2000 Commonwealth Contest: Report & Results

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RadCom

£3.95 Volume 76 No 10 ♦ October 2000 Journal of The Radio Society of Great Britain

OUT NOW!

G3SXW and G4BUO Battle for Britain at WRTC 2000

2001 Contesting Guide

Peter Hart looks inside the FT-1000MP MARK-V

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The RSGB are running Morse weekends and for a fee of £20 maximum you can paticipate and if you wish take you 5 wpm test. Provided you pass during the weekend and purchase a 100W HF transceiver from us within 60 days of your pass, we will refund the course fee up to a maximum of £20. Simply provide us with a copy of your receipt and pass slip.

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NEW 2000 sq. FT. SHOWROOM

YAESU Choice of the World's top DX'ers

£799 Plus £7.50 Carr.

FT-100

Modes: SSB CW FM AM
Receive Range: 100kHz - 970MHz
Power HF & 6m : 100 Watts
Power 2m: 50 Watts
Power 70cm: 20 Watts
Memories: 300
Head Unit: Remote option
Bandwidths: 6kHz to 60Hz
Output 1: HF - 6m
Output 2: 2m - 70cm
Size: 160 x 54 x 205mm
Weight: 3kg.

This diminutive HF transceiver will pump out 100 Watts of RF power from 1.8 - 50MHz ham bands. It will also give you 50 Watts on 2m and 20 Watts on 70cm. The removable head makes it easy for car installation, yet it is just as much at home when used for base station operation. There's a choice of extra CW filters and a front-end performance that matches many rigs costing much more.

YAESU **FT-840** 160-10m

£499 Plus £7.50 Carr.

Look at our new low price for this 100W radio. Impossible to fault, it just goes on and on! But stocks limited at this price.

24-Month FREE Warranty on Yaesu

ICOM **IC-756PRO** 1.8 - 52MHz 100W

£1959 Plus £7.50 Carr.

You've read the rave reviews, and you have seen our recommendation on the web site. This radio with its amazing receiver and digital filtering, also includes auto ATU and real-time spectrum scope. A great DX rig.

YAESU **FT-847** SAVE
160m - 70cm All Mode
£1329 with switch mode power supply

£1149 Plus £7.50 Carr.

The FT-847 has firmly established itself as a true all-band, all-mode transceiver. Loved by the VHF & UHF operators, and superb for satellite operation, it also offers great HF performance. We have sold more than any other dealer, which says a lot about our reputation and our price. Phone for free leaflet today. And remember, our stock is genuine UK, not modified overseas models!!

YAESU **FT-1000MP AC** SAVE
160 - 10m All Mode

£1795 Plus £7.50 Carr.

19.4% APR Available

If you are looking for the rig with every feature including dual receive - then look no further!

It has stood the test of time and used by the worlds top DXers and DXepeditions. Its excellent receiver combined with its superior transmitted signal makes this a natural choice for the HF enthusiasts.

YAESU **FT-920AF** SAVE
HF 160m-6m-100w

£1099 Plus £7.50 Carr.

Includes full DSP and internal ATU. High tech receiver with dual tuning controls. Uses many of the FT1000 MP features but at a more attractive price. Full break-in on CW and includes a data port for TNC.

ICOM **IC-746**
160m - 2m All-mode

£1349 Plus £7.50 Carr.

Your chance to purchase one of the most popular "all-band, all-mode" transceivers at a very competitive price. The IC-746 offers 100 Watts output on all bands and has a receiver performance to match.Limited stock at this price.

ICOM
IC-706IIG 160 - 70cm All Mode

£895 Plus £7.50 Carr.

Still a firm favourite with mobile operators and those who want a compact all-mode, all-band station. Phone for latest leaflet.

KENWOOD **TS-570DG**
160 - 10m All Mode

£825 Plus £7.50 Carr.

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Probably the most underestimated transceiver on the market. Don't be fooled by the low price, the TS-570 has one of the best receivers around. One of the best buys if you want top HF performance on a budget.

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Dual Bander Airband Rx

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* 2m & 70cm Handheld
* 5W Output on 13.8V DC
* Full CTCSS & 12.5/25kHz Steps
* 110 Alphanumeric Memories
* 29 Programmable Functions
* DTMF Keypad & AM Airband
* Ni-cads & AC charger

SAVE
C-408
70cm Handy

£69.95 Plus £6.00 Carr.

Previously £89.95

* CTCSS
* Repeater Shift
* Digital Display
* 12.5 / 25kHz Step
* 20 Memories
* 230mW Output
* Uses 2 x AA

SCOOP!
YAESU FT-11R
2-Metre Handheld

£119 Plus £6.00 Carr.

Another find in a warehouse! Brand new, boxed with AC chargers and ni-cad packs. 75 Alphanumeric memories, AM airband rx mod possible. Last selling price £249! Very limited stocks.

KENWOOD TM-D700E
2m / 70cm Data Mobile

£429 Plus £7.50 Carr.

SAVE

Just arriving, this new model has built-in TNC, port for GPS, Data connector for SSTV, RTTY etc., CTCSS/DCS, Switchable TX/RX deviation, Dual receive, Wide receive option, Detachable head unit, 50 Watts on 2m, 35 Watts on 70cm, 200 memories, Alpha tag memo capability and a lot more. And who has the best price? - look no further!

GARMIN GPS-III Plus

Detailed maps of UK and Europe plus street data upload feature via PC. Great value. Sits easily on the dash board and gives extremely comprehensive data including GB national Grid. Powered by AA cells or external 13.8V

£359 Plus £8.00 Carr.

NEW
Optoelectronics CD-100 MULTICOUNTER

£379.95 Plus £6.00 Carr.

Reads Frequency & Codes

Range: 10MHz -1GHz
Memory: 100 Channels
Decode:
CTCSS, DCS, DTMF, LTR.
Power: Internal ni-cad battery
Charger included

ICOM IC-2800H
In Full Colour!

£310 Plus £7.50 Carr.

* 2m & 70cm Mobile
* Colour TV Screen
* Full CTCSS and 1750Hz Tone
* 50W 2m 35W 70cm

Includes FREE Remote head cable.

HOKA Software
The Secret's out!

We are now the UK distributors. As used by governments, it can decode just about any form of data transmission on HF and VHF. Simply connect between PC and RX audio. Can be loaded on any number of PCS. This is a very advanced programme.

£349.95 Plus £6.00 Carr.

KENWOOD TH-D7E

£259 Plus £6.00 Carr.

* 2m & 70cm Handheld
* 6W Output on 13.8V DC
* CTCSS & 1750Hz Tone
* Built-in Packet Modem
* 200 Alphanumeric Memories
* DTMF Keypad & AM Airband
* Ni-cads & AC charger

ICOM IC-207H

£245 Plus £7.50 Carr.

* 2m / 70cm
* 50W / 35W
* 180 Memories and 7 Tuning Steps
* Detachable Head Unit / Clear Display
* Microphone, Mounting Bracket etc.

C-150 2m Handy

£99.95 Plus £6.00 Carr.

* 2m Handheld
* 5W Output on 13.8V DC
* 1750Hz Tone Included
* 25 / 12.5kHz Steps
* 20 Memory Channels
* Wideband Receive
* Uses 6 x AA cells (not inc.)

YAESU FT-90R
Can you believe the size? 2m/70cm Dual Band

SAVE

£309 Plus £7.50 Carr.

The tiny dimensions of the FT-90R from Yaesu, are hard to believe. Yet it produces 50W on 2m and 35W on 70cm. Auto repeater shift on UK channels and switched 12.5 / 25kHz deviation, make this a number one choice.

KENWOOD TM-G707E

£259 Plus £7.50 Carr.

* 2m and 70cm
* 50W and 35W
* Full CTCSS
* 180 Alphanumeric Memories
* Detachable Head with Amber Display

£269 Plus £6.00 Carr.

YAESU VX-5R

* 6m / 2m / 70cm Handheld
* 5W Output on 13.8V DC
* CTCSS Encode / Decode
* 25 / 12.5kHz Steps
* Auto Repeater Shift
* AM Airband Receive
* Lithium Cells & Charger

YAESU FT-8100R

£349 Plus £7.50 Carr.

* 2m and 70cm
* 50W and 35W
* Wideband RX AM & FM 208 Memories
* 7 Tuning Steps DTMF Remote Front panel
* Very compact, supplied with all hardware.

YAESU FT-50R

£199 Plus £6.00 Carr.

* 2m / 70cm Handheld
* 5W Output on 13.8V DC
* CTCSS Encode / 1750Hz tone
* 25 / 12.5kHz Steps
* 30 Memory Channels
* AM Airband Receive
* Ni-cad Cells & Charger

ADI AR-147
AM Airband Receive

£199 Plus £6.00 Carr.

* 2m 50 Watt Mobile Airband Receive
* Full CTCSS Encode / Decode
* 81 Memories 25 / 12.5kHz Steps
* Keypad microphone & Mounting Kit

KENWOOD TM-V7E

£339 Plus £7.50 Carr.

* 2m / 70cm Mobile
* 50W 2m, 35W 70cm
* Clear LCD Readout
* CTCSS & DTMF
* 8 Frequency Steps & 280 Memories
* Includes Microphone & Mounting Bracket

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FREE MFJ Catalogue - Just Phone!
BEWARE of grey imports. All MFJ products should have serial numbers and UK Warranty cards issued by us.

MFJ-969 300W ATU

£169.95 Plus £7.50 Carr.

160 - 6m Wire, Coax or Balanced

Includes VSWR / Power Meter, Ant. Selector, PEP feature, Roller Coaster Tuning

MFJ-949E 300W ATU

£139.95 Plus £6.00 Carr.

160 - 10m Wire, Coax or Balanced

Includes VSWR / Power Meter, Ant. Selector, PEP feature, Built-in Dummy Load

MFJ-962D 1.5kW ATU

£239.95 Plus £7.50 Carr.

160 - 10m Wire, Coax or Balanced

Includes VSWR / Power Meter, Ant. Selector, PEP feature, Roller Coaster Tuning, T-Network

£329.95 Plus £7.50 Carr.

SGC-230 Smart Tuner

Covers 1.6 - 30MHz and handles 3 - 200W. Designed for end fed wires, just connect to 12V and feed with RF via coax. Can be mounted outside or at top of mast.

SGC-500 HF PowerCube Amp.

£1095.95 Plus £7.50 Carr.

This solid state amplifier delivers 500W from 70W drive. Auto bandswitching, auto drive level adjustment, and built-in test programme. Requires 10 - 18V DC @ 40 Amps average. 90 Amps CW. Great for mobile or remote mounting.

Microset SR-100 100W 2m Amp.

Ths multimode amplifier will produce up to 100W output for 4 - 25W input. Includes GaAsFET pre-amp and requires 13.8V @ 12 Amps. **£169.95**
Carr. 6.00

Speaker Mics.

Including Yaesu and Icom 4-way jack.
QS-112-Y Yaesu **£16.95**
QS-112-K Kenwood **£16.95**
QS-112-Y4 4-way **£16.95**
Phone if in doubt about suitable model.

QS-112

£16.95 Plus £2.00 Carr.

Hands-Free Mobile Mics.

£42.95 Plus £2.20 Carr.

Comes complete with PTT switch box for mounting on gear lever. Head/shoulder band makes for easy wear. Models for almost every transceiver. Phone for confirmation of model number to suit your rig.

Amazing Cushcraft Mini-Beam

£299 Plus £7.50 Carr.

This antenna works, and works well! It covers 20, 17, 15, 12 and 10m. The secret is in the element spacing. On 17m and 12m it acts as a dipole. On the other bands it performs as a 2 element Yagi because only two elements are active. Trying to cram 3 active elements onto a short boom does not work! The Radcom review was high in praise, so don't just take our word for it! It sits happily on a Tennamast and only needs a modest rotator.

2 El. on:	20m, 15m 10m
Gain:	3.6dB, 4.8dB, 5.3dB
F/B	10dB, 12dB, 22dB
Dipole:	17m and 12m (0dB)
Power	1.2kW (2:1VSWR)
Boom:	2.2m
Element	5.2m
Radious	2.7m

MFJ-269 Analyser

160m - 70cm On-site Antenna Analyser.

£299.95 Plus £6.00 Carr.

Imagine being able to plug into your antenna or feed line and make meaningful adjustments on site. Or be creative and turn hours into minutes and ideas into antennas! Read what RadCom says and make your own mind up. One of the best investments you will ever make!

Heil Audio

Full Range Stocked

Proset-4	H'phone/boom mic	£129.95
Proset-5	H'phone/boom mic	£129.95
Micro-4	Lightweight ver.	£99.95
Micro-5	Lightweight ver.	£99.95
AD-1	Cables Y. K. or I	£14.95
HM-10-4	Stick mic	£69.95
HM-10-5	Stick mic	£69.96
CC-1	Cables Y. K. or I.	£25.95
HC-4	Spare insert	£32.95
HC-5	Spare insertt	£32.95

You can convert your mic to Heil by simply purchasing HC-4 or HC-5 insert.
Phone for carriage

NEW Screwdriver Mobile Antenna

3.5 - 30MHz No Gaps!
Remote Tuning - Low WSWR
Rated to 400W
Change band without leaving the car seat.

- *Max Height Approx 2.7m*
- *2" diameter coil*
- *Weather shroud*
- *Single 3/8" bolt fixing*
- *Impedance transformer*
- *Remote control box*
- *Cable harness*
- *50 Ohm Feed*

WBB-3	Antenna	£295.00
WUMB	Chassis bracket	£15.95
WC-160	160m coil	£44.95

Carriage £7.50

Avair AV-600

£59.95 Plus £6.00 Carr.

1.8 - 525MHz VSWR Meter 5/20/200W scales. Dual sensors, PEP reading. More accurate than built-in meters.

Telescopic Masts

Much Stronger than Alloy Poles!

NEW

We are now able to supply a range of telescopic tiltover masts, galvanised to BS729. These masts are extensively used for commercial purposes and built to a very high standard. Heights available from 7.6m to 12m extended. Models for wall mounting or post mounting are included. The post mounted versions tilt-over and are supplied with a socket for mounting in concrete. Models are available to support antennas from VHF to HF tribanders.

AAM	**7.6m** Wall mount (VHF & Mini HF)	£250 (£30)
AAM	**10m** Wall mount (VHF & Mini HF)	£295 (£35)
TML	**7.6m** Self supporting (VHF & Mini HF)	£340 (£35)
TML	**9.2m** Self supporting (VHF & Mini HF)	£415 (£40)
TMS	**10.7m** Self supporting (HF 3 el beams)	£579 (£52)
TMS	**12m** Self supporting (HF 3 el beams)	£659 (£57.50)
TMS	**10.5m** (3 section) (HF 3 el beams)	£659 (£52.50)

Price in brackets are carriage charges. Delivery is normally 3 - 5 days from date of order. We suggest you discuss your requirements with us by phone to make sure that you choose the right model for your needs.

Phone or write for full information and drawings

LINEAR AMP UK Amplifiers

£895 Plus £7.50 Carr.

UK Ranger 811H (illustrated) £895 Plus £7.50 Carr.
* 1.8 - 30 MHz. 800 watts output
* Drive: - 10-100W * Built in Power Supply

British made Amplifiers with a Pedigree

NEW MMT-1 Mobile Martching Unit

A wideband ferrite transformer to match the low impedance of a mobile whip to 50 Ohm coax cable. Particularly essential on 80m and 40m. Covers 3.5MHz - 24MHz. Rated at 400W pep.
£19.95 post £2.00

NEW MFJ-Cub QRPers

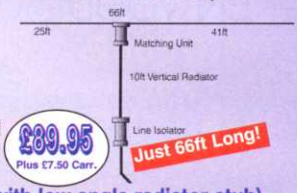
The MFJ Cub **single band transceivers** are small enough to sit in the palm of the hand. They provide up to **2 Watts CW output** (variable to mWs), have **full break-in** and on-air sidetone.
Available ready **built or as a half kit.** The kit version has all the surface mounted components installed. You only need to add the larger items, knobs and case.

Kit £89.95 Built £139.95
Models available for 80m, 40m, 30m, 20m and 15m. Includes cabinet and controls.
Postage £6.00

Carolina Windoms

CW-80 Special

Just 66ft long yet covers 80m - 10m. It will out perform a G5RV and give lower angle of radiation because of the 10ft vertical section which is forced to radiate. It will handle 1.5kW



£89.95 Plus £7.50 Carr.

Other Models (all with low angle radiator stub)

CW-160	160 - 10m 171ft long	£109.95
CWS-160	160 - 10m 133ft long	£99.95
CW-80	80 - 10m 133ft long	£84.95
CW-40	40 - 10m 66ft long	£79.95
CW-20	20 - 10m 34ft long	£77.95

Plus £7.50 Carr.

80-40-20m Mini Dipole

The "80 plus 2" Mini - Dipole was designed by our Director, Peter Waters, G3OJV. Just 52ft long, it uses linear loading - no tuned traps. It can be directly fed without ATU and also operates at 2.5:1 VSWR on 15m. Amazingly efficient, it handles 400 Watts and is balun fed. Erect it as an inverted V and it takes up less than 40ft of space. If you have a small garden, don't miss out on the LF bands anymore. **£79.95** Carr. £6.00

Power Supplies

SEC-1223
13.8V PSU
23 Amps - 3.2lbs!

£99.95 Plus £6.00 Carr.

Back In Stock

Beware of cheap noisy supplies that have poor filtering & construction!

Lighter than an IC-706 and about the same size! The **SEC-1223** switch mode power supply delivers 23 Amps at 13.8V Thermo fan cooled, it measures just 57 x 177 x 190mm. Will power all 100W rigs and can be changed for 115V AC

WATSON

UK's top selling power supplies.

£89.95 Plus £7.50 Carr.

Watson power supplies guarantee the very best performance and value for money. Tried and tested, they have been submitted for independent laboratory testing for safety and electrical performance.

W-3A	3 Amp fixed supply.	£22.95
W-5A	5 Amp fixed supply	Plus £6.00Carr. £29.95
W-10AM	10 Amp variable supply	£59.95
W-25AM	25 Amp variable supply	£89.95
W-30AM	30 Amp variable supply	Plus £7.50 Carr. £119.95

NEW W-40SM 40 Amp Switch Mode

£149.95 Plus £6.00 Carr.

Digital display, variable ouitput rated at 40 Amps continuous. Fully protected and very low noise. Ideal for a wide variety of ham applications. Light weight makes it easy to transport.

Compact 10 Amp Switch Mode PSU

The W-10SM is small enough to fit in a brief case. Measuring just 230 x 100 x 65mm, it's ideal for 50 Watt mobile's etc. Over voltage and current protection.

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IC-706 IIG Icom 1.8 - 70cms Transceiver

5 - 100W RF output 1.8 - 50MHz * 2 - 40W RF output AM * 1 - 50W² RF output 144MHz FM * 1 - 20W² RF [illegible]30MHz FM * Receive: LSB, USB, CW, RTTY, [illegible]30kHz - 470MHz Enhanced * Transmit: [illegible]mories * Narrow FM [illegible]t * Sub dial second [illegible]le front panel * 13.8V [illegible]1.9A * Audio: 2W (8 Weight: 2.5kg

[illegible]ed version of this popular features but in the same physical size. New fe[illegible] include 70cm, crossband split, band stacking register memories. It has a sub dial for easier access to RIT/ second VFO and high quality transmit audio. Power has been increased to 50W on 2m² and 20W on 70cm² as well as narrow FM cabability with the FM deviation set for 2.5kHz, ideal for the new

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YAESU

Call now on 0208 566 1120 or see our web site for more details

Yaesu FT-1000MPmkV

First stocks arriving October (So 'they' say...!) RRP £2799.00

Call the sales desk for THE VERY BEST PRICE either for cash, cheque, credit card, trade-in or finance!

Yaesu FT-847

Only £1229

or £29 deposit & only 36 x £44.60 p/m

Yaesu FT-840

Only £599 with Matching Fist Mic,

or NO DEPOSIT & 24 x £30.48 p/m.

Yaesu VX-5R

Only £269 including

YAESU FT-817

Probably won't be seen over here until sometime in 2001, this new marvel is an ALL MODE ALL BAND (160m-70cm!) hand portable. Not much bigger than an FT-290R, it includes its own NiCad pack and produces 5W output. Just wondering what they are going to do about Top Band operation..!

Yaesu VR-500 Save £100!

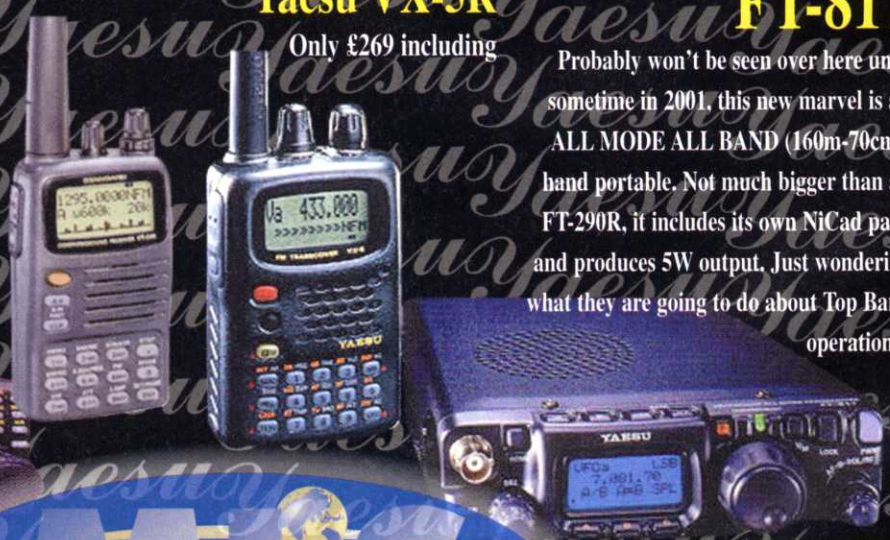
Only £199.95 whilst stocks last.

Yaesu VR-5000

Estimated RRP: £799

Large panoramic display, DSP,

100kHz - 2.6GHz, dual recieve.



Available Christmas 2000.

NEW!

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Martin Lynch can also offer finance terms up to 48 months with no deposit. We welcome your part exchange against any new (or used!) product, provided its clean and in good working order. Call the Sales Desk today. APR: 21.9%. Payment protection is also available up to 36 months. All units are brand new and boxed and offered with full manufacturers RTB warranty. All prices quoted for cash/cheque or Switch/Delta card. No additional charges for credit cards. Martin Lynch is a licensed credit broker. Full written details are available on request. Finance is subject to status. E&OE. £10 p&p on all major items.

Front Cover:

G4BUO and G3SXW, the team who represented the UK in this year's World Radiosport Team Championships (p16). Richard Mortimore, GW4BVJ, operating as GM4BVJ in the 2000 IOTA Contest (2001 Contesting Guide, p43). The new Yaesu FT-1000MP MARK-V (review, p29).

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Radio Communication

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October 2000

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Down To Earth - Amateur Radio From The Ground Up

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IOTA.HQ@rsgb.org.uk (Islands On The Air)
GM.Dept@rsgb.org.uk (managerial)

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The RadCom Leader

Just Another Survey!

WE HAVE RECEIVED a number of calls at HQ recently from members who have been approached by a Market Research company who are carrying out a survey of the amateur community on behalf of the Radiocommunications Agency.

The Society was aware of the RA's plans to carry out this new survey but were left rather wrong footed by the timing. We had been told that it would be starting in the autumn and were rather surprised to find out, and I believe, so were some departments in the RA, that the survey was already underway. Good at communicating, aren't we!

The survey has been commissioned by the RA to put a nominal valuation on the spectrum allocated to amateur radio and CB. These two areas of spectrum were not part of the recent Spectrum Pricing review and the economists working for the Agency felt that the AR and CB spectra should have financial values placed upon them. I know that some of you who have already undertaken the survey have been concerned with the framing of the questions, especially those of a financial nature. However, let me assure you all, the Society is monitoring the situation closely. We have the assurance of the Agency that the survey is not a precursor to a licence increase, nor is it going to lead to the AR spectrum or the CB spectrum being included within the Spectrum Pricing package. We will see!

It's not all bad news; in recent discussions with the RA it has agreed to allow Novice Licence holders to operate without supervision in Raynet operations, something I know will be welcomed by all Raynet groups. Also, they have also agreed to the removal of the age limit for the issue of a full licence. These changes are not yet in force, but will be announced in a Gazette Notice shortly.

Finally this month, a couple of advertisements.

Firstly, expect to receive a bumper parcel in *RadCom* next month. Your magazine will contain: the Society's Annual Report and Accounts, all the details of the candidates standing in the forthcoming Council Elections, plus the new Memorandum and Articles of Association and the new Bylaws which you are being asked to approve at this year's AGM.

And the second advertisement is for the Society's AGM which is being held in Yorkshire this year at Harrogate Ladies' College, on Saturday 2 December. The Society has been criticised in the past for always holding the AGM in London. Not strictly true, as the AGM has been held away from London on a number of occasions, the last being the 1993 AGM which was held in Manchester. So, all you people that live north of the Watford Gap, (that's the north to a southerner like me), let's have a bumper turnout this year. It takes a lot of organising to hold the event and it would be a shame if it did not attract the numbers that we usually get in London. Now there's a challenge!

Peter A Kirby, G0TWW, General Manager

Birthday celebrations get under way in Beckenham

G2OS - Amateur Radio's Centenarian

DOCTOR G A V Sowter, 'Gav' to his friends, celebrated his 100th birthday on 28 August. He has been a member of the Institution of Electrical Engineers for 79 years, obtained his first amateur radio call, 2OS, in 1922, has been a member of the RSGB for 34 years, and belongs to the Surrey Radio Contact Club.

Most of his career has been devoted to magnetic materials, having done some of the original research on the Mu-metal range of alloys, and on moving-coil loudspeakers. He will be remembered by many for his association with Sowter Transformers of Ipswich.

Gav's impending century was first brought to our attention by Harold Turner, G4YRH, and subsequently by Ray Herbert, G2KU, who visited him at his Beckenham home a week before his birthday, to commit some of his recollections to tape and to take some photographs.

Gav lives on his own, cooks for himself, and gave up driving his car only last year. His 1922 call of 2OS was re-issued to him as G2OS in 1966, and he can be heard regularly on the air using a Yaesu FT-990 and a 3-element beam. The President of the RSGB Don Beattie, G3OZF, wrote a congratulatory letter to Gav on this unique occasion.

As Ray departed, after exchanging fascinating accounts of the early days, he left Gav grappling with his new computer. Age knows no bounds…

G2OS in his shack in Beckenham, Kent, a week before his 100th birthday. (Photo G2KU)

Editorial Changes

AFTER THREE YEARS with the Society, initially as Technical Editor of *RadCom*, this edition is my final. I am signing-off as a member of the HQ team, but have every intention of continuing to support the Society - in the short term by contributing a column to the magazine, and in the medium term as a freelance editor on the Society's book programme.

I have enjoyed editing *RadCom* enormously and would like to take this opportunity to thank all the readers for their contributions and constant encouragement. I would also like to wish my successor, Steve Telenius-Lowe, G4JVG, success in his new role.

Steve White, G3ZVW

Essex Man Convicted

KEITH JERMY, of Basildon, Essex, was convicted at Basildon Magistrates' Court on 3 August of "using amateur radio apparatus to send messages in a form that was grossly offensive, indecent, obscene and of a menacing character". He also used unlicensed apparatus, and the conviction followed a previous one at the same court on 20 April for a similar offence.

Following complaints made by the RSGB, officers of the Radiocommunications Agency and the local Police obtained a search warrant and entered Mr Jermy's premises on 26 April, seizing equipment. Further threatening and abusive transmissions followed, and the premises were entered again the following day and more equipment was seized. Mr Jermy was arrested.

He subsequently pleaded guilty and was given 12 months' probation, forfeiting all the relevant equipment. His callsign has also been revoked by the RA.

Radio on Stamps

THE *HAMEXPO* Amateur Radio Show takes place during the 75th anniversary celebrations of the French amateur radio society, REF-UNION. As part of the celebrations, a philatelic exhibition on amateur radio themes will take place on 21/22 October in Auxerre, France. Anyone wishing to contribute to this, or requiring further information, please contact raymond.aupetit@wanadoo.fr

Per Ardua

THE ROYAL AIR FORCE Amateur Radio Society (RAFARS) is starting new initiatives to ensure that it will continue to flourish. The next AGM will consider proposals to welcome student members at a reduced subscription, and to attract new members from within the RAF and related organisations. A Special Events Team now provides a professional standard of RAFARS representation at selected rallies.

More information about RAFARS is available from the Administrator at RAF Cosford, Wolverhampton WV7 3EX, by phone on 01902 377878 (10am – 12 noon), or from the world-wide web (www.rafars.freeserve.co.uk).

Stolen!

AT ABOUT 10.30pm on Tuesday 8 August, an out-building on the Waters and Stanton PLC premises in Hockley, Essex, was broken into and several power supplies were stolen. If you are offered one of these you can be fairly sure it has been stolen, because this equipment is not yet on sale in the UK. The photographs show the two PSUs, which are quite similar in appearance. Five of type FC-25 were stolen, together with 36 of type FA-25.

Rayleigh Police Station CID would be very interested to receive any information leading to the recovery of these items.

The FA-25 (top) and the FC-25, stolen from Waters and Stanton PLC.

Money Raised for Charity

THE RADIO Officers' Association has ensured that the end of the 500kHz Morse watch and the closure of the UK coast stations did not pass without recognition of their contribution to the safety of life at sea.

It organised Maritime Radio Month in April 1999 and liaised with BT Maritime Radio Services this year to organise the GKB cross-band amateur/maritime event from Portishead Radio in Somerset.

The sale of award certificates raised £1,100 and has been presented in equal parts to the Royal National Lifeboat Institution and the Mission to Seafarers. The presentation took place at the Sennen lifeboat house on Sunday 30 July. Peter Roper, G3MII, and David Barlow, G3PLE, who had operated throughout both events, presented the cheques to the two charities.

The presentation (l-r): Terry George, G4AMT, Coxswain, Sennen Cove lifeboat; Margaret Price, Treasurer, Sennen Cove RNLI; Peter Roper, G3MII, Station Manager, Maritime Radio Month; David Barlow, G3PLE, Manager, Maritime Radio Month and GKB liaison officer; David Nancarrow, G3RID, former Radio Officer, Land's End Radio, GLD.

Ex-D Club Formed

THIS NEW CLUB is aimed to bring together British and Allied service personnel who served in Germany in the post-WW2 period and who held amateur radio callsigns or who operated club stations.

If you were there and would like to renew acquaintances, especially if you have photographs or memorabilia to share, please join.

Membership is free and you can be placed on the mailing list by e-mailing jhawkins@iinet.net.au or by sending an SASE to Graham, GM3JQJ.

They Found the Treasure

THE NORTH Yorkshire Repeater Group recently celebrated the 21st anniversary of GB3NY, their 70cm voice repeater. As part of the celebrations, families and friends took part in a treasure hunt organised by Group Treasurer David, G4EDR. A buffet was held afterwards and certificates were presented to the winners.

The winning team (l-r): Sheila; Dawn, 2E1HBS; Miles, G0ODS; Richard, G0OII, and Group Chairman David, G4EEV, who presented them with their certificates.

No saboteurs here: Alison and Scott, keen DFers and first home in this year's Norfolk ARC Fox Hunt. Scott is the grandson of Doug, G3HUL.

Volunteers Needed

TELECOMS SANS FRONTIERES (TSF), on behalf of the United Nations, seeks volunteers qualified in the maintenance of VHF and HF radiotelephones, satellite phones, GPS and peripherals, antennas, power supplies, etc. After selection by TSF, the candidates must be available at short notice for different missions, which may last up to three months. Transport, expenses, compensation and insurance are paid by TSF.

TSF seeks dynamic people, bilingual in French and English. A sensitivity to humanitarian issues is essential for field work. Technical knowledge is essential, as is physical fitness. If you have these qualities, telephone 0033 5 59 84 43 60 or fax 0033 5 59 84 43 58 or e-mail tsfi@wanadooo.fr There is a web site (www.tsfi.org).

RA Abolishes Age Restriction

THE FOLLOWING announcement was made by the Radiocommunications Agency on 17 August: "Following recent discussions with the RSGB, it was agreed that the 14-year age restriction (to obtain a Full Amateur Radio Licence) should be completely removed. To be eligible previously, you had to be 14 years of age or over or have held a Novice licence for a least a year.

"If you have obtained a pass in the RAE (and either the 5WPM or 12WPM Morse test for a Class A/B and A licence respectively), you may apply for a full licence. It is no longer a requirement to have held a Novice licence for a year if you are under 14.

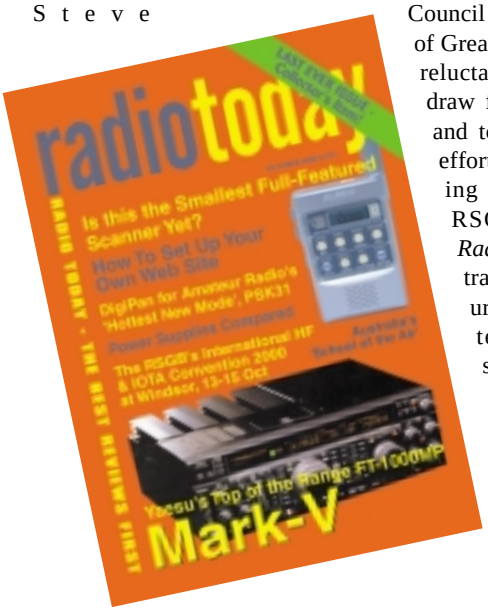
"This initiative is part of the ongoing process to refine and improve access and facilities for amateurs. Both parties felt that, in view of the increasing technical and operational ability of youngsters today, and recognising that those talented youngsters should be actively encouraged and nurtured, this restriction was a particular anomaly, which ought to be discarded,.

"After all, if you are good and keen enough, you are old enough!"

Radio Today Closes

RADIO TODAY, the newsstand magazine of the Radio Society of Great Britain, is to close after the October 2000 edition. Since taking on *Radio Today* some two years ago, the RSGB has refocused and reshaped its strategy, and has achieved significant success in growing circulation. However, increasing difficulties of getting the magazine wide exposure on the newsstands has forced the Society to take the reluctant decision to close the magazine.

Since 1998 the Society has had much success with the magazine. Advertising revenue and subscription income has increased to a healthy level and the editorial content under the editorship of Steve Telenius-Lowe, G4JVG, has received wide accolades from the amateur radio community.



The Society's objective when purchasing the magazine from Nexus Publishing in early 1998 was to gain maximum exposure via the newsstands for amateur radio and other hobby radio activities. This has not been achieved, primarily because of the wholesale and retail magazine distribution policy within the UK, which is now shifting almost entirely towards the high-volume popular magazine market. Specialist magazines within the UK have come under increasing pressure, finding it extremely difficult to obtain newsstand space. In view of this, the Council of the Radio Society of Great Britain has made the reluctant decision to withdraw from the news stands and to focus the Society's efforts on further improving and developing the RSGB house journal, *RadCom*, and to concentrate and support measures to promote amateur radio within schools.

Funding allocated to *Radio Today* will now be diverted into new projects to support the growth of amateur radio in the UK.

DXpeditioning is hard work: the Nunsfield House team in full spate on Oronsay, an island in Loch Sunart.

Five IOSA Islands in Eight Days

THREE MEMBERS of the Nunsfield House Amateur Radio Group decided to include five Scottish islands on their eighth week-long DXpedition to Scotland – Carna (OH17), Oronsay (OH16), Hestan (SF1), Little Ross (SF2) and Lismore (FL1).

Les, G4CWD, Peter, G6KUI and Ken, G3OCA, set out on their 1000-mile round trip having previously obtained permissions from the island owners for their operation. Their transportable stations comprised a TS-50, an FT-900, an R5 vertical and an 80/40-metre dipole with straps for changing bands. The power was supplied by a small 500W generator through 4A power supplies and parallel gel-cells.

Carna and Oronsay are islands in Loch Sunart, Carna and yielded some 600 contacts. The Oronsay tally was only around 200 because of a concurrent solar flare, and was far exceeded by the number of man-eating Scottish midges, causing the team to retreat to their tents. Lismore was a disappointment logistically, but resulted in 300 contacts. Hestan, on the other hand, was attractive and comfortable, and the two-day stay resulted in 380 contacts. Finally, Little Ross proved to be the team's favourite island, in a beautiful setting, and yielding over 400 contacts.

The trip had been a great success, the team returning to Derby with a real sense of achievement and in need of a good holiday!

- Morecambe Bay ARS has been approved as a satellite centre for the RAE and NRAE examinations. Further information is available from Chris, G0TOO, on 01524 410805, evenings and weekends. The society web site is www.radiosociety.org

- In last month's *RadCom*, an incorrect date was quoted for the coming RAE in December. The correct date for the examination is the 4th, *not* the 11th. The other dates are correct. More information will appear next month.

Built to last: once the pride and joy of a Scottish amateur, this mast in Motherwell has survived ensuing surrounding demolition and redevelopment. The local council has even planted roses around it and enclosed it in a small public garden. (Photo: GM3MXN)

Icom Equipment Back from Arctic Balloon

AS REPORTED on p9 of the June *RadCom*, Icom UK supplied a quantity of communications equipment to David Hempleman Adams. This was arranged at the last minute when other equipment had proved unreliable. David returned the equipment in person to Herne Bay-based Icom, where it was received by Chris Ridley, G8GKC.

The equipment included two IC-M710 marine transceivers (which provided the main link between the balloon and its Birmingham base), the IC-A3E and IC-A22E VHF airband transceivers (for backup and communications with the rescue helicopter), together with antennas, power supplies and battery cases.

David said "the HF equipment was the best I have used in the last 25 years! Personal contact was immensely important because it kept up my morale when things weren't going according to plan."

Chris Ridley receiving from David Hempleman Adams the IC-M710 used in his record-breaking Arctic crossing. (Photo: Icom UK)

Project Millecom at the Petersfield Show: John Stringer, G7WLR (logging, left), with Cadet Matthew Parkman, Corporal Charlotte Cunningham at the microphone, and Sergeant Heather Johnson. Two onlookers show great interest.

● Congratulations to Ian, 2E0AOZ, a member of the North Wakefield Radio Club. He is the first Novice licensee to be awarded the QRP Masters Award.

● On 28 August, the day Louis Varney, G5RV, died, a halyard parted at the end of his garden, and his own G5RV antenna sagged gently to rest at half-mast, where it has since remained.

First GB Station in the Field?

GB2CRA 1952: Peter Bendall, SWL; Alan Davies, G3INW; Peter Naish, G3EIX and Louis Varney, G5RV. Peter Bendall was later G3NBU and is now DJ0JR; Alan is now GW3INW; Peter Naish was later VK2BPN. The photograph was taken in a tent set up in 'The Rec' (now Central Park), Chelmsford, to commemorate the Coronation of Queen Elizabeth II. (Photo: Arthur Butcher, G3KPJ)

THE RECENT DEATH of Louis Varney, G5RV, has started to produce anecdotes from various sources about his life and work. One such story comes from the web page of the Chelmsford Amateur Radio Society (www.g0mwt.free-online.co.uk), of which Louis was a Founder and Life Member.

The photograph, although conveying a typical 1952 field day atmosphere, is unique, quite apart from the famous gentleman on the right. The Special Event station, callsign GB2CRA (Chelmsford Radio Amateurs), was the first for which a GB callsign was issued for such purposes. Louis, probably though his contacts in the GPO (the Licensing Authority at that time), arranged for the call to be issued. Up to then, only RSGB Headquarters had GB callsigns.

The photograph also shows the original G5RV 'TVI-proof' 50-watt transmitter built by the designer. A later one had two 807s in the PA and was published as the *Elizabethan* because of the Coronation. Also in the picture is an HRO receiver loaned by Lawrence Fuller, G6LB.

This year is the 30th anniversary of the Worked All Britain Awards, the celebrations for which involved the introduction of the Sunrise 2000 Award. There was also a draw prize of a hand-held radio, donated by Martin Lynch and Sons. Against a musical background, the prize was presented to the winner, Frank Howe, G3FIJ, by a member of the WAB committee.

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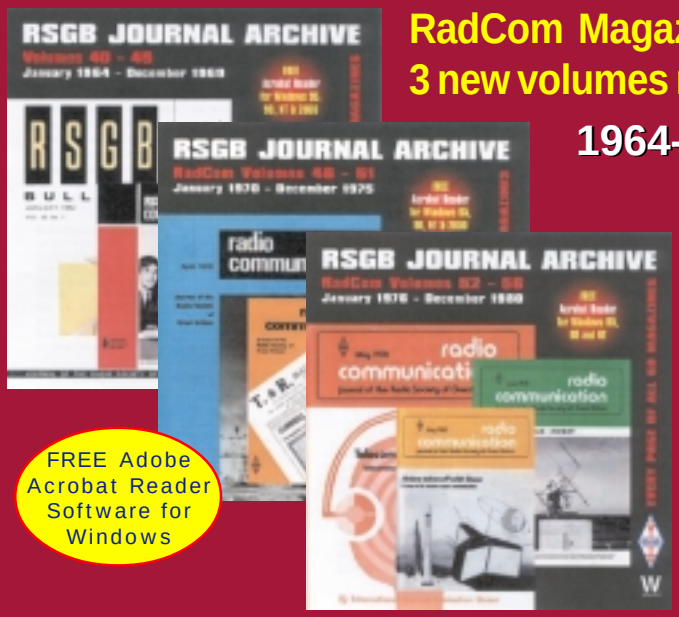

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Lead Feature

WRTC 2000


Committee chairman Tine Brajinik, S50A, opening WRTC.

By Roger Western, G3SXW*

IN JULY, 53 teams from 35 countries converged for our version of the Olympics. It is not just a wonderful chance for the world's best contesters to battle it out, it is a large social gathering, forging hundreds of new friendships.

Amateur radio contesting is not an Olympic sport, so we have to make our own. Every four years, teams from all over the world compete in the World Radiosport Team Championship, hosted this year by Slovenia.

COMPETITION

TWO-MAN TEAMS compete on a 'level playing-field'. Normally in contesting home location and antennas play a big part in determining the winners, but in WRTC operating skill is the prime factor. This is because:

- operating sites are close together (all in the small country of Slovenia)
- propagation variances are thereby minimised
- locations are equalised as much as possible (all were on hilltops)
- identical antennas - a tribander and a Windom, all 12 metres high
- maximum 100 watts output
- only one transmitter and two receivers
- all teams operate during the same 24 hours, with the same scoring system.

It can never be one hundred percent equal, but this was as fair a competition as it could possibly be made and the Slovenian Contest Club are to be congratulated for their huge efforts to make it so.

The event takes place in early July, coinciding with the weekend of the IARU HF Radiosport Contest, an international contest supported by stations all over the world. Participants exchange a signal report and their ITU zone number on both CW and SSB, on the six non-WARC HF bands.

WRTC competitors require a range of skills and tactics to do well in each of five separate categories, somewhat like a pentathlon: number of SSB QSOs, CW QSOs, multipliers and performance in SSB and CW pile-up simulation competitions.

Competitors at the opening ceremony.


Operating S568Y with referee 9A2AA listening.

TEAMS

THE ALLOCATION OF teams was designed to reflect the contesting track-record of each country. The United Kingdom was allocated one team (the USA, Russia and Japan each had several) and was represented this time by Dave Lawley, G4BUO, and Roger Western, G3SXW. This selection was approved by the RSGB's HF Contest Committee. In all, 106 contesters were involved.

Each of the 53 teams was allocated a full-time referee and each operating site had a host, so those directly involved numbered 212, plus a team of six judges and of course a large Organising Committee. Add to this travelling partners and families, local Slovenian amateurs who joined in, and a good number who came just for the holiday, and the total attending was over 500.

TACTICS

CONTESTING ENTAILS making as many contacts as possible, but it also demands a range of skills and experience. The format of the competition calls for important tactical decisions:

- off-time: during the 24 hours of the contest we were allowed to operate only 20 hours, so four hours of off-time had to be taken. This was carefully monitored by the on-site referee. Propagation predictions suggested that the middle of the day was likely to be the least productive.
- each contact is one 'point' on both SSB and CW. SSB contacts can be made faster, but on the other hand low-power (100 watts) makes it harder to break through the QRM than on CW. What should be the proportion of time spent on each mode?

** 7 Field Close, Chessington, Surrey KT9 2QD.*
E-mail: g3sxw@compuserve.com

Pos	Team	Operators
1	USA	K1TO, N5TJ
2	Russia	RA3AUU, RV1AW
3	USA	K1DG, K1AR
4	Germany	DL1IAO, DL2MEH
5	Germany	DL6FBL, DL1MFL
6	Ukraine	UT4UZ, RW1AC
7	Croatia	9A9A, 9A3GW
8	USA	KQ2M, W7WA
9	Germany	DL6RAI, OE2VEL
10	USA	K1ZM, N2NT
11	Russia	RZ9UA, UA3DP
12	Canada	VE7ZO, VE3EJ
13	USA	K6LA, K5ZD
14	Lithuania	LY3BA, LY2BM
15	Lithuania	LY1DS, LY4AA
16	Ukraine	UT5UGR, UU2JZ
17	Hungary	HA3OV, HA3NU
18	Belgium	ON4WW, ON6TT
19	Italy	IK2QEI, I2VXJ
20	Finland	OH1EH, OH1NOA
21	Spain	EA3NY, EA3KU
22	Slovakia	OM3BH, OM3GI
23	USA	K8NZ, W2GD
24	UK	G3SXW, G4BUO
25	Yugoslavia	YT1AD, YU7NU
26	Russia	UA9BA, RN9AO
27	USA	K4UEE, N6IG
28	Argentina	LW9EUJ, LU7DW
29	USA	K9TM, N2IC
30	USA	WC4E, W0UA
31	Germany	DL2CC, DL5XL
32	Croatia	9A3A, 9A2AJ
33	South Africa	ZS6EZ, ZS4TX
34	USA	K4BAI, K6LL
35	Cyprus	5B4WN, 5B4LP
36	Slovenia	S59A, S58A
37	USA	K3NA, N6TV
38	Brazil	PP5JR, PY2NY
39	Canada	VE7SV, VA7RR
40	Czech Rep.	OK1QM, OL5Y
41	Japan	JM1CAX, JO1RUR
42	USA	K9ZO, K7BV
43	Brazil	PY5CC, PY1KN
44	Slovenia	S50U, S51TA
45	Canada	VE3BMV, VE3KZ
46	Poland	SP8NR, SP9HWN
47	France	F6BEE, F6FGZ
48	Japan	JA8RWU, JH4RHF
49	Japan	JH4NMT, JK3GAD
50	Spain	EA7GTF, EA7KW
51	USA	N3AD, N3BB
52	Australia	VK4EMM, VK4XY
53	Italy	I5NSR, I5JHW

Table 1: The results of WRTC 2000.

Pos	Team	Number of QSOs			Multi-	Pile-Up Competition			Accuracy
		CW	SSB	Total	pliers	CW	SSB	Total	
1	K1TO/N5TJ	1277	957	2234	364	61	52	113	99.3%
2	RA3AUU/RV1AW	1079	885	1964	405	44	47	91	99.3%
3	K1DG/K1AR	1135	954	2089	301	47	46	93	98.6%
24	G3SXW/G4BUO	1147	463	1610	337	51	48	99	99.2%
UK Team Rank Order		2nd	46th	23rd	17th	12th	10th	9th	6th

Table 2: How the UK team fared against the top three.

- multipliers (zones per band and mode) were an important factor in the scoring system, so we had to find stations in unusual parts of the world and then ask them to QSY to the other mode and to extra bands.
- two operators share one transmitter and one additional (non-transmitting) receiver. Who should operate, and when?
- which bands (80-10m) and modes were likely to be best at which times? When to change band, or mode, or operator?

In the event neither operator slept during the 20 hours on-air time. One manned the main station while the other searched for multipliers and checked band-openings with the second receiver. We swapped positions every hour or two.

SCORING

TACTICS WERE further refined by the need to perform well in each of five categories. Each had a maximum number of points to be scored by the winner, and all others were percentaged on the score of the leader in that category. The overall winners were determined by the addition of points scored in these categories:

Number of CW contacts	300
Number of SSB contacts	300
Multipliers	300
Pile-up copying competition:	100
Total:	1000

RESULTS

ADJUDICATION WAS completed in time for the results to be announced at the Closing Ceremony, the very next day. As you will see from **Table 1**, first place went to a team from the USA, Dan, K1TO, and Jeff, N5TJ. This was a truly remarkable performance, as they also won in San Francisco in 1996. Second place was a Russian team, RA3AUU and RV1AW, and third was K1DG and K1AR, who were the winners at the very first WRTC in Seattle.

The UK team achieved 24th place, finishing above many world-renowned contesters, and were especially proud of their 2nd place on CW and 9th place in the pile-ups. It seems clear that we gave too little emphasis to operating on SSB, even though the QSO rate was slower on that mode.

ACTIVITIES

THE OUTLINE programme – Opening Ceremony, Contest, Closing Ceremony – masked a full series of events, which included a wide range of tours for families. For the UK Team the fun started at Gatwick, with several other competitors on the same flight to Ljubljana. Then there was a pleasant surprise around every corner. On arrival we were stopped by customs because of the FT-1000MP boxes, but the magic word 'WRTC' saw us quickly through. We were transported by military bus to the hotel in Bled, a half-hour on excellent roads, and checked-in at WRTC and hotel desks. Our 'goody bag' contained WRTC shirts and a jacket, cap, gifts, brochures – it felt like Christmas!

Participants stayed a full week, so there was plenty of time for socialising as well as for the serious business. A question and answer session cleared up any outstanding issues and on Thursday we did the Pile-Up Competition. This is a realistic simulation of CW and SSB pile-ups, during which entrants write down as many complete call-signs as possible in the allotted three minutes. The room contained twenty computers with headphones - the advantage being that this is an identical test for all competitors. Thursday evening was the official Opening Ceremony, when teams paraded with country boards, just like in the Olympics. Brief speeches were followed by traditional dancing and modern, very stimulating dancing displays, then more of that 'liquid refreshment'.

Friday morning saw the drawing of call-signs which were handed to referees in a sealed envelope. Five minutes before the start of the contest we discovered that our call for the weekend was to be S568Y. A mouthful – but all teams were equally encumbered. We then drove an hour or so to the QTH of Tine, S50A, to which we were allocated for the contest.

It is interesting that it is common in Slovenia, and perhaps other countries in that region, to live in town and to have an out-of-town radio shack. Tine lives in Ljubljana, with little

Above: 140ft tower, 80m 3-ele linear loaded Yagi at the top, 40m 3-ele full sized Yagi on ring rotator lower down. S50A.

Left: Russian competitors, judges and supporters at WRTC.

At the closing social, G4BUO, VK4EMM and VK4XY.

space for antennas, but his house on a hilltop sports four huge towers and antennas, including a full-size three elements on 80 metres. Very impressive, as indeed was the hospitality – we were well 'fed and watered' and felt warmly welcomed.

We finished the contest by handing a computer disk to the referee, then returned to Bled Sunday afternoon, only to learn the news that we had been beaten! The hubbub had to be heard to be believed, as teams swapped war stories.

A team of adjudicators worked through the night, verifying log accuracy. They had the benefit of hundreds of IARU contest entries e-mailed to them to add to the database of call-signs. The results were announced at the Closing Ceremony and we returned to UK exactly a week after leaving home, having enjoyed a truly memorable time.

The winners. Left to right; RA3AUU, RV1AW, K1TO, N5TJ, K1AR, K1DG.

SLOVENIA

A HUGE VOTE of thanks to the Slovenians for taking on this mammoth project. They performed it flawlessly with full attention to every detail, like a well-oiled machine. Their organisation and efficiency are quite remarkable. This in turn led to a happy, relaxed atmosphere during the whole week. It was marvellous to spend time chatting with the best contesters from all over the world, from Argentina to Cyprus, from Canada to Australia. Whoever takes on the challenge of organising the next WRTC has a hard act indeed to follow.

We were so impressed with Slovenia, both for its natural beauty and for its warm-hearted folks, that we both intend to return for a family holiday. Lakes and mountains remind one of Switzerland or Austria, with the additional bonus of a coastline. Everywhere is neat and tidy, the food and 'liquid refreshment' quite outstanding. The town of Bled itself cannot be bettered for serene beauty. Our congratulations to a small, new country for achieving a national spirit and hard work that is sorely lacking elsewhere, a country and a standard of living of which they deserve to be very proud.

NEXT TIME?

THIS WAS A memorable event of the kind that comes along in life only rarely. The whole experience was hugely enjoyable. Our thanks especially to Tine, S50A, for not only his WRTC leadership but also for hosting the UK team at his home.

The 'ham spirit' is never stronger than with contesters. They are at the same time a highly competitive bunch *and* devotees of the hobby who help-out colleagues without hesitation. It is as if they are all members of a world-wide club who feed off each other's enthusiasm with a high fun-quotient.

WRTC, because of its tremendous bonhomie and professionalism, puts forth the very best face of amateur radio – thrusting yet friendly, high-achieving yet open-minded. When so many go home saying "This was a major experience in my life" then the future of WRTC is assured. Discussion is already underway for hosting the next event. ♦

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RSGB YEARBOOK 2001

Edited by Mike Dennison, G3XDV

Described by RSGB staff

THE *RSGB Yearbook* is really two books for the price of one. The first one is the RSGB information directory, which consists of 176 pages of vital amateur radio information. It includes all the band plans, GB2RS news and GB2CW Morse practice broadcast schedules, information on operating abroad, lists of affiliated radio societies and their officials, RSGB HF, VHF / UHF and ARDF contest information and blank contest stationery, lists of beacons, prefixes, repeaters etc, a listing of centres where you can take the Radio Amateurs' Examination, information on the RSGB's Internet site at www.rsgb.org and much more.

A 16-page colour section contains a look back over the last year, how the RSGB improved amateur radio in 1999 - 2000, information on amateur satellites, amateur TV, and repeaters, including new colour maps of the UK's 2m and 70cm repeater network.

This year there is also a new section of articles, and this also appears in colour. Most of these are reprinted from *Radio Today* magazine, so will be new to many RSGB members. They include a feature on the AMSAT Phase 3-D satellite which is due to be launched very soon now, a comparative review of three very popular HF/VHF 'mini-mobile' transceivers, the Alinco DX-70, Icom IC-706 MkIIG and Yaesu FT-100, reviews of the Icom IC-756PRO HF/6m transceiver and the Icom IC-2800H VHF/UHF mobile transceiver, plus a review on propagation prediction software.

The information directory section was updated as of 1 August, making it the most up to date source of UK amateur radio information available anywhere. The book will remain current until December 2001, so naturally some things will change during this period. Updates will be published throughout the year on the RSGB Internet site at www.rsgb.org as and when they occur.

ARE YOU QTHR?

ARGUABLY THE MAIN reason why people buy the *Yearbook*, however, is for the Callbook. This forms the second and the larger part, at just under 300 pages, of the *Yearbook*. It incorporates not only the RSGB's callbook, but also the official callbook of the IRTS, listing all current EI licensees.

The callsigns listed in the *Yearbook* reflect the official records held at POCM Radio Licensing Centre on behalf of the RA. The callsign data is purchased from POCM every year and is therefore as up to date as it can possibly be at the time of going to press. Note that some callbooks rely entirely on updates being notified to them by individual licensees, so the information can be 10 years or more out of date. In order to make the *Yearbook* more readable and compact, the data received from POCM is case converted (it is received entirely in upper case) and a few standard abbreviations are made, but *no* changes are made to the substance of any entries.

A major effort has been made to reduce those entries with nothing but "Details withheld at licensee's request" against them. It must be emphasised that "by licensee's request" means just this, and those entries are not within the control of the publisher of the *Yearbook*. However, increased publicity of the scheme whereby a licensee may request his/her post town, for instance, to be added to this type of entry has resulted in over 1000 entries with additional useful data against them.

Whatever licence details are published, special text may be added after the data received from POCM. Many licensees with complete entries have taken advantage of this facility to add information such as their e-mail address, amateur radio interests, telephone number, WAB area, favourite band, or QSL route etc.

In other words, whatever the licensing record shows (either withheld or released), will be published - it will not be deleted or amended. However, amateurs have the choice of what *extra* words appear *after* the standard entry. It is this information that makes the *RSGB Yearbook* the most comprehensive UK and Ireland callsign listing available.

In the past, a particular callsign could be reserved up to six months in advance, although callsigns were actually issued in strict alphabetical sequence. However, from 1 April this year, the RA permitted *any* callsign in the current series (2E0, 2E1, M0, M1 and M5) to be issued. This means that in future it will no longer be possible to say in which year a callsign is likely to have been first issued.

A listing of the special short contest calls (such as G5A or MM2Z) and their holders has been published for the first time. These callsigns are used for the major international HF and VHF/UHF contests which are held throughout the year.

Bob Treacher, BRS32525, has again compiled an SWL listing, with the postal and e-mail addresses for the most active listeners.

Every year the *RSGB Yearbook* keeps on getting bigger and better. This year is no exception and the *Yearbook 2001*, at 464 pages, is the biggest and best yet. No shack should be without one - in fact it's well worth while buying the book every year, as only a few pages are precisely the same as last year's book, and you wouldn't want to be using out of date information, would you?

The *Yearbook* is published by the RSGB and costs £13.59 (plus P&P) to members. *It can be ordered from the RSGB One-Stop Shop on tel: 01707 659015, on the web at www.rsgb.org/books or by e-mail: sales@rsgb.org.uk*

Also available is the *CallSeeker 2001* CD-ROM, which contains precisely the same information as published in the book, but in an electronic form which allows the user to perform searches for the information required. As a special offer to RSGB members only, the RSGB *Yearbook 2001* and *CallSeeker 2001* CD-ROM can be purchased together for just £20.00

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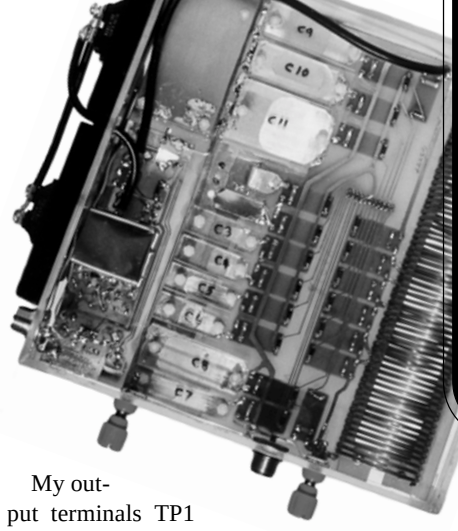

Part two, by Peter Rhodes, BSc, G3XJP *

THIS MONTH concentrates on circuit diagrams - with the complete project components list. An assembly drawing is provided for context. Full construction detail will be covered in later parts.

L-MATCH

THE HEART of the system is shown in **Fig 10**. The main coil of 63 turns is tapped so that using every combination of its switching relays, the coil can be switched from 0 to 63 turns in one turn increments. The location of the taps is such that those on the smallest number of turns are not adjacent. This reduces their mutual inductance and means the total inductance of the coil builds up rather more slowly from low values - effectively increasing the resolution at low inductances. Hence the 'strange' tap sequence on L1.

I still have a general unease about the effect on Q of shorting turns. Suffice it to say that it works well - and high power linear amplifier Pi networks have been doing it for years.

Even when the whole coil is shorted out, the inductance is not zero. Not only do the leads contribute, but the relay contacts themselves look remarkably like a small one turn coil when closed. Each relay contact is in fact two normally open contacts in series - arranged so that the two little coils they form are mutually opposing.

The same switching process is applied to the capacitors, giving a theoretical range of capacitance from 0 to 2047pF in 1pF increments. These values are definitely theoretical because there are also strays to consider; and the capacitors are home made so their values will not be (and need not be) exactly as shown.

I have found it completely impossible to source high voltage capacitors of a suitable Q at anything like an acceptable price. If you are contemplating genuine QRP operation only, you could try 500V silvered mica units connected in series-parallel combinations to give a 1kV rating.

Mine use a polyethylene dielectric with a nominal 6kV rating, which will handle 200W into almost every real-world antenna - and 400W into many.

So that you don't find out the hard way, a spark gap is fitted. The gap is set as small as you can for your power and your antenna - but ultimately at absolutely no more than the breakdown voltage of your relays. Physically it is simply two stiff pieces of wire with the gap between them adjusted with a set of feeler gauges - reckoning the dielectric strength of air at 20V per thou ie 50 thou per kV.

For impedance switching purposes, either RL1 is closed for a low-Z antenna or RL2 is closed for a high-Z antenna. Both are left open for an antenna requiring only series L and both are closed for one requiring no matching (straight through) or only shunt C.

My output terminals TP1 and TP2 are low voltage 30A terminals. Given the polystyrene case, there is no requirement for anything more exotic. SK2 is fitted if you want to use a coax fed antenna, which by its nature will be already reasonably matched. It should have a good insulator such as PTFE to avoid the risk of voltage breakdown.

Although the L-match circuit looks simple enough, it occupies the vast majority of the RF deck board area.

RF DECK SENSOR SECTION

THIS PART of the board (**Fig 11**) has several purposes. The most significant surrounds the SWR head, which comprises T1 and T2 with the coupled port terminated with 50Ω by R1 and R2/R3 in parallel. D24 detects any reflected voltage. The circuit was lifted directly from an article in *Sprat* [3] by Tony Lymer, GM0DHD - which in turn is based on the 'Stockton Bridge' by Dave Stockton, GM4ZNX - and the original 'Quiet Tune' work by Underhill and Lewis [4], referred to in 'Technical Topics' on several occasions [5].

It has two great virtues in this application. Firstly, while searching for a match the Tx power delivered to the antenna is attenuated to 1/256 - so not much escapes! The balance is dissipated in R1. Secondly - during matching - your transmitter sees something very close to 50Ω, irrespective of the state of the L-match and antenna

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E-mail: pirhodes@aol.com

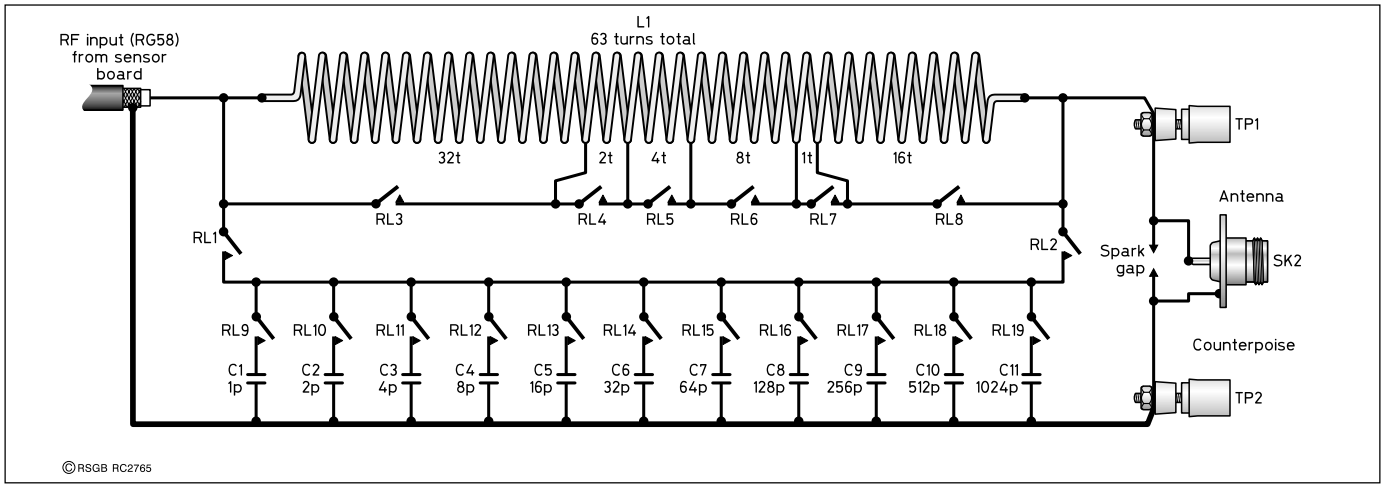


Fig 10: L-match section of RF deck circuit diagram. Note the explicit nature of the 'ground' return via the coax feed only. Details of the relays and their coil connections are provided later, but note that each contact shown is in fact two normally open contacts in series - to increase the breakdown voltage and to reduce capacitance across the contacts. Capacitor values C1-C11 are nominal.

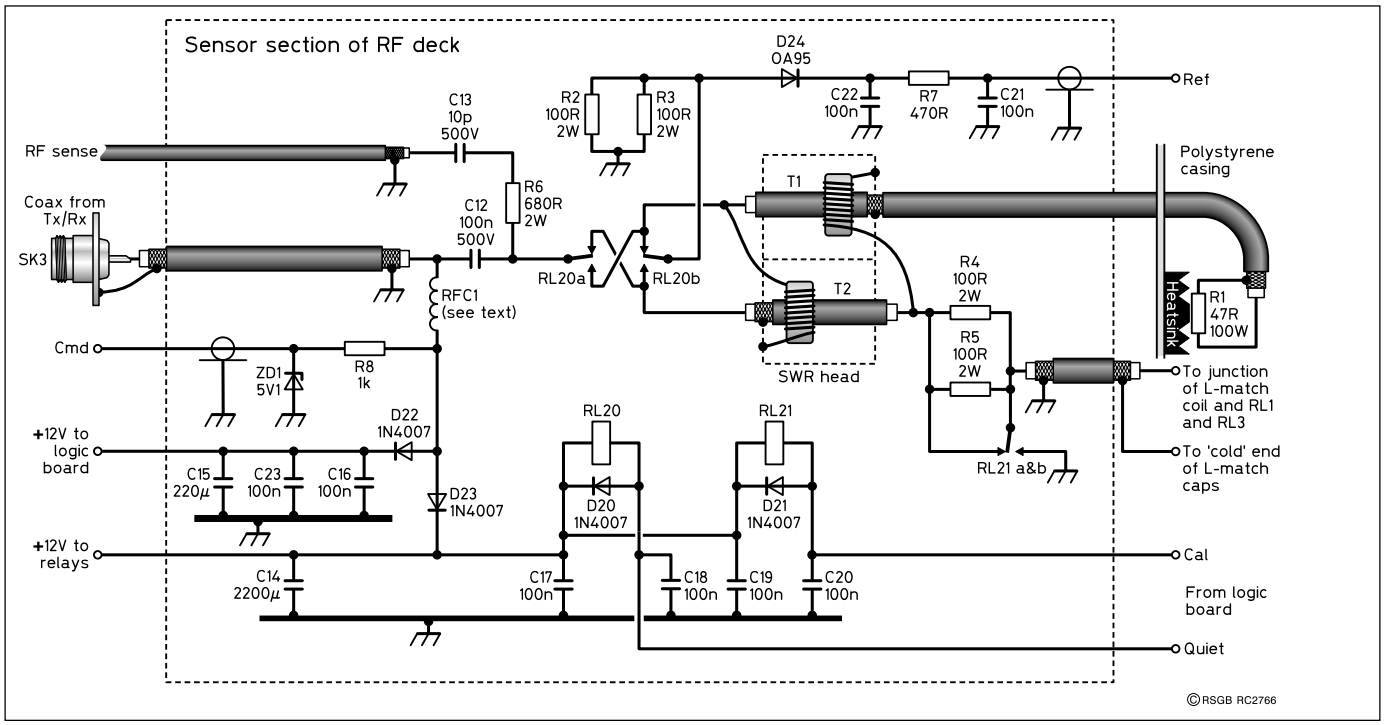


Fig 11: RF deck sensor section circuit diagram. The dummy load R1 is fitted outside the case to reduce internal heat dissipation and to minimise the case 'breathing' under thermal cycling.

combination. This is a much healthier state of affairs than asking your transmitter to look at a varying load during matching. It also means that there are no issues arising from your transmitter throttling-back under SWR protection - which in turn means that there is no requirement to measure forward power in order to find a matching solution. (If you were to measure forward power it would be substantially constant during matching - despite wild swings in the L and C values.) This requires only that you don't gratuitously alter the transmitter output power during the matching process - which is not an unreasonable request. So, the usual diode to detect forward power is omitted - and so 'SWR head' is technically a misnomer.

R1 (non-inductive thick film technology) - and its heatsink - needs to dissipate the full transmitter power while searching for a match. This is typically 10W, but you also need a safety margin. It can also be used as a conventional dummy load. I fitted 200W dissipation capability to stress the system, but 100W would be more than adequate for most purposes. It's your decision.

Next is the RF sense lead. This simply taps off a sniff of RF to allow the PIC to determine when the transmitter is on. The values of R6 and C13 are somewhat critical in allowing the PIC to discriminate between no transmission and extreme QRP operation across the whole HF spectrum - while not saturating at higher power levels. This is one of those annoying situations where although you know perfectly well whether you are transmitting or not, the PIC doesn't! RF sense is also used to measure transmitter frequency - and status messages are also fed back to your receiver via this line.

The command (Cmd) line is DC coupled all the way back to your Command Unit and is used by the PIC to sense Command Switch operation. ZD1 makes sure the line to the PIC does not exceed specification. D22 and D23 allow DC power to reach the PIC and relays - which survive on the energy stored in C15 and C14 respectively during Command Switch transients.

The Cal relay, associated with R4/R5 allows a 50Ω load to be substituted for the L-match and antenna, giving the PIC the opportunity to calibrate zero reflected power on the actual frequency and at the actual power level being used on every occasion. It also lets the PIC ground the L-match/antenna to attenuate seriously any incoming signals so that they do not swamp any status messages being sent to your receiver at the time. And equally, this prevents status messages from being broadcast.

The less-than-obvious configuration of the changeover contacts was adopted to make sure that there is always a reasonable load presented to your transmitter, even during the switching time of the relay. The two sets of changeover contacts are wired in parallel only because they are there.

LOGIC BOARD

THE HARDWARE of the logic board (see **Fig 12**) is truly unremarkable in the sense that the same board is suitable for my central heating controller, VOX unit, burglar alarm, etc - with IC3-IC6 variously removed as required by the scale of the application.

The operation of the various I/O lines is discussed, because in the event of any problems, their behaviour is observable on a 'scope.

The Cmd line is routed to the interrupt pin so that operator commands get priority.

The RF Sense line goes to both RB4 - where any change causes an interrupt - and to the real time clock register for frequency counting purposes.

By a strange quirk of fate, on the one day in the 18-month development when I had just finished a 50MHz prescaler, Ed, EI9GQ, pointed out to me that the PIC already contains that capability.

The small issue is that you cannot read the internal prescaler from the software. It's somewhat like trying to measure the amount of water in a bucket when you are not allowed simply to pour that water into a measuring jug. The workaround is to pour some other water into the jug, then pour that into the bucket and wait for the bucket to overflow. Given you know the capacity of the bucket, you can then compute how much water was in it in the first place - by simple subtraction.

To count RF cycles, both RB4 and RA4/RTCC are set as input pins for the counting gate time - in this case 400µs - at the end of which RB4 is changed to an output pin to freeze the count. RB4 is then toggled high/low until the main counter register changes. This happens because the prescaler finally overflows. Knowing how many times RB4 was toggled, the value of the 8 most significant bits in the main counter as well as the 8 least significant bits in its prescaler are

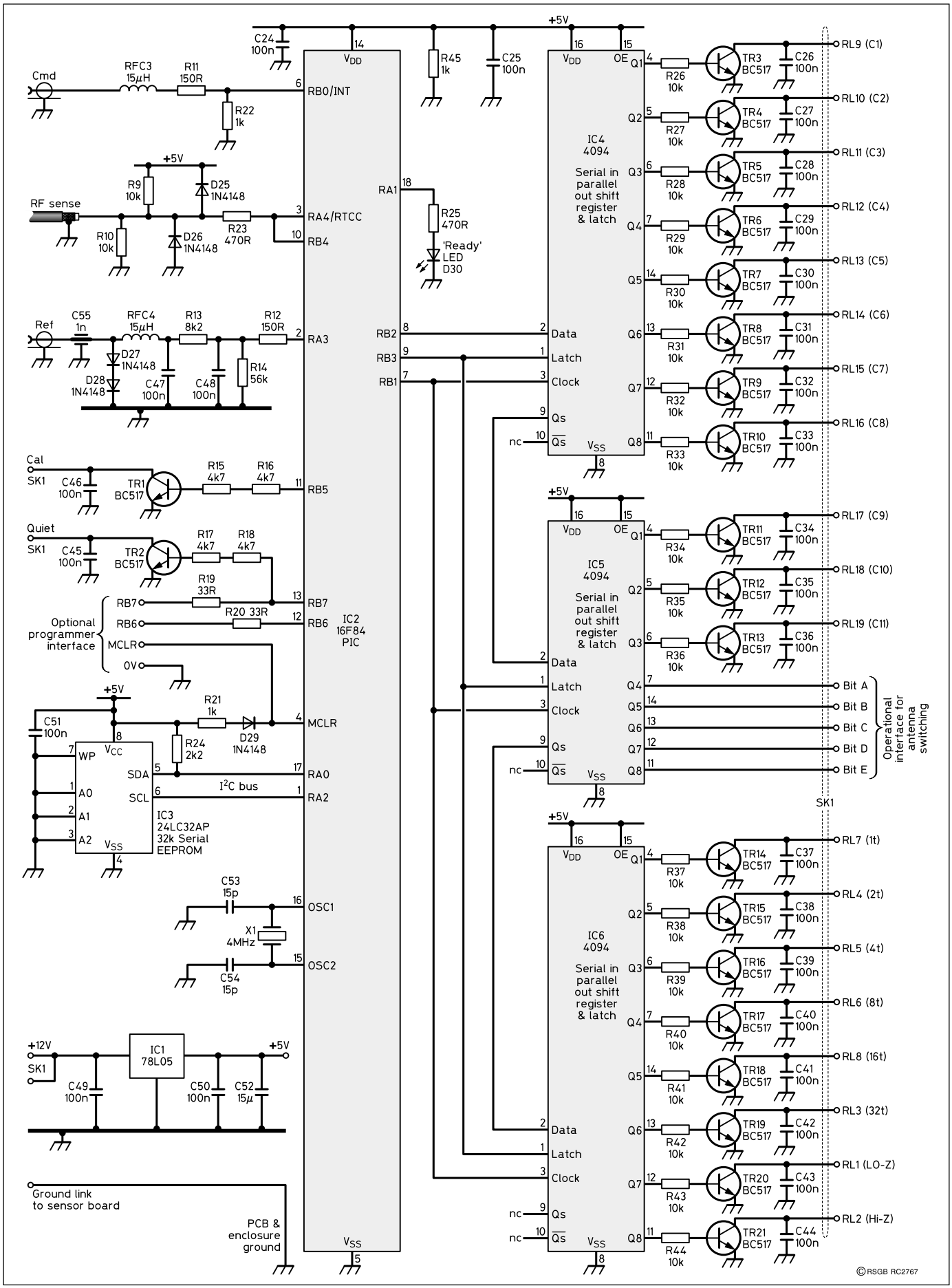


Fig 12: Logic board circuit diagram. The PCB is assembled into an enclosure with a ground link to the sensor section of the main RF deck. If *in-situ* programming of the PIC is not required, R19 and R20 may be omitted. Both the PIC and the serial EEPROM require programming before use. The optional antenna switching interface is discussed in the text.

COMPONENTS

Resistors, 1/8-1/4W, 5-10% unless specified

R1	47R 100W non-inductive. See text
R2-R5	100R 2W carbon
R6	680R 2W carbon
R7, R23, R25, R46	470R
R8, R21, R22, R45	1k
R11,12	150R
R13	8k2
R14	56k
R15-18	4k7
R19,20	33R
R24, R48	2k2
R26-44, R9, R10	10k
R47	100k

Capacitors

C1-C11, home made comprising:	
M3 x 12mm nylon screws	25 approx
M3 nylon nuts	25 approx
Tesco large freezer bags	1 box
DC4 grease	1 tube
Brass shim	10in x 4in x 5 thou, 3 sheets (also used to make covers for SWR head and logic board assembly)
C12, C56	100nF 500V
C13	10pF 500V silvered mica
C14	2200µF 16V axial electrolytic
C15	220µF 16V axial electrolytic
C16-C51, C57, C58	100n 20v disc ceramic or monolithic
C52	15µF 10V axial electrolytic
C53,C54	15pF ceramic plate
C55	1nF feedthrough

Inductors

L1	250g 2mm enam copper (see text)
RFC1, RFC2	3/8" (10mm) dia ferrite rod, approx 1.5in long. Fully wind with 1 layer of 28SWG enam copper.
RFC3, RFC4	15µH axial choke
T1, T2	each 16t of 24SWG enam on Fair-Rite 61001101 ring

Semiconductors

TR1-TR21	BC517
TR22	BC516
D1-D23, D31	1N4007 or similar
D24	OA95
D25-29	1N4148 or similar
D30	'Ready' LED
D32	'Match Complete' LED
ZD1	5V1 250mW
IC1	78L05
IC2	16F84-04/P PIC
IC3	24LC32AP 32K Serial EEPROM
(both IC2 and IC3 need to be programmed)	
IC4-IC6	4094

Relays - all purchased identical

See text. All have 12V coil, approx 250Ω	
RL1-RL19	DPCO modified to SPNO
RL20, RL21	DPCO unmodified

Miscellaneous

Choke balun	23 turns of RG58 round 4 x 10mm ferrite rods, 145mm long. See text
SK1	28-way SIL wire-wrap socket strip
PL1	28-way SIL mating plug strip
SK2	optional coax output SO239 round with PTFE insulation
SK3	coax input SO239 round
S1	SPCO break before make, 1.5A non-latching, click action, push button
TP1, TP2	30A terminal posts
X1	4MHz wire lead crystal
RG58 coax	approx 0.5m
Mini coax	approx 0.5m
Mini audio lead	approx 0.5m (screened)

Screened box and connector for Command Unit
Heatsink for R1 0.7°C/W. See text

8 pin DIL turned pin socket	1 off
16 pin DIL turned pin socket	3 off
18 pin DIL turned pin socket	1 off

Single-sided fibreglass PCB 233.4 x 220mm (double Eurocard)
Some double-sided PCB for logic board and some screen partitions. Preferably *not* fibreglass.
Polystyrene 4mm sheet for casing and capacitor clamps. See text.
1 tube of polystyrene cement
Heat transfer compound for R1
Silicone bath sealant, silica gel and brass studding, nuts, washers for sealed casing.

determined, giving a count with 16 bits resolution and an error of ±1 count. One expensive prescaler chip saved!

The Ref input is a DC level representing reflected power. It is filtered and integrated by the various CR combinations. To be of any use, it needs to be digitised - and the traditional solution is an A/D converter, either a separate chip or a totally different PIC with built-in A/D. However, in this case, adapting an idea from Peter Grigson, G0TLE [6], the RA3 pin is normally set as an input. When a reflected power measurement is required, RA3 is changed to an output pin, pulsed high and then instantly reconfigured as an input pin. The time taken for RA3 to fall below the '1' threshold is then determined, giving a measure of the voltage across C48. The width of the high pulse on RA3 is adjusted with the Cal relay energised - and therefore no reflected power - to calibrate the zero point. The process is crude but effective, given the requirement is only to determine the direction of change as the L and C values are altered. One A/D converter saved!

The Cal and Quiet outputs are driven directly from the PIC, in order to get at them quickly. All other switching outputs go via IC4-6 and are subject to the delay of serially clocking 24 bits into these registers - before they are actioned by pulsing the latch line. Discrete transistor drivers were used because I could not get the same packing density using IC drivers.

The five output bits A-E are included to allow external switching. Bit A may be set or cleared by you from the Command Unit at any time. Bits B-E are set automatically by which band you are on. You can configure which bands set which bits. More about this later, but it is a feature envisaged for applications such as feeding stacked monoband antennas from one coax feed to a PicATUne mounted at the mast head. If you require this feature, the outputs would typically go to transistor relay drivers, just like the other outputs. Provision is made on the PCB for their inclusion.

The 'Ready' LED is useful during commissioning and can be seen with an average pair of binoculars from 100m at night. It is there for confidence that all is well, and lights when PicATUne is waiting patiently for you to do something different… such as press the Command Switch or change from transmit to receive or vice versa. During speech or CW it flashes off and on once per 'Restore from Before' software cycle, ie about 10 times per second.

Finally, IC3, the 32K serial EEPROM. This stores all the matching solutions indexed by frequency, your configuration options, band edge markers and CW messages. A standard serial bus protocol passes all the address and data bytes across the SDA line, clocked by SCL.

OVERALL ASSEMBLY

IN ORDER TO give you an early feel for the appearance of PicATUne, **Fig 13** illustrates the RF deck in its polystyrene enclosure. The top and bottom enclosure plates are not shown. These are simply further sheets of 4mm polystyrene some 5cm larger than the case all round - and are clamped-up externally to the enclosure with some brass nuts and studding - having first run a fillet of

bathroom sealant around each lip. They also have mounting points, reinforced as necessary to your requirements.

The orientation of the assembly in service is not critical, but is envisaged with the coil at the top and the input connector and dummy load at the bottom; mounted either on a vertical face or mast.

SUPPLIERS

The relays (60-4610) and the double Eurocard PCB (34-0815) were purchased from Rapid Electronics Ltd, Heckworth Close, Colchester, Essex CO4 4TB. Tel: 01206 751166.

2mm wire for L1 is available in 500g reels from Scientific Wire Co Ltd, 18 Raven Rd., London E18 1HW. Tel: 020 8505 0002.

4mm polystyrene sheet is available from most DIY stores. Brass shim is available in model shops. DC4 grease, M3 nylon screws and nuts and R1 are available from Farnell, as are the PIC and EEPROM. If you want them programmed with my software, then I would be happy to supply them for £15 with an SAE.

If you were to purchase all the components from new at full retail price, you should budget about £100.

LATE EXTRA

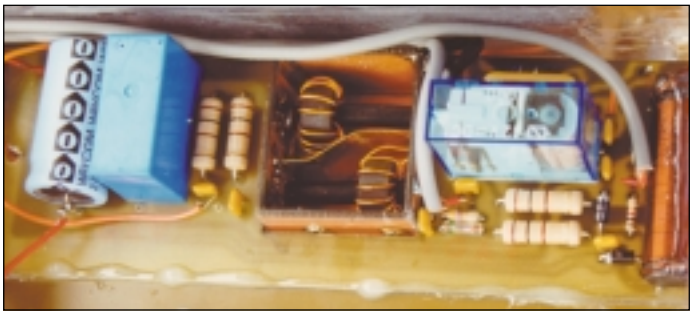
ONCE PicATUne has found a good match, it is possible to work the equations backwards from the reported L, C and Z values used - to compute your antenna impedance. A utility running under QBASIC is now available which does this. It also reports on the efficiency of your match; and gives a feel for the volts and amps stress on your coil and capacitors. If you would like a copy, it is included in the programmed chips offer. Simply include a blank formatted disk with your SAE.

TOOLS & TEST EQUIPMENT

THE ONLY EXCEPTIONAL requirement is for a capacitance meter with 1pF discrimination in the range 10-3000pF. This is needed to build capacitors C1-C11. The capacitance range on a digital multimeter is ideal. Absolute accuracy is not important, but repeatability is. If you don't have such an instrument, one suggestion from David, G4FQR, is to use the capacitors as the frequency determining element of a simple audio oscillator (eg NE555) and measure the resultant frequency.

REFERENCES

[3] *Sprat*, Issue Nr. 97, Winter 1998/9.
[4] *Electronics Letters*, Underhill & Lewis, 4/1/79.
[5] 'Technical Topics', Pat Hawker, G3VA, *RadCom*, Oct 1987 and Feb 1988.
[6] The 'Backpacker QRP Transceiver' by Peter Grigson, G0TLE, *RadCom*, Nov 1998. ♦



T1 and T2 can be seen clearly inside the SWR head. In this view, RL21 is to the left of it and RL20 is to the right.

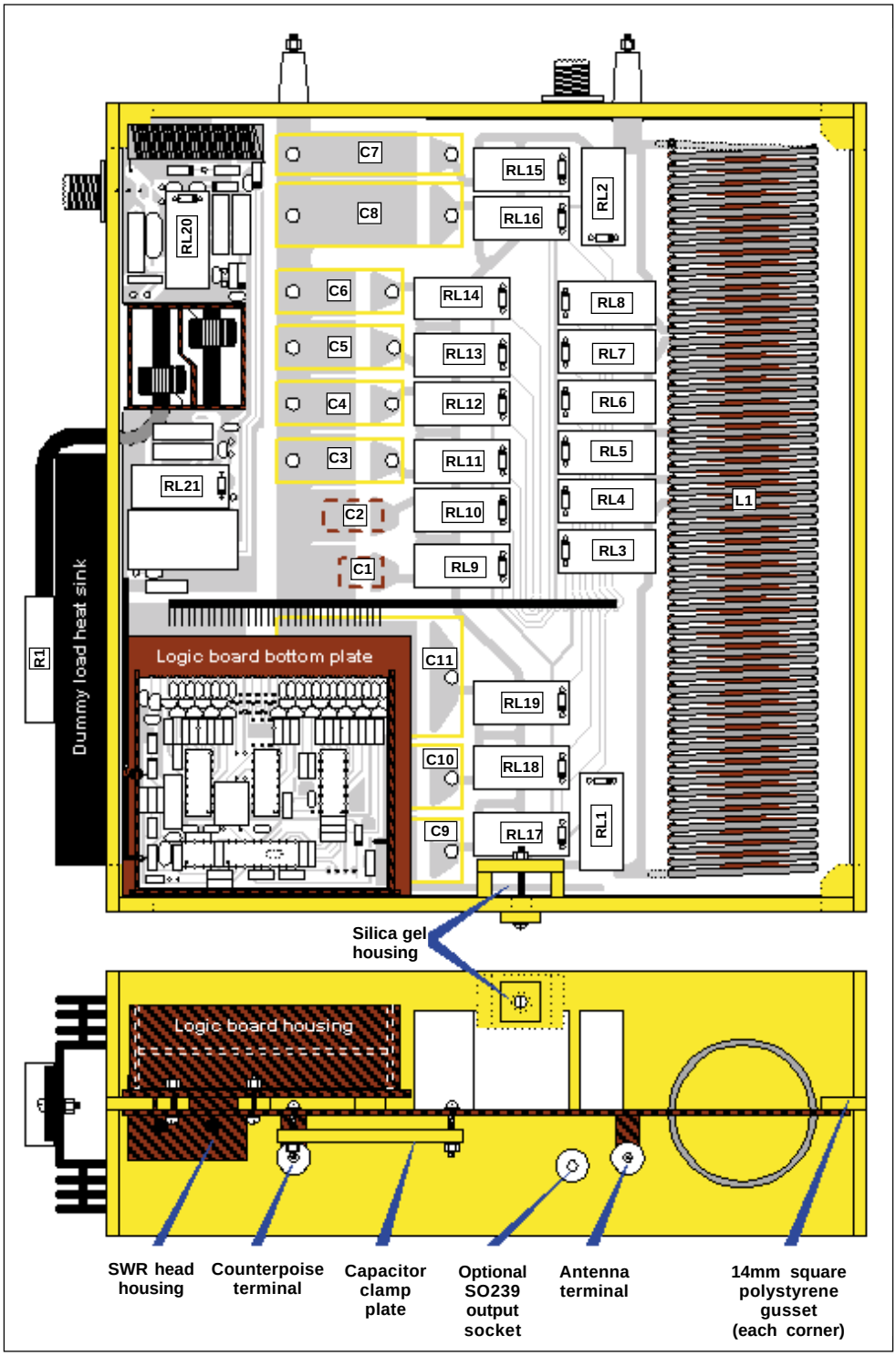


Fig 13: Half scale assembly drawing of RF deck in its polystyrene enclosure, viewed from the component side. Also shown are the component locations and references for the L-match section. Not illustrated is the top screening plate on the logic board or those on the top and bottom of the SWR head. Note that in all cases the diodes are wired directly across the relay coil terminals. Diode references are the same as the corresponding relay, eg D17 is across RL17 coil, etc. The antenna and counterpoise terminals are connected to the PCB by short stubs of PCB material soldered at right angles to the main board.

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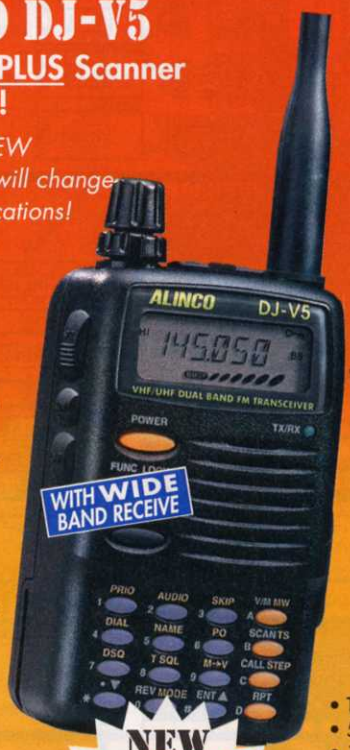

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- 100W output on HF & 6mtrs
- RX - general coverage
  150kHz - 30-MHz
  50MHz - 54MHz
- SSB, CW, AM, FM & digital modes
- 100 memories
- Detachable faceplate and remote mounting kit available
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EMS-14

Add 'talk power' to your DX70TH with this matching speech compressor
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- Power 200W PEP
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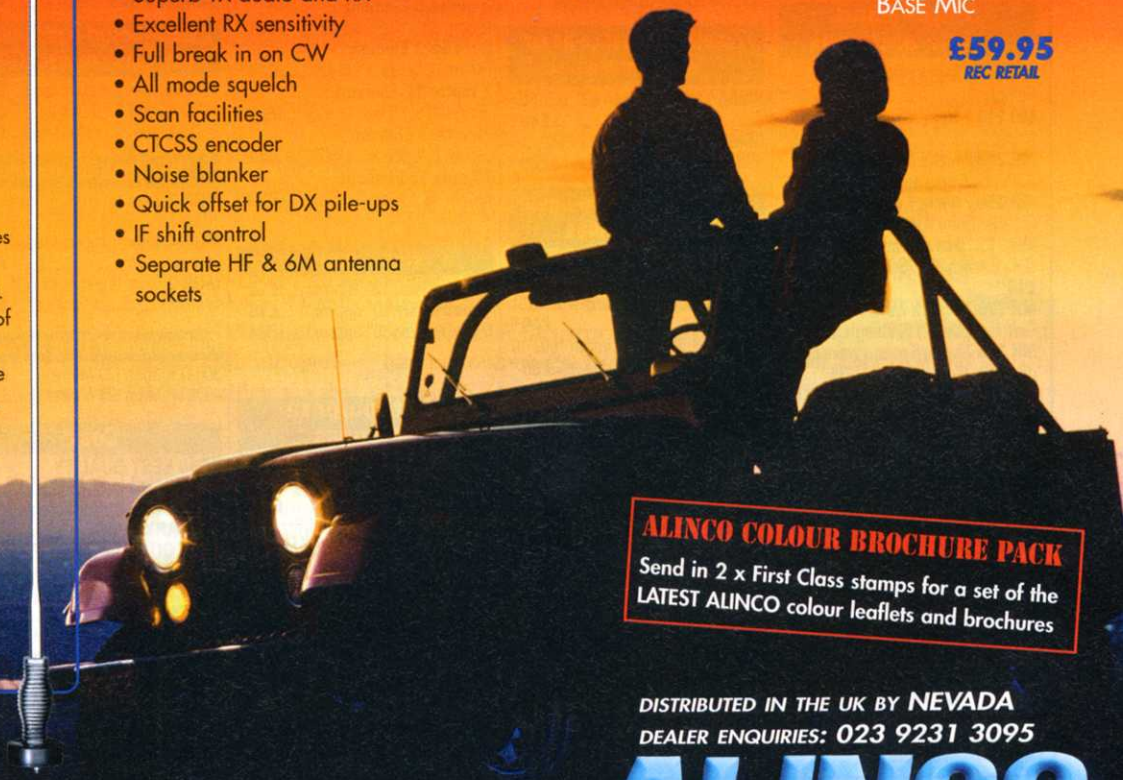

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Super Gainer.....**£49.95**
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Complete with 25 mts of enamelled wire, insulator and choke Balun Matches any long wire to 50 Ohms. All mode no A.T.U. required. 2 "S" points greater than other Baluns.
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Yaesu FT-1000MP MARK-V Transceiver

Reviewed by Peter Hart, G3SJX*

FIVE YEARS AGO Yaesu introduced the FT-1000MP, at a time when the major manufacturers were all introducing new top-of-the-range HF transceivers with extensive DSP features. During the five years since its launch, the 'MP' has become firmly established as the transceiver of choice by many of the top DX operators and many of the big DXpeditions. Indeed it was my choice last year when I purchased a new transceiver to re-equip my own HF station, so naturally I was very interested to see how the new Mark-V version performed and how it compared with the original 'MP'. There are several significant changes to the new model and I will cover these in some detail, but the features common to the earlier model will be covered in less detail. Check out the original review in the January 1996 issue of *RadCom* for further information.

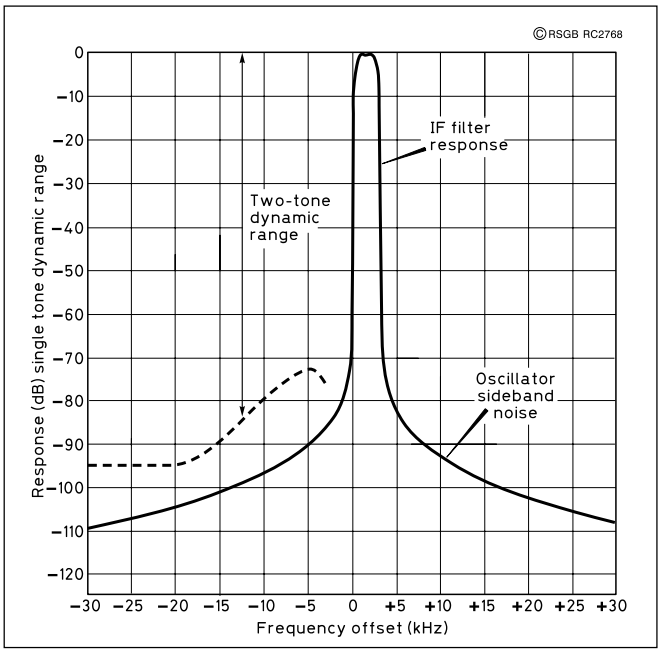


Fig 1: Effective selectivity curve on USB.

PRINCIPAL FEATURES

THE MARK-V FT-1000MP is a substantial base station radio incorporating two receivers each tuning 100kHz to 30MHz and with the transmitter covering 500kHz segments around the amateur bands. Apart from the common input bandpass filter, the two receivers (main and sub) adopt totally separate signal paths right through to the audio output, with separate synthesisers, IFs, filters, demodulators and AGC. The two receiver outputs may be fed to stereo headphones to copy the separate channels in different ears, which also yields various possibilities for diversity reception and spatial perception tuning. USB, LSB, CW, AM, FM, RTTY and PACKET modes are provided, with normal/reverse sidebands on CW, normal or synchronous tuning on AM, with SSB or FM modes on packet (FSK or AFSK) and USB or LSB modes on RTTY with FSK or AFSK interfacing.

There are several ways of setting the radio on frequency. Individual keys select the bands with double band-stacking registers, two rotary tuning knobs set the main and sub receivers tuning in a selection of step sizes down to 0.625Hz per step, a click step rotary tunes in larger steps for moving rapidly around bands, the frequency may be directly entered from the numeric keypad, and finally there is the shuttle jog tuning ring. This spring loaded tuning ring is concentric with the main tuning knob and tunes up or down at a rate dependent on how far the ring is turned. Both the main tuning knob and the tuning ring have been increased in size and weight with the Mark-V version and the tuning ring now carries two keys for activating new features (see later).

99 memories are provided, easy to select via a click-step rotary with all the usual memory-related features. The memories may be partitioned into groups and the sub receiver display is used to preview contents whilst still retaining active use of both the main and sub receivers. A quick memory feature allows five frequencies to be rapidly stored and recalled by single button pushes. Split frequency operation is aided by a number of initial split access states, and red and green LEDs above each tuning knob show which is currently in use for receive, transmit or dual receive. The usual RX/TX clarifier is provided, the usual comprehensive scanning facilities and, on FM, a single button selects repeater offset with full CTCSS access tones.

The main receiver is a quadruple conversion superhet, with IFs of 70.455MHz, 8.215MHz, 455kHz and 10.24kHz. The sub receiver is double conversion, with IFs of 47.21MHz and 455kHz. IF filter bandwidths of 250Hz, 500Hz, 2.0kHz and 2.4kHz are available at both the second and third IFs, with 6.0kHz at the third IF only. The standard

* *The Willows, Paice Lane, Medstead, Alton, Hants GU34 5PR.*

model is fitted with both 2.4kHz filters and 500Hz filter for the second IF; the 250Hz, 2.0kHz and 500Hz third IF filters are optional extras, as also is a 500Hz filter for the sub receiver IF. The Mark-V uses a 10-pole Collins mechanical filter for the 2.4kHz third (455kHz) IF, which gives improved skirt selectivity compared with the original 'MP' 8-pole filter. The other difference between the two models is the way that the filters are selected. With the Mark-V three buttons select normal, narrow 1 or narrow 2 bandwidth settings, which are different for each mode and can be user set from the custom menu.

The Enhanced Digital Signal Processing circuit (EDSP) provides a number of additional filtering functions for both the receiver and the transmitter audio path, as well as digital modulation and demodulation to/from the 10.24kHz IF. On receive, EDSP provides four different filtering contours for improving readability under difficult conditions. These selectable contours provide a bandpass (see IDBT later), low, mid or high cut-off to the audio pass-band. Four audio peaking filters with steep sides and minimal ringing may be selected, giving bandwidths of 60, 120 or 240Hz on CW and an optimised bandwidth for data use. One of four different noise reduction algorithms may be implemented on receive, to improve readability under various conditions and an auto notch will effectively track and notch-out multiple heterodynes on SSB signals. On transmit, EDSP provides equalisation for four different microphone audio characteristics, as well as some filter tailoring to give the best audio quality depending on microphone and voice characteristics. Although all these functions were largely available on the original radio, user access to the functions has been greatly improved with the Mark-V by providing separate buttons for each, in particular the audio peaking filter which had to be set from the user menu in the original radio.

Three alternative receiver RF amplifiers may be selected, a wideband amplifier covering the whole receiver range, a tuned low gain amplifier covering 1.8-7MHz, and a high gain low noise tuned amplifier covering 24-30MHz. In addition, the RF amplifier may be switched out (IPO) or three levels of attenuation inserted. Other receiver functions include IF shift / width and IF notch, fast/slow AGC, variable CW pitch and noise blanker.

Apart from a completely new PA system, transmit features include an RF-based speech processor, full- and semi-break-in, VOX, variable power output, audio monitor and auto-ATU with band/frequency stores. A fully-featured contest memory keyer is also built in.

The multi-coloured fluorescent display is virtually identical to the original radio, just a couple of status indicators are changed. The display is a little dimmer than before, but the unlit segments are somewhat less obtrusive. Both VFO frequencies and clarifier are continuosly displayed with memory number, status indicators and five bargraphs for S meters, TX functions and tuning, all with or without peak hold.

The rear panel connectors are the same as the earlier model, providing twin selectable antenna sockets, twin key jacks, twin headphone jacks and interfacing to external receiver, external receive antenna, linears, remote tuners, data TNCs and the DVS-2 voice store. Transverters are accommodated with display of the transverted frequency and an RS-232C port allows direct computer control at 4800 baud. Although I did not have a chance to check out the computer interface, the command set and data protocols appear identical to the earlier version. 89 of the transceiver's settings are user programmable, even down to providing fine trimming of the various oscillator frequencies. This is largely the same as the earlier model but with some additions. Extensive facilities are included for data modes. Check out the earlier review for further information on all these aspects.

CHANGES INTRODUCED

PROBABLY THE MOST noticeable physical difference between the original radio and the

Mark-V is the large finned heatsink that dominates the upper rear section of the radio. Internally this is blown by a thermostatically controlled cross-flow fan, which engages when the temperature reaches 40°C. This heatsink is used to cool a new higher power PA which conservatively delivers 200W RF output power, although the power output can be reduced down to a level of a few watts. The PA in the Mark-V uses a push-pull pair of power MOSFETS operating from a 30V supply rail.

A unique feature of the Mark-V is the ability to switch the PA to class A operation for greatly improved linearity to achieve 75W output power with a claimed intermodulation distortion level of -50dB. The PA transistors dissipate 300W even when there is no RF output in class A, hence the need for the substantial heatsink. Linear amplifiers, and in particular valve linears, generally have a lower level of distortion products than the PA stages of most transceivers. Hence even when a linear is used, benefits will normally be seen in terms of a cleaner output signal if the PA in the transceiver is operated in class A. Everyone benefits from cleaner transmitter signals on the bands and most linears can be fully driven with around 75W of drive.

The original FT-1000MP operated from a 12V supply and contained an internal power supply for mains use. As a consequence of adopting the new higher power PA, the Mark-V needs both 30V and 12V and is provided with an external matching switched mode power supply. Considering its rated output, this 450W-rated supply is very light, and includes a built-in fan. Overall, the Mark-V without its power supply is 1kg lighter (at 14kg) than the original radio with built-in mains PSU. The size is the same (410 x 135 x 347mm).

Another new feature introduced into the Mark-V is the Variable RF front-end filter (VRF), which functions on bands from 1.8 to 14MHz. This provides a sharply tuned input preselector right at the input to the receiver, with a front panel peaking control. It uses relay switched capacitors and inductors, without any active switching devices. This ensures that no intermodulation products are generated within the filter, no matter how strong the incoming signals (within reason). This is ideal for eliminating second order intermodulation and blocking effects from extremely strong broadcast stations, or where several transmitter stations are co-sited in multi-multi-operator contests or DXpedition situations. VRF is activated by one of the buttons on the shuttle jog tuning ring.

The other button on the tuning ring activates the Interlocked Digital Bandwidth Tracking System (IDBT), another new feature with the Mark-V. The IDBT functions on SSB only and sets the bandwidth of the EDSP audio filtering to match exactly the net bandwidth of the IF filter, also tracking the settings of the IF shift

RECEIVER MEASUREMENTS

	Sensitivity SSB 10dBs+n:n			Input for S9		
Frequency	**Flat Amp**	**Tuned Amp**	**Amp Out**	**Flat Amp**	**Tuned Amp**	**Amp Out**
136 kHz	-	-	1.1µV	-	-	80µV
1.8 MHz	0.2µV	0.4µV	0.5µV	28µV	50µV	80µV
3.5 MHz	0.2µV	0.45µV	0.56µV	28µV	63µV	90µV
7 MHz	0.22µV	0.35µV	0.45µV	32µV	56µV	80µV
10 MHz	0.18µV	-	0.45µV	28µV	-	80µV
14 MHz	0.2µV	-	0.45µV	25µV	-	80µV
18 MHz	0.16µV	-	0.45µV	20µV	-	90µV
24 MHz	0.2µV	0.11µV	0.56µV	28µV	7µV	110µV
28 MHz	0.22µV	0.11µV	0.63µV	28µV	6µV	110µV

AM sensitivity (28MHz): 0.8µV for 10dBs+n:n at 30% mod depth
FM sensitivity (28MHz): 0.13µV for 12dB SINAD 3kHz pk deviation
AGC threshold: 2.5µV 100dB above AGC threshold for +1.5dB audio output
AGC attack time: 3ms (fast), 2ms (slow) AGC decay time: 0.2-0.3s (fast), 2s (slow)
Max audio before clipping: 8ohm-1.6W, 4ohm-2.7W at 1% distortion
Inband intermodulation products: -26 to -40dB

S-Reading (7MHz)	**Input Level SSB Pre-amp Out**
S1	7µV
S3	9µV
S5	13µV
S7	20µV
S9	80µV
S9+20	900µV
S9+40	10mV
S9+60	110mV

Mode	**IF Filter IF2/IF3**	**IF Bandwidth -6dB**	**-60dB**
SSB Nor	2.4/2.4	2570Hz	3350Hz
CW Nor	2.4/2.4	2570Hz	3350Hz
CW Nar1	500/500	490Hz	940Hz
CW Nar2	250/500	355Hz	720Hz
AM / FM	Thru/6k	8020Hz	13.7kHz
AMNar1	2.4/2.4	2570Hz	3350Hz

Intermodulation Performance (50kHz tone spacing)

	3rd Order Intercept			Two-Tone Dynamic Range		
Frequency	**Flat Amp**	**Tuned Amp**	**Amp Out**	**Flat Amp**	**Tuned Amp**	**Amp Out**
136kHz	-	-	+6dBm	-	-	81dB
1.8MHz	-5dBm	+10dBm	+22dBm	84dB	90dB	97dB
3.5MHz	+6dBm	+16dBm	+21dBm	91dB	93dB	95dB
7MHz	+13dBm	+16dBm	+18dBm	95dB	95dB	95dB
14MHz	+12dBm	-	+24dBm	95dB	-	99dB
21MHz	+11dBm	-	+13dBm	95dB	-	91dB
28MHz	+2dBm	-9dBm	+2dBm	88dB	85dB	82dB

Close-in Dynamic Range Measurements on 7MHz Band - Pre-amp Out (IPO)

Frequency Offset	**3rd Order Intercept**	**Two Tone Dynamic Range**	**Blocking**	**Reciprocal Mixing For 3dB Noise**
3 kHz	-9dBm	77dB	-14dBm	82dB
5 kHz	-14dBm	73dB	-14dBm	87dB
7 kHz	-12dBm	75dB	-8dBm	91dB
10 kHz	-5dBm	79dB	0dBm	95dB
15 kHz	+10dBm	89dB	>+6dBm	100dB
20 kHz	+18dBm	95dB	>+6dBm	104dB
30 kHz	+18dBm	95dB	>+6dBm	109dB
40 kHz	+18dBm	95dB	>+6dBm	112dB
50 kHz	+18dBm	95dB	>+6dBm	114dB
100kHz	+18dBm	95dB	>+6dBm	120dB
200kHz	+18dBm	95dB	>+6dBm	123dB

SSB TWO-TONE TRANSMITTER MEASUREMENTS

	Class AB SSB (PEP)	Class AB Intermod. Products		Class A SSB (PEP)	Class A Intermod. Products	
Frequency	**Power O/P**	**3rd Order**	**5th Order**	**Power O/P**	**3rd Order**	**5th Order**
1.8MHz	220W	-36 (-30)dB	-42 (-36)dB	88W	-41 (-35)dB	-56 (-50)dB
3.5MHz	195W	-34 (-28)dB	-42 (-36)dB	75W	-40 (-34)dB	-56 (-50)dB
7MHz	215W	-31 (-25)dB	-42 (-36)dB	85W	-54 (-48)dB	-60 (-54)dB
10MHz	212W	-38 (-32)dB	-44 (-38)dB	85W	-56 (-50)dB	-60 (-54)dB
14MHz	213W	-36 (-30)dB	-50 (-44)dB	86W	-52 (-46)dB	-60 (-54)dB
18MHz	211W	-28 (-22)dB	-54 (-48)dB	88W	-52 (-46)dB	-60 (-54)dB
21MHz	210W	-28 (-22)dB	-50 (-44)dB	89W	-49 (-43)dB	-58 (-52)dB
24MHz	212W	-29 (-23)dB	-44 (-38)dB	88W	-52 (-46)dB	-60 (-54)dB
28MHz	222W	-31 (-25)dB	-46 (-40)dB	92W	-48 (-42)dB	-60 (-54)dB

Intermodulation product levels are quoted with respect to PEP, figures in brackets are with respect to either tone.

Carrier suppression: >70dB Sideband suppression: >80dB @ 1kHz
Transmitter AF distortion: <1% Microphone input sensitivity: 1mV for full output
SSB T/R switch speed: mute-TX 10ms, TX-mute 5ms, mute-RX 24ms, RX-mute 2ms

NOTE: All signal input voltages given as PD across antenna terminal. Unless stated otherwise, all measurements are made on SSB.

and width controls. The net result is a 'brick wall' shape characteristic to the overall channel bandwidth, even with the channel narrowed considerably with the width control.

The front panel layout of the Mark-V is largely unchanged except for the addition of the new features and to improve access to the EDSP and other functions. The shift, width, notch and clarifier knobs have been made larger and these are no longer dual concentric controls.

MEASUREMENTS

THE FULL SET of measurements are given in the table. The review radio was equipped with the optional 250Hz filter at the second IF and 500Hz filter at the third IF and in the sub receiver. This is shown in the bandwidth measurements, which are for the IF only and not including EDSP. The 10-pole SSB filter has noticeably superior response. Due to the large number (11) of narrow bandwidth front-end filters, the FT-1000MP second order intermodulation result was some 10dB better than any other radio I have measured. With the VRF activated in the Mark-V, this improved further to the point where it was in many cases unmeasureable. The overall close-in dynamic range (see **Fig 1**) is very good, but is equalled (and in some cases bettered) by other radios.

On transmit, the new PA has excellent linearity. Even in class AB, results are better than most radios and in class A really excellent. CW keying was reasonably well shaped, but perhaps slightly sharp on the fall characteristic.

CW TRANSMITTER MEASUREMENTS

Frequency	CW Power O/P	Harmonics
1.8MHz	212W	-60dB
3.5MHz	200W	-65dB
7MHz	210W	-66dB
10MHz	210W	-66dB
14MHz	210W	-70dB
18MHz	211W	-68dB
21MHz	214W	-72dB
24MHz	210W	-65dB
28MHz	220W	-70dB

ON-THE-AIR PERFORMANCE

AS WITH THE earlier version, the new Mark-V FT-1000MP is a really excellent performer for the serious HF operator. Signal handling was excellent and the various selectivity functions including the new IDBT and the other interference-combating armoury of tools all performed very well. The overall ergonomics are even better implemented now with the Mark-V. Although I never experienced a situation during the brief period of the review where VRF really helped, measurements showed that for the multi-transmitter situation this should prove a real boon. Transmission quality was excellent and the high power PA coped well with extended use.

The FT-1000MP is potentially a good receiver for 136kHz. However, the power supply provided with the review radio was an early production sample and generated considerable hash on this band and long wave broadcast using close-by antennas. This was not observed during measurements using screened cables. Yaesu UK are confident that this would not be a problem with full production models in the UK.

CONCLUSIONS

THE NEW Mark-V FT-1000MP fully lives up to expectations. Improving on an established world-class design, the new version should fully meet the needs of the serious HF operator and in particular the multi-station DXpedition and contest groups. The current list price is £2799.

And finally, in case you were wondering, there was no Mark 2, 3 or 4 version of the FT-1000MP, the Mark-V relates to the five new features.

ACKNOWLEDGEMENTS

I WOULD LIKE to thank Yaesu UK for the loan of the radio. ♦

Newcomers' News

News and Comment from and for Amateur Radio's Newcomers. Compiled by Steve Hartley, G0FUW *

MANY THANKS to all those who requested copies of the G0BBL active antenna project and for the kind words that came with them. Flattery will get you everywhere! I trust that the construction details proved helpful and that the projects are working well.

AN END TO AGE LIMITS?

NEWCOMERS WISHING to obtain a full amateur radio licence must be 14 years of age, or have held a Novice licence for at least 12 months. However, we have seen some relaxation of these rules for specific individuals (see last month's 'Newcomers News'). As many of the younger Novice licence holders have shown, there appears to be no justification for this old regulation with some very competent operators, some as young as 9 or 10. Mick Preece, M0BQF, expressed his views to the Radiocommunications Agency and their reply states that "the age 14 restriction has now been lifted". Great news for young amateurs!

Ed Doyle, M0BSP, reports that they have three more new young Novices in the Bromsgrove area. They are all related and have consecutive callsigns. The youngest is Amy, 2E1HXO, who is just 9 years old and the other two are her cousins James, 2E1HXN, who is 11, and Lee, 2E1HXM, who is 13.

Ed says that having lots of young amateurs on the air locally has added a lot of interest to the hobby for them and their logbooks are filling rapidly. The downside is that their parents are finding it hard to get on the air these days as the kids are monopolising the rigs!

* *5 Sydenham Buildings, Lower Bristol Road, Bath, BA2 3BS.*

Layla Noel, 2E1FPM, operating GB0VIK (see 'Layla Goes Viking').

LAYLA GOES VIKING!

IN THE AUGUST column I featured young Layla Noel, 2E1FPM, who took her Novice Radio Amateurs' Exam just days after her ninth birthday. Kevin Prince, G0NUP, has reported that Layla persuaded her parents to visit the Scarborough Viking Festival during the summer. During her visit she was hoping to contact the Special Event Station GB0VIK, which was on the air to commemorate the occasion.

Not only did she manage to work the station on 145MHz, but she went away with a souvenir QSL card of the occasion and was also invited to sit in the HF SSB "hot seat' by members of the Scarborough Special Events Group.

Special event stations are a great way of bringing amateur radio to the attention of youngsters, so why not set one up at your local school or youth club and see if we can't bring in some more enthusiastic youngsters like Layla?

RADIO SCOUTING UPDATE

THE *SCOUT RADIO Newsletter* will continued to be produced in paper format, but there will also be a new web site to act as a Radio Scouting resource centre.

Following the consultation exercise I mentioned in the July column, there was a clear mandate for the *Newsletter* to continue and for it to arrive by post each quarter. Apparently the majority view was that an Internet resource is all well and good, but there is no substitute for a paper copy to read over a coffee or to pin on the club notice board.

Malcolm Bell, G4CXT, the *Newsletter* editor, is keen to see more input from readers, particularly on VHF topics. Malcolm can be contacted on 01473 610073 or on e-mail, editor@radio-scouting.org.uk The Radio Scouting web site can be found at www.radio-scouting.org.uk

STARS NOT STELAR

THE KENYAN NOVICES featured in the August column are still waiting for their licences to be cleared, although their national society is working very hard to remove some of the red tape involved. In the article I reported that the boys had been promised some money from STELAR, the UK group encouraging and supporting amateur radio in schools. Ted Alleyne, 5Z4NU, sends his apologies as this should have read STARS, a different group with similar aims. A slip of the keyboard, as he says. I trust this puts the record straight.

Many thanks to those who have offered their support to the newcomers in Kenya, especially David Kennedy, M5DNK, who has donated a part-built Lake DTR7 kit and some radio magazines.

DON'T GIVE UP!

KEEN SHORT-WAVE listener Simon Smith is currently studying hard to get himself a transmitting licence. Having joined the RSGB he was disappointed not to be able to access the society's Members Only page on the internet - no callsign, no access.

A few e-mails later, Simon got word from Mike Dennison, the RSGB Publications Manager, to say that "the RSGB treats all members the same, licensed or not. Use your RS number as the user name (remembering to type 'rs' in lower case) and your membership number (to the right of your rs number on the *RadCom* address label) as the password". Have a look if you have access, there is some good stuff on there.

On a separate note, Simon has been listening on 70cm and has been quite alarmed at the snobbery that some of the older amateurs seem to portray to M5 callsign holders. Some of his local amateurs have actually admitted on air to either ignoring CQ calls from M5s, or worse still, jamming them.

I have assured Simon that such attitudes are held by a narrow-minded few and, in my experience, the vast majority of amateurs welcome newcomers with open arms. My advice to anyone aiming for a callsign, whether it is to be M5, MW1, 2M0 or MI0, is to get stuck in, pass the exams and make the hobby what *you* want it to be. Most important of all, enjoy it! ♦

Spread The Word!

Send your news and colour photos to: Steve Hartley, G0FUW, QTHR.

E-mail: newcomers.radcom@rsgb.org.uk

Down To Earth

An Introduction to Screening

By Peter Buchan, G3INR *

SCREENING OR shielding, as it is sometimes known, can be very much a practical exercise when it becomes necessary to restrict a field or fields, close to their source, or alternatively to prevent a field or fields from reaching a sensitive point in a circuit. However, unless the underlying principles are applied, the outcome may not be successful. Textbooks are vague on the subject, so perhaps the following few 'rules of thumb' may go some way toward a better understanding.

As far as this feature is concerned, there are two fields, magnetic and electric. They can and do exist independently but, the instant one of them changes, an electromagnetic field is produced which is able to re-produce itself and propagate into the surrounding space (an electromagnetic wave), or possibly be constrained to travel along a transmission line of some description. For example, if a DC source is switched briefly into a transmission line of any length, the capacitance of the line causes a charging current to flow. This, along with the applied voltage, creates an electromagnetic wave which, willy-nilly, has to set off down the line.

Only changing or alternating magnetic or electric fields create electromagnetic waves. At low frequencies, eg at 50Hz (mains supply), the radiation is very small, as it is also at audio frequencies.

The field surrounding the secondary of a mains transformer of a modern solid-state transceiver would be almost entirely magnetic, whereas the field surrounding the supply terminals of a valve linear power supply (2kV @ <1A) would be almost entirely electric.

MAGNETIC SCREENING

Now to the question of screening. There are basically two methods available:

(1) Diverting the path of the field; and

(2) cancelling it out with an opposing field.

As an example of (1), consider **Fig 1**. Here the magnetic flux of the coil finds an easy path through the high permeability of the enclosure, leaving only a very small residual field outside. It should be remembered that the lines depicting the path of the magnetic flux do not mean that the flux is made up of lines… it is spread throughout the space, though beyond the enclosure only very very thinly.

For the enclosure to be reasonably light in construction, the material used must have a very high permeability. It is here that an alloy called *mu-metal* is employed, though whether this is readily available nowadays is uncertain. At one time microphone transformers were all enclosed in mu-metal boxes, to prevent low and audio frequencies being picked up by the windings. Note that this method *increases* the inductance of the coil. A further very important point is to realise that the join in the box should *not* be made along the line X-X; to do this would insert a high resistance (reluctance) path to the flux. The join should be made along a line Y-Y instead.

A mu-metal enclosure is effective from 0Hz to the higher audio frequencies, but as frequency increases the permeability of the alloy diminishes and the resistance increases, so method (2) is employed.

For method (2), copper or aluminium is used. Either material has a low resistance to current flow though the relative permeability is that of air, ie 1, hence it cannot offer a path for the magnetic flux. What it does do is act as a short-circuited secondary to the coil, and the current induced produces a field which tends to cancel out the field produced by the coil. This reduces the inductance of the coil, but providing the screen is made large enough the effect can be tolerated and/or allowed for in the design of the coil and screen. The screen diameter should be twice the coil diameter, and the ends of the coil should not come within one diameter of the ends of the screen.

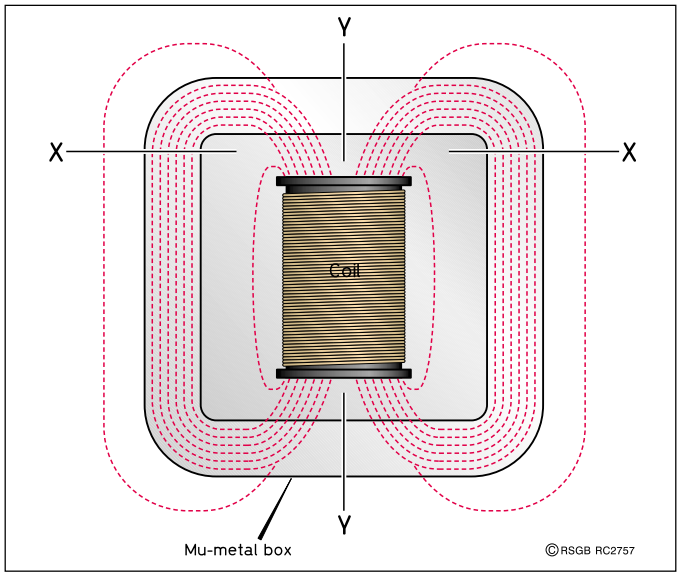


Fig 1: The high permeability box concentrates the flux within the walls. Remember not to join the box along the line X-X.

Fig 2a shows a coil with the normal flux lines depicting a magnetic field. The letters 'a', 'b', and 'c' indicate the falling-off of flux density as one moves away from the coil, the field being strongest at 'a' and much lower at 'c', though assumed to be greater than wanted. We assume the current in the coil is alternating, therefore when the screen is placed around the coil, forming a closed circuit, currents will also be produced in it, though their direction will be opposite to those creating them (Lenz's Law). Providing the screen resistance is very low the currents produced in it will tend to reduce the flux at 'b' *almost* to zero, the small difference being that which is needed to create the reverse flux, 'b'', see **Fig 2(b)**. The letters 'a'', 'b'' and 'c'' below the axis of the graph show the level of the flux present due to the screen at these points – note that they are in the reverse direction to those causing them and very slightly less in amplitude at 'b'' and 'c'' and very much less at 'a''. Note also that the flux at 'a'' will only marginally affect the flux in the coil, therefore the inductance is not greatly reduced. It should be pointed out that the direction of the current in the screen is very different from the flux in Fig 1; it is in a continuous ring, parallel to the turns of the coil, hence the joint in this screen may be made in the direction X-X, but not in the direction Y-Y (which would prevent current flowing). As frequency is increased the depth of field penetration into the screen becomes less, so relatively thin copper or aluminium sheet may be used, but for best results the boxes or enclosures must be watertight (the ideal), requiring joints to be lapped and special care taken with lids, covers, etc. See [1] and [2].

Incidentally, method (2) is completely useless for static or DC fields, and is not successful at

* 79 Cavendish Avenue, Cambridge CB1 7UR.

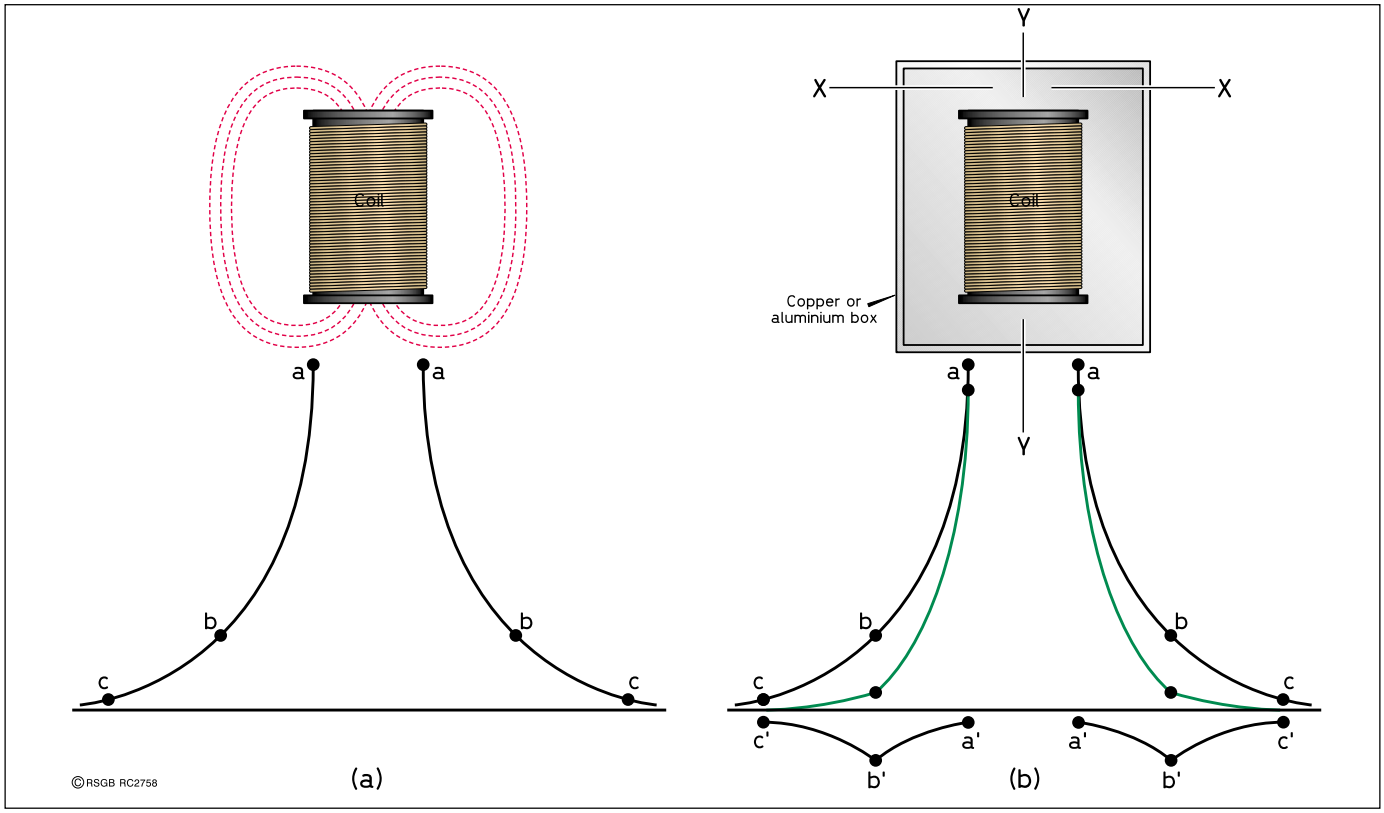


Fig 2: (a) A simple coil and field. The flux density is shown by the graph being greatest at 'a' and least at 'c'. (b) The coil is now enclosed in a metal box. Below the line the graph shows the flux set up in the box; the letters 'a'', 'b'' and 'c'' indicating the flux density. Note that it is the reverse of that in the coil. The graph shown in *green* is the result of adding the graph above the line to the graph below the line.

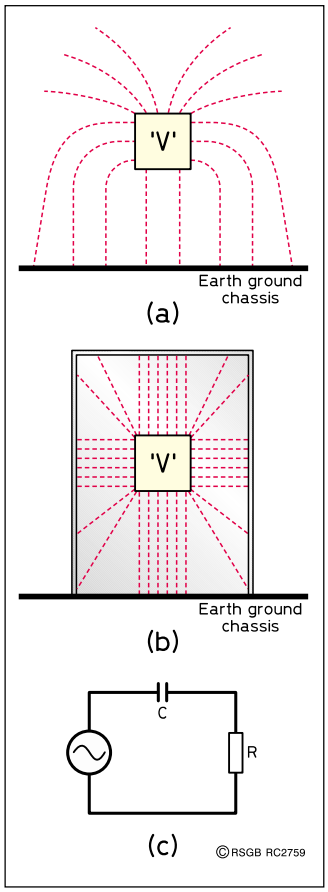


Fig 3: (a) The point 'V' is at high potential and surrounded by an electric flux or field. (b) The field or flux is contained inside the screen. Every part of the screen is at earth potential, consequently the field or flux is no longer present outside. (c) The AC generator represents an HF or VHF source of voltage. Due to the presence of the screen, some capacitive coupling is certain. Should the screen be of poor conductivity, a potential difference will develop across it, giving some loss.

low frequencies, therefore use mu-metal for DC and low frequency and copper or aluminium for RF screening.

ELECTRIC SCREENING

PERHAPS YOU WILL have noticed that nothing has been said about 'earth' so far. This is because earthing has nothing to do with magnetic screening. However, it has everything to do with electric screening. Metallic screening is used for electric fields, but the permittivity is not considered as the permeability must be in magnetic screening (DC and LF fields) - it is the conductivity that is important. To screen a DC or LF electric field all you need to do is to enclose the field in an *earthed* can, box or enclosure.

Fig 3(a) represents a high voltage point, as may be found in a valve linear's power supply. Between this point and chassis/earth there will be an electric field, depicted by the dotted lines. This means that every point in space between 'V' and chassis/earth is at some potential (and hence not zero). If this field is enclosed in a conducting screen connected to chassis/earth, then the screen is considered to be at the potential of the chassis/earth, all points on the screen are at chassis/earth potential, so there is no longer an electric field outside the screen. This is true for non-varying or LF fields, but if the potential at 'V' is varying at a high frequency then there will be a capacitive current between 'V' and the screen, which could cause a potential difference across the screen, so some loss is possible. In practice it is advisable to have the screen as far away as possible from 'V', to avoid too much capacitive loading of the screened high voltage point.

It is not necessary to have a continuous metal screen, it may be made up of individual conductors in the form of a cage. Although important, the joints need not have the perfection of those in a magnetic screen, so lids etc may be just a push fit.

The degree of screening is measured by taking the ratio of the field strength before and after the screen is fitted. Screen effectiveness below 20dB, poor; from 20 to 80dB, average; 80 to 120dB, above average; above 120dB, cost problems.

REFERENCES

[1] *Practical RF Handbook*, by Ian Hickman. Newnes, 1993. Good Appendix.
[2] *Circuit Designer's Companion*, by Tim Williams. Newnes, 1993. Pages 248-252. ♦

The Voices

PUBLICATION of the 'RSGB Contesting Guide 2001' in this edition means that part five of 'The Voices' has been held over to next month - *Ed.*

2000 Commonwealth Contest

By Harold Owen, G2HLU, and Bob Whelan, G3PJT***

This year's Open Section winner, Bruce, ZF2NT

A PLACE IN THE sun, in the Caribbean, or failing that the Mediterranean, again seemed to offer a good chance of success. That said, there were eight different Commonwealth countries and ten different call areas in the top ten stations this year. Top place in the Open section, and the Senior Rosebowl, goes to Bruce Sawyer, ZF2NT, followed by George Beasley, 5B4AGC (third in 1999 and winner of the Restricted section in 1998), with John Sluymer, VE3EJ (winner in 1998, for the latest of several occasions), a very short distance behind. Bob Whelan, G3PJT, as VP5C made it to fourth place, and Andy Chadwick, 9G5VJ, had to settle for fifth (Andy did not prosper as well in Ghana as he did in Malta in 1999 (winner) and 1998 (second), though he came third in 1997 when operating from 9G). Barry, VK2BJ, turned in a VK record score despite poor conditions and has been awarded this year's Commonwealth Medal for this and many consistent top class entries for many years.

The Col. Thomas Rose Bowl goes to Jan Fisher, G0IVZ, in thirteenth place, this time. Dave Lawley, G4BUO, sacrificed his chance of this award for an umpteenth time by operating his station as GB5CC, with G4TSH.

Barry, VK2BJ, (ex-G3PEK) who made a record VK score and wins the Commonwealth Medal.

Top place in the Restricted section is again filled by Bill Metcalfe, VE6BF, operating VE6JY, who is awarded the Junior Rosebowl; Bob Nash, VE3KZ (fourth in the Open section in 1999), is second, and Steve Ireland, VK6VZ, usually found in the Open section, was compelled by other commitments to enter the Restricted section, where he put in an excellent log to reach third place.

We had a record number - eight - of HQ stations. Thanks to them all. Despite uncertainty about 5Z4WI and VK5XE they have been scored as HQ in all contacts - not that it made much difference, since there were no other 5Z4s, and VK5s were not thick on the ground! VP6BR, on Pitcairn Island, was a new bonus for many entrants. ZS0E has been given separate call area status.

Comments about conditions varied, but entrants were unanimous in deploring poor propagation on 80m, and nearly all were disappointed with 10m (only ZL1MH and ZL2CD had good words to say about that band). Despite the record number of QSOs made by the top three stations in 1999, the total number of QSOs made by the top ten stations in 1999 (6740), was appreciably lower than the corresponding figure of 8150 in 2000. This must mean something! Again there were several first-time entrants, who enjoyed themselves and promised to be back. Many entrants commented on their appreciation of the unique character of this contest.

The year 2000 brought the largest total entry of recent years, 138, excluding the record number for the 60th Anniversary Contest in 1997. Compared with last year there was a small decrease in numbers for the Open section and a small increase for the Restricted.

VK3MR's comments last year about it being probably his last BERU were unhappily prophetic: we have now lost another of our stalwarts. Many will remember his outstanding DX performance of years past when he 'covered the world with rhombics'.

PARTICIPATION

THE TOTAL NUMBER of call signs recorded was up this year, to 791 over all bands (498 Gs, 155 VEs, 51 VKs, 32 ZLs, 10 ZSs). Some of the rarer prefixes were as usual available only in certain parts of the world, except for the most well-equipped stations, and - again as usual - some participants only made a few contacts. Call areas were up again, to 60: 3B8, 4S, 5B, 5H, 5Z (HQ), 9G, 9H, 9J, 9M2, 9Y, AP, AX2 (HQ), G (including GI, GM, GU, GW, M, MM), GB (HQ), J6, P2, P2 (HQ), S2, T32, V3, V4, VE1-9, VE1 (HQ), VE2 (HQ), VE5 (HQ), VK1-8, VK4 (HQ), VK5 (HQ), VO1, VP5-6, VP9, VQ9, VU, Z2, ZC4, ZF, ZL1-4, ZL6, ZS0, ZS1, ZS6.

Participation by bands was: 80m, 182 stations including 97 Gs, 39 call areas; 40m, 348 (207 Gs), 48; 20m 573 (356 Gs), 50; 15m 506 (334 Gs), 47; 10m 418 (303 Gs), 47. The LF bands showed little change from 1999, but figures are up for 20m and 15m (totals and Gs), and the totals for 10m are surprisingly a little higher than in 1999, despite the much poorer conditions.

LOGS

PAPER LOGS were in the majority (55%), though the proportion of logs sent by e-mail increased again, to 35%, and 13% were sent on disk (the total exceeds 100% because a few used two formats). All are transferred to paper for checking. We had a problem with some e-mail logs being received incomplete. This resulted in two stations being unplaced, as it was not possible to score their logs.

Grateful thanks are due to those entrants who provided dupe sheets (and bonus lists), especially to such as 9J2BO and ZB2EO, with large logs, who put call signs in alphanumeric order without the benefit of a computer (and ZB2EO's entry, as ever, a model of neatness and clarity). Regrettably, much time was expended by the adjudicator in making dupe sheets for those many logs which did not provide them. Eleven unmarked duplicates were found - one station had *three*, at 55 penalty points each! All would have been avoided if the entrants had kept dupe sheets - *verb. sap*! Only 29% provided a Band/Call Areas total, so that too had to be calculated for the majority. Eighty-four entrants qualified for the special certificate, by working 63 or more

RESULTS - HQ Stations

Pos	Call	80m	40m	20m	15m	10m	Total	QSOs
1	GB5CC (G4BUO, G4TSH)	917	1578	2095	1792	1028	7410	688
2	VK4WIA (VK4XA)	225	646	1884	883	913	4551	320
3	AX2OOO (VK2AYD)	175	560	1660	925	600	3920	280
4	VE5RAC (VE5MX)	50	455	820	1043	806	3174	181
5	VE1RAC (VE1JS)	196	358	514	652	164	1884	168
6	VA2RAC (VE2GK)	95	351	601	335	275	1657	86
7	5Z4WI	120	306	285	-	433	1144	102
8	VK5XE	273	200	300	96	75	944	38

Checklogs from G2CIL, G3SXW, G3TXF, G3WP and G4OGB are gratefully acknowledged.

** Arbutus, Durnford Drove, Langton Matravers, Swanage, Dorset BH19 3HG.*
*** 36 Green End, Comberton, Cambridge CB3 7DY.*

RESULTS - Open Section

Pos	Call	80m	40m	20m	15m	10m	Total	QSOs
1*+	ZF2NT	836	1658	2873	2375	1668	9410	1003
2*	5B4AGC	683	1397	2755	2228	1808	8871	1001
3*	VE3EJ	914	2070	2575	2178	1096	8833	837
4*	VP5C	637	1582	2245	2263	1883	8610	883
5*	9G5VJ	200	984	2504	2510	2373	8571	929
6*	VE2ZP	909	1657	2360	1923	1018	7867	730
7*	9H1ZA	711	1338	1949	1963	1541	7502	879
8*	VE7CC	508	1126	2228	2209	1379	7450	601
9*	VK2BJ	705	1303	2489	1595	1030	7122	566
10*	G3XTT/VP9	808	1429	2098	1433	1050	6818	721
11*	ZL6QH	768	1363	2146	1616	843	6736	565
12*	VK4EMM	678	1235	2181	1658	973	6725	543
13*++	G0IVZ	440	1285	1909	1814	779	6227	343
14	VE3QAA	344	1416	1917	1386	618	5681	563
15	G3OZF	438	1158	1794	1481	721	5592	279
16*	ZL1MH	551	960	1711	1110	910	5242	357
17*	ZB2EO	155	680	1991	1093	1041	4960	597
18	VE3VHB	513	785	1663	1058	845	4864	342
19	G3TBK	401	757	1584	1435	655	4832	247
20*	9J2BO	25	405	1279	1405	1490	4604	484
21*	VO1GO	555	1080	1390	1115	345	4485	409
22	VE3XN	453	645	1675	961	549	4283	335
23	VE2AYU	240	1130	1569	1063	175	4177	447
24	G3IAF	355	808	1345	1218	400	4126	191
25*	ZM2AZ	621	1061	912	965	535	4094	261
26	G2QT	348	734	1335	1079	565	4061	210
27	G0WAT	318	806	1526	1128	248	4026	222
28	G3GLL	348	778	1200	1150	500	3976	184
29	GW3HGJ	371	820	1280	888	325	3684	174
30	VA2FB	-	1018	1045	835	598	3496	285
31	G2HLU	223	665	1205	1058	323	3474	160
32	VE7JKZ	50	865	835	1110	485	3345	185
33	VE7VF	25	474	875	1235	575	3184	246
34	G4CZB	355	495	995	900	325	3070	142
35	G3LIK	298	375	1143	895	348	3059	139
36*	VE1AYY	285	815	968	783	182	3033	310
37	G4IIY	225	693	853	963	175	2909	147
38*	VE4IM	195	528	1150	621	221	2715	141
39	G3EBH	25	421	1050	808	398	2702	122
40	VK6HQ	146	685	1556	300	-	2687	201
41	G3KKP	150	475	915	698	423	2661	117
42	G2VJ	223	480	884	713	250	2550	112
43	G3GPE	221	425	884	771	223	2524	113
44	G3IGW	125	679	555	918	225	2502	122
45	G3DEF	223	453	730	774	298	2478	111
46	G5MY	248	556	924	568	171	2467	116
47	VE1LS	296	603	668	628	250	2445	135
48	G3JJG	75	596	613	875	223	2382	111
49	G3VDL	198	460	763	705	198	2324	102
50	G3MPB	25	605	743	808	125	2306	103
51*	VK5GZ	275	346	1238	360	75	2294	145
52	G3JKY	98	296	725	788	325	2232	100
53=*	VK3ZC	271	498	923	440	75	2207	103
53=	G3TEV	50	425	680	877	175	2207	98
55	G3ICH	-	321	991	434	175	1921	88
56	VK2DID	-	498	673	583	100	1854	98
57	G3BPM	221	473	467	551	125	1837	83
58	VE1EP	246	400	546	450	150	1792	72
59	G4IDL	23	223	592	614	244	1696	69
60	G3NAN	-	246	593	611	225	1675	77
61	ZL1HV	75	150	710	577	100	1612	76
62	G3HKO	75	325	530	450	125	1505	70
63	VE1KB	148	123	613	230	75	1189	79
64	G3ZDD	-	239	519	317	71	1146	57
65	GM3PPE	-	-	1101	-	-	1101	49
66	VK3KS	50	323	394	-	-	767	31
67	G0VQR	-	-	406	75	150	631	28
68	VK5HO	125	150	198	25	-	498	20
69	G3KSK	-	-	-	-	173	173	7
#	ZL2BR	225	585	1580	1255	805?	4450?	306?
#	VE2AWR	-	915	610	1055	275	2855	247

\+ Senior Rose Bowl ++ Col. Thomas Rose Bowl
* Certificate of Merit # Claimed scores: unchecked

RESULTS - Restricted Section

Pos	Call	80m	40m	20m	15m	10m	Total	QSOs
1*+++	VE6JY	100	1305	1651	1597	816	5469	430
2*	VE3KZ	537	951	1669	1484	650	5291	483
3*	VK6VZ	100	828	1916	598	557	3999	428
4*	GM0GAV	298	725	1231	1163	573	3990	177
5	G3LZQ	400	775	1228	1035	503	3941	183
6*	VK2APK	250	1166	1515	510	488	3929	291
7	VE3FU	300	515	1180	980	605	3580	273
8*	VE7UZ	150	555	945	1170	730	3550	212
9	VE3UOL	192	681	1098	974	453	3398	296
10	G3KZR	248	746	933	1100	350	3377	157
11	G3LET	-	505	1430	860	419	3214	152
12	G3LHJ	175	628	938	913	505	3159	161
13	G3JYP	246	585	982	912	394	3119	141
14	G4AZN	173	398	1120	1000	425	3116	144
15	G0ORH	-	451	1235	821	473	2980	153
16*	ZL2CD	326	592	754	880	397	2949	191
17*	VK4TT	-	425	983	818	533	2759	147
18	VA3UZ	-	790	876	558	521	2745	155
19	G2AFV	175	698	1023	645	175	2716	124
20	GW3NJW	150	533	875	725	325	2608	120
21*	ZL1PC	55	749	754	725	204	2587	132
22	G3VYI	125	604	1080	615	150	2574	119
23	G3YEC	90	495	1315	450	223	2573	60
24*	VK8HA	-	153	1051	773	486	2463	151
25*	VE5SF	25	298	835	1003	296	2457	181
26	G3RSD	98	380	800	928	225	2431	112
27	GM3CFS	-	425	1008	771	175	2379	97
28	VE3STT	200	305	748	630	425	2308	134
29	G3KNU	48	325	866	751	275	2265	112
30	GM3POI	-	1485	305	150	275	2215	107
31	G3HEJ	100	300	760	741	275	2176	92
32	G4CXT	100	335	803	710	200	2148	94
33	G3HZL	175	246	971	581	125	2098	90
34	VK6AJ	-	171	1429	125	290	2015	173
35	G6QQ	25	355	620	641	300	1941	85
36	G3ZGC	225	383	643	375	150	1776	76
37*	VU2UR	-	175	978	525	-	1678	112
38	G3KKQ	250	380	540	250	225	1645	69
39	G3GMS	-	175	565	663	225	1628	70
40	VK2BQQ	250	400	500	348	-	1498	64
41	GW3SB	75	223	548	505	100	1451	63
42*	VK5GN	25	55	1019	75	80	1254	112
43	G0IGP	-	-	430	558	150	1138	48
44	G4ZME	-	-	534	323	196	1053	45
45	G3GMM	-	25	235	493	125	878	41
46	G4FDC	-	-	200	198	175	573	23
47	VK4XW	-	-	444	90	-	534	28
48	VK8AV	-	-	375	50	25	450	22
49	VA3XRZ	-	-	398	-	-	398	23
50	G4XPE	-	-	210	125	50	385	17
51	GW4XXF	-	-	-	50	125	175	7

+++ Junior Rose Bowl * Certificate of Merit

Band/Call areas (64 will be required in 2001).

It is pleasing to record that in a number of logs no error was detected: VO1GO had the highest-scoring 'perfect' log in the Open section, GM3POI in the Restricted section (for the second year running). There were also a fair number of entries that lost only 2 or 4 points, through a single digit error in one or two exchanges.

SOAPBOX

'Not yet mastered bonus gathering' - 5B4AGC.
'I worked more VK stations over the weekend than in the last 5 years… fantastic contest for DX' - G0VQR.
'Have the gods got something against us? Reasonable conditions in the week, then the dreaded aurora strikes' - G3HZL.
'Best ever score' - VE2ZP.
'Serious snow static on Saturday night' - VE3EJ.
'Restricted section is a terrific idea for overworked dads like myself' - VK6VZ.
'Band (15) swarming with low level Gs half an hour before close' - VK8HA.
'Plagued by storms and five power cuts' - 9J2BO.
'We did not have power supply the whole of Sunday' - VU2UR.
'A big hats-off to all the VEs, from me' - ZL1MH (and so say all of the rest of us!).

NEXT YEAR

THE NEXT Commonwealth Contest will be on 10/11 March, 2001.

A number of stations have requested changes of time to allow an earlier finish in VK/ZL, but no change will be made at present. Minor corrections to the call area list, ZD9, Tristan da Cunha, and ZS0 for South Africa, will be made. You will require 64 band call areas for a certificate.

Some have asked for a multi-op section and in effect we already have this in the HQ stations table. Why not enter a HQ station from your call area?

It is becoming easier to mount contest DXpeditions these days, so why not activate some of the more unusual Commonwealth call areas around the contest weekend? It can be a lot of fun and you can get pretty high up the table. Many parts of the Commonwealth are rather sunny and a good break from the northern winters.

The URL where the latest information about the contest can be found is: http://ourworld.compuserve.com/homepages/Bob_G3PJT/ ♦

Last year's winners, VE6BF (left) and G4ZVJ (right) receive their trophies at the HF Convention.

inpractice

by **Ian White,** G3SEK*

http://www.ifwtech.com/g3sek E-mail: g3sek@ifwtech.com

WHITE LEDs

HOW DO WHITE LEDs work? I thought you could only get one narrow band of wavelengths from an LED.

YOU'RE CORRECT - conventional LEDs produce light that consists of a single clearly defined peak or dominant optical wavelength, while true white light is a mixture of all visible wavelengths. The 'white' LED is actually a blue LED exciting a white phosphor. According to the Agilent Technologies (formerly Hewlett-Packard) web site, the white LED typically uses an InGaN (indium gallium nitride) LED chip coated with a YAG (yttrium aluminum garnet) phosphor to provide a high-quality white light.

One way of expressing the quality of a white light is by 'colour temperature' - essentially equivalent to the physical temperature of something that is glowing white-hot. Lower colour temperatures such as 1500K to 2000K (subtract 273 to convert into °C) range from reddish to yellowish in appearance, eg candlelight and conventional incandescent lamps. The Agilent/HP white LEDs have a colour temperature of about 6500K, which is generally regarded as a good 'pure white'. In addition, the quality of white light is measured using the Colour Rendering Index (CRI), which is an index of the spectral distribution at a given colour temperature. The appearance of white light can be created not only as a continuous spectrum but also by combining narrow wavelength bands of red, green and blue, as in a TV or computer monitor. Any colour can be created accurately in this way, but if you use this synthesised white light as a source to illuminate other objects (which of course you don't in the case of a CRT screen), the colours of some objects will appear dull because the necessary wavelengths aren't actually present. The CRI measures this aspect of white light quality, and the white LEDs score around 75 out of 100, which ranks them as a good illumination source.

The white phosphor LED is not to be confused with the tri-colour red-green-blue device which is actually three chips in the same package (with four connecting leads). Theoretically these RGB LEDs can synthesise any colour including white, in the same way as a colour CRT or LCD; but even at best the CRI is poor. In practice there is strong coloration at off-axis viewing angles, because the LED chips are not in exactly the same place and the colours do not mix correctly. The main use for RGB LEDs is as indicators that change between a few simple colours, or for very large flat-panel colour displays.

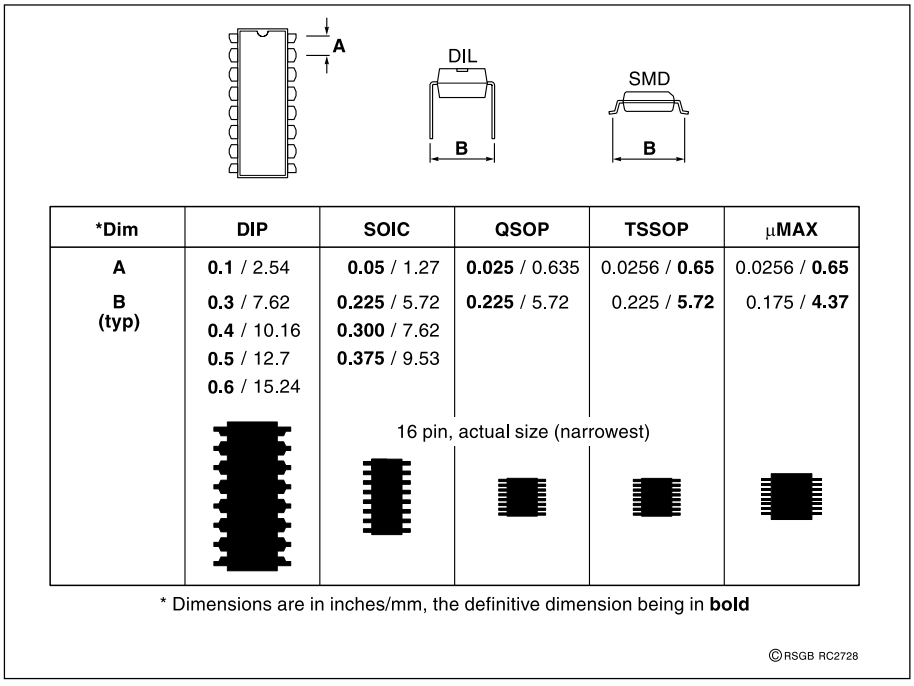
Luminous intensities for white phosphor LEDs are comparable with conventional 'high brightness' or 'ultra bright' LEDs. In other words they are not bright enough for use in a serious torch - someone aptly said that a white LED 'torch' on a key ring will help you find the lock, but it won't find the door itself. Similarly, white LEDs are not really suitable for large-area dial illumination. However, they should make a good and permanent replacement for those miniature dial bulbs that keep on burning out. Yellow LEDs have been recommended for greater reliability, as also have under-run filament bulbs rated for a higher voltage, but they both have an unpleasantly low colour temperature. Changing to white LEDs should cure that problem too. The prices for white LEDs are still a little above those for blue, and substantially dearer than the very cheap red LEDs, but most component distributors now have them.

SMD PACKAGES

WHAT ARE THE sizes and pin spacings of SMD packages for ICs? How do they compare with the older package sizes?

THE FAMILIAR dual inline package (DIP or DIL) is based on a 0.1in grid and pin spacing. There are two ranges of SMD sizes below that, based on 0.05in and 0.025in, and then a range of 'metric 0.025in' packages. **Fig 1** compares the dimensions for a range of 16-pin IC packages. Although they are all dual in-line, it is now customary to reserve the label 'DIP/DIL' for the original 0.1in size. The pin spacings and overall lengths are straightforward, but many of these packages come in a range of widths. For DIL packages it is customary to quote the width between pin/hole centres, but this is less clear-cut for SMD. Some manufacturers like to quote body width, which looks small but is otherwise meaningless; others quote 'real estate' occupied on the board, including the full width of the two rows of PCB pads. In Fig 1 I have taken the middle course, and quoted the nominal distance between the centrelines of the pads, which is the figure you'd use for laying down pads and tracks.

Fig 1 includes dimensions in both inches and millimetres. In the DIP, SOIC and QSOP outlines the definitive dimensions are those in inches, but the TSSOP and µMAX the definitive dimensions are in millimetres. DIP, SOIC, QSOP and TSSOP are industry standards, while µMAX is a 'slim TSSOP' outline used by Maxim Semiconductor. But packages can get smaller yet! For devices with eight pins or less, many manufacturers switch to the SOT23 package shown in **Fig 2**. This is the package generally used for low-power transistors and diodes, usually with only three pins, but up to six are available and are sometimes used. The basic pin spacing is 0.0375in, half-way between SOIC (0.05in) and QSOP/TSSOP/mMAX (0.025or 0.0256in). Transistors and diodes usually come in the three-pin 3-SOT23 package (**Fig 2a**). Many SOT23 diodes come as pairs, using all three pins, and these are often cheaper than a single diode in the same package. That's fine if you only want to use one diode, because the choice of two gives more flexibility in layout, but if you need both diodes you must be sure to get the device with



*Dim	DIP	SOIC	QSOP	TSSOP	µMAX
A	**0.1** / 2.54	**0.05** / 1.27	**0.025** / 0.635	0.0256 / **0.65**	0.0256 / **0.65**
B (typ)	**0.3** / 7.62 **0.4** / 10.16 **0.5** / 12.7 **0.6** / 15.24	**0.225** / 5.72 **0.300** / 7.62 **0.375** / 9.53	**0.225** / 5.72	0.225 / **5.72**	0.175 / **4.37**

* Dimensions are in inches/mm, the definitive dimension being in **bold**

Fig 1: Comparison of DIP and various SMD packages, for a 16-pin IC. Width between centrelines of SMD pads is a nominal value.

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DANGER - BUYER BEWARE!

ALWAYS CHECK equipment bought at rallies before plugging it into the mains!

AT A RECENT radio boot sale I bought a Weller DS900 power supply for a de-soldering station, because it would also power my normal 24V AC iron. The unit was a bit battered and covered in test stickers from a very well-known UK plc, but I reckoned it would clean up nicely with those 'look prettier' sprays from Electrolube (AFC foam cleaner and LRM label remover). What I didn't realise was that it had been modified in a potentially lethal way.

Being a trusting soul - and having a mains supply protected by an RCD - I simply plugged my iron into the front, mains into the IEC socket on the back, and switched on. When the iron failed to get hot, I looked inside, and only then discovered what someone had done. The 24V transformer had been completely disconnected, and the output to the 24V soldering iron was connected directly to the IEC mains socket! This also put mains on the two '24V' terminals on the front panel. As soon as mains was applied, it had burned out the element in my iron. Later, when I replaced the element and reconnected the transformer, it all worked fine. My guess is that these units were modified by some idiot lab tech, and disposed of just one step ahead of the company's own safety inspector. Then they would have been sold as scrap in the normal way, and found their way by devious routes to the rally trader.

Such things can happen, and I was lucky that my mistake only cost me money. There are numbers of these units still out there, and the same mistake could cost somebody a lot more - so pass the word to your friends, and always check equipment bought at rallies before plugging it into the mains!

the correct internal orientations. **Fig 2b** shows the 8-SOT23 variant, which uses the 0.0256in/0.65mm pin spacing to fit eight pins into the same outline.

Although many ICs are available in a range of package sizes, in practice each manufacturer does have a preferred size for volume production, and this may be more readily available and cheaper than the alternatives. Some ICs that are specifically designed for applications in compact equipment such as mobile phones are only ever available in the smallest size.

As the full-size outlines in Figs 1 and 2 show, the smallest packages are very difficult to work with by hand unless you're set up with the proper equipment - above all, a magnifier [1]. Even though the individual IC pins are too small to be able to see clearly with the naked eye, the magnifier 'amplifies' your eye-hand feedback, allowing most people to do extremely fine work that would be impossible without it. However, normal-sized tools and solder also become enormous under the magnifier, and can make fine work very difficult indeed. Hand soldering of surface-mount devices uses what the industry generally calls 're-work' techniques (as distinct from the initial mechanised construction) and there are specialised tools for this... at a price. Techniques for SMD re-work using minimal low-cost equipment are not really settled, and various people are still advocating widely differing methods. Earlier 'In Practice' columns have described methods using both a soldering iron and hot air [2].

ROPE FOR GUYS

WHAT IS the best material for guy ropes?

PROBABLY POLYESTER. Dacron is the most common trade name, which is for DuPont's version of polyester fibre. Many other companies make similar fibres under their own trade names, which may be less familiar, and may also be obtainable at better prices. For outdoor use of polyester ropes the important thing is their ultraviolet resistance. Rope specifically designed for outdoor use will contain various ultraviolet inhibitors and antioxidants which prolong its useful life. Rope colour has some bearing on the useful lifetime too. The longer-lasting outdoor ropes are usually white, black or military olive drab. Bright white fibres containing titanium dioxide pigment will reflect most of the ultraviolet, while black or olive-drab will absorb the ultraviolet at the surface which is almost as good. Yellow, blue, and especially fluorescent colours are to be avoided, as these degrade quickly in sunlight.

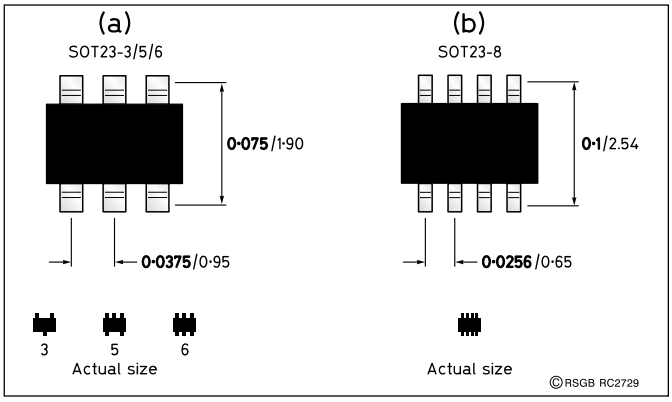

Fig 2: (a) SOT23 outlines using three to six pins on a 0.0375in/0.95mm pitch. (b) 8-SOT23 outline uses the same package size, but the smaller 0.0256in/0.65mm pin spacing.

Nylon rope is a slightly stretchier alternative which can be suitable for many applications. Again, choose a rope based on its outdoor ratings and ultraviolet resistance. Nylon is somewhat susceptible to attack by hydrochloric acid from acid rain and heavy smog. Avoid polypropylene ropes for permanent installations. These fail quickly in sunlight, literally falling apart as the fibres break and degrade. Polypropylene ropes are inexpensive, however, and fluorescent coloured ones might be well suited for occasional weekend Field Day events where the colour can provide some added safety to keep people from walking or driving into them. But don't use them at home for any extended period [3].

When using rope for guys, plastic thimbles on the ends of loops are an excellent idea. These prevent cutting or chafing of the rope where it is attached to the mast or guy anchor. For further information on knots, ropes and wind loadings, see G3JMG's classic article on ropes and rigging, and various 'In Practice' columns [4, 5].

A falling antenna can do considerable property damage as well as being potentially lethal, so check your ropes frequently for signs of degradation or weakness. Good habits are to inspect permanently-installed ropes twice a year, and Field Day ropes before every contest. For permanent ropes, check for signs of wear at each end, and wherever the rope has been touching anything such as a pulley. For Field Day ropes, check the whole of every length, because you never know where or how they might have been damaged. In addition, check sample sections more closely, looking for breakage of the fibres. Untwist the major strands part way along the rope, to make sure they still have the flexibility to cope with such treatment, and also to check that the inner parts are in good condition and free from trapped grit.

REFERENCES

[1] 'In Practice', *RadCom*, August 1996.
[2] 'In Practice', *RadCom*, October 1993, August 1998.
[3] Thanks to Barry L Ornitz, WA4VZQ, for much of this information on rope materials.
[4] 'Ropes and rigging for amateurs - a professional approach' by J M Gale, G3JMG, reprinted in Chapter 8 of *HF Antenna Collection*, edited by Erwin David, G4LQI (see RSGB Shop on p66).
[5] 'In Practice', *RadCom*, June 1994, October 1994, January 1995, December 1998, January 1999. ♦

If you have new questions, or any comments to add to this month's column, I'd be very pleased to hear from you by mail or E-mail. But please remember that I can only answer questions through this column, so they need to be on topics of general interest.

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RSGB
Contesting Guide
2001

WELCOME to the sixth annual RSGB Contesting Guide, produced so that the rules of RSGB HF, VHF and microwave contests all appear in one place.

Members of the Five Bells Contest Group, taking part in the 70MHz Trophy contest.

Mimram Contest Group's 'Search & Pounce' station in the IOTA contest.

The Guide is designed as a pull-out, so you can remove it from *RadCom* and keep it by your operating position for reference throughout the year.

Good luck in the contest!

HF Contest Rules for 2001

General Rules

1. These rules apply to all RSGB HF Contests, except where superseded by the specific Contest Rules.

2. UK means England, Scotland, Wales, Northern Ireland, Channel Islands and Isle of Man.

3. Entrants must abide by their licence conditions.

4. Contacts:
a. A contact consists of an exchange with incrementing serial number commencing from 001 and acknowledgement of receipt of call sign and contest data. Incomplete contacts must be logged with zero points claimed. Points are not lost if a non-competing station does not send appropriate information, but a report must be logged and any other exchange sent by that station must be recorded. The full contest exchange must be sent to all stations worked.
b. One contact only with the same station per band counts for points, regardless of that station's operator or call sign. More than one contact with the same operator using different call signs may not be claimed. Contacts with stations who have no other contest contacts may be disallowed. Duplicate contacts must be logged, with zero points claimed.
c. Cross-band contacts do not score.
d. Contacts scheduled before the contest do not count for points. Schedules may only be made during the contest.
e. Simultaneous transmissions on more than one frequency below 30MHz are not permitted, ie in multi-operator/assisted events use of VHF/UHF to access the DX Cluster is permitted.
f. Proof of contact may be required.
g. For contest purposes, /AM and /MM stations are treated as /M stations in their own country. Other stations are regarded as being in the call area / country indicated by their call sign as sent.

5. Multipliers, where applicable, are scored per band, and consist of (a) for UK stations: Countries as per the DXCC countries list, except that JA, W, VE, VK, ZL and ZS call areas count as separate countries. (b) for non-UK stations: one for each UK district (c) IOTA and SSB Field Day contests, see specific rules.

6. Portable stations
(a) Entrants must operate from the same site for the whole contest.
(b) Stations must not be located in a permanent building or shelter.
(c) No permanent building or structure may be used as an aerial support (trees are acceptable).
(d) Power must be obtained solely from on-site batteries, portable generators or solar cells, without use of mains.
(e) All equipment, aerials and supports must be set up on site no more than 24 hours before the start of the contest. This does not apply to short-term storage of equipment on site.

7. All operators of UK stations must be RSGB members, except visiting amateurs not normally resident in the UK. UK stations may not use special (eg GB, GX, etc) call signs nor be /MM or /AM.
a. A single-operator station is operated by one person, who receives no assistance whatsoever from any other person in operating, log-keeping, checking and so on, and who does not receive notification from others by radio (including packet), telephone or any other method, of band or contest information during the contest.
b. Multi-operator entries are those not covered by 8a. One operator must act as entrant and sign the Summary Sheet.

8. Adjudication
a. Errors in sending/receiving are penalised by the loss of all points for the QSO.
b. Points may be deducted or entries disqualified or excluded for any breach of the rules or spirit of the contest. The decision of the RSGB is final.

9. Entries must be sent to **RSGB - G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, England**, and postmarked no more than 16 days after the end of the contest, unless superseded by specific contest rules. Check logs are welcome where an entrant does not wish to make a formal entry. Acknowledgement will be sent if a stamped, addressed postcard or IRC is enclosed. Logs become the property of the RSGB.
Entries consist of:
A Summary Sheet (RSGB form HFC2 or equivalent) showing: Contest; Date; Final Score; Station Call sign and address; Name of Club or Group (if applicable); Exchange (District Code) sent; Entrant's Name, Address and Call sign; Equipment and Antennas (and height) used for each band; Output Power; Call signs of all operators and a Signed Declaration. Summary sheets in electronic format (disc or e-mail) do not require a signature. **Plus either:**
9.1 Electronic Logs:
a. Files sent on disk must be on an MS-DOS formatted 3.5in disk.
b. The disk label must indicate the contest name and the name of the log files(s) in the form of (call sign).LOG, eg G9XXX.LOG or G9XXX-P.LOG, (for portable stations).
Acceptable formats are NA .LOG, Super Duper .LOG, G3WGV .LOG, TR .DAT, ADIF and RSGB standard format for electronic logs. Where possible, logs in ADIF format are preferred. Each contact must correctly show points and multiplier claimed.
E-mail logs should be sent to: **hf.contests@rsgb.org.uk** The .LOG and .SUM (a text file of the summary sheet including declaration) files only should be sent as an attachment to an e-mail. All e-mail logs will be acknowledged.
Or:
9.2 Paper Logs:
a. UK stations must use log sheets in RSGB format. Others may use their own National Society's format. Hand written and typed entries are acceptable.
b. Log sheets must be headed with Name of Contest, Date, Band, Call sign and Page x of n.
c. Log pages should contain 40 QSOs, with columns as follows: Time, Call sign worked, RS(T) / serial sent, RS(T) / serial received, Other Data (specific to the contest), New bonus / multiplier, QSO points. Any RS(T) column left blank will be taken as 59(9).
d. A Duplicate Sheet for each band, comprising of a list of all call signs worked, sorted into alphabetical order (or alphabetical order of suffix) together with the serial number sent to that station, or the time of the QSO.

10. Receiving Contests. The above rules apply, but also:
(a) Only SWLs or holders of licences to transmit only above 30MHz may enter.
(b) Entrants should use RSGB SWL Contest forms if possible. The call signs of both the 'station heard' (for which points are to be claimed) and the 'station being worked' must be logged.
(c) The same call sign may appear only once in any group of three consecutive entries in the 'Station being worked' column.
(d) The Summary Sheet declaration to include: "I do not hold a licence to transmit on frequencies below 30MHz."

11. Awards. Trophies as specified will be presented at the annual HF Convention and will be held for a maximum period of one year for any particular annual event. Certificates of Merit will be awarded to leading stations in each category/band as appropriate.

Note: A variety of contest logging programs can be used in RSGB contests. The most popular is SD by EI5DI, and it is the only one which supports all the Society's contests and produces a correctly scored log. Full details can be found on the web site www.ei5di.com or by writing to EI5DI, QTHR (e-mail: paul@ei5di.com). If you use a different logging program you must take steps to ensure that your entry is correctly formatted and that QSO points, bonuses and multipliers are correctly shown for each contact. The demo version of SD is unrestricted for overseas entrants in all RSGB contests with district codes. SDL (SD for Listeners) is a freeware SWL contest logger. It supports RSGB and other major contests.

LF Cumulative Contests

This series of short contests, each of just two hours duration, will enable you to sharpen your operating skills and develop antenna systems for the three lowest frequency bands. As the events count towards the HF Contests Championship, you will find a good mix of experienced and less-experienced operators taking part.

Date	Time UTC	Frequency	Mode	Exchange
Tue 9 Jan		1830-1870		
Wed 17 Jan	2000-2200	&	CW	RST +
Thu 25 Jan		1950-1960		serial
				number
Sun 7 Jan				commencing
Sat 13 Jan	1600-1800	3530-3580	CW	with 001
Sun 28 Jan				for each
				session
Sat 6 Jan				and band
Sun 21 Jan	1000-1200	7015-7040	CW	
Sat 27 Jan				

1: The contest is single- or multi-operator. Entrants should endeavour to minimise interference caused to SSB users operating above 1840kHz. There is a speed limit of 12WPM maximum in the sub-bands 3560-3580 and 1950-1960kHz.
2. Scoring: 3 points per contact with any station in each session. The final score for each contest is the sum of the best two sessions on that band, as chosen by the entrant.
3. Logs: One cover sheet is required for each band. Entrants should submit logs for every session that they are active, to assist in cross checking against other entries.
4. Awards: The 1989 HF Contests Committee Trophy to the entrant with the highest aggregate score from all three contests combined. Certificates of Merit will be awarded to the highest placed Novice station entrant and station licensed during 2000 or 2001. The contest counts towards the HF Contests Championship.

Affiliated Societies Team Contests

This popular club event has something for everyone. What better way to start contesting than in AFS? You can contribute by just participating and

gathering points for your team and Club. Enjoy the local rivalry - it's great fun! You don't need to have a high or complex antenna either, a simple low dipole works well.

Dates: CW Event, Sunday 14th January
SSB Event, Saturday 20th January
Time: 1400 - 1800 UTC
Frequencies: CW - 3510 - 3590kHz
SSB - 3600 - 3750kHz
Exchange: RST + Serial Number

1. Eligible Entrants:
(a) Each entering club must be affiliated to the RSGB.
(b) Each operator of a team station must be a member of the club they represent. The operator is not required to be a member of RSGB.
(c) All stations representing a club must be located within a radius of 50 miles of the normal meeting place of the club. Where a club has 'branches', eg RNARS, it may define separate 'branch' meeting-places, and the team(s) entered by each branch will be considered to be entirely separate from those entered by other branches, except in respect of affiliation.
(d) Each station may be single or multi-operator, but no station or operator may represent more than one affiliated club or branch.
2. Teams: Teams comprise of up to five stations for the CW section and three for the SSB section. A club may enter as many teams as it wishes. Which stations make up each team is determined by the club entering the event, as defined on the summary sheet.
3. Contacts: In the CW section, 3570 to 3590kHz is reserved for slower-speed contacts. It is intended that operators less experienced in CW and contest techniques should be able to make contacts here in a more relaxed environment. Experienced contesters using the segment are required to keep their speed down.
4. Scoring: 10 points per contact, including overseas.
5. Entries: (a) Entries should be submitted by an officer of the affiliated society. A summary sheet showing: name of team, call sign of each station in each team, individual scores, team score, the normal meeting place of the club/branch and a declaration that each operator is a member of the affiliated club should accompany each entry. Each log within the entry should include a completed Summary Sheet.
6. Awards:
CW: The Edgware Trophy to the leading team. The Marconi Trophy to the leading single-operator individual station.
SSB: The Flight Refuelling ARS Trophy to the leading team. The RSGB Lichfield Trophy to the leading single-operator individual station.

7MHz DX Contest

A chance for you to experiment with simple or complex antenna systems and to gain knowledge of propagation during daylight and darkness conditions.

Date: 24/ 25 February 2001
Time: 1500-0900 UTC
Frequency: 7000-7030kHz
Mode: CW
Exchange: RST + Serial No. & district code (UK entrants)
Contestants are asked not to solicit contacts in the sub-band 7000-7005kHz.

1. Eligible entrants: UK and Overseas (including EI). Single- and multi-operator entries will be accepted.
2. Sections: (a) UK Open (b) UK Restricted (c) Europe including EI (d) North America, South America, Africa, Asia (e) Oceania. The Open Section has no antenna limitations. In the Restricted Section, only one antenna is allowed which must be a single element with a maximum height of 15m, and a maximum of 100W output.
3. Scoring: UK stations contact only overseas stations. Contacts with stations in section (c) score 5 points, in section (d) 15 points and in section (e) 30 points. Multipliers are as per the General Rules. Overseas stations contact only UK stations. Stations in section (c) score 5 points, section (d) 15 points and section (e) 30 points. Multipliers: 1 for each UK District worked. The final score is the total of contact points times the number of Multipliers worked.
4. Awards: The Thomas (G6QB) Memorial Trophy to the leading UK single-operator entrant. The Cyril Leyden (G4RYY) Memorial Trophy to the leading single-operator entrant in the UK Restricted section.

Commonwealth Contest Call Areas

Call	Country	Call	Country	Call	Country
3B6	Agalega; St. Brandon	P2	Papua New Guinea	VP8	Antarctica
3B8	Mauritius	S2	Bangladesh	VP8	Falkland Islands
3B9	Rodriguez Island	S7	Seychelles	VP8	South Georgia
3D2	Fiji	T2	Tuvalu	VP8	South Sandwich
3D2	Rotuma	T30	W. Kiribati	VP8	South Shetland
3D2	Conway Reef	T31	C. Kiribati	VP8	South Orkney
3DA	Swaziland	T32	E. Kiribati	VP9	Bermuda
4S	Sri Lanka	T33	Banaba	VQ9	Chagos
5B	Cyprus	TJ	Cameroons	VU	India
5H	Tanzania	V2	Antigua, Barbuda	VU4	Andaman; Niccobar
5N	Nigeria	V3	Belize	VU7	Laccadives
5W	Western Samoa	V4	St. Kitts Nevis	VY0	Nunavut
5X	Uganda	V5	Namibia	VY1	Yukon
5Z	Kenya	V8	Brunei	VY2	Prince Edward Island
6Y	Jamaica	VE1	Nova Scotia	YJ	Vanuatu
7P	Lesotho	VE2	Quebec	Z2	Zimbabwe
7Q	Malawi	VE3	Ontario	ZB2	Gibraltar
8P	Barbados	VE4	Manitoba	ZC4	Cyprus (UK Bases)
8Q	Maldive Islands	VE5	Saskatchewan	ZD7	St. Helena
8R	Guyana	VE6	Alberta	ZD8	Ascension Island
9G	Ghana	VE7	British Columbia	ZD9	Tristan de Cunha
9H	Malta	VE8	North West Territories	ZF	Cayman Islands
9J	Zambia	VE9	New Brunswick	ZK1	North Cook Islands
9L	Sierra Leone	VK0	Heard Island	ZK1	South Cook Islands
9M0	Spratly Island	VK0	Macquarie Island	ZK2	Niue
9M2	W. Malaysia	VK1	Australian Capital Terr	ZK3	Tokelau Islands
9M6/8	E. Malaysia	VK2	New South Wales	ZL0/ZL	New Zealand Reciprocal
9V	Singapore	VK3	Victoria	ZL1	New Zealand - Area 1
9Y	Trinidad; Tobago	VK4	Queensland	ZL2	New Zealand - Area 2
A2	Botswana	VK5	South Australia	ZL3	New Zealand - Area 3
A3	Kingdom of Tonga	VK6	Western Australia	ZL4	New Zealand - Area 4
AP	Pakistan	VK7	Tasmania	ZL6	New Zealand
C2	Nauru	VK8	Northern Territory	ZL7	Chatham Island
C5	Gambia	VK9C	Cocos (Keeling) Island	ZL8	Kermadec Island
C6	Bahamas	VK9L	Lord Howe Island	ZL9	Auckland; Campbell
C9	Mozambique	VK9M	Mellish Reef	ZS0	South Africa
CY0	Sable Island	VK9N	Norfolk Island	ZS1	Cape District
CY9	St. Paul Island	VK9W	Willis Island	ZS2	Cape Province
G, GB, GD, GI, GJ, GM, GU, GW		VK9X	Christmas Island	ZS4	Orange Free State
	United Kingdom (all one area)	VO1	Newfoundland	ZS5	Natal
H4	Solomon Islands	VO2	Labrador	ZS6	Transvaal
J3	Grenada	VP2E	Anguilla	ZS8	Marion Island
J6	St. Lucia	VP2M	Montserrat	GB5CC	RSGB HQ Station
J7	Dominica	VP2V	British Virgin Islands		
J8	Saint Vincent	VP5	Turks; Caicos Islands	Other Commonwealth HQ stations count as separate Call Areas	
		VP6	Pitcairn Island		

64th Commonwealth Contest

The Commonwealth Contest promotes contacts between stations in the Commonwealth and Mandated Territories. A more relaxed contest environment, which gives the opportunity to work some choice DX.

Date: 10/11 March 2001
Time: 1200 -1200 UTC
Bands: 3.5, 7, 14, 21, 28MHz
Mode: CW
Exchange: RST plus serial number

1. Eligible entrants: UK entrants must be members of the RSGB and may not use special (GB, GX, etc) call signs nor be /MM or /AM. Overseas - Licensed radio amateurs within the Commonwealth or British Mandated Territories. Apart from section (c), all entries must be single operator and may not receive any assistance whatsoever during the contest, including the use of spotting nets, packet cluster or other assistance in finding new contacts or bonuses.
2. Sections:
(a) Open, no limit on operating time.
(b) Restricted, operation is limited to 12 operating hours. Off periods must be clearly marked and be a minimum of 60 minutes in length. No more than eight hours operation may take place before 0000UTC on 11 March.
(c) Headquarters stations, one only per Commonwealth Call Area and may be multi-operator.
3. Frequencies: Entrants should operate in the lower 30kHz of each band, except when contacting Novice stations operating above 21030 and 28030kHz.
4. Scoring: Contacts may be made with any station using a Commonwealth Contest Area prefix, except

those within the entrant's own call area. Note that for this contest, the entire UK counts as one call area, and therefore UK stations may not work each other. Each contact scores 5 points, with a bonus of 20 points for each of the first three contacts with each Commonwealth Call Area on each band.
5. Headquarters stations: A number of Commonwealth Society HQ stations will be active during the contest and will send 'HQ' after their serial number, to identify themselves. Every HQ station counts as an additional call area and entrants may contact any HQ station (including in their own country) for points and bonuses.
6. Logs: Each entry must be accompanied by a summary sheet, indicating the section entered and the scores claimed on each band.
(a) Paper Logs: Separate logs and lists of bonuses claimed are required for each band.
(b) Computer Logs: In any format approved by the Society, showing clearly the points and bonuses claimed for each contact. In both cases entrants are requested to include a duplicate checklist with their entry.
7. Closing date for logs: Logs must be postmarked no later than 9 April 2001.
8. Awards:
(a) Open: The Senior Rose Bowl to the overall leader. The Col Thomas Rose Bowl to the highest-placed UK station.
(b) Restricted: The Junior Rose Bowl to the section leader.
(c) A Commonwealth Medal will be awarded to the entrant who in the opinion of the HF Contests Committee has most improved their score or contributed to the contest over the years.
(d) Special Certificates will be awarded to every entrant in each section who makes contact with more than 64 Band-Call Areas in the 2001 contest. One certificate per entrant. For example, VP9 worked on three different bands counts as three Band-Call Areas. Entrants are asked to note their claimed Band-Call Area total on the summary sheet.

RoPoCo

A real test of your CW operating skill. Chinese whispers using rotating postcodes!

Dates: First Event - Sunday 1 April
Second Event - Sunday 5 August
Time: 0700-0900 UTC
Frequency: 3520-3570kHz
Mode: CW
Exchange: RST + Postcode received

1. Exchange: RST plus for the first contact, the entrant's own postcode. For each subsequent contact, RST plus the postcode received from the previous contact.
2. Scoring: Ten points for each contact with another UK station.
3. Awards: Trophy and certificate to the highest scoring entrant with the most accurate log; in RoPoCo 1 the Verulam Silver Jubilee Trophy and in RoPoCo 2 the G3XTJ Memorial Trophy. The G5MY Trophy to the entrant with the highest aggregate score from both events.

Slow Speed Cumulative Contests

The aim of these events is to provide training and encouragement for those less experienced in CW and contesting. It is intended primarily for Novices, Class A/B and newly-licensed operators. More experienced contesters are asked to support the event by inviting an entrant to guest-operate their station.

Dates	Time UTC	Frequency	Mode	Exchange
Tue 03 Apr	1900-2030	3540-3580	CW	RST + First name
Wed. 11 Ap				
Thu. 19 Ap				
Tue. 04 Sep				
Wed. 12 Sep				
Thu. 20 Sep				

1. Sections: (a) Transmitting, single- or multi-operator. No limit on the number of operators in a team, nor need they be the same for each session. (b) Receiving, single operator only.
2. Speed Limit: No faster than 12WPM.
3. Exchange: RST and First Name. Multi-operator stations must send only one name during any particular session, regardless of who is operating, although different names may be used during different sessions.
4. Maximum Power: 10W RF output for all entrants.
5. Scoring: Section (a) Any station may be worked once during each session. Any contact with a Class A/B or Novice call sign at either or both ends scores 20 points. Contacts between two Full licence-holders score 5 points. The overall score is the total of the best two of three sessions each month, as chosen by the entrant. Section (b) Listeners may log only stations actively participating in the contest. Each Class A/B or Novice call logged scores 20 points, each Full call counts 5 points.
6. Logs: Entrants are requested to submit logs for all sessions during which they are active, to assist with checking other entries. The name of the operator worked/heard should be recorded in column 5.
7. Awards: Section a: Certificates of Merit to the leading Class A/B, Novice and Full licence-holders, and also to the highest placed station entering any RSGB HF CW Contest for the first time (please note on your Cover Sheet if you qualify for this last award). Section b: Certificate of Merit to the leading listener.

Contests in which Special Contest Calls can be used

HF Contests:	CQ WW RTTY
CQ WW 160	BARTAG RTTY
CQ WPX	ARRL RTTY Roundup
ARRL DX	CQ WPX RTTY
IARU Championship	WAE RTTY
IOTA	
WAE DX	**VHF Contests:**
CQ WW	50MHz IARU
ARRL 1.8 DX	144MHz IARU
ARRL 10m DX	

National Field Day

An excellent club activity with varied areas of expertise required, such as antenna design, construction and erection, generator maintenance and, increasingly, computer expertise. Give your CW operators some support! We have modified the QRP section to give a reduced time of operation. This should assist groups who have difficulty in finding operators to cover the night shift. Starting in 2001 it is not an absolute requirement to pre-register to enter Field Day, but you are encouraged still to register and must do so in order to qualify for awards.

Date: 2 / 3 June
Time: 1500-1500 UTC
Bands: 1.8, 3.5, 7, 14, 21 & 28MHz
Mode: CW
Exchange: RST + Serial number

1. Registration: In order that inspections can be arranged, each group intending to compete should send details of the site to be used to: D J Lawley, G4BUO, Carramore, Coldharbour Road, Penshurst, Kent TN11 8EX, to arrive no later than 7 May 2001. Details must include the name and address of the person responsible for the entry; section to be entered; name of group; call sign(s) to be used; national grid reference and sufficient access information to enable an inspector to locate the site. In the event of a late change of site, it is the responsibility of the members of the group to make suitable arrangements for the inspector to find the new site. Groups not registering may take part in Field Day but will not be eligible for awards. All stations are subject to inspection by representatives of the HF Contests Committee, whose brief will be to ensure that the rules and spirit of the contest are being observed. The inspector must be given immediate access to the site and may make return visits.
2. Sections: All sections are multi-operator. This is a portable contest as defined in General Rule 6.
(a) Open Section. There is no restriction on the number or type of antennas, but the maximum height must not exceed 20m.
(b) Restricted Section. One antenna only, which must be a single element having not more than two elevated supports and not exceeding 11m above ground at its highest point.
(c) Low Power Section. Same as the restricted section, with power further limited to 10W output. Additionally, this section has a time limit of 12 hours. Off-periods must be a minimum of one hour and should be listed on the summary sheet.
3. Equipment: Transmitter power output must not exceed 100 watts (10W in section (c)).
(a) Open Section. One transmitter and two receivers. The receiver section of a second transceiver may be used as the second receiver if desired, so long as the transmitter section is disabled for the duration of the contest. Unused receiver sections must also be disabled for the duration of the contest. (b) and (c) Restricted and Low Power sections. One transmitter and one receiver, or one transceiver. Both receivers in a dual-receive transceiver may be used, if desired. In all sections, equipment and antennas for packet radio access above 30MHz may also be used, if desired.
4. Frequencies: Contest preferred segments should be used, ie 3510-3560 and 14010-14070kHz.
5. Scoring: For contacts with:
Fixed stations in Europe (inc UK), 2 points.
Fixed stations outside Europe, 3 points.
Portable and Mobile stations in Europe (inc UK), 4 points.
Portable and Mobile stations outside Europe, 6 points. Contacts on 1.8MHz and 28MHz should be scored as above and then multiplied by two to obtain the band score. Points must not be claimed for contacts made by a competing station with members of its own group.
6. Logs: Paper and disk entries must be postmarked no later than Monday 25 June 2001. E-mail entries must be sent to: hf.contests@rsgb.org.uk by that date.
7. Awards: The National Field Day Trophy to the overall leading station. The Bristol Trophy to the station having the leading score in the other section. The Scottish Trophy to the leading Scottish station. The Gravesend Trophy to the runner-up in the Restricted section. The G6ZR Memorial Trophy

to the runner-up in the Open section. The Frank Hoosen, G3YF, Trophy to the leading station on the 14MHz band. Certificates of merit to first, second and third in each section and to the band leaders in each section.

Low Power Contest

This a serious event for the QRPer, providing a choice of fixed station operation or outdoor fun.

Date	Time UTC	Frequencies	Mode	Exchange
Sun 22 Jul	0900-1200 1300-1600	3510-3580 7000-7040	CW	RST + Serial No. + Power

1. Sections: Single- or multi-operator (a) Fixed (b) Portable, both sections 10W RF output maximum. (c) Fixed (d) Portable, both sections 3W RF output maximum.
2. Frequencies: Both bands may be used during each session. Any station may be contacted once on each band.
3. Special conditions for Portable sections: (i) A Portable station is defined in General Rule 6. (ii) Antennas must not exceed 11m above ground and may have no more than two elevated supports.
4. Exchange: RST, serial number and RF output power in Watts. Serial numbers commence at 001 and continue through both sessions. Output power should be expressed as one or two digits plus 'W' in place of the decimal point, eg 1W, 1W5. Participants using more than 10W should send 'QRO'.
5. Scoring: 15 points for each contact with a QRP Portable or Mobile station; 10 points for a QRP Fixed station; 5 points for all other contacts. For the purposes of scoring, 'QRP stations' are those using 10W RF output or less.
6. Awards: The 1930 Committee Cup to the winner of section (a). The Houston-Fergus and Southgate Trophies to the winners of sections (b) and (d) respectively.

IARU Region 1 SSB Field Day

An increasingly popular club activity. Finding the best ratio of contact rate to country multipliers provides an intriguing backdrop to a weekend outdoors. The more competitive you are, the greater the fun!

Date: 1 / 2 September 2001
Time: 1300-1300 UTC
Bands: 3.5, 7, 14, 21, 28MHz
Mode: SSB
Exchange: RS + Serial Number

1. Sections: All sections are multi-operator. This is a portable contest as defined in General Rule 6.
(a) Open Section. Full licensed power. There is no restriction on the number, height or type of antennas.
(b) Restricted Section. 100W output power. One antenna only, which must be a single element having not more than two elevated supports and not exceeding 15m above ground at its highest point.
2. Equipment:
(a) Open Section. Linear amplifier, one transmitter and two receivers. The receiver section of a second transceiver may be used as the second receiver if desired, so long as the transmitter section is disabled for the duration of the contest. Unused receiver sections must also be disabled for the duration of the contest.
(b) Restricted Section. One transmitter and one receiver, or one transceiver. Both receivers in a dual-receive transceiver may be used, if desired. In all sections, equipment and antennas for packet radio access above 30MHz may also be used, if desired.
3. Scoring: For contacts with:
Fixed stations in IARU Region 1, 2 points
Stations outside IARU Region 1, 3 points.
/P or /M stations in IARU Region 1, 5 points.
IARU Region 1 countries include those in Europe, Africa, USSR, ITU Zone 39 and Mongolia.
For a more precise definition, refer to the *RSGB Amateur Radio Operating Manual*. Points must not be claimed for contacts made by a competing station with members of its own group.
4. Multiplier: One for each DXCC Country worked on each band.
5. Awards: The leading station in the Open section will receive the Northumbria Trophy and in the Restricted section, the G3PSH Memorial Trophy.

21/28 MHz Contests

With the sunspot cycle approaching its maximum, activity is on the increase. There is much DX to be worked during this event. We have now added a Restricted section to enable less complex antenna systems to be used.

Date	Time UTC	Frequencies	Mode	Exchange
Sun 7 Oct	0700-1900	21150-21350, 28450-29000	SSB	RS(T) + Serial No. + District Code (UK)
Sun 21 Oct	0700-1900	21000-21150, 28000-28100	CW	RS(T) + Serial No. + District Code (UK)

1. Sections: (a) UK Open, (b) UK Restricted, (c) UK QRP, (d) Overseas Open, (e) Overseas Restricted, (f) Overseas QRP, (g) UK Receiving, (h) Overseas Receiving. QRP stations must use 10W RF output maximum. Open section has no antenna limitations. In the Restricted section, only one antenna per band is allowed, which must be a single element with a maximum height of 15m and a maximum of 100W output. Single- or multi-operator entries accepted in the transmitting sections. Entrants are reminded that stations using packet or other spotting facilities must enter as multi-operator stations.
2. Frequencies: CW: Entrants are requested not to operate in the sub-band 21.075-21.125MHz.
3. Scoring: The same station may be contacted on both bands for points and multipliers. (a) UK. 3 points per contact with Overseas stations. Multipliers as per General Rules. (b) Overseas. 3 points per contact with UK only stations. 1 Multiplier for each UK District worked on each band. Final Score is the total QSO points for all bands added together, multiplied by the number of multipliers from all bands added together.
4. Closing date for logs: to be postmarked by 21 November 2001.
5. Awards: SSB: the Whitworth Trophy to the UK single operator overall winner. The Powditch Transmitting Trophy to the leading single operator entry on 28MHz. CW: T E Wilson, G6VQ, Trophy to UK single-operator overall winner.
Receiving Section
Single-operator entries only will be accepted. General Rule 11 and transmitting section rules apply except where specified below.
1. Scoring: UK SWLs log only Overseas stations in contact with UK stations participating in the contest. Overseas SWLs log only UK stations in contact with Overseas stations participating in the contest. Scoring and multipliers as for the transmitting section.
2. Logs: Columns to be headed: time UTC; callsign of station heard; report / serial number sent by that station; County Code sent by that station (if applicable); callsign of station being worked; multiplier (if new); points claimed. Note: in the column headed 'station being worked' the same callsign may only appear once in every three contacts except when the logged station counts as a new multiplier.
3. Awards. SSB: the Metcalf Trophy to the overall leading UK entrant. The Powditch Receiving Trophy to the leading 28MHz entrant.

Club Calls Contest

The aim of this event is to encourage contacts between Affiliated Societies, to give their call signs an airing and to encourage Class-B licensees to operate under appropriate supervision.

Date	Time UTC	Frequencies	Mode	Exchange
Sat 10 Nov	2000-2300	1870-1990	SSB	RS(T) + serial No. + other data

1. Eligible Entrants: All licensed amateurs and SWLs in the UK.
2. Exchange: RS + serial number + name of Club + 'Club Station', 'Club Member' or 'No Club', as appropriate. NB: the name of the club must be sent in full. It must not be sent as initials. A Club Station must use a call sign which is specifically issued to a Club or Society which is affiliated to the RSGB. Use of special prefixes such as GX etc by club stations is allowed in this event.
3. Scoring: 3 points per contact, plus bonuses of 5 points for contacts with any club members, and 25 points for contacts with any Club Station.
4. Awards: The Ariel Trophy to the leading Club station. Certificates to the leading club, individual club and non-club member. The David Hill, G4IQM, Memorial Trophy will be awarded to the club having the highest aggregate score of five club members operating within a 30 mile radius of the club meeting place.
Receiving Contest: General Rule 10 and transmitting section rules apply except where specified below.
1. Log column 'Other Data' to show name of Club + 'Member', or 'No Club', or name of Club + 'Club Station' as appropriate. Any station may appear only once in the 'station heard' column, regardless of mode.

HF Contests Championship

Every UK single-operator station entering two or more of the events listed below will automatically be entered for the Championship. For each event the entrant will be awarded points according to the score, expressed as a percentage of the score achieved by the leading UK station in that event. These points will then be multiplied by the appropriate factor for the contest. The winner will be the station with the highest number of points at the end of the year and will be awarded the G2QT Trophy. Certificates of Merit will be awarded to the winner and second placed station.

Event	Factor
LF Cumulatives	20
1st 1.8MHz	10
7MHz DX	20
Commonwealth	30
RoPoCo 1	10
IOTA	30
RoPoCo 2	10
21/28MHz SSB	20
21/28MHz CW	20
2nd 1.8MHz	10

VHF Contest Rules for 2001

General Rules for RSGB VHF/UHF/SHF Contests for 2001

1. Entries

a. In submitting an entry to a contest, you agree to be bound by the rules and spirit of the contest, and you agree that the decision of the RSGB shall be final in cases of dispute.
b. All paper and/or disk entries should be addressed to the PO Box. A new address will be provided for 2001 onwards. Please check the RSGB, VHFCC web sites and *RadCom* for further details.
c. Alternatively, entries may be submitted by e-mail to vhf.entry@rsgb.org.uk. Please ensure that you use this address rather than any previously published one.
d. Entries should be postmarked or e-mailed not later than 16 days after the end of the contest, or, for cumulative contests, the last activity period.
e. Entries become the property of RSGB and cannot be returned.
f. Proof of contact may be required. Any station may be approached, without notice to the entrant, for confirmation of contact details.
g. In case of dispute, in the first instance, the Chairman of the VHF Contests Committee (VHFCC) should be contacted in writing. The VHFCC may refer cases of appeal to RSGB Council. Council's decision shall be final.
h. In multi-band contests, single-band entries are always acceptable.
i. Queries about the contests may be addressed to the VHFCC Chairman. Tel: 0870 740 7909 (calls are charged at the BT national rate), evenings/weekends. E-mail: vhfcc.chairman@rsgb.org.uk.

2. Paperwork

a. The preferred method of entry is by electronic log in DOS format supplied on diskette or by e-mail. Hand written or typed entries on paper are always acceptable. If you use a computer to prepare an entry, we reserve the right to require an electronic copy of the entry.
b. Acceptable file formats include .LOG from SDV, G0GJV, G3WGV and CONLOG programs, N6TR .DAT, RSGB standard format, REG1TEST and ADIF. We will endeavour to work with any other reasonable format - please contact the VHFCC to discuss this. The WWW page http://www.blacksheep.org/vhfcc may also contain details of other means of electronic log submission as they become available. Free software is available from the VHFCC Chairman or www.rsgb.org/vhfcc
c. E-mail entries should include a plain text file which contains the same information as the paper coversheet (form 427). Entries on diskette can use either a file or paper coversheet. A suitable plain text template can be found at www.rsgb.org/vhfcc
d. Diskettes and e-mail subject headers must clearly indicate the relevant contest(s) and call sign(s). The file names should consist of the call sign and the extension .LOG or .COV, eg G9XXX.LOG. Where the same call sign is used on more than one band, add some reference to the band, eg G9XXX144.LOG.
e. All diskettes become the property of the RSGB, unless you enclose an SAE, whereupon the disk will be returned to you.
f. All paper entries should be accompanied by a VHF/UHF contest cover sheet (form 427) for each band used, or a similar form which supplies the same information. Please include a contact telephone number or e-mail address in case of query.
g. The logs for paper contest entries should be made out on current RSGB VHF/UHF log sheets or a close replica. These forms may be photocopied from the *RSGB Yearbook*. Larger quantities may be purchased from RSGB HQ. Each sheet should be headed with the entrant's call sign, IARU locator, contest title and sheet number. Logs should be tabulated as follows:
i. Date/time (GMT)
ii. Call sign of station worked
iii. My report on his/her signal and serial number
iv. His/her report on my signal and serial number
v. IARU Locator received
vi. QTH or county received (when required) or comments
vii. Points claimed.
h. In contests with a multiplier scoring system, when submitting paper logs, please also submit a list of multipliers worked, showing at least the call sign, and either serial number sent or time of QSO, for each contact claimed as a new multiplier.
i. Any complaints/adverse comments received or made about signal quality must be recorded in the comments column of the paper log or electronic log.
j. If you wish to receive a copy of the results as soon as they are available, please send an SAE labelled results and the contest name.

3. Station/Operators

a. All operators must be RSGB members, except in VHF NFD and the Affiliated Society contests. See individual rules.
b. Stations entering a fixed station section or contest must operate from permanent and substantial buildings located at the main station address as shown on the licence validation document. The spirit of the contest will be paramount.
c. Entrants must not change their location or call sign during the contest. In multi-band events, all stations forming one entry must be located within a circle of 1km radius.
d. Stations located outside of the UK (G, GW, GM, GI, GD, GU, GJ) may enter a contest, and will be tabulated within the overall results tables, but will only be eligible for their own awards.
e. There must be only one frequency used for transmit on any band at any one time.
f. The lower of the contest power limit or the standard licence power limit must not be exceeded during the contest. Contacts made under a high-power permit will not count for points. Severe action may be taken against infringements of this rule.
g. Stations which persistently radiate poor quality signals, cause deliberate interference to other stations, or otherwise contravene the code of practice for VHF/UHF/SHF contest operation may be penalised.
h. Entrants must permit inspection of their stations by members of VHFCC or its representatives, and give site access information if requested to do so. The inspector must be permitted to remain for as long as desired, and to return to the site for subsequent inspections at any time during the contest. Contestants must demonstrate to the inspector's satisfaction that they are obeying the rules of the contest.

4. Contacts

a. The contest exchange consists of at least both call signs, RS(T) signal reports followed by a serial number, and the IARU locator. Particular contests may require additional information to be exchanged, as described in the individual contest rules.
b. Serial numbers start from 001 on each band and advance by one for each contact. In cumulative contests, serial numbers start from 001 for each activity period.
c. Cross-band contacts do not count for points below 2.3GHz. On 2.3GHz and above, cross-band contacts are scored at 50% of the two-way score.
d. No points will be lost if a non-competing station cannot provide an IARU locator, serial number, or any other information that may be required. However, the receiving operator must receive and record sufficient information to be able to calculate the score.
e. Contacts with call signs appearing as operators on any of the cover sheets forming an entry will not count for points or multipliers. In AFS contests, stations within the same AFS team may work each other for points/multipliers.
f. Only one scoring contact may be made with a given station on each band, regardless of suffix (/P, /M, etc.) during an individual contest or cumulative activity period. All non-scoring contacts must be clearly marked in the log, and unmarked duplicates will be penalised at ten times the claimed score for that contact.
g. Contacts made using repeaters, satellites or moonbounce will not count for points.
h. The IARU/RSGB band-plans must be observed.
i. All information must be copied off air at the time of the QSO. Databases must not be used to fill in missing information.
j. The DX Cluster may be used in all sections of the contest, but deliberate self-spotting by the entrant or close associates is not permitted.
k. Any band may be used for setting up contacts or talkback. No confirmation of QSO details must take place on the talkback frequency. All exchanges for the contest band in use must be made on that band. The talkback channel can be used for antenna alignment signals and confirmation that signals are audible, but not for giving reports and serial numbers.
l. In contests with a section '6S' or '6O', stations may choose any continuous 6 hour period in which to operate (eg 1500-2100, or 1917-0117). Serial numbers must start at 001 for this period, and you cannot enter both this section and the full contest. Section 'SS' is for single operator fixed stations, section 'OS' for all others. In multi-band contests, a single 6-hour period must be used on all bands.

5. Scoring

a. Scoring will normally be at 1 point per km. Contacts with stations in the same small locator square as your station (eg IO92AA to IO92AA) will score 1 point.
b. For computer purposes, a conversion factor of 111.2 km/degree must be used.
c. Multi-band contests will contain an overall results table in addition to the individual band results. The scores in this final tabulation will be formed by taking the sum of the normalised scores on each band. The normalised scores will be calculated by:

Normalised score for each band/session =

$$\frac{\text{(Score achieved x 1000)}}{\text{(Band/session leader score)}}$$

6. Awards & Results

a. Certificates will be awarded to the leading and second placed station in each section of the contest. Additional certificates of merit may be awarded at the adjudicator's discretion.
b. In all contests/sections where the power limit is above 25W, a certificate will be awarded to the leading fixed station using 25W or less into a single antenna.
c. Placement certificates showing the result achieved in the contest can be obtained by including an A4 SAE with the entry marked with call sign, contest and (if applicable) group name.
d. A certificate will be awarded to the **leading Novice** in each section.
e. A certificate will be awarded to the leading overseas station in each section.

7. Multipliers

a. Where a contest uses multipliers, the score for each band will be the number of points made on that band multiplied by the number of multipliers contacted on that band.
b. The type of multiplier scheme for a particular contest will be referred to in the individual rules for the contest. Not all contests will use multipliers.
c. Each new multiplier must be clearly marked in the log.
d. In postcode multiplier contests, each Scottish Post Code may be worked up to three times for multiplier credit, and BT for Northern Ireland may be worked up to six times for multiplier credit. The TD area counts three times, regardless of whether the stations contacted are in England or Scotland.
e. In contests using postcode area multipliers, the exchange will include the first 2 letters of the postcode (eg EN from EN5 7JE). Where a postcode consists of only a single initial letter (eg B6 9AA), the exchange will be padded out to 2 letters - in this case 'BM'. This extended exchange is used to keep a common format, but entrants need to be aware that some non-contestants may not be aware of their extended code.

2001 Special Rules

Certain of these rules are invoked for individual contests as listed in the individual contest rules.
S1. Instead of 1 point per km scoring (rule 5a), scores will be calculated at 1 point per QSO.

call seeker 2001 - cd

The complete contents of the rsgb yearbook are available on cd rom. the uk callsign directory is accessed by a sophisticated yet easy-to-use search program, whilst all of the information directory section can be viewed using the supplied adobe acrobat software.
callseeker 2001 provides the ideal medium for rapidly searching for all or part of a callsign, post code, name, town, keyword etc.
all amateur radio information pages are available on screen or via your printer in exactly the same format as the printed yearbook.
amateur radio information pages: awards, band plans, beacons, clubs, 2001 contesting guide, emc advice, operating abroad, prefix list, propagation terms, qsl bureau, rae centres, repeater list, traders addresses and much much more. - order your copy now! - (windows 95/98)

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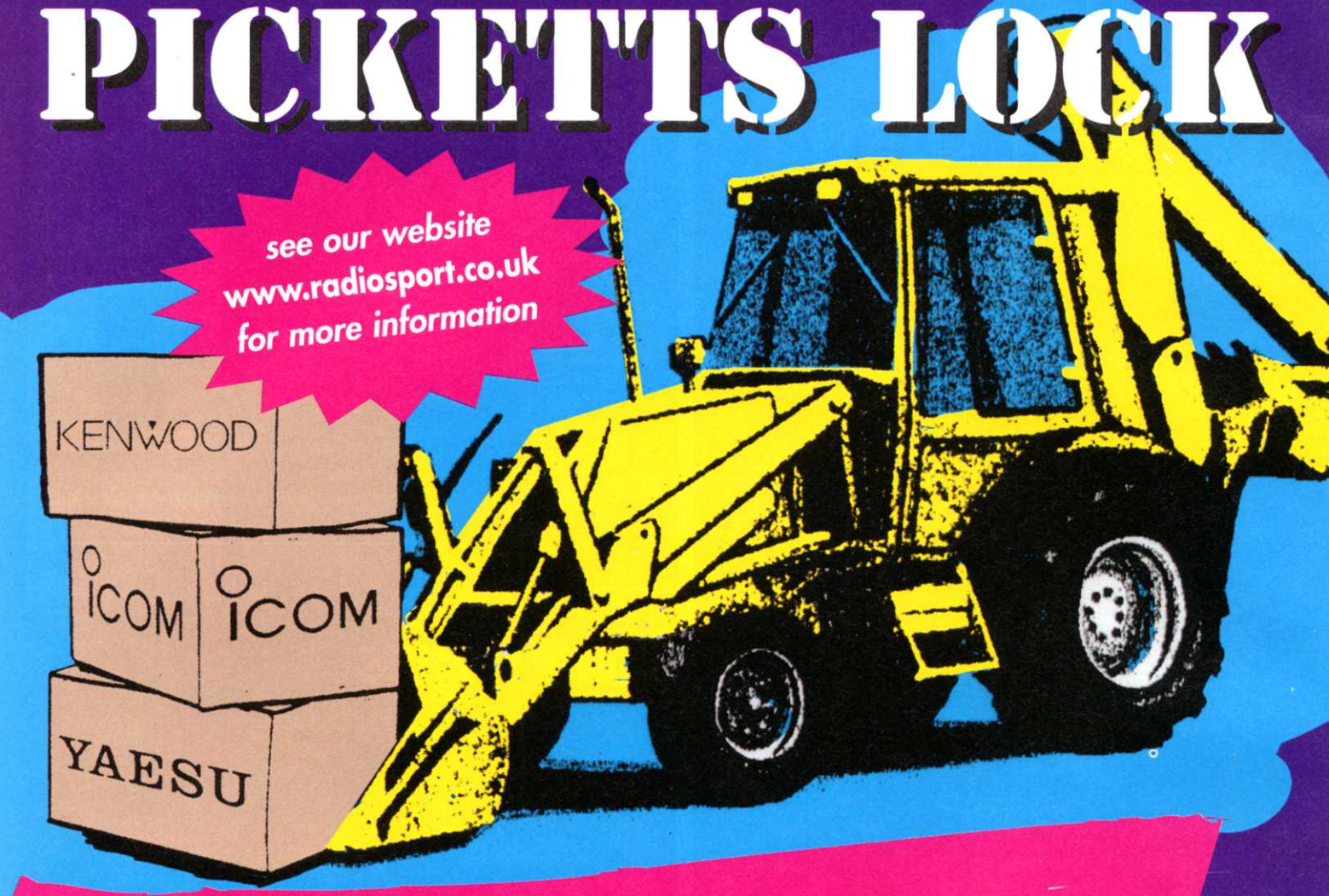
KNOCKDOWN DEALS AT PICKETTS LOCK

(before redevelopment)



OUR LAST EVENT AT PICKETTS LOCK

will be on November 25/26 where there will be

BARGAINS GALORE!

Then we move to Alexandra Palace for April 21/22 2001

How do I find Lee Valley Leisure Centre?

BY CAR on the A1055. Follow the signs from junction 25 of the M25.

BY PUBLIC TRANSPORT bus W8 from Edmonton Green B.R. Station

Saturday November 25th 10am - 5pm
Sunday November 26th 10am - 4pm

Adults: £3.00
Concessions: £2.50

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Picketts Lock Lane • Edmonton • London N9 0AS

RadioSport Ltd • 126 Mount Pleasant Lane • Bricket Wood • Herts • AL2 3XD
• *Tel:* 01923 893929 • *Fax:* 01923 678770

RSGB VHF Contests Committee Postcode Districts

The district codes are based on the first two letters of the postcode of your operating location. (Single letter codes - eg 'B' - have been padded out to two letters, ie 'BM'). The description column is for guidance only.

Districts underlined can be counted in VHF contests three times as multipliers. In the case of DG and TD, regardless of whether the station contacted is in England or Scotland. See general rules 7d and 7e. The district in **bold** can be counted in VHF contests six times as multipliers.

AB	Aberdeen	EL	London E1 - 18	LE	Leicester	SK	Stockport
AL	St Albans	EC	London EC1 - 4	LL	Llandudno	SL	Slough
BM	Birmingham	EH	Edinburgh	LN	Lincoln	SM	Sutton
BA	Bath	EN	Enfield	LS	Leeds	SN	Swindon
BB	Blackburn	EX	Exeter	LU	Luton	SO	Southampton
BD	Bradford	FK	Falkirk	MR	Manchester	SP	Salisbury
BH	Bournemouth	FY	Blackpool	ME	Medway	SR	Sunderland
BL	Bolton	GS	Glasgow	MK	Milton Keynes	SS	Southend on Sea
BN	Brighton	GL	Gloucester	ML	Motherwell	ST	Stoke on Trent
BR	Bromley	GU	Guildford	NL	London N1 - 22	SW	London SW1 - 20
BS	Bristol	GY	Guernsey	NE	Newcastle upon Tyne	SY	Shrewsbury
BT	**Belfast**	HA	Harrow	NG	Nottingham	TA	Taunton
CA	Carlisle	HD	Huddersfield	NN	Northampton	TD	Tayside
CB	Cambridge	HG	Harrogate	NP	Newport	TF	Telford
CF	Cardiff	HP	Hemel Hempstead	NR	Norwich	TN	Tonbridge
CH	Chester	HR	Hereford	NW	London NW1 - 11	TQ	Torquay
CM	Chelmsford	HS	Scottish Islands	OL	Oldham	TR	Truro
CO	Colchester	HU	Hull	OX	Oxford	TS	Teeside
CR	Croydon	HX	Halifax	PA	Paisley	TW	Twickenham
CT	Canterbury	IG	Ilford	PE	Peterborough	UB	Uxbridge
CV	Coventry	IM	Isle of Man	PH	Perth	WL	London W1 - 14
CW	Crewe	IP	Ipswich	PL	Plymouth	WA	Warrington
DA	Dartford	IV	Inverness	PO	Portsmouth	WC	London WC1 - 2
DD	Dundee	JE	Jersey	PR	Preston	WD	Watford
DE	Derby	KA	Kilmarnock	RG	Reading	WF	Wakefield
DG	Dumfries	KT	Kingston upon Thames	RH	Redhill	WN	Wigan
DH	Durham	KW	Orkney	RM	Romford	WR	Worcester
DL	Darlington	KY	Kirkcaldy	SD	Sheffield	WS	Walsall
DN	Doncaster	LP	Liverpool	SA	Swansea	WV	Wolverhampton
DT	Dorchester	LA	Lancaster	SE	London SE1 - 28	YO	York
DY	Dudley	LD	Llandrindod Wells	SG	Stevenage	ZE	Shetland Isles

A downloadable postcode multiplier checklist is available from the VHF committee's stationery page.

If your operating site has a postal address, you can look up the postcode in a Royal Mail postcode directory (probably available in the local library), or call Royal Mail on 0345 111222 (a local call) during business hours.

If your site doesn't have an obvious postal address, the same number (0345 111222) should still be able to help you - you will need to tell them the name of the nearest town or village. Remember it's only the postcode 'area' you need in Royal Mail-speak.

UK postcode maps are available from good bookshops - published by Bartholomew amongst others.

If all else fails - it's quite OK to use your best guess. Don't give the contest a miss because you can't be sure you have the right postcode for your hilltop site.

S2. In addition to the IARU locator, QTH information must be exchanged. This should be given as a point identifiable on an Ordnance Survey route-planning map or equivalent (scale 1:625,000) or as a direction and distance not greater than 25km from such a point, eg 10km West of Skegness.

S3. This is an Affiliated Societies contest and is open to both individual entrants (who must be RSGB members), and to teams made up of a number of operators who must all be members of the same affiliated society, but not necessarily RSGB members themselves. Scores from portable stations will be included in the results, but will not count towards team tables.

a. All members of the team must operate from within 50km of the normal meeting place of the society. No station may represent more than one society. No operator is allowed to use more than one call sign during the contest. In the case of national societies, each team must define a separate meeting place, and each team member must operate within 50km of that designated meeting place.

b. QSOs with other members of your team will count for points.

c. Multiple teams are encouraged from both local and national societies. For the purpose of calculating the overall AFS team score, each member of each team will be placed in one of 5 sections (3 for the 432MHz contest) Sections A, B, C, etc. The highest placed member of each team will be placed in Section A, the second highest in Section B, etc. All stations in each of the sections will have their score normalised against the highest score in that section, with the highest score gaining 1000 points. The final AFS team score will be the sub of the team members' individual normalised scores.

d. Please mark your RSGB Zone (which can be found in the *RSGB Yearbook*) on the cover sheet.

e. Logs should be sent as a single package for each club and should include a declaration signed by a club official that all operators are members of the Affiliated Society, and listing the QTH locator of the normal meeting place of the club.

S4. This contest runs concurrently with a backpackers contest. Stations entering the backpackers contest only may be worked once from a fixed location and once from their portable location for points.

S5. This is a cumulative contest. The following special rules apply:

a. For cumulative contests the overall score will normally be calculated from the best 3 normalised session scores - the normalised score being calculated as above in rule 5c. It is impossible for you to determine your best sessions without knowing everyone else's scores, so please submit your logs and scores from all sessions in which you were active and allow the adjudicator to calculate your best sessions.

b. Stations may move location between individual cumulative activity periods.

c. For cumulative contests, please summarise your scores from each session on the reverse of the cover sheet.

S6. This contest runs concurrently with the first few hours of an RSGB 24-hour event. You may submit entries to both contests with a single set of logs, but please include two cover sheets - one for the shorter contest and one for the 24-hour event. Entries may be automatically submitted into the 24-hour event, unless you specifically request otherwise.

S7. This contest runs concurrently with all or part of an IARU coordinated contest. You may submit a single set of logs for entry to both the RSGB and IARU events. Entries may be submitted to the IARU event, unless you specifically request otherwise.

S8. This is a new activity contest. The following special rules apply:

a. These contests are timed to coincide with the last two hours of a number of European 2m activity contests, with an extra hour at the end to encourage intra UK activity. They take place on the first Tuesday of every month, from 2000 to 2300 local time.

b. Please submit an entry after each session in which you are active. There are separate sections for 'Single-Operator Fixed Stations' and 'All Others'.

c. This contest is scored at 1 point per QSO, with a QTH locator multiplier (multiplier type M2).

d. At the end of the year, an overall score will be calculated from the best six normalised session scores - the normalised score being calculated as above in rule 5c. It is impossible for you to determine your best sessions without knowing everyone else's scores, so please submit your logs and scores from all sessions in which you were active and allow the adjudicator to calculate your best sessions.

e. Stations may move location between individual activity periods.

The Backpackers Series of Contests

Times: See individual rules.

Modes: All mode.

Sections:

a) 10W Single Operator Portable.

b) 10W Multi-Operator Portable.

c) 3W Single Operator Portable.

d) 3W Multi-Operator Portable.

The listed power is output from the transmitter. Participants will be expected to demonstrate how their power level was determined, particularly where the basic commercial equipment is rated at higher output power.

Restrictions:

1. Although any number of antennas or groups are permitted, no fixed or mobile towers, cranes or any other 'significant structure' (in excess of 2in outside diameter) is to be used as support. No part of the antenna may be higher than 10m above ground level. On 144MHz, a maximum of 20 half-wave elements (or equivalent) in total is permitted for the antenna.

2. All equipment must be battery powered.

3. Petrol/gas/diesel generators for charging are not permitted. This includes a motor vehicle engine. If operating from a vehicle supply, the engine must be switched off for the duration of the contest. Wind and solar power generation and charging is permitted.

Scoring: This is at 1 point per km (general rule 5a) with a multiplier applied. The multiplier type differs between individual contests in order to match the exchange in the main contest running at the same time - check the individual rules table carefully.

Award:

Each session is treated as a separate contest. Please submit an entry after each session. Session winners and runners-up certificates will be awarded. In addition, a certificate will be awarded to the leading station running one watt or less into a single antenna for each session.

On 144MHz, the Backpackers Trophy will be awarded to the leading stations in either category, with the best three placings out of a maximum of five sessions. Scores will be normalised, as in general rule 5c. In the event of a tie, if appropriate, the remaining session will be taken into consideration. The 50MHz Backpackers Trophy will be determined from the two sessions.

RSGB VHF Contests 2001

1st Tuesday in every month	2000-2300 (Local Time)	144MHz UK Activity Contest (UKAC)	SF, O	This contest is scored at 1 pt / QSO (S1), with a QTH locator multiplier (M2). Cumulative rules (S8) apply, but the best 6 sessions count to the final score. Submit entry after each activity session.
7th Jan	1000-1600	144MHz CW	SF, SO, M	Postcode/Country Multipliers (M1)
14th/28th Jan 11th/25th Feb 18th Mar	1000-1200	70MHz Cumulatives	SF, SO, M	Full QTH Information to be sent (S2). Cumulative contest rules apply (S5)
4th Feb	0900-1500	432MHz AFS	SF, SO, M	AFS rules apply (S3), 3 stations per team, only fixed stations count towards AFS tables.
3rd/4th Mar	1400-1400	March 144/432MHz	SF, SO, M6S, 6O	Low power stations running 25W or less at the transmitter will be specially identified in the results and the leading and second placed low power stations in each section will receive certificates.
1st April	0900-1300	1st 70MHz	SF, SO, M	Full QTH Information to be sent (S2)
27th Mar 4th/12th Apr	1900-2100	144MHz Cumulatives (All Modes)	SF, SO, M	This contest is scored at 1 pt / QSO (S1), with a QTH locator multiplier (M2). Section 1 for stations with 25W maximum output at the transmitter & section 2 for full legal power. Cumulative rules (S5) apply, but the best 2 sessions count to the final score.
8th Apr	1700-2100	1.3GHz /2.3GHz	SF, SO, M	These run as separate contests - there will be no overall tabulation.
22nd April	0900-1300	50MHz	SF, SO, M	Postcode, Country & QTH Locator Multiplier (M3).
5th/6th May	1400-1400	432MHz - 248GHz	SF, SO, M	
5th May	1400-2200	432MHz Trophy	SF, SO, M	This contest runs concurrently with the first 8 hours of the 432MHz - 24GHz event (S6). The 1951 Council Cup is awarded to the overall winner of this contest.
19th/20th May	1400-1400	144MHz	SF, SP, M, 6S, 6O	Postcode/Country Multiplier (M1)
20th May	1100-1500	144MHz Backpackers #1	S, M	Postcode, Country & QTH Locator Multiplier (M3). See separate Backpackers rules.
13th May	0900-1200	70MHz CW	SF, SO, M	Postcode & Country multiplier (M1). Full QTH Information to be sent (S2)
2nd/3rd Jun	1400-1400	50MHz Trophy	SF, SO, M 6S, 6O	Co-ordinated with IARU contest (S7). Country & QTH Locator Multiplier (M4). The Telford Trophy is awarded to the overall winner of this contest, and the Six Metre Cup to the highest scoring UK single operator entrant.
3rd Jun	1100-1500	50MHz Backpackers #1	S, M	Country & QTH Locator Multiplier (M4). See separate Backpackers rules.
17th Jun	0900-1300	144MHz Backpackers #2	S, M	Country & QTH Locator Multiplier (M4)See separate Backpackers rules. This event is co-ordinated with the first 4 hours of the Practical Wireless QRP contest.
10th Jun	1800-2200	432MHz FM	SF, SO, M	Postcode & country multiplier (M1)
7th/8th Jul	1400-1400	VHF NFD		Rules to be published
8th Jul	1100-1500	144MHz Backpackers #3	S, M	Country & QTH Locator Multiplier (M4). See separate Backpackers rules.
15th Jul	1100-1500	50MHz Backpackers #2	S, M	Postcode, Country & QTH Locator Multiplier (M3). See separate Backpackers rules.
21st Jul	1400-2200	144MHz Low Power	SF, SO, M	25W maximum output from the transmitter. Postcode, Country & QTH locator multiplier (M3).
22nd Jul	0800-1400	432MHz Low Power	SS, SO, M	25W maximum output from the transmitter. Postcode, Country & QTH locator multiplier (M3).
29th Jul	1100-1500	144MHz Backpackers #4	S, M	Postcode, Country & QTH Locator Multiplier (M3). See separate Backpackers rules.
12th Aug	0900-1500	70MHz Trophy	SF, SO, M	Postcode & country multipliers (M1)
19th Aug	1700-2100	432MHz	SF, SO, M	Postcode, Country & QTH locator multiplier (M3)
13th/28th Aug, 12th/27th Sep, 19th Oct	2000-2230 LOCAL	144MHz UK Cumulatives	SF, SO, M	Cumulative rules apply (S5) , see separate rules
1st/2nd Sep	1400-1400	144MHz Trophy	SF,SO,M	Co-ordinated with IARU contest (S7). The Thorogood Trophy is awarded to the winner of section S, and the Mitchell-Milling Trophy to the winner of section M of the contest.
2nd Sep	1100-1500	144MHz Backpackers #5	S, M	Country & QTH Locator Multiplier (M4)See separate Backpackers rules.
9th Sep	1800-2200	1.3/2.3GHz	SF, SO, M	The 1.3 GHz and 2.3 GHz contests are separate contests - there will be no overall tabulation.
23rd Sep	0900-1300	2nd 70MHz	SF, SO, M	Full QTH Information to be sent (S2).
11th/26th Oct, 5th/20th Nov, 5th Dec	2000-2230 LOCAL	1.3/2.3GHz Cumulatives	SF, SO, M	The 1.3 GHz and 2.3 GHz events are separate contests- there will be no overall 2 band tabulation. Cumulative contest rules apply (S5).
6th/7th Oct	1400-1400	432MHz - 248GHz IARU	SF, SO, M	Co-ordinated with IARU contest (S7)
6th Oct	1400-2200	1.3/2.3GHz Trophies	SF, SO, M	These contests run concurrently with the first 8 hours of the IARU contest (S6, S7). The VHF Contests Committee cup is awarded to the winner of the 1.3GHz contest and the G6ZR Memorial Trophy to the winner of the 2.3GHz event.
12th/29th Oct, 13th Nov, 28th/13th Dec	2000-2230 LOCAL	432MHz Cumulatives	SF, SO, M	Cumulative contest rules apply (S5).
21st October	0900-1300	50MHz	SF, SO, M	Postcode, County and QTH locator multipler (M3).
3th/4th Nov	1400-1400	144MHz CW Marconi	SF, SO, M	The RSGB and European Marconi Memorial events run concurrently (S7).
4th Nov	0800-1400	6 hour 144MHz CW	S, M	This event runs in the last 6 hours of the European contest (S7).
2nd Dec	0900-1700	144MHz AFS	SF, SO, M	AFS rules apply (S3), 5 stations per team, only fixed stations count towards AFS tables.
26th/27th/28th /29th Dec	1400-1600	50/70/144/432 MHz Christmas Cumulatives	SF, O	Cumulative contest rules apply (S5) Score at 1 pt / QSO (S1). QTH locator multipliers (M4) applies, and the same multipliers may be claimed for credit on each band on each day.

Key to sections: S - Single Operator, M - Multi Operator, SF - Single Operator Fixed, SO - Single Operator others, 6S Six hour single operator fixed, 6O - Six hours others; O - all others

Note: 432MHz Backpackers contests have been discontinued.

VHF/UHF Listeners' Contests

1. Listeners' contests are open to all non-licensed members of the RSGB and foreign SWLs. Only one entrant may operate the receiving station. Every VHF contest is open to listeners' entries.
2. Logs must show in columns:
i. Date/time (GMT).
ii. Call sign of station heard.
iii. My report on his/her signals.
iv. Report and serial number sent by station heard.
v. Call sign of station being worked.
vi. IARU Locator given by station heard.
vii. QTH given by station heard (if appropriate).
vii. Points claimed.
On 144 MHz, the call sign in column 'v' may occur once in every five contacts logged. CQ and test calls do not count for points and should not be logged. If both sides of the QSO can be heard, both can be claimed for points.
3. The Hanson Trophy will be awarded to the entrant with the highest aggregate score in all SWL contests between March and September inclusive of each year. The aggregate score will be calculated in accordance with General Rule 5c.

2001 Multiplier Types

One of the following rules, as defined in the individual contest rules, will apply to any contest using multipliers. In each case, a QSO with your own postcode, country or large square as appropriate to the contest counts for multiplier credit, and any appropriate QSO can count as more than multiplier (eg your first G QSO in an M3 contest will count for a new locator, postcode and country).

M1. Post Code and Country Multipliers. The multiplier for a band is the sum of the number of different DXCC countries and UK postcode areas worked on that band.
M2. QTH Locator Multiplier. The multiplier for a band is the sum of the number of different large locator squares (eg JO01, IO91, etc) worked on that band.
M3. Post Code, Country and QTH Locator Multiplier. The multiplier for a band is the sum of the number of different DXCC countries, UK postcode areas and large QTH locator squares (eg JO01, IO91, etc) worked on that band.
M4. Country and QTH Locator Multiplier. The multiplier for a band is the sum of the number of different DXCC countries, and large QTH locator squares (eg JO01, IO91, etc) worked on that band.

The VHF Contests' Championship

1. The VHF Contests' Championship aims to provide an overall result for the year, based on a representative selection of contests. The contests which count towards the championship are:
i. March 2m/70cm (The overall 2-band normalised score)
ii. 432MHz Trophy
iii. May 144MHz
iv. 50MHz Trophy
v. 144MHz Low Power
vi. 432MHz Low Power
vii. 144MHz Trophy
viii. 70MHz Trophy
ix. 1.3GHz Trophy & 2.3GHz Trophy (combined score)
All stations entering three or more events are automatically included in the championship. Stations may opt out of the championship by contacting the VHFCC Chairman, but individual contest results cannot be excluded.
2. The championship is open to UK stations. Scores from overseas stations will be disregarded when calculating championship scores. There is a Single-Operator Fixed Station section (SF), a low power section (LP) and a section for All Others (O).
3. The low power section is open to single-operator fixed stations who enter any of the above contests using 25W or less output and a single antenna. If a station enters some contests with high power or extra antennas, and some with low power and a single antenna, only the low power, single antenna scores will count towards this award.
4. The overall score is calculated from the sum of the normalised scores for each event listed above. The normalised scores are calculated as in general rule 5c. Low power entrants will be normalised against the best low power score.
5. Stations entering the single-operator fixed section of a contest may elect to submit their score towards an All Others championship score if they wish. In this case their score will be normalised against the leader of the All Others section. Please mark your cover sheet clearly with the name of your contest group/club if you wish to do this.
6. The John Pilags Memorial Trophy is awarded to the winner of section SF, and the Racal Radio Cup to the winner of section O, and the Low Power Championship Trophy to the winner o section LP.

Codes of Practice

1. Obtain permission from the landowner or agent before using the site and check that this permission includes right of access. Portable stations should observe the Country Code.
2. Take all possible steps to ensure that the site is not going to be used by some other group or club. Check with the club and last year's results table to see if any group used the site last year. If it is going to be used by another group, come to an amicable agreement before the event. Groups are advised to select possible alternative sites.
3. All transmitters generate unwanted signals; it is the level of these signals that matters. In operation from a good site, levels of spurious radiation which may be acceptable from a home station may well be found to be excessive to nearby stations (25 miles away or more).
4. Similarly, all receivers are prone to have spurious responses or to generate spurious signals in the presence of one or more strong signals, even if the incoming signals are of good quality. Such spurious responses may mislead an operator into believing that the incoming signal is at fault, when in fact the fault lies in the receiver.
5. If at all possible, critically test both receiver and transmitter for these undesirable characteristics, preferably by air test with a near neighbour before the contest. In the case of transmitters, aim to keep all in-amateur band spurious radiation, including noise modulation, to a level of -100dB relative to the wanted signal. Similarly, every effort should be made to ensure that the receiver has adequate dynamic range.
6. Remember that contesters cannot claim exclusive use of any part of any band. Please respect other operators at all times by avoiding using, or causing interference to, frequencies set aside for other legitimate users. This applies whether the other use is prescribed by an official band plan (eg the 144.300MHz SSB calling frequency on 2m), by recognised code of practice (eg the 50.100-50.130MHz DX window on 6m), or by common convention (eg the GB2RS news broadcasts on 144.250MHz). If asked to QSY because of interference to any such use, please do so quickly and courteously.
7. Above all, be friendly and polite at all times. Be helpful and inform stations apparently radiating unwanted signals at troublesome levels, having first checked your own receiver. Try the effect of turning the antenna or inserting attenuators in the feedline; if the level of spurious signal changes relative to the wanted signal, then non-linear effects are occurring in the receiver. Some synthesised equipment has excessive local oscillator phase-noise, which will manifest itself as an apparent splatter on strong signals, even if there is no overloading of the receiver front-end. Pre-amplifiers should always be switched out, to avoid overload problems when checking transmissions. If you receive a complaint, perform tests to check for receiver overload and try reducing drive levels and switching out linear amplifiers to determine a cure. Monitor your own signal off-air, if possible. Remember that many linear amplifiers may not be linear at high power levels under field conditions with poorly regulated power supplies. The effects of over-driving will be more severe if speech processing is used, so pay particular attention to drive level adjustment. If asked to close down by a Government Official or the site owner, do so at once and without objectionable behaviour.

Microwave Contest Rules 2001

These rules are final and binding for 2001. Any previously listed rules should be ignored. Please note the important changes to the RSGB 10GHz Trophy rules.

General Rules

(applicable to all events)

All the contests run from 0900 to 2100GMT on a Sunday.

Except for the 10GHz Trophy, the Contests are *open to all comers* (you do not have to be an RSGB member). 10GHz Trophy contestants must be members of RSGB if they wish to submit logs.

Contestants are expected to enter in the true spirit of the event and to strictly adhere to any equipment or power restrictions that apply to the particular contest.

Contacts are scored on the basis of 1 point per kilometre for full, two-way microwave contacts and at half points for one-way (ie crossband) contacts. The G4JNT Contest Soft-

RSGB Microwave Committee Microwave Contest Programme 2001

(All events are scheduled for Sundays, 0900-2100GMT, unless otherwise stated)

This list shows only those microwave contests organised and administered by the RSGB Microwave Committee. Other UK microwave contests are organised by the VHF Contest Committee, to whose list reference should be made.

Jan 28	All Bands Activity Day - non competitive	Last Sunday of month
Feb 25	All Bands Activity Day - non competitive	Last Sunday of month
Mar 25	All Bands Activity Day - non competitive	Last Sunday of month
Apr 15	Millimetre Bands Contest (24GHz and up)	3rd Sunday of month
May 27	1st 10GHz Cumulative Contest	Last Sunday of month
Jun 10	Millimetre Bands Contest (24GHz and up)	2nd Sunday of month
Jun 24	All Microwave Band Contest (inc 2nd 10GHz Cumulative)	Last Sunday of month
Jul 29	3rd 10GHz Cumulative	Last Sunday of month
Aug 12	All Microwave Bands Contest	2nd Sunday of month
Aug 26	4th 10GHz Cumulative	Last Sunday of month
Sep 9	Millimetre Bands Contest (24GHz and up)	2nd Sunday of month
Sep 23	5th 10GHz Cumulative	4th Sunday of month
Oct 7	All Band Microwave Contest (including 6th 10GHz Cumulative)	1st Sunday of month
Oct 21	Millimetre Bands Contest (24GHz and up)	3rd Sunday of month
Nov 25	All Bands Activity Day - non competitive	Last Sunday of month
Dec 30	All Bands Activity Day - non competitive	Last Sunday of month

ware is recommended for use in the final scoring process.

Contest exchanges on the microwave bands consist of RS(T) + serial number (starting at 001). In addition the six (or eight) figure QTH locator must be exchanged either via the microwave band or on the talkback frequency. Where the locator is not known, a full six figure National Grid Reference (UK only) must be provided. In multiband contests, the serial number will start at 001 for each band (ie a common sequence across the bands is NOT to be used).

Operators may enter as home station or portable (either mixed or separately).

Except where indicated, the VHFCC general rules as published in the RSGB *Contest Handbook* also apply.

Contestants are asked to make sure their entries have been scored correctly and that all relevant bonus points and multipliers have been claimed. The adjudicator will not do this for you!

All entries must be prefaced with an appropriate summary/cover sheet (either an RSGB VHF-UHF type or a personal one) showing: Title of contest, name(s) of operator(s), location(s) of station, section entered, call sign used, band score(s), multipliers or bonus points, final claimed score. The sheet should also detail equipment used, particularly the power output, antenna and receiver for both the microwave band and the talkback. This is very important if the logs are entered in one of the restricted sections. Where the contest has a 'rover' facility, it is essential that each location used is clearly stated.

Where Locator squares and/or countries are used as multipliers for bonus points, a summary list of the squares and countries worked must be attached to the contest cover (summary) sheet. This list should include the callsign and date of the first contact for each square/country.

Log entries may be submitted directly on paper, using standard RSGB VHF Contest sheets, self-prepared contest sheets, or on a 3.5in diskette (IBM PC format), the latter preferably using the G4JNT Contest Software.

In the light of problems experienced in recent years with e-mail entries going astray, it is highly recommended that a paper log is also sent to G4JNT either as a backup or as the main entry.

All Logs (including those for the 10GHz Trophy contest) should be sent to the contest adjudicator, G4JNT, within 16 days of the end of the contest. Late entries will be acknowledged but not used in the final ranking. G4JNT's address is: A Talbot, G4JNT, 15 Noble Road, Hedge End, Southampton, SO30 0PH. (Tel: 01489-787424 or e-mail: drassew2@interalpha.co.uk)

Logs for the 10GHz Trophy contest will be forwarded by G4JNT to the RSGB VHF Contest Committee once they have been adjudicated for the 10GHz Cumulatives. It is important to label the top of your cover sheet with "+10GHz Trophy". Remember that you must be a member of RSGB to make this entry.

Appropriate Certificates will be awarded to overall contest winners and individual section leaders. Additional Certificates of Merit may be awarded at the discretion of the RSGB Microwave Committee. With these, as with the logs, the adjudicator's decision is final.

10GHz Cumulatives

1. The general rules shown previously apply.
2. Six, monthly events are available from May to October inclusive. Two of these events (June and October) are also part of the All Bands Contests (see below) and their scores can be used in both contests.
3. Any four of the six events may be used for final scoring purposes. Logs for all events entered must be submitted.
4. Contestants may submit logs for any one of the following sections:

Open
Restricted
Wideband

There is no separate section for portable stations. However, the Restricted and Wideband sections offer much scope for portable work.
The sections have individual restrictions as follows:

Open: No power or antenna restrictions (other than those laid down in the Amateur Licence) on either 10GHz or on the talkback band.

Restricted: 10GHz transmit output not to exceed 1.0 watts to the antenna. No power restrictions on the talkback band. No antenna restrictions on either band.

Wideband: 100 milliwatts maximum transmit power to the antenna. Modulation bandwidth to exceed 50kHz. This section includes wideband modes such as FM (voice), MCW, ATV and data.

For both the Restricted and Wideband sections contestants are free to use the 'Rover' concept of portable operation. This allows the location of the station to be moved as many times as desired and by a minimum of 16 linear kilometres, at any time during the contest period. From each new location, stations worked from any of the previous locations during the event may be worked again, both stations involved in the contact gaining points. The serial number however will not revert to 001 each time a move is made but will carry on consecutively from the previous contact.

The 'Rover' concept is to encourage lightweight, low power portable activity. Details of the equipment used for this type of operation should be included on the log summary/cover sheet.

The 'Rover' concept is *not* applicable to the Open section.
5. Scoring - as detailed in the General Rules (ie 1 point per km). In addition the following bonus points will also apply:

Locator Square Multiplier: (applicable to all sections):

The final, total kilometre score for the best four cumulative sessions will be multiplied by the total number of different Locator (grid) squares, (eg IO92, IO81, etc) contacted over the entire cumulative (ie up to the six events maximum). To claim this bonus it is therefore essential to submit logs for all events entered, not just the best four. Please include a separate checklist of the squares worked with your cover sheet.

Wideband Bonus: (applicable to all contacts in which a wideband mode forms at least one half of the microwave contact):

Two-way wideband contacts *multiply the distance points by 2*

Wideband to non-wideband contacts *multiply the distance points by 1.5*

One-way contacts score half the points a full contact would have made, including the multiplier. The wideband bonus applies to both sides of the contact. Therefore a narrowband operator working a widebander would also *multiply the score for that contact by 1.5*

Note: Wideband stations do *not* multiply the Locator Square Bonus as well!

It is appreciated that operators who use computer contest log software will not yet have the facility to automatically include the wideband bonus in their logs. For the moment, the bonus will have to be added manually to the final score as calculated by the G4JNT software, for example. All bonus-carrying contacts should be clearly marked as such.
6. Logs should be sent to the adjudicator, G4JNT, to arrive no later than Tuesday 23 October 2001.

10GHz Trophy Contest

Important notice: At the time of going to press, the rules of this contest were under discussion at committee level. The following rules are subject to final decisions being made by the RSGB Microwave Committee and the RSGB VHF Contest Committee. A final announcement will be made in *RadCom* and the RSGB Microwave Newsletter no later than January 2001.

1. The contest will run in parallel with the 10GHz Cumulative Contests, the winning station being the leading RSGB member (or members if a group entry) in the cumulatives held between May and October.
2. General rules shown above, General RSGB Rules and the 10GHz Cumulative Rules (see above) will apply.
3. There is one section only – Open.
4. Only paid-up members of the RSGB are eligible to enter this contest.
5. If you wish to enter your 10GHz Cumulative logs for the Trophy, please mark the cover sheet accordingly, otherwise it will not be forwarded to the RSGB VHF Contest Committee.
6. Awards: The 10GHz Trophy will be awarded to the leading RSGB member (or members if a group entry) in the 10GHz Cumulatives.
7. Logs: These should be posted to arrive at the adjudicator, G4JNT, no later than Tuesday, 23 October 2001.

Microwave Contests 2001 Summary

10GHz Cumulatives (6 contest days with 4 to count for scoring purposes)
10GHz Trophy (see below for important changes to this contest)
Millimetre Bands Contest: 24GHz and up (4 separate events - not cumulative)
All Bands Contests (3 separate events - not cumulative)
In addition there are 5 non-competitive activity days (see previous)

The full contest programme and rules are also available on the Internet at: http://www.g3pho.free-online.co.uk/

Millimetre Bands Contests

1. The rules are identical for each of the millimetre bands: 24GHz, 47GHz , 76GHz and higher.
2. These band contests are 'stand alone' events and will be scored as such. However, as an incentive to millimetre wave activity, an award will also be made to the operator with the highest combined 24GHz scores, a further one to the operator with the highest combined 47GHz scores and likewise to the operator with the highest combined 76GHz scores, and above, over the four sessions. These awards will be in addition to the band leaders in each event.
3. The General Rules apply (see above).
4. Sections: One section only (Open) on each band. There will be *four contests for each band*, held over the summer season.
5. Scoring: Each contact will be scored on a one point per km basis.

Crossband and one-way contacts score half points.

The 'Rover' concept is applicable to both bands (see 10GHz Cumulative rules), as it has been in previous years for the 24GHz contests.

There are no bonus points for wideband contacts (unlike the 10GHz contests).
6. Logs should be sent to the adjudicator to arrive no later that the following dates:

1 May 2001 for the first Millimetre Band Contest
26 June 2001 for the second Millimetre Band Contest
26 September 2001 for the third Millimetre Band Contest
6 November 2001 for the fourth Millimetre Band Contest

All Band Microwave Contests

1. The General Rules (see above) apply to this contest.
2. *Three All Bands Contests* will be held, each a 'stand alone' event.
3. Each band will be scored separately and band leaders will receive certificates. The overall contest winner will be the operator with the highest normalised scores for the whole band range 1.3 to 47GHz.
4. The raw claimed scores will be 'normalised' to a maximum score of 1000 and then ranked.
5. There are no bonus points. The normalisation of scores takes care of differences in activity and 'difficulty' from band to band.
6. 'Rover' contacts may be made on 24 and 47GHz only (see 10GHz Contest Rules for a definition of this).
7. There are no separate sections for low power, wideband, etc.
8. Logs should therefore only include the exchange of information outlined in the General Rules.
9. One-way and crossband contacts score half points.
10. If the 10GHz logs are to be also entered in the 10GHz Cumulative Contest they will need to be re-scored for that contest in the light of the Cumulative Contest rules (see earlier).
11. The completed logs and summary/cover sheets should be sent to arrive at the adjudicator no later than:

Tuesday 10 July 2001 (for the June contest)
Tuesday 28 August 2001 (for the August Contest)
Tuesday 23 October 2001 (for the October contest)

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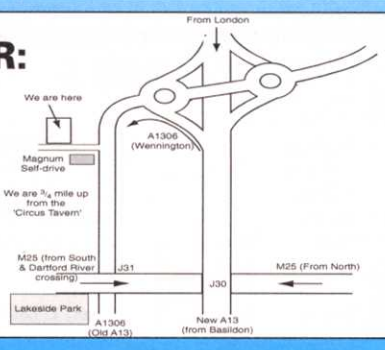

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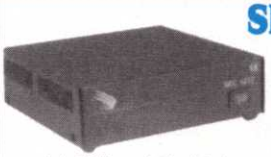

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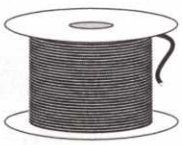

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technical topics

by **Pat Hawker**, G3VA*

VK2ABQ TRIBANDERS, REINARTZ SQUARES & MOXON RECTANGLES

BY COINCIDENCE, two articles featuring the same antenna system appeared in the June 2000 issues of *QST* and *Practical Wireless*. Both traced briefly, if sometimes a shade misleadingly, the history of an antenna that originated in the 1970s but has since flowered in several versions: The VK2ABQ Tribander Beam for the 14/21/28MHz bands. This antenna received widespread attention after publication in 'TT' in January 1974, although its first appearance in print had been some two months earlier as a short contribution by Mr F Caton of West Merrylands, New South Wales to the 'Circuit & Design Ideas' feature of *Electronics Australia*, October 1973. It was accompanied by an Editorial Note: "This appears to be a very interesting approach to the never-ending search for the ideal aerial system. Of necessity, the description must be short but there should be sufficient information for readers to duplicate the original."

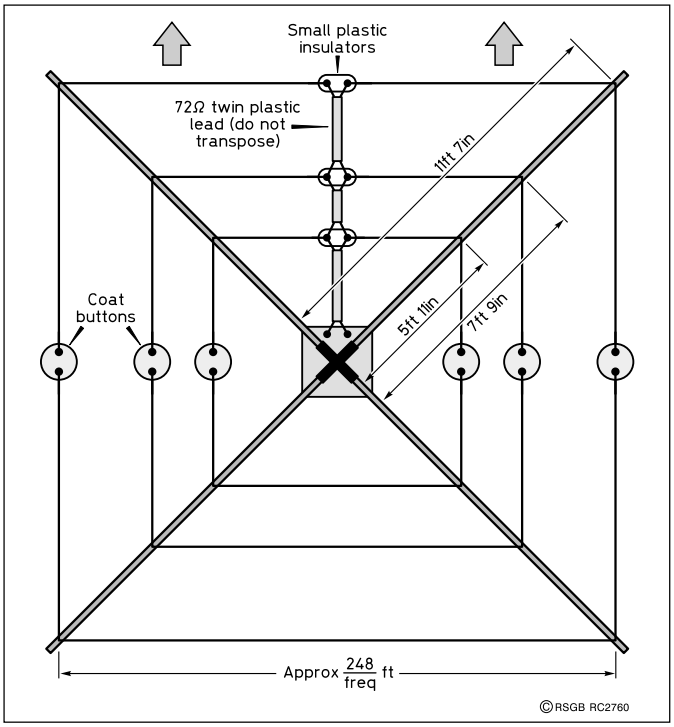

Fig 1: The VK2ABQ tri-band beam for 14/21/28MHz, seen looking down on the array.

Immediately after its publication in *EA*, the late Fred Caton, VK2ABQ, and former G3ONC, sent me an airmail letter containing the clipping and some extra information on construction and adjustment. From these I was able to concoct the item that appeared in 'TT' under the same heading previously used by *EA*. VK2ABQ frankly admitted that he did not know the forward gain, but claimed that it had a back-to-front ratio of 2-4 S points, with substantial gain over a dipole and a low angle of radiation on long haul contacts.

I admitted to having slight qualms about some aspects of the design, not reassured by the extremely scrappy nature of his notes, a characteristic that I came to recognise over the following years when he sent further ideas that never quite equalled his original tri-bander design. Nevertheless, I added: "the general concept seems interesting and a convenient way of constructing a compact tri-bander; so the information is presented as possibly experimental, but well worth investigating, certainly VK2ABQ/G3ONC has had good results." There can be do doubt that Fred was a gifted and determined experimenter in the days before NEC computer design began to dominate the antenna field.

It needs to be stressed that VK2ABQ designed a wire tri-bander that could be fixed or rotated. He made no claim to having developed the basic square-shaped compact element/reflector. As noted below, this compact form of directional antenna can be traced back to 1937, shortly before the recognition of the greater gain that can be achieved by close-spaced arrays – a major development based on the work on MF antennas by Dr George Brown of RCA.

VK2ABQ himself wrote: "After a lot of experimenting, I am now using what I consider to be the simplest and best home brew tri-bander yet. It has no traps or coils and so no losses related to such devices. Also, no mysterious blobs of electronics hanging on the array. Also, mechanically the system is very simple, it has no boom and a 14, 21 and 28MHz version has a turning radius of only 12 feet."

Subsequent reports from several UK amateurs who checked out the VK2ABQ soon confirmed that it fulfilled a useful role for amateurs still seeking a simple tri-bander as a low-cost alternative to commercial rotary beams using tubular elements. The design is simpler to construct and to erect than a typical condensed-quad array, although the forward gain is likely to be rather less.

Care is needed in adjustment for optimum performance. Variations in dimension were suggested for example by G3FRB and these are shown in **Fig 1**, although G3FRB stressed that a GDO should always be used to check for resonance. This is a relatively high-Q design, making for critical dimensions. Tuning for resonance and low SWR is facilitated if it is easy to raise and lower the antenna. Although reports were received of satisfactory performance when a VK2ABQ-type antenna was erected as a fixed beam in a roof space, this is not really advisable for any high-Q antenna - as it will be affected by nearby metal objects, etc.

The power gain of a VK2ABQ will be less than can be achieved with a well-designed close-spaced 2-element Yagi array or the Moxon Rectangle discussed below, but it remains valid to claim that the VK2ABQ deserves attention as one of the few mechanically simple tri-band designs suitable for home construction with a minimum of tools. The first publication in book form was in my *Amateur Radio Techniques* (5th edition 1974, subsequently in the 6th and 7th editions, all now out-of-print). It has also appeared in several other RSGB books on antennas, most notably *HF Antennas for all Locations* (see below).

The same January 1974 'TT' in which the VK2ABQ appeared included a short report on an RSGB London lecture by Les Moxon, G6XN. I wrote: "A full house, but why [even then] so few younger members?… A right royal evening of myth destruction and constructive hints. Looking through my notes I find such nuggets as: What's so important about front/back ratio if the beam has side lobes: tune for maximum gain… 14MHz folded dipoles work very nicely on 21MHz (the trick is to use resonant feeders)... There is no optimum height for horizontally-polarized aerials – get as much height as you possibly can (even if this means using a two-element rather than a three-element Yagi)… Unless a low SWR has been achieved after great care, this usually indicates *poor* performance… Interaction between different aerials is important (and for the amateur who has everything, including two different beams, he can get an extra 3dB gain without difficulty)… Loops are not single-band resonators… Trees have a great effect on vertically-polarized aerials…There is no limit to the possible errors when aerials are compared on the basis of ground-wave measurements."

G6XN is a long-time professional scientist/engineer and his book *HF Antennas for All Locations* (published by RSGB, first edition 1982, second edition 1993) although not always easy reading, remains one of the very best antenna books for the radio amateur!

*37 Dovercourt Road, London SE22 8SS.

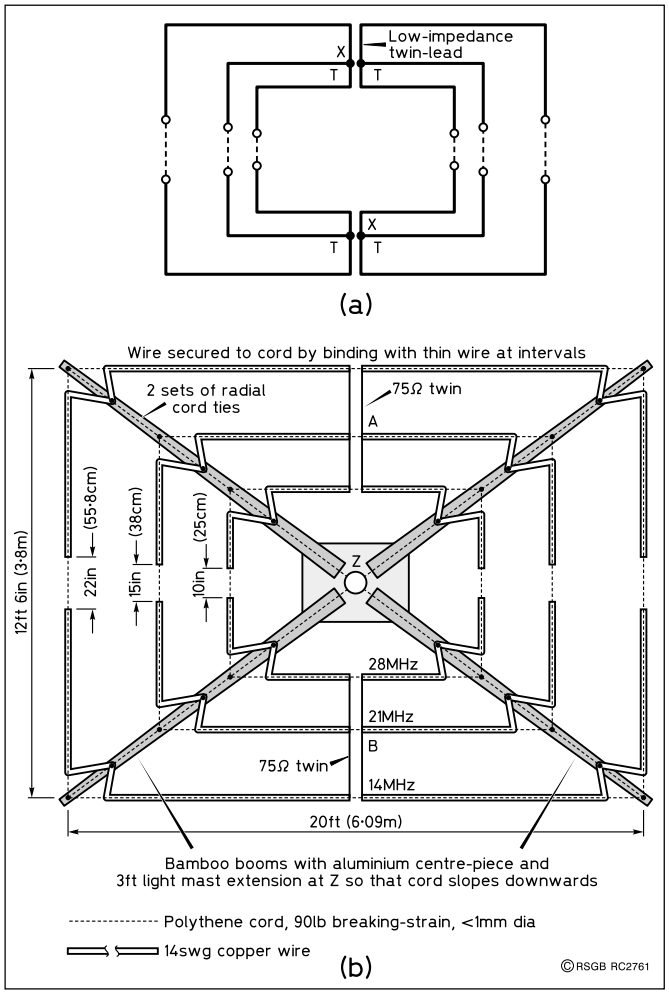

Fig 2: (a) G6XN showed how greater gain could be obtained from a VK2ABQ tri-bander by the use of elements forming a rectangle rather than a square. (b) Implementation of G6XN's rectangular tri-bander without increasing the turning radius.

These memories have been provoked by the two June 2000 articles concerned with the later version of the VK2ABQ elongated into a rectangle. This takes advantage of the extra gain possible with closer spacing of the driven element and the reflector. It was developed by Les Moxon, G6XN, and described in his book: **Fig 2**. It has later been modified and simplified by L B Cebik, W4RNL, who calls his version the 'Moxon Rectangle'. W4RNL's design appeared first in the article 'Modelling and Understanding Small Beams: Part 2, VK2ABQ Squares and the Modified Moxon Rectangle', *Communications Quarterly* (Spring 1995, pp55-70) and has been followed by a number of articles in the UK, USA and Australia. Recent examples include: 'Antenna Workshop: The Moxon Rectangle Revisited', by Peter Dodd, G3LDO (*Practical Wireless*, June 2000, pp 42-43) and 'Having a Field Day with the Moxon Rectangle' by L B Cebik, W4RNL in *QST*, June 2000, pp38-42.

Fig 3 and **Table 1**, from W4RNL's *QST* article, provide an outline of a Moxon Rectangle with the dimensions in feet applying to No.14 AWG bare-wire antennas for the HF bands. However, it should be noted that C, the spacing between the two sections, is fairly critical for optimum performance and it would be advisable to refer to his article for detailed information, including radiation patterns, etc. His article includes expected forward gain figures for various heights above ground, and also includes the outline of a direction-switching Moxon Rectangle by changing the feedpoint from one section to the other and using transmission-line stub loading to lengthen the reflector element electrically. It seems a useful addition to this growing family of directional wire antennas.

No claim was ever made in 'TT' that the basic idea of folding a driven element and a reflector element into a square with sides equal to a one-quarter wavelength was novel to the VK2ABQ design. Indeed, such a mono-band configuration had been illustrated in G6CJ's 'Aerials' chapter in the first two editions of the RSGB's *Amateur Radio Handbook*, published in 1938 and 1939, and rightly attributed to John L Reinartz, W1QP. It stemmed from his classic article: 'Concentrated Directional Antennas for Transmission and Reception – Rotatable loops and antenna-reflector systems of reduced dimensions' (*QST*, October 1937, pp27-29). **Fig 4**, reproduced from my much-battered copy of a pre-war *Amateur Radio Handbook* shows the first four of nine illustrations of compact directional antennas, three of them directly attributable to John Reinhartz's 1937 article.

John Reinhartz, who held the professional experimental call W1XAM as well as his amateur call W1QP, had earlier attracted world attention when in the April 1925 issue of *QST* he presented his theory of ionized layers to account for the skip distances experienced on "short waves". Previously, in November 1923, he was one of the main participants in the first transatlantic contacts between ARRL and Leon Deloy, F8AB, on about 100 metres. In 1924, his pioneering 14MHz signals were heard in California, the first time this feat had ever been accomplished.

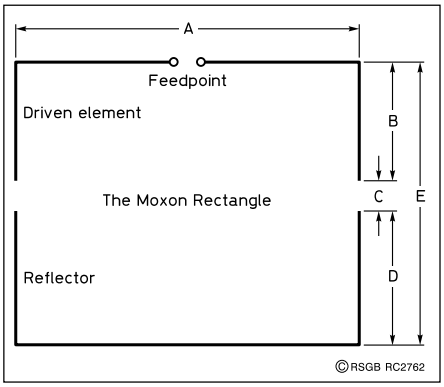

Fig 3: W4RNI's outline of a Moxon Rectangle with various dimensions labelled as in Table 1.

The Reinhartz antenna loops and squares attracted worldwide interest, particularly the double loop system for VHF operation. The basic elements were included in *Amateur Radio Handbook* as three items in a nine-part (A) to (K) diagram as the (a), (b) and (c) items of Fig 4. I have no idea whether VK2ABQ/G3ONC ever saw this material, but certainly he never claimed that he originated the basic square element configuration. It is for his simple tribander design that, rightly, he should be remembered.

Presented alongside Reinhartz's article was a description by Burton Simpson, W8CPO, of "A Square 'Signal Squirter' for 14MHz", based on a suggestion from W1QP. This was a hefty mono-band affair using *copper* tubing with quarter-wave sides to the square in the form shown in **Fig 4(c)**, with many wooden and brass struts. This elaborate approach was soon to be overtaken by the flood of two-element, close-spaced Yagi designs that followed the presentation by Walter Van Roberts, W3CHO of 'The Compact Uni-directional Array' (*Radio*, January 1938 pp19-23, 173). W3CHO's is believed to be the first amateur radio Yagi design to take advantage of a portion of Dr Brown's classic paper in *Proc IRE*, January 1937. Until then, reflectors had always been placed at least a quarter-wave behind the driven element. Another pioneer of close-spaced arrays was W8XK although, in his antenna, both elements are driven.

Freq (MHz)	A	B	C	D	E
3.6	99.98	15.47	2.16	18.33	36.96
7.09	50.69	7.82	1.15	9.35	18.32
14.175	25.30	3.87	0.62	4.70	9.19
21.225	16.88	2.56	0.44	3.14	6.14
28.3	12.65	1.90	0.35	2.36	4.61

Source: W4RNL in *QST*.

Table 1: Dimensions of Wire Moxon Rectangles for 3.5-28MHz with reference to Fig 3. Dimensions are in feet and apply to No 14 AWG bare-wire antennas.

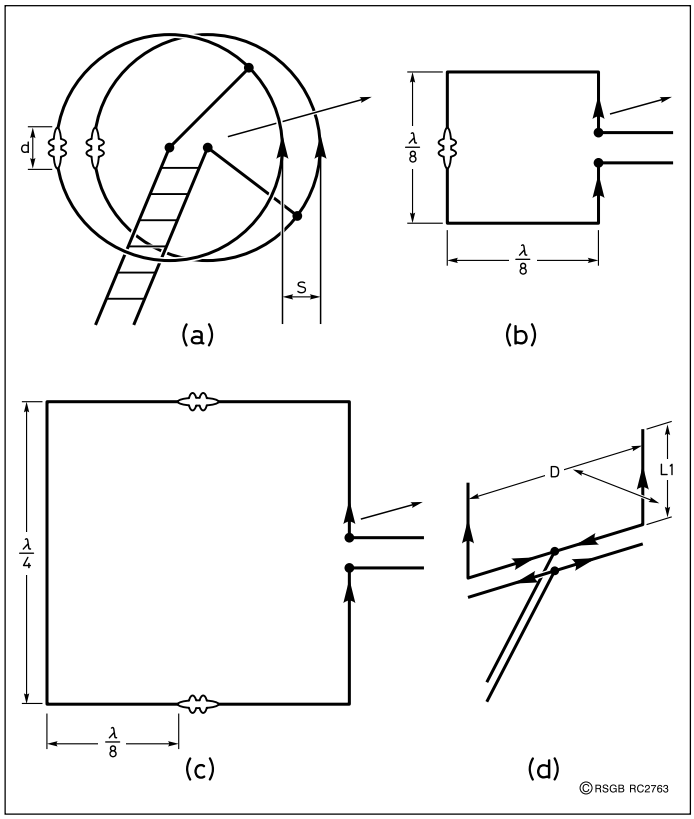

Fig 4: Part of a collection of compact directional antennas as presented in the pre-war editions of the RSGB's *Amateur Radio Handbook.* (a), (b) and (c) were derived from the classic 1937 *QST* article by John Reinhartz.

HERE & THERE

THE PREFACE to Robert C Dixon's 'Radio Receiver Design' (Marcel Dekker Inc, NY, 1998, viii + 474pp, ISBN 0-8247-0161-5) includes some apt remarks on current trends: "Today's receivers typically employ the same architecture that has been employed in receivers for many years. That is, today's receivers are still superheterodyne in structure, but they employ very different components from receivers of just a few years ago. Even the most common components – resistors – are different, in that at present one-eighth-watt resistors are commonly used, while half-watt resistors were the standard ten or more years ago. Integrated circuits, employing silicon and gallium arsenide, are achieving higher-performance in smaller packages, with less current consumption. Technology has made the difference, and will continue to do so, even as receivers become implemented using more digital structures… For as long as I can remember, engineers have had a dream of being able to digitize at the output of an antenna and process the digital result with a computer, thereby doing away with all those 'troublesome' analogue circuits and components. That dream is rapidly becoming reality, but not without certain drawbacks. The greatest advantage of digital processes is flexibility, not simplicity or even elegance, and many of the things done with digital processing are done with simple iteration of brute force techniques. However, if the end result is a better filter (for example) and it can be implemented in less space, by a microprocessor in its 'spare' time, then it must be used, and will always win out in the end. This shift is already occurring."

DAVID Macey, G6STD/M5AFA, recently successfully scaled down for use on 144MHz the 14MHz Clemens match design shown in various editions of the RSGB's *Radio Communication Handbook*. He finds this works well both as a 3-element and as a 5-element antenna. He wonders why the Clemens match seldom appears in other recent books on antennas for radio amateurs. I wonder if any reader can point me in the direction of the original publication, presumably by a Mr Clemens? It seems to have appeared in the mid-1950s.

NEW LOW-IMD MIXER

THE DISCONTINUANCE of the SL6440 IC mixer which provided a reasonably-acceptable dynamic range (much greater than the NE604) left something of a gap (partly filled by the Motorola MC1496) when building high-performance receivers/converters etc. Chris Trask in *Electronics World*, September 2000, pp680-685, presents detailed information on a new series-shunt feedback active mixer that is claimed to offer clear advantages over both the common Gilbert Cell active mixer and diode-ring mixers. An editorial note states: "With lower local-oscillator power requirements, low distortion and higher saturable output power, this new mixer is highly suitable for low-power, high-performance communications systems. Yet it's possible to implement the design on the kitchen table!" The *EW* article attracted my attention and was also noticed by Michael O'Beirne, G8MOB.

Chris Trask writes: "Mixers are essential building blocks of radio communication systems, being used for modulation, demodulation, and signal frequency conversion. Among the various forms have been transconductance multiplication – dual gate FETs, pentagrid and heptode vacuum tubes, etc – diode and switching FET rings, and the transistor tree – also known as the Gilbert Cell. An inherent undesirable property of mixers has been – and continues to be – intermodulation distortion (IMD) caused by two adjacent signals interacting. This interaction creates spurious signals that can interfere with adjacent smaller signals… Overcoming this unwanted characteristic is no small task. Traditionally, the efforts at improving IMD have included using Class III diode ring and switching FET ring mixers that generally require local oscillator signal levels of +17dBm or more, an unsuitable solution for field-portable equipment where power consumption is an important parameter."

He provides a comparison of the performance achievable with various high-performance mixers: **Table 2**. However, he does not appear to be aware of the H-mode mixers developed by Colin Horrabin, G3SBI, which have been featured in a number of 'TT' columns (and in the RSGB's *Radio Communication Handbook* (6th and 7th editions) and also in *Communications Quarterly*). The H-mode mixer, for example using the FST3125 array ('TT', September 1998) can have an IP_3 performance of the order of +45dBm with an insertion loss of 4.6dB, significantly better than the 2nd generation Trask mixer. Nevertheless, the new mixer appears to offer useful characteristics for operation from batteries, etc.

The *EW* article provides detailed design information on this class of series-shunt feedback active mixers, both the 1st generation mixer and the improved 2nd generation arrangement in which an additional Mini-Circuits hybrid transformer replaces a number of the resistors in the original circuit. The 2nd

Type	Gain	Input intermod Intercept point (IP_3)	Compression Point (1dB)
Mini-Circuits SBL-1	-5dB	+19.0dBm	-4.5dBm
Typical Gilbert-cell mixer	-1.5dB	+17.5dBm	+4.5dBm
Trask 1st generation mixer	-7.0dB	+21.5dBm	+5.5dBm
Trask 2nd generation mixer	-3.0dB	+29.5dBm	+10.5dBm

Source: *Electronics World*. Note this table does not include G3SBI's H-mode mixer configuration that can achieve an IP_3 of the order of +45dBm (see text).

Table 2. Measured performance of low-IMD mixer configurations.

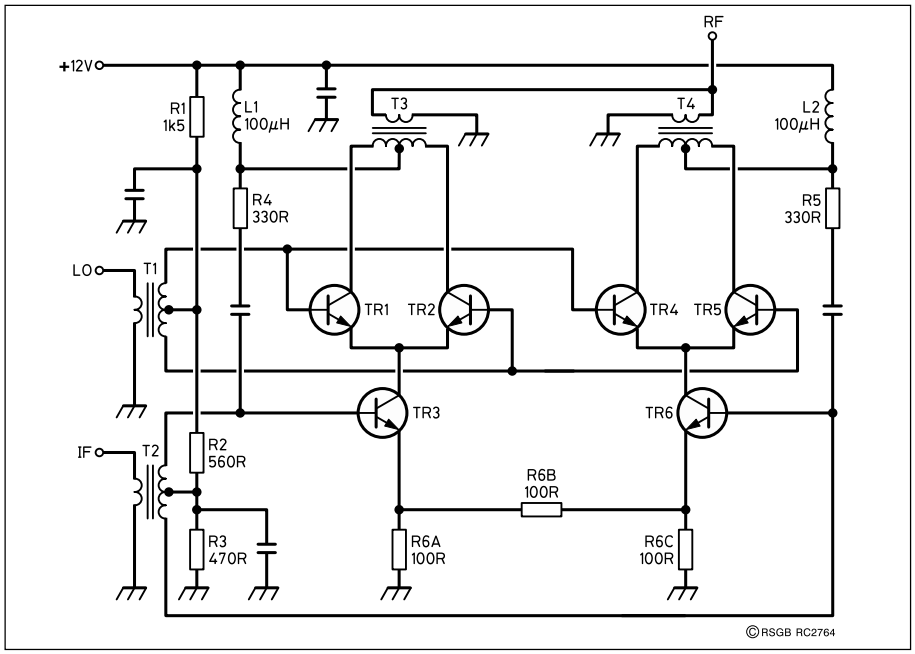

Fig 5: Second-generation Trask series-shunt feedback mixer, using a pair or hybrid transformers to combine the four collector currents. (Source: *Electronics World*).

generation circuit is shown in **Fig 5**. The requirement for four of the Mini-Circuits T4-1 transformers makes this, as G8MOB points out, a relatively expensive mixer. He writes: "I expect the cost of this mixer is quite expensive, though it may be possible to wind the inductors by hand at far lower price, provided the ferrite-material was readily available. The problem is achieving a decent balance with the average amateur's kitchen table technology skills!"

The FST H-mode mixer uses three Mini-Circuits TT4-1A styleX65 transformers (costing about £5 each). It was noted by G3SBI ('TT', September 1998) that the commercial units give better results both in overall insertion loss and third-order intercept point than can be obtained from home-made transformers using available toroid cores: "Apparently the core mix used by Mini-Circuits is superior to the standard mixes. The transformers are available from Mini-Circuits Europe (Tel: 01252 835094)".

I note that the first generation Trask feedback mixer was originally described in *RF Design*, September 1997, pp46-52. G3SBI developed the H-mode mixer while a professional scientist/electronic-engineer at the Science and Engineering Research Council's Danesbury Laboratory (later CERL) which supported his investigative work on the H-mode switched FET mixer and consequently holds intellectual title to the original mixer, since further developed by G3SBI in conjunction with I7SWX (F5VGU) and W7AAZ. Incidentally, as F5VGU, Gian Moda has recently been experimenting with the use of an H-mode mixer in his IC-751, but using the more common 74H4066 device in place of the FST3125. He would be interested if anyone has measured the performance of this device as an H-mode mixer.

'PADDYBOARD' CONSTRUCTION

DREW DIAMOND, VK3XU, described the 'paddyboard' form of circuit construction used for the transmission monitor in *Amateur Radio*, February 1995, pp6-7 where he wrote: "A circuit board construction method which has not received the attention it deserves uses pads of appropriate size attached to plain circuit board sheet. No drilling or etching is necessary. More reliable operation, even for VHF circuitry, is usually obtained because the foil provides a continuous ground plane under the components, and lead lengths can be made very short. Capacitance is about 4.3pF per square centimetre for 2mm fibreglass board, so the additional capacitance of small pads should not significantly affect operation.

"Scraps of single or double-sided board are hacksawed, guillotined, or tin-snipped to the sizes required (eg squares about 6mm). Rough edges and burrs should be removed with a flat mill file [dust from fibre-glass board is not thought to be hazardous, however, as with any dusty job, you should wear a suitable mask when cutting such material]. The pads can be attached to the board using a *tiny* jab of super glue (to make the job easier, a resistor can be temporarily soldered to the pad to use as a handle. Both surfaces must be clean before the glue is applied. Be sure the glue has set before applying the soldering iron again. If a pad needs to be removed, carefully present a sharp pocket-knife blade to the pad-board junction and snap it off the board.

A second method (preferred by VK3XU) uses pads of double-sided board. "Using bent long-nose pliers as an extra hand to hold the pad on the workbench, apply a narrow line of solder along two opposite edges of one surface of the pad foil. Place the pad, pre-soldered side down, onto the board in the exact spot required. Again, use the bent pliers lightly to clamp the pad in position.

"Now this is the crafty part. Apply the tip of your soldering iron at an angle of about 45°, so that the tip makes contact with the board and the lower surface of the pad at the very edge of the foil. Melt a little extra solder at the junction as you slide the tip along. A small amount of solder will then 'sweat' under the pad. Do the same at the opposite edge. Presto! The pad is firmly attached. Visually check that there are no solder bridges between the top and bottom of the pad.

"If you need to remove a pad, apply the tip of the iron as before. Then place a knife blade under the pad and gently lift one edge just a bit; then do the same with the opposite edge while holding the pad with long-nosed pliers, and lift the pad from the board.

"For multi-leaded components, use a 'substrate' pad, sized accordingly. For example, with 8-leg ICs, try a substrate of about 18mm by 20 or 25mm, with spare lands at the ends if desired. Since an ordinary vice will not normally grip circuit board on its edges, a holding jig can be made from a 65mm length of 10 x 40mm hardwood. Using a tenon saw and a chisel to cut a channel 18mm wide along the length of one surface of the wood, about 1.5mm deep (slightly shallower than your board thickness). Two countersunk wood screws are fitted to provide a tightening arrangement. The holes should be clearance to half the width, then woodscrew-in the other half. When the holes for the screws have been drilled, saw the wood lengthways down the middle.

"To make a substrate, place your circuit material in the jig and tighten the screws so that it is firmly held. The jig may then be fixed in an ordinary vice. An Eclipse 14J junior hacksaw is a good tool to cut the individual lands. Hold a small scrap of timber against the side of the blade as a guide when starting the cut, then draw the teeth square across the surface of the board. Remove just sufficient of the foil to form the lands.

"It is a good plan to socket ICs, thus avoiding the need for great accuracy in cutting the lands. Wire-wrap and the cheaper sockets allow you to bend their legs a little so that they will be lined up well. Substrates may be glued or soldered to the main board as for the smaller pads. Tag strips can be made similarly. With double-sided board, make a substrate with as many lands (or tags) as needed, both sides if necessary. Instead of placing them flat upon the board, they could be soldered vertically on edge to enable the construction of compact and dense circuitry, or for use as anchor points for wires and cables. ♦

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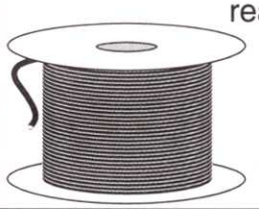

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ALINCO	DJ-G1 HANDY 2M WIDE RECEIVER	£129.00
ALINCO	DR-150 2M/FM/ 50w MOBILE	£200.00
ALINCO	DR-590 DUAL BAND MOBILE	£175.00
ALINCO	DR-599 DUAL BAND MOBILE	£245.00
ALINCO	DX-70T 100W MOBILE / HF	£475.00
ALPHA	87A FULLY AUTOMATIC AMP	£3,750.00
AMERITRON	QSK-5 2.5kw QSK SWITCH	£199.00
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AOR	AR-3000A RECEIVER	£495.00
AOR	AR-3030 HF RECEIVER	£325.00
AOR	AR-5000 RECEIVER	£1,199.00
AOR	AR-5000+ RECEIVER (AS NEW)	£1,249.00
AOR	AR-7030 REMOTE CONTROL RECEIVER	£595.00
AOR	AR-8000 HANDY RECIEVER	£199.00
AOR	AR-8200 MK1 HANDY RECEIVER	£280.00
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DAIWA	PS-120MK11 10amp PSU	£50.00
DATONG	FL3 FILTER	£60.00
DATONG	RF PROCESSOR	£60.00
DRAKE	DRAE 24amp PSU (GOOD QUALITY)	£75.00
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DRAKE	R8E RECEIVER INC CONVERTER	£595.00
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KENWOOD	TS-50S MOBILE TRANSCEIVER 100W	£499.00
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EXCHANGE

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CONTEST-winning QTH complete with 80ft HD tower and multiband, multi-ele Q-quad, etc, POA. MFJ voice keyer MFJ-432, £50. Bug Catcher mobile whip, as new, £70. Ex-army DF VHF tcvr model B44 Mk2, no Xtals fitted, no further details, offers? G3NAS, QTHR. 01543 255992 (Lichfield). E-mail: margaret.ginder@virgin.net

YAESU FT-1000MP-AC, all Yaesu filters fitted, main and sub band, £1300 to include postage. 01624 626080 (Douglas). E-mail: gd0tep@qsl.net

YAESU FT-290R Mk2 2m multimode, 25W linear, nicads, 2 x mics, 2-ele portable Yagi, all vgc, £250 ono. Mutek FT-290 f/end, offers? 2 x Maxon 49MHz 5-channel tcvr, as new, £100 pair. AVO 9 Mk2 multimeter, £50. 2 x Telequipment S32 oscilloscopes, 1 wkg, 1 for spares, offers? Rogers Ravensbourne stereo amp, free to good home. 12V 10A PSU (heavy), ex computer, offers? Will haggle. GM4HAO, QTHR. 0131 667 5369 (Edinburgh). E-mail: rob@mackean.com

2m 7-element Yagi, c/w KR-400 rotator and cables, £40. 01642 869856 (Stockton-on-Tees).

2m 8-element crossed Yagis with 5ft pole fitting to support for rotor, also 25ft sections of 2in alloy pole. 020 8950 1762 (Watford).

40FT four-section tower, ex Royal Naval ARS HMS Mercury, £50, buyer collects. 01329 287298 (Fareham). E-mail: g4zmp@butler95.freeserve.co.uk

40FT lattice tower with h/duty rotator, needs attn. 2m/70cm beam, HF tri-band, all with h/duty coax, £400. Gavin, G7MAO. 01482 648673 (Hessle). E-mail: gavin@byron.karoo.co.uk

ALINCO DJ-491 VHF FM 70cm h/held, man, boxed, £85. Ian, 2M1GMB. 01330 833252 eves (Aberdeen).

ALINCO DR-140E, 2m, £100. Yaesu FT-90R dual-band, £200. Both as new, surplus to wants. Albert. 01254 209117 (Blackburn) E-mail: g7decfeni@aol.com

ALINCO DR-M06SX 6m FM tcvr, boxed, clean cond, £125. Diamond SX200 power meter, boxed, clean cond, £35. Icom IC-T7E, £125. 02476 743905 (Nuneaton).

ALINCO DX-70TH HF/6m tcvr, mic, mobile bracket, man, original box, gc, £389. 01652 618658 (North Lincs).

AMERITRON AL-811 600W HF linear amplifier, 160 - 10m bands, vgc, boxed, with mans. A good buy, £390. Nigel. 01487 832147 (Peterborough). E-mail: g0bnr@aol.com

AOR AR-3000A; Yaesu FT-51R with FBA-14 AA battery case; £500 the two. Jim, G7WFP, QTHR. 01303 267122 (Hythe, Kent). E-mail: smithmun@lineone.net

ATLAS 210X tcvr, 80-10m (no WARC), 100W, Shure mic, Datong RF clipper and mobile mount included, £135 ovno. G4AHC, QTHR. 0151 691 0729 (Merseyside). E-mail: patntom@supanet.com

BUG keys, Dentsu, Seiki, Swallow, BK50, ca 1953, mint. Monarch Eagle KY102 (BK100) ca 1967, mint. Offers with SAE. G3TSS, QTHR.

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DRAKE TR7 with man, PSU-PS7 and RV7, £425. Datong RF speech proc ASP and man, £25, all in vgc. 020 8449 7203 (Barnet).

EMIGRATING! All must go! Icom IC-751A HF multimode. IC-2KL/IC-2KLPS HF linear. IC-275H 2m multimode. IC-475H 70cm multimode. IC-2400D 2m/70cm FM mobile. Rcvrs: Eddystone 830, 940, 1830. Racal 1217. Racal multimode manpack, 1-30MHz. Racal HF AMU + controller. Bird power analyser + test kit. Nye Viking 3kW RF monitor. Spares: vacuum variables, preselectors, etc. First sensible offer secures in each case. Michael. Not QTHR. 07968 267510 (Newcastle-upon-Tyne. E-mail: lima.mike@virgin.net

FIRST £90 gets my complete shack! KW2000A HF rig, R220 4m rcvr, three solid signal generators, mobile 10m rig, G3RKK HF rcvr and loads more. See my website and e-mail for list, buyer collects. G3WJG, QTHR. 01923 283337 (Rickmansworth). www.avcomm.co.uk/g3wjg.htm

FOR sale: Icom 746 HF/6/2m with IC-SM20 desk mic, PS-85 PSU, mint, boxed, £1000 ono, or swap for Kenwood TS-870SE. For sale: FT-847 HF/2/70/4/6, mint, boxed, £950, non-smoker. Wanted: Rotator, cash waiting. 01226 742971 (Barnsley). E-mail: mrhardy@lineone.net

FT-100 Yaesu, HF, VHF, UHF, brand new, boxed, £550. Mosley PRO-57B HF beam, covers 5 bands, £550 ono. 01623 484950 (Mansfield). E-mail: arthur@bignet.co.uk

FT-1000MP, extra IF amp and filters, original packing, £1500. Call or write G3PTN, QTHR. 0113 265 4644 (Leeds). E-mail: zygic@btinternet.com

FT-50R accessories: FTT-12, £30; FBA-15, £10; MH-18AB2 mic, £10; CT-30, £5. Kenwood AT-230, £120. Kenwood TS-690S, £600. Icom IC-706 Mk2, £650. 01245 495230 (Chelmsford).

FT-736 6m/2m/70cm, £750, also IC-T8E h/held 6/2/70, £180 brand new. Paul. 01920 871639 (Ware).

HALLICRAFTERS SX24 Skyrider Defiant, fully restored, £75. Lowe HF-225 fitted detector option, S-meter U/S, no PSU, hence £125. Howes DC-2000 with 160/80/20m modules, £75. Yaesu FRG-7, fitted FM det, N/B, filter, separate digital readout, £90. G4HHZ, QTHR. 028 8027 0785 (Chandlers Ford). E-mail: tony@nicholrd.fsnet.co.uk

HEATHKIT DX-40 transmitter, c/w VFO, mans, collectors item, AM/CW, offers? A B Rogers, G6HTZ, QTHR. 01249 813890 eve (Calne, Wiltshire).

IC-725 cared-for HF 100W rig, narrow filter, QRP use only, vgc, boxed, plus FL3 filter, £425. FT-790 70cm multimode, plus Microset pre-amp/PA, vgc, boxed, £225. 0121 449 5583 (Birmingham).

IC-756 as new, man, box, IC-PS15, SM-5 mic, £950. IC-2KL amp, £850. IC-AT500, £250. Yaesu YS-2000 wattmeter, £90. Ant switch, 4-way, £25. Welz dummy load, peak 1000W, £60. G5RV, new, £25. 25ft metal pole, £40, bolts to 'sleeper'. 20ft steel pole, £20. G4OWV. Prefer buyers view/inspect. 01493 444181 (Gorleston, Great Yarmouth). E-mail: georgedavies@davies70.freeserve.co.uk

ICOM 745, CW, FM, gen coverage, mic, man, £375. Icom AT-100 auto ATU, £125. Icom 471A 430MHz all-mode base mobile, 30W, mic, man, £275. Daiwa 2002 auto ATU, 2.5kW PEP, £175. Trio TS-830S, MC-50 mic, man, £300. 01332 880633 (Derby).

ICOM 765, auto ATU, internal PSU, exc cond, matching SP-20 speaker, serviced by Castle Electronics, boxed, mans, bargain, £750 plus carriage. G0ADL, QTHR. 0161 280 3064 (Radcliffe).

ICOM FL-52 CW filter 455kHz IF, 500Hz, £80 ovno. Fits IC-740/756, etc. Datong RF mic compressor/clipper, offers please. 01438 368670 (Stevenage).

ICOM IC-706 Mk2 DSP, boxed, little used, QRP only, by non-smoker, never mobile, £525 plus carriage. 01526 352789 (Woodhall Spa).

ICOM IC-970H, 144/430MHz top base tcvr, all-mode, AM, SSB, FM/W, fitted UX-R96 module, rcvr 50-905MHz, new, boxed, £1,495. IC-737A tcvr, gc, rcvr auto ATU, boxed, £585. PX IC-781/756. G4AFY. 01562 747480 (Kidderminster).

INDEX Labs QRP Plus, all-band SSB/CW 5W tcvr, £275. G3XAQ, QTHR. 01227 738520 (Canterbury). E-mail: alan@g3xaq.demon.co.uk

KENWOOD AT-230, £100. Dummy load DL1000, 52-ohm, £50. Antenna rotator CDE CD44 c/w control box, 25ft cable, £100. Some spares available, extra control box, £40, collect or carriage extra. 01302 857339 (Doncaster). E-mail: g3vll@lineone.net

KENWOOD TL-922 linear, 2kW, £875 ono. Chelcom quad 5-band 20/17/15/10/6, £250 ono. Yaesu FC-902 ATU, 500W, £120 ono. G4HWA, QTHR. 01604 870292 (Northampton). E-mail: bernie@abmdata.demon.co.uk

KENWOOD TS-50, very little used, mint cond, boxed, with mans, £450. Assorted mobile whips, Hustler, G-whip and man, £70. 01752 216455 (Plymouth). E-mail: g3zzs@g3zzs.eurobell.co.uk

KENWOOD TS-520SE and VFO and speaker, £100. MFJ-1798 vertical, £150, all with mans. Kenwood a little rough. 01745 851564 (Prestatyn). E-mail: m-webb@lineone.net

KENWOOD TS-530S tcvr, ham bands only inc WARC, digital display, 220W input, clean, unmodified, man, test & collect, £235 ovno. 01789 297158 (Stratford on Avon). E-mail: dex@g4abs.worldonline.co.uk

KENWOOD TS-690SAT as new, boxed, with mic and h/book, £580. Workshop man, £20. Farmhouse in Brittany fully furnished, £35,000, send for details and photo, c/w G5RV and TS-930S. Bob Price, GW3ECH, QTHR (F5VDN). 01874 658203 (Brecon). E-mail: breconbob@aol.com

KENWOOD TS-850SAT HF tcvr, immaculate, mans, but not boxed, £695. Yaesu FT-726R 6m/2m/70cm multimode, with satellite module, as new, with mans, boxed, £495. Timewave DSP-599ZX all-mode digital signal processor, as new, man, boxed, £165. 01249 656702 (Chippenham).

KENWOOD TS-850SAT HF tcvr, little used, immac, man, mic, etc, but not boxed, £695. 0973 534183 (Birmingham).

KENWOOD TS-850SAT, gc, built-in ATU, no added filters, box, mic, man, power lead, £600 plus shipping. 023 8025 4599 (Southampton). E-mail: lizowl@yahoo.co.uk

KENWOOD TS-870S, as new, offers? 01332 833684 (Derby).

KENWOOD TS-940S, 455kHz and 8MHz CW filters, built-in PSU, exc order. Can deliver HF Convention, Windsor, £525. 01751 476380 (Pickering, N Yorks). E-mail: phil@g4obk.fsnet.co.uk

LATTICE tower, three sections with mounting post, £300. 0114 288 3120 after 5pm (Sheffield).

LINEAR amplifier for sale, Drake L7 2K, mint cond, £900. 01902 491033 (Wolverhampton).

MARINE HF tcvr TRP-5000, comprising R-5000 rcvr 0-30MHz USB/AM/FSK/CW, 19in rack cabinet. T-5000 tcvr USB/AM/FSK/CW, 24V PSU, vgc, offers? 01482 860440 (Humberside). E-mail: steve@eddiesplace.karoo.co.uk

MARINE radio. Radio direction finder. Electronic depth sounder, £2000 or £1700 for quick sale, together with 4 BTH B/K 19ft 6in 'Caprice' sailer with trailer. Roller-reefing jib. Roller and slab-reefing main. 5HP twin Suzuki OB alternator, 5 gal fuel tank, compass, 5 gal water tank to sink pump. Rubber dinghy. 12V batt, gas bottle, extras. 01925 710902 after 6pm (Warrington).

NEWNES' *Radio And TV Servicing*, 20 volumes, 1948 to 1962, hardbacks, £45. Geoff, 01634 253056 (Medway). E-mail: gw.hoo@pgen.net

ONAN 3.5kVA generator, noisy and very heavy. Could deliver locally, offers? G3WCE, QTHR. 01603 250910 (Norwich).

PALSTAR 30A PSU, £70. TB-3 tri-bander with ext kit, £100. 21MHz 3-element mono-bander, £100. 3-ele mini-beam 2000, 10, 15, 20m, £140. MFJ-564 iambic paddle key, £35. MC-60 desk mic, £60. Datong FL-3 multimode filter, £50. MFJ MFJ-949E Versatuner, £80. MFJ antenna selector, 6 way, £30. Icom IC-745 tcvr, faulty on 10m band, otherwise OK, 0-30MHz, £250. Postage not included. 01752 316092 (Plymouth). E-mail: g0wou@hotmail.com

SALE or swap Maplin brand double-beam scope, 100MHz, new, never used, £450, or swap for best digital hand camera offered. Also, Icom IC-R7000 communication rcvr, 25MHz-1.3GHz, SSB/AM/FM/FM wide, the Rolls Royce rcvr, perfect. G3AAJ, QTHR. 020 8989 6741 (E. London). E-mail: ronbg3aaj@cs.com

SEM Tranzmatch ATU, £45. Katsumi EK-150 keyer, £25. Both immac. 07768 492562 (Isle of Wight). E-mail: paul.i.martin@btinternet.com

SHACK clearance. Yaesu FT-747GX, man, £200. Yaesu FT-736R, man, £650. Yaesu FL-2100Z, man, £350. MFJ-1278 TNC, man, £75. Pakratt PK-232 TNC, man, £75. Jaybeam TB-3 Yagi, man, £100. Diawa rotator, £100. Tower accessories: winch etc, offers? Scaffold poles, £10 each. 0208 578 3737 (Southall). E-mail: mike.redbird@btinternet.com

SILENT key sale. IC-756 tcvr, £990. Desk mic SM-20, £60. Solid-state linear amp IC-2KL with matching power supply, plus HF auto antenna tuner IC AT500, £900. Icom SP-20 ext LS with filters, £40. 25A power supply, £50. 33ft Adaptamast with 12in brackets, full tilt assembly with DL-600 winch, £180. Carriage at cost. GM4EHB, QTHR. 01688 302446 (Tobermory).

SILENT key sale. Yaesu FT-1000MP, £1350. 100W 2m linear, £75. Trio 9130 multimode, £185. Yaesu FL-2100B linear, £250. IC-701, c/w PSU, £250. Yaesu G-1000 rotator, unused, £295. Thrust bearing, £45. Cushcraft A3S tri-bander, unused, £300. Kenwood MC-85, £45. 60ft tower, £60. Valves: 4CX1000A, QV03-100, offers please. 01296 668166 (Ivinghoe). E-mail: g4lrg@aol.com

SILENT key sale. Yaesu FT-900AT, with brackets, car remote cable, boxed, £475. Icom IC-820H, boxed, £475. Daiwa RS-40XII 30/40 watt PSU, £90. MFJ-949E, boxed, £100. Datong D70 with book, Morse tutor, £15. CX401, PL259 x4 switch, £15. Also 2x switch, £10. All new or very little use and vgc. c/o M0BKV, QTHR. 01428 724456 (Liphook). E-mail: kammdp@altavista.net

SMARTUNER SGC-235, 500W version, £750. SGC-303 all band, 500W mobile aerial, £350. Kenpro KR-5400 dual elevation & rotator, as new, £365. MFJ-4112, £40. MFJ-945E, £75. SGC-230 Smartuner, £225. Big shack clearance. E-mail me for list. Dave, G3RCQ. 01708 374043 (Romford). E-mail: g3rcq@supanet.com

TEKTRONIX spectrum analyser (7L13) 1kHz - 1.8GHz in chassis with storage scope (7613). Perfect working order, with man, £800. 0973 534183 (Birmingham).

TRIO R-1000 rcvr, working but elderly, also realistic DX-394 rcvr in box, would suit young SWL, £50 ono each, buyer collects. 01582 715922 (Harpenden).

TRIO TR-9130, BO-9A base, 13A PSU, mobile mount, ToyoYM-1X SWR/PWR meter, Trio SP-120 speaker, £230. Trio TR-2500 h/held, ST-2 base mobile stand MS-1, SMC-25 mic soft case SC-4, £100 ovno. Daiwa DR-7500 rotator controller, cabling, £75 ovno. Two 2m ZL-special beam antennas, home-made Slim Jim antenna, triple ? colinear, 70cm mobile antenna, ? 2m mobile antenna, all with cabling and FOC to purchaser of equipment. Prefer buyer collects. Cyril, GW0CUM. 01446 773212 (Cowbridge).

TRIO TS-830S HF SSB tcvr, bands covered – 160, 80, 40, 30, 20 17, 15, 12, 10m, modes SSB/CW 220 watts O/P CW Full instruction man, schematic diagrams, boxed, immaculate, £375. 01737 373373 after 6pm or any time weekends (Surrey).

TRIO TS-940S, exc original cond, boxed, h/book, can be seen working, £550. G4WIA, QTHR. 01480 461331 after 6pm (Huntingdon).

VERSATOWER BP-40, Ringo Ranger ARX 2B 2m 12dx beam, HF tri-band beam £100. Silent key. Wiveliscombe Somerset, G4NIL. 01823 284225 (Taunton).

VERSATOWER P60 60ft 3-section tilt-over tower, complete, £550, buyer dismantles and collects. New unused auto-brake winch, £65. Daiwa MR-750 HD rotator, £150. KLM KT34A super DX 4-ele tri-bander, £150. TET HB433DX 3-ele 10-40m beam, £100. All vgc, offers invited. 07779 373216 (West London). E-mail: g4ged@dshack.demon.co.uk

YAESU 101ZD and Yaesu FV-101DM digital VFO, KW-107 ATU, vertical antenna - this lot, £260. G4KFR, QTHR. 01285 831648 (Cirencester). E-mail: albert.hodges@btinternet.com

YAESU 230R, complete, £50. SP-mic, 4m lead, £7. AR-240 handie, £40. Both 2m FM. NEC pinwriter P2200 printer, £18. 01260 280231 (Congleton).

YAESU 767GX 6-2-70cm bolt-on converters with VC1 electronic tuner unit VC-300LP, also 20m vertical, £400. Commodore computers 500+ with A530 turbo hard drives, 2-off, sensible offers. Sundry SSTV for Commodores and ICL picture-grabber - offers? PK-232MBX, mans, £160 ono. 01242 673834 (Cheltenham). E-mail: john.g3cxi@tesco.net

YAESU FT-290R, boxed, as new, c/w carrying case, man, circuit diagram. Microwave Modules 144MHz linear 25W power and receive amplifier, FT-290 mobile metal mounting case and antenna. The lot, £230 ono. 01695 575247 (Ormskirk). E-mail: joseph_yates@talk21.co.uk

YAESU FT-51R dual-band 2m/70cm h/held tcvr, plus spare FNB-31 Ni-Cd battery and Diamond RH-6 antenna, exc cond, original packing, £170. Icom IC-PCR1000 inc DSP, computer-driven wide-band rcvr, exc cond, original packing, £170. Bob, GW0DFY, QTHR. 01745 590257 (Rhyl). E-mail: robert@ranthony.freeserve.co.uk

YAESU FT-736R 2m and 70cm all modes inc satellite, original owner, box, man, excellent radio, sensible offers please. G0KDR. 01728 663476 (Saxmundham, Suffolk). E-mail: g0kdr@btinternet.com

YAESU FT-77 HF tcvr, 3.5-30MHz, £300. Yaesu FC-707 antenna tuner, fitted Ezitune transmatch, £80. Yaesu FT-290R 2m tcvr, £85. Microwave Modules 30W linear amplifier, £30. 5-ele portable Yagi for 2m, £25. Mobile tri-bander 10-80m, £30. Mobile mount for FT-77, £15. Mobile mount for FT-290, £15. MFJ pocket Morse tutor, £60. YD-14B desk mic, £10. Morse key, ex WD, £6. Buyer collects. 01736 330493 (Penzance).

YAESU FT-890, internal ATU, boxed with man, mic and lead, gwo, £450. Prefer buyer collects or pays delivery. 01472 314783 (Grimsby). E-mail: fnelson@ntlworld.com

YAESU FT-900AT mint, boxed, little used, £495. Yaesu MH-34B4B spkr/mic for VX-5R, unused, £10, or exch Standard C-156 accessories. G4ILO. 01900 821192 (Cumbria). E-mail: julian@tech-pro.co.uk

YAESU VX-1R, immac, boxed, hardly used, dual-band h/held, £110 ono. 01234 708301 (Bedford). E-mail: koenraodr@hotmail.com

WANTED

CRYSTAL sets and early valve radios wanted. All old equipment, valves, etc is of interest. Jim, G4ERU, QTHR. 01202 510400 (Bournemouth).

AR88 wanted, will collect, pay cash, and give it a good home! Mike, G3XEF. 01952 606373 (Telford). E-mail: mfle@mail.com

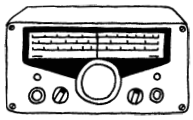
CW filter for FT-736R. 70cm low-noise masthead pre-amp. Sequencer for satellite antenna switching. 01527 541502 (Redditch). E-mail: g3kwk@aol.com

CW filter for Yaesu FT-980, type XF455.8MCN or XF8.9HC/XF8.9HCN (also used in FT-101ZD, 901, 902, FT-707 and 107). Graham, G4DPH. 01934 838298 (Bristol). E-mail: alva@tinyonline.co.uk

DATONG active antenna, outdoor, indoor, or parts only. IB5 interface and head unit. 01269 871382 (Llanelli).

EDDYSTONE EA12 rcvr, any cond considered, will pay very good price if mint. Also any Eddystone loudspeakers. Steve, G8EBM, QTHR. 01335 360755 (Derby). E-mail: g8ebm@compuserve.com

Looking for a classic receiver?



Find one with a member's ad!

MARCONI Wireless Telegraph Company transmitters, rcvrs, Morse keys, spark coils, coherer rcvrs from the early days. Also, any wireless sets from the 1920s, especially those with valves on the outside, plus crystal sets, horn speakers, valves, books, magazines, pre-war televisions, mechanical TV by Baird Scophony, even components. Finally, all spy sets from WW2 and coding machines. Mr Yates, The Hewarths, Sandiacre. 0115 939 3139 (Nottingham). E-mail: vintageradio@aglance.fsnet.co.uk

MFJ-259 or similar antenna analyser, also 1155 rcvr, preferably with spare valves, PSU and DF function. 01653 696737 (nr York). E-mail: avril@amonks.freeserve.co.uk

MORSE keys wanted by private collector. Also telegraphic sounders, relays, galvanometers, anything considered. Silent key sales, etc. Gerald. 0118 983 4307 (Reading).

NARROW CW filter for FT-707, Yaesu part no. H1102019 type XF89HCN or equivalent. GI8AYZ, QTHR. 02892 665034 (Lisburn). E-mail: gi8ayz@rsgb.org

OLD ham requires HF to 70cm tcvr or HF to 2m all-mode will do, base or mobile, any condition. Will part exchange my Lake DTR-7 with SWR/ATU 5A PSU, value £80, perfect w/o QRP, as new. 0161 775 8444 (Irlam, Manchester).

SILENT key clearout or just not needed, wanted for research project, QSL accumulations, old call books, etc. Can collect. 0113 269 3892 (Leeds). E-mail: g4uzn@qsl.net

SPECTRUM analyser display unit for HP-8551B, to replace stolen club item. Our speccy is useless without it. G3UKV, QTHR. 01952 255416 (Telford). E-mail: ukv@globalnet.co.uk

T & R Bulletins July 1925 to April 1936, single copies or complete sets, also *RadComs* 1974 to 1982. I have some duplicates 1937 to 1942 for swaps and would like to hear from other collectors. Harry, G3NGX, QTHR. 01491 872919 eve or answerphone (Reading).

TRAILER-mounted tower, plus large HF tri-band beam. WHY? Steve, G3ZVW, QTHR. 020 8882 5125 (London).

TS-130 for spares and repair. 01707 813890 (Welwyn Garden City). E-mail: cyril@g3cse.freeserve.co.uk

WANTED ERA Morse reader at a reasonable price, for OAP to help pass his CW test before it's too late. Also, setting-up disc for Amstrad 2286. 01925 790599 (Warrington).

SILENT KEYS

WE REGRET to record the passing of the following radio amateurs:

G0AHX	Mr F B Limond	14/08/00
G0MMV	Mr J West	01/08/00
G0MVA	Mr J L Bailes	18/08/00
G0NDW	Mr C Harradine	13/11/99
G0NHC	Mr J Kearney	26/07/00
G0NXP	Mr RHL Thomson	14/12/99
G0SUX	Mr D Brown	22/02/00
G0WAR	Mr P F Hulse	08/08/00
G1HVA	Mr M Bugby	12/08/00
G1OLZ	Mr D G Turtle	21/07/00
G1RYK	Mr J L Weaver	9/7/00
G1YFH	Mr E H Cox	/01/00
G2KI	Mr G A Spencer	09/08/00
G3DTJ	Mr C H Ellison	
G3LON	Mr G F Neal	06/05/00
G3MER	Mrs D Davis	28/07/00
G3MFQ	Mr S Kerrison	14/08/00
G3SGT	Mr A P Teale	15/08/00
G3VCW	Mr M A Baynham	05/01/00
G3WWF	Mr I R Firth	11/07/00
G4CPJ	Mr J S Seymour	20/07/00
G4GGB	Mr DEE Owen	02/08/00
G4HJN	Mr L J Tucker	30/07/00
G4JNA	Mr R I Macfadyen	29/03/00
G4PVV	Mr L Watkins-Field	21/08/00
G4ZNA	Dr J N McCormick	
G5RI	Mr FJU Ritson	31/08/00
G6PZT	Mr K Davey	07/07/00
G7UJK	Mr T A Medlicott	07/08/00
G8BAA	Mr D A Earnshaw	24/05/00
G8DF	Mr A E Mitchell	/05/00
G8JH	Mr G F Budden MBE	14/08/00
G8LY	Miss C R Hall	25/05/00
GI0EZS	Mr D N Neill	/00
GM0UCB	Mr R de'Ath	03/07/00
GM3DUS	Mr W B Storry	18/08/00
GM4HKH	Mr R W Hardie	04/08/00
GW3UO	Mr R H Smale	13/07/00
RS94947	Mr N Agutter	

Clive Trotman, GW4YKL (ex-GW6LDX)

THE SOCIETY'S 1995 President Clive Trotman, GW4YKL, died early on Wednesday morning, 6 September 2000.

The first native Welshman to hold the office of President, he was installed at a ceremony on 14 January 1995 in Bridgend. Among the dignitaries in attendance were the Deputy Lord Lieutenant of Mid-Glamorgan, VIPs from the Irish, Belgian, French and German national amateur radio societies, and hundred's of Clive's friends.

He came into amateur radio from a CB background. He was an active member of the Bridgend Radio Club from 1980, becoming their Contest Organiser in 1982, also arranging many other social events.

He became Club Chairman in January 1984 and, in this capacity, was instrumental in organising the first Bridgend Radio Rally.

Clive was elected Bridgend Club's President in 1991, a post he held until his death. Always anxious to put something back into the hobby that gave him so much pleasure, he ran RAE and NRAE classes at the Highfield Centre for the Disabled and at the local comprehensive school, where more than 440 students passed through his hands. He was elected to RSGB Council in the same year, but continued teaching until the mid-1990s.

Clive will be missed by many, particularly in the South Wales area where he was known and respected as an ambassador for our hobby. His funeral was on 11 September at 2pm at the Bridgend Crematorium, and was attended on behalf of the Society by past Presidents Ian Kyle and John Case, by the Zone E Council Member, Paul Essery, by the Chairman of the VHF Committee, Mike Adcock, and by the Deputy ERLO, Simon Lloyd Hughes.

Club NEWS

ABERDEEN ARS

6, Junk sale; 13, Building competition; 20, Building competition winner talk; 27, Night on-the-air. Robert, 01224 896142.

APPLEDORE & DARC

16, Radio quiz. Brian, 01237 473251.

AYLESBURY VALE RS

4, Surplus equipment sale. Roger, G3MEH, 01442 826651.

BARRY ARS

3, Night on-the-air & planning meeting: GW8K re CQ WW; 10, Quiz night by GW0ANA; 17, Night on-the-air & Morse practice; 24, Night on-the-air & final planning meeting, GW8K; 28/29, CQ WW DX phone as GW8K; 31, Night on-the-air & contest debrief. Rich, GW4BVJ, 01656 658830.

BRACKNELL ARC

11, Return of the HF Antenna. Baugh @compuserve.com

BRAINTREE & DARS

16, Talk 'Home Brew Kits', by David, M1CZY; 20/21/22, JOTA. Keith, M0CLO, 01376 347736.

BRISTOL RSGB GROUP

30, An evening with top CW DXer Roger Western, G3SXW (possible alternative venue). Martyn, G3RFX, 0117 973 6419.

BROMSGROVE ARS

20, Talk 'Air Ambulance Service'; 24, Quiz night. Jon, M5DRW, 01527 454729.

CHELMSFORD ARS

3, AGM and at 9pm a talk 'Packet Radio', by Clive Ward, G1EUC. David, M0BQC, 01245 602838.

CHELTENHAM ARA

6, Sale of surplus equipment. John, G4PDQ, 01242 242336.

CHESHUNT & DARC

4, Members' forum; 11, Talk 'Recent Developments in Fire Science', by Stan Ames, G4OAV; 18, Night on-the-air. David, M1DGS, 01920 463746.

CHESTER & DRS

3, Talk 'Flying as a hobby', by Geoff, G0OXA; 17, Talk 'Air Traffic Control', by Dave, G4JMF; 24, Surplus sale. Bob, G4CMI, 01244 378699.

CHICHESTER & DARC

3, Talk 'The Triode', by John, G3IJS; 1, Talk 'Climatic Oscillations', by John Crosby. Graham, G0WSD, 01243 788292.

COCKENZIE & PORT SETON ARC

20, Video night. Bob, GM4UYZ, 01875 811723.

COVENTRY ARS

6, AGM; 13, Night at the dogs; 20, Outdoor activity; 2, Night on-the-air, Novice class, CW Practice. John, G8SEQ, 024 7627 3190.

CRAY VALLEY RS

5, Surplus sale; 19, Talk 'GSM Mobile Phones', by Andy, M0BXT. Bob, BRS32525, 020 8265 7735 after 8pm & weekends.

CROWBOROUGH & DARS

26, Grand charity quiz. Margaret, G6UIF, 01892 663666.

CRYSTAL PALACE & DRC

4, Transverter project, construction class, computing and Internet; 21, Microwave aerial table, by D Atter, G3GR. Bob, G3OOU, 01737 552170.

DENBY DALE (PIE HALL) ARS

4, AGM at the Pie Hall, Denby Dale, 8pm prompt; 11, Surplus sale. Tony, G4LLZ, 01484 318750.

DERBY & DARS

4, Junk sale; 18, Quiz night. Martin, G3SZJ, 01332 556875.

DUDLEY ARS

16, 16th AGM. Bill, G3CAQ, 01902 843873.

EDGWARE & DARS

12, 'Summer Activities' round table discussion; 26, Quiz, Tony, G0IGP, as MC. David, G5HY, 01923 655284.

EXMOUTH ARC

8, Construction competition; 18, Talk 'Radio Communications', by Alec, G8GON. Alec, G8GON. 01395 264872.

FAREHAM & DARS

4, 'Circuits and Components' - Part 6; 11, Night on-the-air; 18, Video night; 25, A practical demonstration - using a CRO in fault-finding. Steve, G7HEP, 01329 663673.

FARNBOROUGH & DARS

11, Construction evening; 25, Talk 'Batteries', by Chris, M1EBL. Norman, G0VYR, 01483 835320.

FELIXSTOWE & DARS

2, Talk by Andy, G4PIQ; 16, Fish & chip supper - Victoria Inn, Felixstowe Ferry - names to Robin, G0VQS; 30, 'Robot Wars', by John Willoughby. Paul, G4YQC, 01394 273507.

GLOUCESTER AR & ES

2, Talk 'Clandestine Radio - part 1'; 9, Talk 'Clandestine Radio - part 2'; 16, Morse practice, 5WPM; 23, Talk 'The Mysterious 128 Set'; 30, World War Two DF techniques. Tony, 01452 618930, office hours.

GOOLE RES

6, Contest discussion night at the Barnes Wallis Inn; 13, HF Night on-the-air at Lionel Winder Ltd, Selby; 20, 'Build your own computer Part 3', hosted by Dennis, G0FBR, at the Courtyard Centre, Goole; 27, Telegraphy night at the Courtyard Centre, Goole. Richard, G0GLZ, 07867 862169.

GREAT YARMOUTH RC

13, Operating evening; 27, Grid Dip Oscillator Demo. Tony, G3NHU, 01493 721173.

GRIMSBY ARS

5, AGM; 19, Annual junk sale. Brian, G4DXB.

GUILDFORD & DRS

13, CW & RTTY evening; 27, Talk 'QRP Transceiver Built By a Club Member', by Denis, G3OLM. Tim, G7JYQ, 020 8399 5125.

HAMBLETON ARS

4, Night on-the-air. John, G0VXH, 01845 537547.

HASTINGS ELECTRONICS & RC

21, JOTA event at St Peters Church Hall, Parkstone Rd, Hastings. R C Gornall, G7DME, 01424 444466.

HODDESDON RC

10, Bumper junk sale; 20, Club Annual Dinner; 24, Night on-the-air. Don, G3JNJ, 020 8292 3678.

HORNDEAN & DARC

3, Club social evening; 24, AGM. Stuart, G0FYX, 023 9247 2846.

HORNSEA ARS

4, Yorkshire Snapshots, by G4UOZ; 11, Rally preparations; 18, Activity; 25, Museum Pieces, with G4IGY. John, G0TPS, 01964 562258.

HORSHAM ARC

5, Junk sale. David, G4JHI, 01403 750228.

HULL & DARS

20, Talk 'Build Your Own House', by G0VVP. Jonathon, G7DBL, 01482 493425 or 07867 880402.

ITCHEN VALLEY ARC

13, Talk 'The Story of the SS Great Britain - Part 1', by Doug, G4BEQ; 21/22, JOTA at 15th Chandlers Ford Scouts, Otterbourne; 27, DFing with Clive, G4ODM. Pete, M0CFQ, 023 8034 5052.

KEIGHLEY ARS

5, Night on-the-air; 19, Northern Heights quiz (Pie & Peas); 26, Talk by Peter Hut (Morse Examiner). Ian, M1BGY, 01274 723951.

KIDDERMINSTER & DARS

3, Surplus sale. Geoff, G0RJP, 01299 888826.

KILMARNOCK & LOUDOUN ARC

3, 'Building your own PC', by Paul, SWL; 17, 'Home-built CAT for your Icom', by GM4OSS; 31, Talk 'Home-Built Audio Amp', by GM1MJK. Steven, GM4OSS, 01560 483800.

LEICESTER RS

2, Night on-the-air; 16, Quarterly meeting; 23, Night on-the-air. A T Wann, G0TNI, 0116 263 0947.

LEISTON ARC

3, Talk 'Surface Mounted Devices', by Ian, G0OZS. John, G0FSP.

LINCOLN SHORT WAVE CLUB

4, G5FZ on-air; 18, Surplus equipment sale. John, G1TSL, 01522 793751.

LOTHIANS RS

11, Talk 'Analysis of Morse Sending', by Geoff Walsh, GM4FH; 25, Surplus equipment sale (Orwell Lodge Hotel). John, GM7REG.

LOUGHBOROUGH & DARC

3, Three-transistor construction competition – update by Ian, G8SNF; 10, AGM; 17, Night on-the-air - DX on any band; 24, Talk 'Lake Electronics', by Alan Lake; 31, Calibration night - bring your gear to be checked. Chris, G1ETZ, 01509 504319.

LOUGHTON & EPPING FOREST ARS

6, HF night on-the-air; 20, RSGB Video Night. Marc, G0TOC, 07803 023501.

MAIDSTONE YMCA ARS

6, RAE DC theory; 13, RAE AC theory; 20, RAE reactance and impedance; 27, RAE resonance. John, G0RHO, 01622 832259.

MAXPAK

2, The latest information about the MaxPak LAN, by the committee. Ron, G6LRD, 01922 684496.

MERCIAN ARS

23, Talk 'Across the Pacific with Expedition Raleigh', by John Layton, G4AAL. Arnold, G3FZW, 01543 262495.

MID-WARWICKSHIRE ARS

10, 2001 programme planning meeting; 24, Talk 'Steam Trains 3', by Mick Jerome. Bernard, M1AUK, 01926 420913.

MORECAMBE BAY ARS

24, Talk 'Advances in Camera Technology over the Last Two Years', by Reg. Brian, G0RDH, 01524 424522.

NORFOLK ARC

11, Night on-the-air, construction, Morse practice; 18, Nostalgia evening, bring your most treasured (radio-related) possession - Peter, G3ASQ; 25, Night on-the-air, construction, Morse practice. John, G0VZD, 01953 604769.

NORTH BRISTOL ARC

6, Kenwood evening with David Wilkins, G5HY; 20. Quiz night; 27, Scratch and kit built display. David, G0GHM, 01275 790448.

PAISLEY (YMCA) ARC

4, 'How to Drive a Valve Linear' with GM3CIX; 18, Talk 'Confessions of an MM5', by MM5TGW. Jim, GM3UWX.

RADIO SOCIETY OF HARROW

6, German evening, a chance to try out German food, wine and radio contacts; 20, Hungarian evening. David, G0CAG will attempt to repeat his triumph of last year; 21, GB2DHH operating day, from Mosquito Museum, London Colney. Jim, G0AOT, 01895 476933 or 020 7278 6421.

READING & DARC

12, Talk 'Practical Wireless - Origins, Past, Present and Future', by Rob Mannion, G3XFD. Pete, G8FRC, 0118 969 5697.

SALOP ARS

12, AGM. Fred, G3NSY, 01743 790457.

SHEFFORD & DARS

12, CQWW planning; 19, Grand junk sale; 28, CQWW - your chance to work the world. Mike, G8BEG, 01462 816738.

SILVERTHORN RC

27, AGM. Andrew, G0LWS, 020 8504 2831.

SOUTH BRISTOL ARC

4, CW practice evening, with Ken, G0TDS; 11, Master Class - Cables & Connectors, with Len G4RZY; 18, VHF workshop for newcomers, with Peter, G0DRX; 25, Night on-the-air. Muriel, G4YZR, 01275 834282.

SOUTH NOTTS ARC

4, Talk 'Kanga Products', by John Fletcher,

Items for club news should be sent to the *RadCom* Office at HQ to arrive by the 26th of the month, ie approximately a month before publication (eg 26 January for the March Issue). News items should be sent in writing (fax, letter or e-mail gb2rs@rsgb.org.uk) by the club secretary or the person responsible for publicity. Post cards for this purpose are available from RSGB HQ. A database of all meetings is shared by *RadCom*, *Radio Today* and GB2RS, so information only needs to be sent once.

Club News is a service for clubs and societies affiliated to the RSGB. The announcements are intended to notify non-members and potential members of your club of specific events, therefore 'informal', 'committee meeting', 'natter night' and 'ragchew evening' etc will not be included. Basic, unchanged details about RSGB-affiliated clubs are published annually in the *RSGB Yearbook*.

G4EDX; Night on-the-air HF & VHF; 18, Open forum - members only; 25, Night on-the-air HF & VHF. 01509 672846.

STOCKPORT RADIO SOCIETY

11, The G0HAL Lecture 'And Now For Something Completely Different', by Andrew Paterson, G0HAL; 25, Construction competition & slide video show. David, M1ANT, 0161 456 7832.

SURREY RADIO CONTACT CLUB

2, Autumn surplus equipment sale; 16, Fix it & advice clinic. Berni, G8TB, 020 8660 7517.

TELFORD & DARS

4, Night on-the-air. Mike, G3JKX, 01952 299677.

THE VALE OF WHITE HORSE ARS

3, AGM. Ian, G3SEK, 01235 531559.

THORNTON CLEVELEYS ARS

2, AGM; 9, Video evening; 16, Night on-the-air; 23, Talk 'Flight Simulators', by Ian, G0KMT; 30, Talk by Colin, G0EPY. Jack, G4BFH, jack@duddington.fsnet.co.uk

TROWBRIDGE & DARC

4, Talk 'The Cellular GPRS Network and Mobile Internet Services', by Jan Verduyn, G0BBL. Ian, G0GRI, 01225 864698 evenings & weekends.

VERULAM ARC

23, Talk 'EMC and the Amateur', by Dickie Marshall, G3SBA. Walter, G3PMF, 01923 262180.

WAKEFIELD & DARS

3, Talk 'VLF Cave Radio'; 10, Talk 'Cameras'; 17, Night on-the-air; 24, Brewery visit; 31, Games night. John, G7JTH, 01924 251822.

WATERSIDE (NEW FOREST) ARS

3, Speaker, Ian Hubball – IARU; 17, Practical construction and night on-the-air. Tony, G0LKG, 023 8084 1794 evenings & weekends.

WELWYN HATFIELD ARC

9, Communal junk sale with SWIG group to be held at the Hyde Club, Welwyn Garden City. Dean, 07968 119975.

WEST SOMERSET ARC

3, Spectrum Analysis in Action. Alan, M0AOJ, 01643 707207.

WESTON-SUPER-MARE RS

2, Quiz night with Andy Giles; 16, Workshop. Doug, G0WMW, 01934 629160.

WOLVERHAMPTON ARS

26, AGM. J Smith, 01902 751936.

WORTHING & DARC

4, Discussion evening; 11, Direction-finding; 18, AGM; 25, Discussion evening. Roy, G4GPX, 01903 753893.

YORK ARS

20, Annual Dinner; 21, SES for Maths 2000. Keith, G3WVO, 01904 422084.

YORK RC

5, Morse tuition with G4XIV; 12, AGM - John, G4FUO; 19, Pie and peas evening - Andy, G0VYS; 26, Morse tuition with G0WUY and G4XIV. Tony, G4XIV, 01132 868744.

Rallies & Events

This is a list of all rallies, hamfests, exhibitions and conventions notified to HQ (as at press date). Items are given in detail for the next three months inclusive and in brief thereafter. Please send detailed information, including contact callsign andtelephone numbers direct to HQ and marked 'Rally News – DIARY'.

CONGRATULATIONS

To the following whom our records show as having reached fifty years' continuous RSGB membership this month:

GW3IGG	Mr JPG Jones
RS18978	Mr R G Clement

1 OCTOBER 2000

BELGIUM AMATEUR RADIO & COMPUTER Rally – Hall 'La Louvière Expo', la Louvière, access direct from motorway, 50km south of Brussels. OT 9am, TI on repeaters 145.600 and 430.325MHz, TS, FM. Michel, ON7FI, 0032 64 849 596.

GREAT LUMLEY AR & ES Rally – Great Lumley Community Centre, Front Street, Great Lumley, Chester-le-Street. OT 10.30/11am, £1 (accompanied under-14s free), TI, CP free, C, B&B, JS. 0191 384 2803 or 020 8937 2772.

8 OCTOBER 2000

NORTH WAKEFIELD RC 17th Radio Rally – TS, SIG, B&B,C, MT (two photos needed). http://www.nwrc.mcmail.com or 01924 824451.

PORTLAND ARC and PORTLAND ISLAND COMPUTER CLUB Rally – Royal Manor School, Weston, Portland, Dorset. OT 10am, £1 (accompanied children free), TS, C, TI on S22. Kerry, G1WIK, 01305 788591 or e-mail parc@the-morris-family.freeserve.co.uk

13 -15 OCTOBER 2000

RSGB International HF and IOTA Convention - Old Windsor, Berkshire. RSGB, 01707 659015.

15 OCTOBER 2000

BLACKWOOD & DARS Radio, Computer & Electronics Rally – Newport Centre, Newport, 1 mile from jn 25A M4. OT 10.30/11am, B&B, TI, CP, TS, SIG, LB, C, DF. Stuart, 01495 243824 or 07970 777756, fax 01495 240260 or e-mail fireham@aol.com

HORNSEA ARC Radio and Computer Rally – Floral Hall, Hornsea. OT 10.30/11.00am, TS, RSARS, RAFARS, RSGB books, B&B, C, LB. Duncan, G3TLI, 01964 532588.

28 OCTOBER 2000

INTERRADIO Exhibition – Eilenriedehalle, Theodor-Heuss-Place 1-3, Hannover. OT 9am, 10DM, CP free, TI by DF0IR, LEC, TS, FM. www.interradio-hannover.de

29 OCTOBER 2000

GALASHIELS & DARS Annual Radio and Computer Rally – The Volunteer Hall, St John's Street, Galashiels. TS, B&B, C. Jim, 01896 850245 or e-mail jimk@gm7lun.freeserve.co.uk

4/5 NOVEMBER 2000

NORTH WALES RRC Rally 2000 – North Wales Conference Centre, Llandudno Promenade. OT 10am, £2 under-14s free, C, LB, DF, TI on S22. Muriel, GW7NFY, 01745 591704 or Ted, GW0DSJ, 01745 336939. Club web page www.nwrrcw.org.uk

5 NOVEMBER 2000

NORTH DEVON RADIO Rally – Holsworthy Memorial Hall. OT 10am. B&B etc. G8XMI, QTHR, 01409 241202.

TYNE & WEAR Repeater Group Annual Auction – Great Lumley Community Centre. OT 10am, auction starts 12 noon. Brian, G8FBQ, 0192 388 2913 or brian@briancorker.freeserve.co.uk

12 NOVEMBER 2000

GREAT NORTHERN HAMFEST – Metrodome Leisure Complex, Queen's Road, Barnsley, S Yorkshire. OT 10am. Ernie, G4LUE, 01226 716339 or 07787 546515 or ernest.bailey1@virgin.net

19 NOVEMBER 2000

WEST MANCHESTER RC Red Rose Rally – Horwich Leisure Centre, Horwich, Bolton, off jn 6 M61. OT 10.30/11am, £1.50 (£1 OAP), C, B&B. Don, G3BSA, 01942 871620, or don@g3bsa.freeserve.co.uk

25 NOVEMBER 2000

ROCHDALE & DARS Traditional Radio Rally – St Vincent de Paul Catholic Church, Caldershaw Road, off A680, approx 2 miles W of Rochdale. Follow orange arrows from M62 jn 20. Note: this is taking place on Saturday! OT 10.15/10.30am, £1, C. John, G7OAI, 01706 376204 (eves).

25/26 NOVEMBER 2000

LONDON Amateur Radio & Computer Show – Lee Valley Leisure Centre, Pickett's Lock Lane, Edmonton N9. OT 10am, £3 (£2.50 concessions), TS, B&B, SIG, CP free, DF, CS, FAM, LB, C, MT. 01923 893929.

26 NOVEMBER 2000

BISHOP AUCKLAND RAC Rally – Spennymoor Leisure Centre. OT 10.30/11am, £1, (accompanied under-14s free), TI on S22, CP, B&B, C, LB, MT (two photos needed). Mark, G0GFG, 01388 745353 or Brian, G7OCK, 01388 762678.

21 JANUARY 2001

OLDHAM ARC Rally – Geoff, 01706 846143.

28 JANUARY 2001

LANCASTRIAN Rally - G0GVA, 01772 621954.

4 FEBRUARY 2001

HARWELL ARS Rally – Ann, 01235 816379

SOUTH ESSEX ARS 16th Mobile Rally – Brian, G7IIO, 01268 756331 or briang7iio@yahoo.com

11 FEBRUARY 2001

CAMBRIDGE & DARC Radio Rally & Car Boot Sale – New venue. G0GKP, 01954 200072.

25 FEBRUARY 2001

SWANSEA ARS Radio & Computer Show – Roger, GW4HSH, 01792 404422.

18 MARCH 2001

NORBRECK Amateur Radio, Electronics & Computing Exhibition – Peter, G6CGF, 0151 630 5790.

21/22 APRIL 2001

LONDON Amateur Radio & Computer Show – New venue. 01923 893929.

22 APRIL 2001

HARROGATE Radio, Computer & Electronics Rally – Gerald, G0UFI, 01765 640229 or e-mail g0ufi@qsl.net

7 MAY 2001

DARTMOOR RC Rally – Ron, G7LLG, 01822 852586.

13 MAY 2001

THREE COUNTIES Radio & Computer Rally – John, 01527 545823.

20 MAY 2001

DRAYTON MANOR Radio & Computer Rally - Peter, G6DRN, 0121 443 1189 (eves).

8 JULY 2001

SUSSEX Amateur Radio & Computer Fair – Ron, G8VEH, 01903 763978 or 01273 417756 (office hours).

GB calls

1 Oct	GB2TW B2 from Tunbridge Wells. Tunbridge Wells, Kent. L (G3GWD)
4 Oct	GB0RBL Royal British Legion. Macclesfield. LH2 (G0JNJ)
5 Oct	GB2RCC Radio Caravan Camping. Swinford, Leics. (G4EPN) GB60BOB Battle of Britain. Albrighton, Nr Wolverhamton. LHV27P (G0DAM)
7 Oct	GB2WT Walled Towns. Tenby, Pembrokeshire. LHV27 (GW0JRF) GB4WT Walled Towns. Tenby, Pembrokeshire. TLHV27 (GW0WBQ) GB5LI Lundy Island. Lundy Island, Bristol Channel. LH (G0IFM) GB5WT Walled Towns. Neyland, Pembrokeshire. TLHV2P (GW4XQK) GB6HF Houghton Feast. Tyne & Wear. LHVP (G0PMX) GB6WT Walled Towns. Milford Haven, Pembrokeshire. TLHV2 (GW0MYY) GB8WT Walled Towns. Haverfordwest, Pembrokeshire. TLHV27P (GW0UQH)
13 Oct	MB2HFC HF Convention. Berkshire. TLHP (G3PSM)
21 Oct	GB4ABC Attleborough Baptist Church. Nuneaton. LH (G0FBG) GB4YMF York Maths Fun Fair. York. TL2 (G3WVO)
22 Oct	GB2LSM Long Shop Museum. Leiston, Suffolk. LH2 (G0FSP) GB5MC Morse Campaign. Cambridge. L (G3PJT)

KEY

Rallies & Events

TI - Talk-In; **CP** - Car Park; **£** - admission; **OT** - Opening Time - time for disabled visitors appears first, eg (10.30/11am); **TS** - Trade Stands; **FM** - Flea Market; **CBS** - Car Boot Sale; **B&B** - Bring and Buy; **A** - Auction; **SIG** - Special Interest Groups; **MT** - Morse Tests; **LB** - Licensed Bar; **C** - Catering; **DF** - Disabled Facilities; **WIN** - prize draw, raffle; **LEC** - LECtures / seminars; **FAM** - FAMily attractions; **CS** - Camp Site.

HF

DON FIELD, G3XTT
105 Shiplake Bottom, Peppard Common, Henley on Thames, RG9 5HJ.
e-mail: hf.radcom@rsgb.org.uk

SOME NICE DX at last, with FR/F6KDF/T worked on 9 bands from the UK during August, plus YJ0AXC (Vanuatu) workable from the UK on 12, 15, 17 and 20m despite running just 100 watts to dipoles, and some other equally nice Pacific DX such as ZK1NNP (S.Cook Islands) and VK9XY (Christmas Is.) at good strength on the high bands. Let's hope this is a sign of things to come.

DX NEWS

WILLI, DJ7RJ, WILL once again operate from Monaco as 3A/DJ7RJ between 1 and 20 October. The 160m allocation in 3A is 1,830 to 1,850kHz, and on that band he will aim to operate around 1833kHz.

Father Apollo, SV2ASP/A, will operate as SY2A between 1 October and 31 December to celebrate his tenth year of amateur radio activity from Mount Athos. He suspects there might be some problem with the local post office, as he is receiving several second requests for QSOs he has already confirmed (QSLing takes time, he says, but he replies to all the QSLs he receives).

Bill, G3WNI; Tim, G0PSE; and Doug, G0WMW, were due to operate as GB0SM from St Mary's, Isles of Scilly (IOTA EU-011) between 30 September and 7 October. They will be on all bands and modes. QSL to G3WNI, or request a card via e-mail to g0pse@qsl.net

An all-band all-mode DXpedition to Agalega will take place between 8 and 24 October. The callsign will be 3B6RF. This is a big team (something like 20 operators) and a big effort, with capability, for example, of running two stations simultaneously on a single band. Derek, G3KHZ, will be one of the operators. The team has a web page at www.agalega2000.ch

A very experienced German team, lead by Sigi Presch, DL7DF, will be active from West Africa this month. The first stop will be to Togo (5V) between 3 and 9 October. Next it's on to Burkina Faso (XT) from 10th to 15th. The team will have four transceivers and two amplifiers. They will be active on bands from 6 to 160m, CW, SSB and RTTY, and will use beams and verticals, including a 21m-high vertical for 80 and 160m, to help with the emphasis on the low bands. A web page has been set up at http://www.qsl.net/dl7df/ On-line logs are expected. Tom, DL7DO, and Sigi will then head for Mauritius where they will be active from 3 to 17 November. They will have one complete station, a beam and a vertical for 80 and 160m. The station location will be on the beach. QSL all operations via DL7DF, either via the bureau or direct.

Bruce, ZD7VC, writes that another Tristan amateur is currently active from Ascension. Johnny, ZD7WRG, is active as ZD8KW with a TS-440S and Hygain DX88 vertical antenna.

Dez, G0DEZ, writes that he has just begun a 3-year tour of duty in Cyprus (AS-004). He is already active as 5B4/G0DEZ, and when I worked him recently on 30m he told me his ZC4DW call for the Sovereign Base Areas should be issued by the time this column appears in print. QSL his operations to his home call, either via the bureau or direct (*Yearbook* address is wrong, please see 'QTH Corner' next month).

Eiji, JQ1SUO, plans to be active as JQ1SUO/1 from Shikine Island (AS-008) between 7 and 9 October. Look for him on CW and SSB, all bands. QSL either via the bureau (preferred) or direct (1 IRC) to his home call.

Peter, ON6TT, who has operated in recent years from a number of African countries and, most recently, as 9A/ON6TT, has passed on the information that, after being based in Kosovo for the UNWFP since February, he is moving his base to Pakistan. He plans to start setting up shop in Islamabad as of November. Peter expects to stay there for the next four years and will try to build up a station again, as he did from 5X1T (Uganda). He is sure the location will be more challenging to work pileups than his station in Africa. He says that Mario, 5X1C, has recently joined his team and will also be based in Islamabad. Peter adds that this trip will take him not only to Pakistan, but to Laos, Sri Lanka, Indonesia, East Timor, Thailand, Bhutan, Cambodia and India. He will only stay a maximum of a week in each of those places, so he will only be active after work, but with no special activity or a large scale operation. As always, expect Ghis, ON5NT, to deal with QSL cards.

Spanish operators Toni, EA5RM, and Pedro, EA7DBO, will be active as XU7ABD from Sihanouk Ville in the southern part of Cambodia from about 3 to 11 October. They will have an Icom IC-736 and a couple of 4CX250B amplifiers. For antennas they will use a tribander for 10, 15 and 20m, and wire dipoles for the other bands. They will be active on bands from 10 to 80m, SSB and RTTY, with some CW.

Japanese operators JA4LVZ and JF1NEH will be active from Tushima Island (AS-036) from 6 to 8 October. They plan to operate on 15 and 40m SSB. QSL via home calls.

The 4W (East Timor) operation I hinted at last month will now actually take place during October. Dennis, K7BV, an experienced DXpeditioner and contester will be accompanied by Dick, N6FF, a lowband specialist. They will have access to some high towers from which they hope to string LF antennas, and will have support from the newly-formed East Timor Amateur Radio Association. The callsign will be a new one, assigned to the Association, probably 4W6DX. Up-to-date information will be available from K7BV's website at www.qth.com/k7bv/ QSL to KU9C.

The Kingman Reef/Palmyra DX Group will operate from Kingman Reef (KH5K) in early October. Kingman Reef is number six overall and number two in Europe on the most recent ARRL DXCC 'Most Wanted' list. A multi-national team of 16 highly experienced operators will be active with six stations on all bands and modes. The operation will run for approximately 12 days, and will include two full weekends.

Wal, VK6KZ, and Don, VK6HK, will be active as

Sunset over Tristan da Cunha, activated in September by Bob, G3ZEM.

28MHz COUNTRIES TABLE, 2000
sorted this month by CW totals

Call	CW	SSB	Mixed
G4DUW	169	210	232
G3SXW	158	0	158
G0NXX	155	0	155
G3WGV	116	0	116
G4UCJ	114	0	114
G4IDL	100	0	100
G0CGV	78	31	87
MU0FAL	72	0	72
G0TSM	57	141	167
G4OBK	47	5	50
G3WP	43	0	43
GM4OBK	28	0	28
M0BZQ	28	230	242
GW0VSW	27	11	33
M0BIB	10	185	195
G0CAS	1	149	150
G0KDS/M	0	50	50
G0VHI	0	205	205
G3MDH	0	147	147
GM4CHX	0	93	93
M0CAL	0	84	84
M0CNP	0	44	44
M0CTQ	0	149	149
MM5AJN	0	139	139
G0NCS			48‡
G0URR			31†
G3ING			37
G4FVK			44
G4MUW		143	143
G4YWY/M			41
GI4XSF			80
GM0FNE			36†
GU0SUP			42†
M0ASJ			41
M5AFA			22
MM0BQI			50

† RTTY ‡ PSK

WARC BANDS TABLE 2000
sorted this month by 10MHz totals

Call	10	18	24	Total
G3SXW	147	168	130	445
G0NXX	144	157	148	449
MU0FAL	95	52	23	170
G3WGV	84	119	77	280
G4UCJ	80	96	78	254
G4KHM	77	92	27	196
G3ING	41	57	45	143
G4AFI	28	69	80	177
GM4OBK	28	42	30	100
G3WP	26	23	24	73
G0VLC	24	37	21	82
GW0VSW	21	20	40	81
MM0BQI	18	17	19	54
G0TSM	17	15	30	62
G4OBK	15	26	16	57
M0CNP	5	21	11	37
G4FVK	2	17	21	40
G4ERP/M	0	40	0	40
G4YWY/M	0	19	29	48
GM3IBU	0	0	48	48
M0CAL	0	27	36	63
M5AFA	0	11	16	27

VK9CZ and VK9CK from Cocos-Keeling (OC-003) between 21 October and 4 November. The focus will be on 6m, with HF operation (40-10m) if 50MHz conditions allow.

A multi-national team of YL operators from seven countries will be active (SSB and CW) as AX9YL from Norfolk Island (OC-005) between 5 and 12 October. QSL via the VK3 Bureau or direct to VK3DYL.

Australian operators VK2ARY, VK2EO, VK2JW, VK2NP, VK2PB, VK2RD, VK2XN and VK2ZL plan to be active as VI2BI from Broughton Island (OC-212) from 6 to 15 October. Look for them on CW, SSB and PSK. QSL via the bureau or direct to VK2EO.

Lanny, W5BOS, will be on from Cay Sal Bank (IOTA-*new*) in the Bahamas beginning 6 or 7 October for 2-3 days. This is the last unnumbered island group in the Bahamas. The call sign will be W5BOS/C6A.

Gary, KI6T, will operate as KI6T/P from Catalina Island (NA-066) from 3 to 5 October. He will be on SSB and CW on bands from 10 to 20m. QSL to KI6T.

QSLing

MY NOTE IN August about 9J2BO and his manager's QSL practices has prompted a couple of responses. The first is from the manager concerned, Mike, G3TEV. Mike points out that there is no outgoing bureau in Zambia, which necessitates Brian, 9J2BO, making other arrangements. Mike also points out that, with a station as active as Brian's (making thousands of QSOs a year), the cost of replying to every card via the bureau, even if this were possible, would be prohibitive. I also received a response from Roger, G0DIZ, who is an active QSL manager. He points out (as indeed does G3TEV) that the RSGB bureau will only accept cards for a DX station if that DX station is an RSGB member. Not all DX stations are, and Roger does not feel it is the manager's responsibility to pay the membership fee. Roger also raises the cost of printing thousands of cards a year for mailing out through the bureau. His experience is that, on the whole, any funds enclosed with direct cards barely cover the costs of returning those cards, and certainly don't leave a surplus sufficient to cover bureau QSL costs. While Roger does deal with bureau cards, he points out that his last batch from the bureau cost £6.76 in postage alone and, as a disabled person with limited

HF F-Layer Propagation Predictions for October 2000

	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000001111122	000001111122	000001111122	000001111122	000001111122	000001111122	000001111122
(UTC)	024680246802	024680246802	024680246802	024680246802	024680246802	024680246802	024680246802
*** Europe							
Moscow	999744334889	999751.48899	.1.987778999	...9888899.1	....999999..	....99999...	....999991..
*** Asia							
Yakutsk	4111...1.345	45.2....3554	51.53..34546	....444.....	....44.....	...15.....	....
Tokyo	.....1.2.	.....11..241	..1.....4.4	....22...1..	....32.....	....3.....	....3.....
Singapore	1	.....1..2	2.....2224	.....122..	.....11122..	....1..13...	....2...3...
Hyderabad	41.....1344	621.....1444	5.....4565	...3111335..	....223355..	...445455...	...155555...
Tel Aviv	8872...12788	87831...6888	...853357877	...8766677..	....777777..	....77777.1.	....77777...
*** Oceania							
Perth	....	.....1..1	2.....11124	.....1.34..	....11.34...	....21234...	...32.33.1..
Sydney	....	.....11.	.....1.24.	....1..22.1	....1..244..	....1123....	....1.34....
Wellington	....	....	..1....455..	....444557..	....544677..	....66.....	.....667....
Honolulu	..1.......	..11.......	1...3...1...	.....11231.	...1....231.	....1.....1.	....
W. Samoa	....	.....1..	.1..3..13...	1...341233..	1..1.344.4..	.....44.41.	.....4....
*** Africa							
Mauritius	32.....133	33.....34	34.....2133	...1..1.14.4	1.12111344..	...4323344..	...133.4.4..
Johannesburg	22.....12	3221....1..2	344.....443	...3....3444	.1.32211344.	....2322334.	....32..354.
Ibadan	6652.....566	6665.....666	6675....4666	67.754445886	55667877	....7767777.	...1777777..
Nairobi	441.....1444	564.....4.5	655.....4645	...323335665	...6444455..	....5544.6..	....4.....
Canary Isles	8888.....888	889843..5898	999986668999	88888999	....8888899.	1..1.888899.	.....9.9..
*** S. America							
Buenos Aires	3321.....2	4443.....4	44442.....34	....4.1..144	.....1.11344	....4323345.	.....33344..
Rio de Janeiro	4443.....4	5554.....145	65.53.....56	....411.2456	52334556	4444561	....144455..
Lima	2311.....	3443.....3	43..2.....13	24	...1....113.	.....1123..	.....2233..
Caracas	5554.....5	6665.....5	66...11..156	1....4223456	....1444456.	.....4456..	.....55661.
*** N. America							
Guatemala	44541.....	55553.....	.5..5.....14	..1...21234.	434451	.....4444..	.....455..
New Orleans	4444.....1	45552.....14	55..4..11114	1323444	.....34455.	.....455..	.....455..
Washington	6665.1....15	55674.1..116	66...4..2166	..1...444566	.....44556.	.....555..	.....577..
Quebec	556611....26	66673.1..166	66.1.3.21666	556676	.....55676.	.....6667..	.....6667..
Anchorage	1443..11....	44.31...2343	4.....3544	.....54.	.....5..	....1.....	....
Vancouver	1322.1.....	33.3.....	4.....1322	.....443.	.....1441.	.....13..	.....3..
San Francisco	1232.....	14.42..1...1	33..4...12..	3.....23321	.....343.	.....44..	.....44..

Key: Each number in the table represents an S-meter reading on the average amateur rig, whilst colours represent availability. When the predictions are expected to be 67-100% certain, the numbers are blue; when 33-66% certain, red; when less than 33% certain, black.

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at www.g4fkh.demon.co.uk The page is updated weekly.
The provisional mean sunspot number for August 2000 issued by the Sunspot Data Centre, Brussels, was 130.5. The maximum daily sunspot number was 204 on 14 August and the minimum was 67 on 22/23 August. The predicted smoothed sunspot numbers for October, November and December are respectively: (SIDC classical method – Waldmeier's standard) 122, 120, 118 (combined method) 125, 127, 128.

means, he is happy to donate his time to QSLing, but not to pay for the privilege. I think, at this point, I'd better let the discussion rest except, perhaps, to say that several of the various DX Clubs and Foundations have funds to help with exactly this issue for rare or, at least, semi-rare DX stations. I imagine that most countries which have no QSL bureau at least fall into the semi-rare category.

CONTESTS

AS ALWAYS, the CQWW Phone Contest, which takes place over the last full weekend of the month (ie 28/29th), will bring many DXpeditions on to the bands, with most of them also showing up a day or two before and after the contest. Here are just a few I know of at the time of writing. Firstly, the Mid Lanark Amateur Radio Society will sign GM0B in a multi-multi operation from Benbecula. A web site has been set up at www.qsl.net/mmobhx/gmob/new-page-1index.htm The Bavarian Contest Club (BCC) will once again operate from Morocco as CN8WW in both legs of the contest. Having comprehensively beaten the existing World multi-multi records last year, they will be going for even higher scores this year, in the hope that these will then stand for some years to come. They will have a new picture QSL card this year, and a special card will be sent to those working them on five or six bands. Before and after the contests, they will operate as 5C8M on CW, SSB, RTTY, 6m and also on the WARC bands. A web page is available at www.dl6fbl.de/cn8ww/ You can QSL via the bureau or direct to DL6FBL (see 'QTH Corner' next month). WA2VYA, K2WB and N2VW will operate from VP5JM's QTH on Providenciales (NA-002) from 24 to 31 October. They will be multi-multi as VP5T in the contest. Look for them on CW and PSK31 on all bands before and after the contest. QSL VP5T to N2VW. E-mail requests for VP5T bureau cards are OK via n2vw@arrl.net QSL all others via their home calls. John Crovelli, W2GD, will once again operate in the contest from his P40W station on Aruba. He plans to be on the island between 25 and 30 October. Look for him prior to the contest on all bands. QSL via N2MM. The GM7V team will be travelling to Shetland (EU-012) for this year's contest. This is a separate multiplier for CW WW scoring. The operators will include Chris, GM3WOJ; Stewart, GM4AFF; Jim, GM4TXX; and Keith, GM4YXI. They hope to use the callsign GS7V but, at the time of writing, were still waiting for permission. They will sign GS2MP if they can't secure the GS7V callsign. Either way, the QSL route will be via the regular manager, ZS5BBO. For a few days prior to the contest some HF CW activity will take place using the callsign GM4AFF/P. Barry, N0KV, will be MJ/N0KV from the Jersey radio club. He hopes to start operations on 22 October, but to head back to the US immediately after the contest. QSL to his home call. Al, K7AR, and four others will operate from the Hillview Gardens Resort in Sabah (usual call 9M6AAC). A few members of the team may also spend a some days on Layang-Layang (Spratly). Timo, OH1NOA, will also operate from Hillview, but in the CW contest in November. Ron, WJ7R, and Mark, N7MQ, will go to Little Cayman Island for the contest. Ron will operate as ZF2RV and will be single-op single band 10m, while Mark will use ZF2MC on 80m single-band. They will operate the other bands and submit check logs. The two will be on before and after the contest, with emphasis on CW and PSK31, on 12, 17 and 30m. QSL to home calls.

The results of last year's contest appear in the table. There were several new records set this year, and I particularly want to draw attention to GI0KOW's astounding single-operator score of more than 10 million points. Despite my natural modesty, I ought also to draw attention to the new European multi-multi record set by the M6T team, of which I was a part! The previous record, by a German team operating from Luxembourg (the same group which will operate from CN8WW, see previous), had stood since the last solar maximum.

Finally, this year's ON contests take place on 1 October (80m SSB) and 8 October (80m, CW), from 0600-1000 UTC. Work Belgian stations, exchanging RS(T) and serial number. Logs (within three weeks of the contest) go to Welters Leon, ON5WL, Borgstraat 80, B-2580 Beerzel, Belgium.

Due to space limitations, 'QTH Corner' has been held over until next month.

THANKS

MY THANKS TO all who have provided information. Special thanks go to the authors of the following for information extracted: *OPDX Bulletin* (KB8NW), *The Daily DX* (W3UR) and *425 DX News* (I1JQJ). Please send items for the **December** issue by **14 October.** ♦

The A52A team in Bhutan earler this year.

CQWW Phone, 1999

ENGLAND

Call	Category	Points
M5D	A	3,625,020
G3UFY	3	277,984
G4KIU	3	48,880
G4OJH	28	490,620
M4R	21	319,431
G4WPD	21	180,918
G3NLY	14	968,064
G3TVU/M	14	42,622
* G3VAO	A	1,015,644
* G4IIY	A	707,940
* G3LOJ	A	205,646
* G0VBD	A	189,392
* G6QQ	A	173,019
* G4NXG/M	A	122,070
* G3JKY	A	114,848
* M0BWY	A	89,920
* G3RSD	A	37,180
*** G0KDS**	**28**	**179,928**
* G4PCI	28	170,856
* G0NWY	28	146,673
* G0KXL	28	29,484
*** M0BJL**	**21**	**199,206**
* G0ATG	21	49,622
* G0VQR	21	10,150
* G0JJQ	14	16,958
* G3XWZ	1.8	8,427

JERSEY

*** GJ0NYG/P**	**28**	**340,900**

NORTHERN IRELAND

GI0KOW	**A**	**10,457,664**
* GI0KVQ	A	297,075
* GI0OUM	A	121,680

SCOTLAND

GM0F	A	3,347,180
GM3BCL	A	931,952
GM3RTJ	A	78,240
GM0EGI	21	255,204
*** GM0FET**	**A**	**595,800**
* MM0BQI	A	321,433
* GM4HQF	A	297,088
*** GM0FQV**	**28**	**360,472**

WALES

GW4BLE	**A**	**6,657,018**
GW0RYT	A	377,720
*** GW3JXN**	**A**	**1,437,678**
* GW3NJW	A	279,972
* GW3KJN	A	22,330

QRP

GM4ELV	A	35,072
GW0VSW	**A**	**14,065**
2U0ARE	**28**	**17,024**

Assisted

ENGLAND

G3TMA	A	1,029,990

Multi-Single

ENGLAND

Call	Points
M1P	**8,106,700**
GB3RS	3,450,664
G3B	2,455,225
G1Y	2,066,134
M2H	1,558,152
M2G	1,120,290
G4WAC	121,794
M5W	49,742
G0EYO	33,988
M4T	13,446
G0RAF	8,232

GUERNSEY

MU0BKA	5,370,750

Multi-Multi

ENGLAND

M6T	**29,338,624**

Note: an asterisk indicates low power; those entries in bold set new country records.

The RSGB International HF &

Above: Delegates listening attentively in one of the smaller lecture rooms. Left: The magnificent Beaumont Conference Centre.

IT IS THAT TIME of year again, when devotees of the HF bands, together with their long-suffering partners, flock to the Windsor area for the RSGB International HF Convention. For the purpose of this convention the term HF embraces frequencies from 9kHz up to and including the 50MHz band.

Whether an avid DXer, 'ragchewer', antenna designer, propagation expert or casual user, this is the opportunity to meet your friends, to attend presentations given by internationally-acclaimed experts in their particular fields, and to generally have a good time over the course of the weekend.

The year 2000 also brings the International Islands on the Air (IOTA) Convention back to the UK and the opportunity has again been taken to combine both events into a weekend not to be missed. This has, in turn, attracted a large number of overseas visitors. At the time of writing, visitors from the Channel Islands, Cyprus, Finland, Ireland, Italy, Japan, Portugal, Spain and the United States had already confirmed their attendance. There are many more that have promised to attend.

Don't miss it!

NOT JUST FOR DXERS

CONTRARY TO RUMOURS that this is purely a gathering of DXers, presentations arranged for the IOTA stream include an update on the international programme, the new RSGB *IOTA Directory 2000*, and recent operations from Ghana, Myanmar, the Kenyan Wasini Island and East Timor.

An alternative stream for those who have a more hands-on approach includes presentations on loop antennas, linear amplifiers, stacked arrays, antenna modelling and backyard antennas.

Additionally, amongst others, there are forums for DX Cluster aficionados, LF gurus, HF contesters, and - for those newly interested in HF - 'Starting in HF DXing'. Other attractions include a presentation on 100 Years of Amateur Radio, propagation, a DXCC update, the M2000A operation and 6 metres.

INTERNATIONALLY ACCLAIMED

AMONGST THOSE attending this year is Martti Laine, OH2BH. Martti, well known for his pioneering work from those countries previously unfriendly to the Amateur Service, was recently named 'Amateur of the Year' at the Dayton HamVention held in the USA earlier this year.

Then of course there are the social events. The bar will be open for most of the weekend, but why not take the opportunity to attend the IOTA supper on the Friday evening or the 'DX Dinner' on the Saturday. Both of these events are very well subscribed and places are limited, so you should book prior to the event.

Take the opportunity to operate the Convention station MB2HFC. To our knowledge this is the first time this prefix will have been aired and it should prove popular amongst prefix chasers. Then of course there is DXCC card checking, RSGB Morse code tests and RSGB committee stands.

All in all it is hoped that most tastes have been catered for. Even if there is nothing that catches your fancy, there is always the chance of winning a top Yaesu HF mobile transceiver donated by Convention co-sponsor Yaesu (UK), one of many prizes donated by our many supporting organisations.

When is it? 13 - 15 October at the Beaumont Conference Centre, located at Old Windsor in Berkshire. If you wish to stay overnight, particularly if you are attending the IOTA supper on Friday and / or the DX Dinner on Saturday, you can do so - tel: 01707 659015 to book your place or access http:/www.rsgb.org/news/hf2000 Alternatively, just turn up on the day - entrance is just £5.00 per day, and for this you get entrance to all the lectures. Hot and cold lunches are available and there is a bar on site.

IOTA Convention - HFC2000

Lecture Programme

Saturday 14 October 2000

Main Conference Hall - IOTA Stream

1015 Opening: 9G5MD, Abokwa Expedition (AF-084), Gabon Expedition (AF-new), Ken Frankcom, G3OCA
1115 Coffee
1130 IOTA Directory 2000
1200 Questions and Answers
1230 Lunch
1330 XZ0A, Myanmar Expedition (AS-144), Steve Wilson, G3VMW
1415 5Z4WI, Wasini Island (AF-067), Phil Whitchurch, G3SWH
1500 Presentations and Announcements, inc IOTA Convention 2001
1520 4W6EB, East Timor (OC-148), Jose de Sa, CT1EEB
1545 Tea
1600 TBA

Orchid Room

1015 Small HF Loop Antennas, Professor Mike Underhill, G3LHZ
1115 Coffee
1130 HF Linear Amplifiers, Ross Clare, GW3NWS
1230 Lunch
1430 HF Contests Trophy Presentation, Justin Snow, G4TSH
1545 Tea
1600 Backyard Antennas, Peter Dodd, G3LDO

Jasmine Room

1015 73kHz - Achievements, Mike Dennison, G3XDV
1115 Coffee
1130 LF Portable Expedition Forum, Dave Pick, G3YXM
1230 Lunch
1330 LF Forum, John Gould, G3WKL
1500 DX Cluster Forum - Meet the SysOps, UKCWG
1545 Tea
1600 SD User Forum, Paul O'Kane, EI5DI

Doors open 9.00am Saturday and Sunday.
Programme subject to change without notice

Sunday 15 October 2000

Main Conference Hall

0945 DXCC Update,Wayne Mills, N7NG
1045 Coffee
1100 Propagation at and following the Solar Maximum, Gywn Williams, G4FKH
1200 HF Stacked Arrays (inc antenna modelling), Jay Terleski, WX0B
1245 Lunch
1330 HF Stacked Arrays - questions and answers, Jay Terleski, WX0B
1430 TX0DX, Chesterfield Island, Martti Lane, OH2BH and Wayne Mills, N7NG
1545 Tea
1600 Raffle

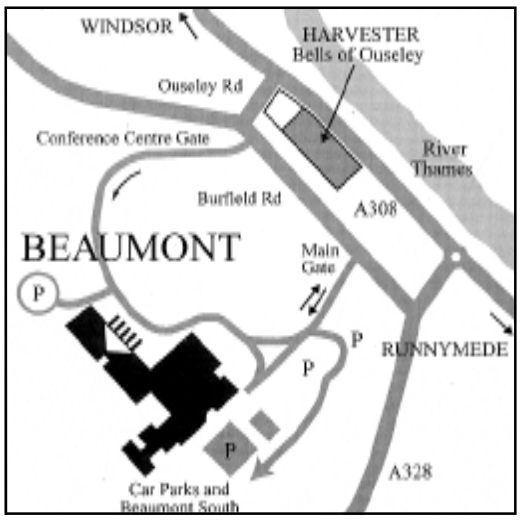
Orchid Room

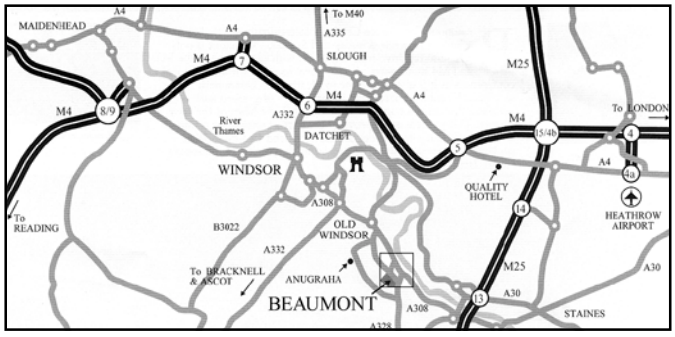
0945 100 Years of Amateur Radio, Ian Poole, G3YWX
1045 Coffee
1100 6 Metres, including 3A2K operation, Geoff Brown, G4ICD (ex-GJ4ICD), and Kari Leino, OH2BC
1200 Clipperton DXpedition, John Kennon, N7CQQ
1245 Lunch
1330 ZD9ZM, Tristan da Cunha, Bob Henderson, G3ZEM / 5B4AGN
1430 -
1545 Tea

Jasmine Room

0945 Starting in HF DXing Forum, Don Field, G3XTT
1045 Coffee
1100 IOTA Forum
1245 Lunch
1330 M2000A, Bob Treacher, BRS32525, and Dave Lawley, G4BUO
1430 -
1545 Tea

Finding your way to the Beaumont . . .





The RSGB International HF and IOTA Convention is sponsored by:

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CONTEST

TIM KIRBY, G4VXE
11a Vansittart Road, Windsor SL4 5BZ
E-mail: tim@ukgateway.net

WET AND WINDY? For once it's not a comment on the weather, but an e-mail mailing list set up by Nigel Roscoe, G0RXA. The objective of the group is to make for easy sharing of ideas and results amongst the enthusiasts for some RSGB VHF contests, particularly the Backpacker events. If you take part in these events and enjoy them, I feel sure that you would enjoy participating in this group. To subscribe, send an e-mail to nigel@barpackers.com

CONTEST EXCHANGES AND SERIAL NUMBERS

OVER ON THE UK-contest e-mail reflector, there has been some lively debate about contest exchanges. This was spurred by the recent IOTA contest, where some people felt that the exchange was getting rather long and unwieldy. Other people clearly felt that they would prefer a shorter exchange – enabling them to maximise the QSO rate, whereas others felt a longer exchange allowed them more of a challenge in terms of operating, and in particular, ensuring that the information is copied correctly.

As Roger, G3SXW, pointed out – there are contests with a wide variety of exchange formats to choose from. At one end there is the CQWW contests where, let's face it, the exchange is pretty much redundant. It's rare for the report to be anything other than 59(9) and the zone number is known for the majority of stations (although beware logging US stations – check whether they are in zone 4 or 5 – the software will not know!). At the other extreme, there is the DARC-sponsored WAE contests, which we mentioned recently. Here, there is a regular type of contest exchange, but also the ability to go for a major accuracy component, by exchanging portions of the contest log (QTC) in return for more points.

In my view, there is certainly a place for both types of exchange. It's great fun to go for the pure rate of the CQWW events, but sometimes it is good to go for something that requires a bit more operating skill.

Another interesting discussion that ensued was whether or not sending signal reports is redundant. As mentioned above, the majority of contestants will send 59(9). Particularly for large contest stations, I think it is helpful to send a report, which adds some value. At least it gives the calling station, who may be running QRP or testing an antenna, an idea of how it is doing. I wouldn't advocate looking at the meter, but I seem to settle on something like the following: I can copy everything you send = S9; I'm missing some of what you say = S7; I'm really struggling here = S3! That has the additional benefit of letting the caller know that they really might need to repeat some information – making sure, on SSB, that they speak clearly – no gabbling, or on CW, that the speed is not too fast and not too slow. Quite apart from that, non-contest enthusiasts often decry the giving of 59(9) reports by default. Removing something for them to complain about can only be a good thing.

Something else that I have noticed is that in contests which do not include a serial number, casual participation is reduced. Somehow, if it is not there, it makes it more difficult for someone who does not have the rules to understand what is going on. When I was living in Canada, I often listened to the ARRL Sweepstakes. However, because the exchange was very different from the type I was used to, it made it less instinctive for me. Also, if signals are weak or there is a lot of interference, the signal report gives something to 'anchor' – which is to say that it is easier to discern the different parts of the exchange and make it clearer if you have copied it correctly or not.

Simon, G4EAG, operating M4R for the Granta Contest Group during the IARU HF Championship, 2000.

THE MONTH AHEAD

OCTOBER IS A busy month for contesters. Of course at the end of the month, there is the flagship contest for HF SSB operators, the CQWW SSB. I'm already aware of much preparation for the event from the UK. From the North of Scotland, Chris Tran, GM3WOJ, wrote to tell me that the North of Scotland Contest Group, GM7V, are travelling to Shetland for this event. They plan to operate in the Multi-Multi category (multi-operator, multi-transmitter). Operators will be GM3WOJ, GM4YXI, GM4AFF and GM4TXX. They plan to use the callsign GS2MP. As you may know, Shetland counts as a separate multiplier from Scotland in the CQWW events, so this is going to be a really popular operation and I am sure that we are going to see a very serious effort from the guys. Good luck to you all, and to anyone else planning an entry in CQWW SSB.

Dave, G4BUO, asked me to remind readers about the European HF Sprint contest that will be held during October. These events are short 4-hour events, on 3.5, 7 and 14MHz. The events have been gaining in popularity over the last few years and it will be good to see more UK participation. The SSB event is on 7 October and the CW event on 14 October. Full details and rules can be found on I2UIY's website at www.kkn.net/~i2uiy/

The CW leg seems to have a habit of clashing with the RSGB's HF Convention held near Windsor, which is unfortunate. The HF Convention this year is held on 13-15 October and there is usually an excellent gathering of contesters and other HF enthusiasts there. I'll hope to meet as many of you possible at the event.

For VHF enthusiasts, things seem to quieten down in October, however, the first weekend in the month sees the '432MHz-to-light' event which always provides plenty of interest – particularly with the possibility to make QSOs on the higher bands with other groups. On the higher bands, just one or two QSOs can win you the band and massively improve your overall placing – so if you are active on the microwave bands, do try to participate.

Correction to the LF Cumulative 2000 results table on p71 of the August *RadCom*. An error crept into the adjudication of this contest. The total 40m score of Chris Burbanks, G3SJJ, was 696 not 456, making him band winner on 40m, moving G4RCG into second place. Chris's total score is now 1944, making him the overall winner, and also the winner of the HF Contests Committee Trophy for this year. No other placings are affected. Our apologies to G3SJJ and G4RCG.

144/432MHz, March 2000

OVER THE YEARS this contest has proved to be an endurance test. This year was no exception! Strong winds, driving hail and snow, low temperatures and deep mud were present

144/432MHz, March 2000

144MHz Multi-Operator Section (O)

	Call	Pts	QSOs	Loc	Pwr	Ant	Best DX	Loc	km
1 *	G8LNC/P	166359	534	IO90JO	400	4*19-ele	DL3TW	JO44SK	842
2 *	GD0EMG	112576	328	IO74QD	400	8*9+2*17	DK5DQ	JO31PG	863
3	G4SIV/P	89497	256	JO03CE	400	4*12-ele	DK0ES	JN48TN	836
4	G8SAD/P	28822	138	IO91TW	50	9-ele	DG2000	JO40RV	691
5 *	G8NJA/P	27387	115	IO80DQ	25	17ele	DK5DQ	JO31PG	772
6	MM1CXE	3329	19	IO86OE	60	14-ele	ON7GI	JO10SS	733
7 *	GI3XRQ/P	808	6	IO74FK	10	5/5	G8LNC/P	IO90JO	503

144MHz Single-Operator Fixed Section (SF)

1 *	G0KPW	225094	601	JO02OD	400	2*17-ele	DF0TEC/P	JO73CF	884
2 *	G4IVH	45248	199	IO92WN	400	17-ele	DB9PZ/P	JN39QF	643
3	G3MEH	35258	184	IO91QS	100	2*10-ele	DL4SKF	JN48MW	754
4 *	G4JTJ	29992	131	IO92SD	25	16-ele	DO4FX	JN49HS	688
5	PE1EWR	19679	74	JO11SL	80	10-ele	DF0MTL	JO61JF	642
6 *	G4HGI	19134	113	IO83PL	25	11-ele	DL1ELY	JO30EM	703
7	G1TWS	8613	63	JO01HO	25	11-ele	DL0LZ/P	JN39JO	480
8	G3FIJ	6717	37	JO01KV	10	10-ele	GI6ATZ	IO74AJ	533
9	2E0ATF	5963	51	JO00DX	5	8-ele	GD0EMG	IO74QD	484
10	G4APJ	5664	32	IO83UP	25	9-ele	ON7GI	JO10SS	510
11	2E1GUA	2985	30	JO01FS	10	5-ele	GD0EMG	IO74QD	431
12	G3XBM	2088	14	JO02DG	10	Halo	GD0EMG	IO74QD	388

144MHz Single-Operator Open Section (SO)

1 *	GW7ORR/P	101000	367	IO81KW	400	4*10-ele	DO4FX	JN49HS	858

144MHz Six-hour Single-Operator Fixed Section (SS)

1 *	G7RAU	57646	166	IO90IR	400	2*9-ele	DG2000	JO40RV	755
2 *	G3XDY	13822	44	JO02OB	400	12ele	DL5NAM	JN59OP	751
3 *	G8ZRE	12206	80	IO83NE	25	8 XY yagi	F6CBH	JN19BH	554
4 *	G8JAY	3391	18	IO81WV	25	9-ele	DK5WO	JO30AS	581
5	2E0AUD	2727	29	JO01BO	10	12-ele	GD0EMG	IO74QD	426
6	G7NBE	2663	12	IO92GS	40	9-ele	ON1DV/A	JO11LC	356
7	G4XPE	2303	14	IO92GU	10	10-ele	ON7GI	JO10SS	414

144MHz Six-hour Open Section (OS)

1 *	M0AFC/P	20587	109	IO84SA	25	11-ele	DL0GL/P	JO31KP	680
2 *	G1WAC	19155	97	IO92BJ	400	18ele	DL9GS	JO31OM	630
3	G4BRA/P	18812	90	IO91PK	400	17-ele	DF5VJ	JN39LI	590
4	G7VHW/P	10142	64	JO01FO	60	17-ele	DF3KV	JO42OF	604
5 *	M0BAO/P	4110	28	IO80PT	25	8-ele	ON1DV/A	JO11LC	397

432 MHz Multi-Operator Section (O)

1 *	G4SIV/P	42151	128	JO03CE	400	4*28-ele	DF9FD	JN49GU	685
2 *	GD0EMG	12654	44	IO74QD	400	4*20-ele	F1PYR/P	JN19BC	728
3	G8SAD/P	5270	35	IO91TW	50	18-ele	DL2DAO/P	JO31PG	534
4 *	G6FSP/P	2402	8	IO80DQ	25	9ele	PE0MAR/P	JO21BX	563
5 *	G4MJS/P	1634	6	IO90JO	20	14-ele	PE0MAR/P	JO21BX	401
6	GI3XRQ/P	70	1	IO74FK	10	15-ele	GD0EMG	IO74QD	70

432MHz Single-Operator Fixed Section (SF)

1 *	G3MEH	11035	61	IO91QS	75	4*23-ele	DJ9KH/P	JO42OX	681
2 *	PE1EWR	6591	27	JO11SL	13	2*21-ele	DK9ZQ/P	JO41RB	414
3 *	G4APJ	2528	16	IO83UP	25	19-ele	GU3EJL	IN89VR	435
4	G3FIJ	1664	8	JO01KV	10	21-ele	GD0EMG	IO74QD	445
5	2E1GUA	1651	13	JO01FS	10	21-ele	GD0EMG	IO74QD	431
6	G4HGI	1105	14	IO83PL	8	19-ele	G0ODQ	IO91NQ	235

432MHz Single-Operator Open Section (SO)

1 *	M1CRO/P	12237	64	JO01IT	50	8-ele	DK4VW	JO40IT	567

432MHz Six-hour Single-Operator Fixed Section (SS)

1 *	G3XDY	14252	41	JO02OB	250	28-ele	DK0ES	JN48TN	713
2 *	G0TXL	5089	25	IO91WI	20	21-ele	DL1ELY	JO30EM	465
3 *	G8JAY	1677	9	IO81WV	20	21-ele	PE0MAR/P	JO21BX	428
4	G7NBE	51	1	IO92GS	40	8-ele	G1WAC	IO92BJ	51

432MHz Six-hour Open Section (OS)

1 *	G1WAC	2498	18	IO92BJ	75	21-ele	DJ8EN	JO31BP	553
2 *	M0AFC/P	2091	17	IO84SA	25	2*12-ele	PI4ZLD	JO11WM	508
3	G8JVW/P	1165	6	IO82UL			PE0MAR/P	JO21BX	440

OVERALL RESULTS

Multi-Operator Section (O)

Pos	144MHz	432MHz	Total	Group
1 *	538	1000	1538	Five Bells
2 *	1000	39	1039	Victory CG
3	677	300	977	Northern Lights CG
4	173	125	298	Stevenage & DARS
5	165	57	222	Torbay ARS
6	20	0	20	Cockenzie & Port Seton ARC
7	5	2	7	Bangor & DARS

across much of the country. However, one station in the south of the country reported sunburn problems on the Sunday. One portable station operator was trapped in his Land Rover after the doors froze shut. Another had the rotator gears stripped by the winds. Most equipment problems were related to the conditions with water in connectors and cables, and generator problems. One group found it so difficult to persuade members of the team to operate in these conditions, that one member operated a Single-Operator Single-Band entry.

Not surprisingly with the weather conditions, radio conditions were generally regarded as poor, with deep QSB. Many entrants bemoaned the lack of UK activity and in particular commented on the lack of activity from the North of the country.

The majority of entries were received in electronic format, making the adjudication process much easier, but it would be helpful if entries could be virus-checked before submission. In general, logging standards were high with the most common mistakes being the failure to log portable stations correctly, plus hopelessly optimistic locators.

Congratulations go to:

- The Five Bells group for repeating their overall win in 1999;
- G0KPW, operated by Bob, G4BAH, for his overall victory on 144MHz;
- Roger, G3MEH, for his overall win in the Single Operator Fixed Section;
- GW7ORR/P and M1CRO/P for their joint win in the Single-Operator Open Section;
- John, G3XDY for his triumph in the 6-hour Single-Operator Fixed Section;
- The Wythall CG for their win the 6-hour Open Section.

These stations, together with those identified with an asterisk in the results tables, will receive certificates.

Roger Dixon, G4BVY

1st 70MHz Fixed, 2000

Single-Operator Fixed Section (SF)

Pos	Call	Pts	QSOs	Loc	Pwr	Ant	Best DX	Loc	km
1	*GD0EMG	14349	49	IO74QD	160	8-ele	GU6EFB	IN89RK	543
2	*G4ZTR	4932	25	JO01KW	150	8-ele	GM4AFF	IO86ST	584
3	G3NKS	4671	33	IO81XU	100	6-ele	GM4AFF	IO86ST	552
4	G3TCU	4364	28	IO91QE	150	6-ele	GM4WLL/P	IO85NR	526
5	G0GCI	3850	21	JO01ED	100	4ele	GM4WLL/P	IO85NR	553
6	G1KHX	3619	22	IO81MI	90	5-ele	GD0EMG	IO74QD	330
7	G3MEH	3199	28	IO91QS	150	6-ele	GM4WLL/P	IO85NR	465
8	G3LVP	2862	19	IO81WV	50	7LP	GM4AFF	IO86ST	547
9	*G4OUT	1619	14	IO92AT	10	3-ele	G0GCI	JO01ED	245
10	GM4DIJ	425	5	IO85IW	50	4-ele	GD0EMG	IO74QD	217
11	GM4UYZ	155	5	IO85MX	50	4-ele	GM4AFF	IO86ST	98

Single-Operator Open Section (SO)

1	*GM4WLL/P	7635	27	IO85NR	90	6-ele	G0GCI	JO01ED	553

Multi-Operator Section (M)

1	*G7RIH	4048	27	IO91RR	20	5-ele	GM4AFF	IO86ST	579

1st 70MHz Fixed, 2000

THIS YEAR'S EVENT suffered from low activity levels, with only 66 stations appearing in the logs, a decrease of 36% on 1999. The number of entries was down by a similar percentage, though at least nine stations with reasonable numbers of QSOs failed to submit entries. Numerous theories were put forward by the entrants, such as the closeness to the 4-metre Cumulatives and the clashing Microwave Round Table. Conditions were generally rated as average to poor, with deep QSB causing problems.

Robert, GD4GNH, this year disguised as GD0EMG, re-

1st Slow Speed Cumulative, 2000

Pos		Call	27 Mar	4 Apr	12 Apr	20 Apr	28 Apr	Total	Code
1	*	G0IGP	235	CKL	CKL	210	210	655	2C11
2	*	G3LIK	225	-	210	CKL	200	635	2C1?
3	*	G2HLU	220	165	205	-	CKL	590	2C12
4		G3YAJ	180	190	CKL	203	CKL	573	2C1?
5		G4EBK	CKL	178	170	-	210	558	2C13
6		G3TTB	152	213	-	179	-	544	2W1?
7		G4XPE	165	CKL	165	-	160	490	2C11
8		G4BLI	195	-	165	-	126	486	2C13
9		G0RAF	CKL	CKL	120	175	160	455	2C17
10		G3ZGC	149	115	168	-	-	432	2W13
11		G3JSR	-	85	147	170	-	402	2W1?
12		G3ZDD	140	115	118	-	-	373	2C1?
13		G0VYR	108	120	-	125	CKL	353	2C12
14	+	G0VDZ	135	CKL	120	97	CKL	352	2C1?
15		G0VQR	-	-	135	78	133	346	2C1?
16		G3SZS	CKL	90	110	110	-	295	2W12
17		G4BJM	65	-	138	-	85	288	2C1?
18		G0FYX	85	-	CKL	100	100	285	2C1?
19		G4KEW	CKL	85	95	75	-	255	2C12

* Certificate of Merit
\+ First-time entrant in RSGB contest
Checklogs: G0DVJ, G0UHM

peated his 1999 victory. David, GM4WLL, won the Single-Operator Open Section and the Dacorum Amateur Radio and Transmitting Society won the Multi-Operator Section. Ian, G4OUT, was the leading fixed station running less than 25 watts into a single antenna. These stations together with section runners-up will receive certificates.

Roger Dixon, G4BVY

1st Slow Speed Cumulative, 2000

FEWER ENTRIES this time, no Novices or the new M5 stations, although there were several shown in the logs. An average of 55 stations were active during each of the 2-hour sessions.

First place goes to Tony Hacking, G0IGP, using a Ten-Tec Argosy 2 and a G5RV antenna, just ahead of Mick Puttick, G3LIK, with a FT-101ZD to a W3DZZ antenna, third place going to Harold Owen, G2HLU, using a TS-940S to a 168ft doublet antenna.

Various comments from entrants including "going a wee bit fast". Many others said "keep the event going to help the up-and-coming CW operators".

The 'First time Certificate' goes to Nigel Newby, G0VDZ, and thanks to RAF Waddington for putting in a Multi-Operator entry.

Derrick Webber, G3LHJ

CONTEST CALENDAR

HF Contests

Date	Time	Mode	Contest
1 Oct	0700-1900	SSB	RSGB 21/28MHz Phone
7 /8 Oct	*1000-1000*	*SSB*	*VK/ZL/Oceania Phone*
7 Oct	*1500-1859*	*SSB*	*EU Autumn Sprint*
14 /15 Oct	*1000-1000*	*CW*	*VK/ZL/Oceania CW*
14 – 16 Oct	*1400-0200*	*CW*	*YLRL Anniversary Party CW*
14 Oct	*1500-1859*	*CW*	*EU Autumn Sprint*
15 Oct	0700-1900	CW	RSGB 21/28MHz CW
21/22 Oct	*0000-2400*	*RTTY*	*JARTS WW RTTY*
28/29 Oct	*0000-2400*	*SSB*	*CQ WW DX Contest, SSB*
28 – 30 Oct	*1400-0200*	*SSB*	*YLRL Anniversary Party, SSB*

VHF Contests

Date	Time	Mode	Contest
7 Oct	1400-2200	All	RSGB 1.3/2.3GHz Trophies
7 - 8 Oct	1400-1400	All	RSGB 432MHz - 248GHz
12 Oct	1900-2130	All	RSGB 1.3/2.3GHz Cumulative #1
16 Oct	1900-2130	All	RSGB 432MHz Cumulative #1
20 Oct	1900-2130	All	RSGB 144MHz Cumulative #5
22 Oct	0900-1300	All	RSGB 50MHz
27 Oct	1900-2130	All	RSGB 1.3/2.3GHz Cumulative #2
31 Oct	2000-2230	All	RSGB 432MHz Cumulative #2

The full rules of RSGB HF and VHF/UHF contests were published in the RSGB Contesting Guide in October 1999 *RadCom*. Brief rules for non-RSGB contests, which are listed in italics above, can often be found in the 'HF' and 'VHF/UHF' columns. The HF and VHF Contest Committees both have web sites from which comprehensive details are available. These are www.g4tsh.demon.co.uk/HFCC/index.htm and www.blacksheep.org/vhfcc

VHF

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FOR THE FOURTH month in a row there is a lot of interesting news to report, with Sporadic-E (Es) openings, another fine aurora, the Perseids meteor shower and Field-Aligned Irregularity (FAI) propagation. All times are UTC and ODX means best DX. An asterisk (*) denotes a CW contact. QTHR signifies that the operator's address is in the current *RSGB Yearbook*, (AB), (SD), etc. after a call sign denotes the postal area and (JO02), etc is the Maidenhead grid.

An interplanetary shock wave from the Sun (see next page for an explanation) struck the Earth's magnetosphere just before the peak of the Perseids meteor shower on 12 August, triggering a powerful geomagnetic storm. The aurora was photographed from Washington state. (Photo: Daniel Hershman)

REPEATER NEWS

GB3VA, GB3AV and GB3BV, the three voice repeaters run by the Aylesbury Vale Repeater Group, continue to function satisfactorily. An 'idiot' has been causing some evening switch-offs of GB3VA. The advice is to *not* respond to any remarks these characters make, and to let the RIS get on with tracking them down. The AVRG's 2000 AGM was well attended and, as at 1 July, its membership was 137. The above information comes from their July *Newsletter*. For further details contact Mike Marsden, G8BQH (QTHR).

The Central Scotland FM Group's Summer 2000 edition of its thrice-yearly publication *FM News* comprises 34 A5 pages, three of which are devoted to status reports of its 10 repeaters, comprising nine VHF and one UHF. There is a four-page article on 'Linking the Internet to Ham Radio' by Ian Abel, G3ZHI, comments on 12.5kHz channel spacing, club news, members' adverts, a membership list, etc. For details of the CSFMG contact Treasurer Robert Henry, GM7AON/MM5AON (QTHR), whose e-mail address is gm7aon@talk21.com

BAND PLANS

THE VHF COMMITTEE of the RSGB has recommended the following frequencies for PSK31 and other similar emergent narrow-band digital modes: 50.385MHz, 70.085MHz, 144.085MHz and 432.085MHz. These should be regarded as centres of activity with operation ±5kHz.

CONTEST NOTES

THE WORKED ALL Britain group is running its 70cm Phone Contest on 1 October, 0900-1500, and the rules are on the website - see the panel. The weekend 7/8 October sees the IARU 432MHz - 248GHz contest, 1400-1400. Details of RSGB VHF/UHF contests are on page 54 in the October 1999 issue of *RadCom*. Relevant Internet websites are listed in the 'Contest Calendar' box in Tim Kirby's, G4VXE, 'Contest' column in each issue.

PROPAGATION

THE JULY ISSUE of *SunMag* includes an account of the space radiation storm triggered by the solar eruption on 14 July and which was featured in the last month's 'VHF/UHF'. The table of daily solar data reveals a wide variation in the 2.8GHz solar flux, which peaked at 253 units on the 20th, dropping to 148 on the 31st, the average being 200, about 12% up on the June figure. There are the usual tables of daily geomagnetic and particle data, over ten pages of sunspot group information and a solar flare list. *SunMag* is compiled and distributed by Neil Clarke, G0CAS (QTHR), whose e-mail address is neil@g0cas.demon.co.uk

In the June issue of *The Six and Ten Report*, co-editor Steve Reed, G0AEV, concludes that up till the end of June, Es on 50MHz has been very good with propagation at some time on every day of June. The results are presented in tabular form over four pages. Under the title 'DX Propagation' Es linked to F_2 periods are listed to CX, FH, FR, LU, PY, TR, V5, Z2, ZD7, ZD8, ZS, 3C, 5R, 7Q, and 9J, with VK8AH being heard around midday on the 30th.

Regarding trans-Atlantic propagation, Steve doubts that the F-layer was responsible. He points out that when such events occur on both 28 and 50MHz at roughly the same time and of roughly the same extent, then this is a characteristic of multi-hop Es. Unfortunately, the table of solar and geomagnetic data printed is that for March and not June. There are the usual reports from outside Britain to give a comprehensive account of 50MHz propagation around the world.

The *Report* is an activity of the RSGB's Propagation Studies Committee (PSC), and is edited by G0AEV and Prof Martin Harrison, G3USF. Subscription inquiries should be addressed to Steve (QTHR), whose e-mail address is g0aev@explore.force9.co.uk

Bob Sroczynski, EA1TH, writes, "Don't miss the tropo prediction maps for Europe." They are available at a website - see the panel.

MOONBOUNCE

THE FIRST LEG of the ARRL EME Contest commences at 0000 on 21 October and lasts 48 hours. London latitude stations will have almost 30 hours of Moon time, the declination varying from +20.09° to +14.67°. The 144/432MHz sky temperature varies between 226/17K and 200/15K and the signal degradation range is -0.01dB to -0.16dB, referred to perigee. The Sun offset at Saturday midnight is –68°. The second leg is over the 18/19 November weekend. Neither clashes with any major terrestrial European event.

OVERSEAS NEWS

DES WATSON is QRV on 6m from Cyprus (KM65) with 50W to a colinear antenna and currently signing 5B4/G0DEZ. On 11August he worked the Tromelin Island Dxpedition FR/F6KDF/T (LH74) at 6023km. They were calling for over an hour on a seemingly dead band and were S9. On the 14th he contacted FR1AN on Reunion Island (LG79). In the evening Dez worked ZS6PJS* (KG46) and says that trans-equatorial propagation (TEP) seems very reliable from Cyprus this year.

Graham Daubney, F/G8MBI (JN04), caught the excellent Es opening on 24 July, working 16 countries on 2m. It started around 0620 to LZ, YO and YU, followed by a short period of backscatter (FAI?) to I7 and I8 with offset beam heading and 'F' tone. Up to 1052 he had QSOs with stations in DL, I0 and I8, IT9, OE, OK, OM, SP and SV3. During the afternoon there were further Es openings to DL, LA, OZ, SM1, 5 and 6, SP2, 3, 5 and 8. He reports that EA8 to G and OK contacts were made.

There was an FAI event to I, YU and 9A on the 25th, 1900-2230, but he had to QRT due to lightning. More Es to I7 and I8 from 0920 on the 29th and another fleeting event next afternoon from 1633 to LZ and OM. Graham reckons July was a good month with far better propagation than in the previous two years, but still not up to 1996/67 standards.

Paulo Gomes, CT1FOH (IN50), made 58 QSOs in the Es event on 24 July, 0834-1016, with stations in DL, F, OK, ON, PA, S5 and 9A, many of them over 2000km in distance (QRB). EA6VQ has updated a list of first ever QSOs from EA, EA6, EA8 and EA9 and these can be found on his website - see the panel. Have a look at it and see if you have a prior claim. If so, e-mail Gabriel at ea6vq@qsl.net

John Peters, PE1OGF, posted a brief account on the Internet about the August operation from Liech-

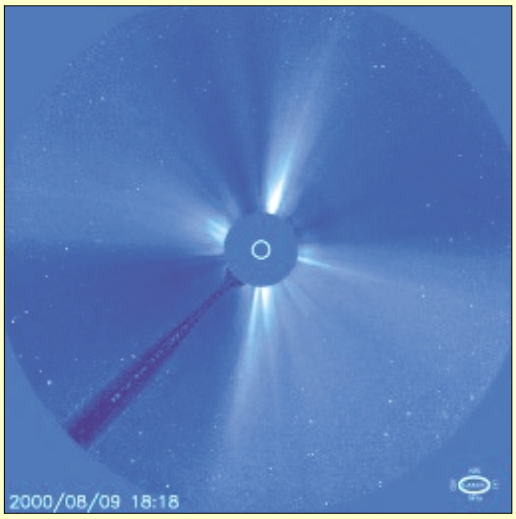
THE PERSEIDS METEOR SHOWER AND AN AURORA

MANY MS ENTHUSIASTS had made their skeds with partners but, during the peak of this year's Perseids shower, there was another impressive aurora. It all began on 9 August with a coronal mass ejection (CME) from the Sun recorded by the ESA/NASA SOHO spacecraft.

The shock wave from this CME hit the Earth's magnetosphere at 1930 on the 11th, triggering the aurora. A comprehensive account, with lots of photographs, can be found on the NASA Space Science website - see the panel for the precise details.

On 2m David Butler, G4ASR (IO81), made six auroral CW QSOs on the 12th starting at 0320 with SM5FRH (JO88) and ending at 0405 with LY2SA (KO14). In 10 minutes from 0425, he completed random SSB MS contacts with 9A2RD, S50C, I8MPO and OE6IWG and with LA0BY/P at 1039. The aurora came back at 1420 and he made another 27 CW QSOs, mainly with DLs, ONs and PAs, ending at 1755. ODX overall were LY2SA at 1739km, YL3AG (KO26 at 1819km) and HA0HO (KN07 at 1805km).

Jamie Ashford, GW7SMV (NP), completed on MS on 2m with S52EZ (JO86) and OE1SOW (JN88) for new countries in the evening of the 11th. From 0526 next morning he made it with 9A2KK (JN85), OK2PMU and 9A2VR. From 1535, in the aurora, his successes included MM1CXE, (IO86), EI9HW (IO63), PE1OPK (JO23), DL1ELY (JO31) on SSB.



The ESA/NASA Solar and Heliospheric Observatory's recording of the coronal mass ejection on 9 August, which hit the Earth's magnetosphere at 1930 UTC on 11 August. The impact occurred just as the Earth was entering the densest part of the debris from the comet Swift-Tuttle (the parent of the Perseids meteor shower). Source: NASA

Gabriel Sampol Duran, EA6VQ, found this year's Perseids "…like it was in the old times." The first peak was *very* sharp at 0525 on the 12th, with a much wider one 0900-1100. He completed six skeds, ODX SM6KJX (JO67 at 2085km), and 14 random SSB QSOs, ODX SM7FMX (JO65 at 1912km).

Stefan Heck, LA0BY, completed 60 MS contacts and 203 auroral ones in this period and he has listed them in his website - see the panel. Auroral ODX were UA3MBJ (KO88 at 1703km), RA3IG (KO87 at 1713km) and RA3DRC/1 (KO55 at 1453km). MS ODX were UT5ER (KN87 at 2135km), YU7ACO (KN05 at 1926km) and YU7KB (JN94 at 1896km).

NASA now offers online meteor counts on a daily basis as reported by a network of observers across North America, including visual and radio detections. These data can be found on the Space Weather website - see the panel in last month's column.

tenstein by the HB0/PI4TUE group. They had a bad take-off on 2m in several directions and conditions weren't very good, so they went out /P in the Perseids. It proved a back-breaking task carrying heavy equipment 1.5km up to the site and they were finally QRV at 2030 on the 11th. Reflections were disappointing and then at 0600 next morning, the capacitors in the PSU for the PA blew up! Anyway, thanks John and your six colleagues for the effort, but they say they *won't* be doing it again.

BAND REPORTS

50MHz

Alec Trusler, G0FIG (BN), worked VE9AA (FN65), K1SIX (FN43) and 4L0DXP (LN21) on 23 July, and on the 25th JX7DFA (IQ50) and JW/DL3NRV (JQ88). On the 30th he completed with ZS6PJS and ZD7MY (IH74), while 5 August saw 3C5I (JJ43) in the log.

Philip Lancaster, G0ISW, was QRV mobile on 5 August travelling from Northern Ireland to Cumbria. Using 50W to a whip antenna he had Es QSOs with CT, EA, F and HB9 stations, dispelling his notion that you need a horizontal antenna to work the DX. Terry Chaplin, G1UGH (IP) worked stations in I, S5, SP, T9, YU and 9A via Es in the 22 July - 5 August period and heard others in Iberia and the Balkans.

From 21 July until he left for a holiday on the 26th, the log of Ted Collins, G4UPS (EX), shows Es propagation each day, including double-hop events to the Middle East. From 0629 on the 23rd, VE9AA worked into Europe, contacting Ted at 0721 and later working IK1EGC and 1A0KM. K1SIX, K5AND* (EM74), VO1BC (GN38), K1GUN* (FN53), VE1YX, K1DAM* (FN41) and VO1GO* (GN38) were also heard/worked by Ted till fade-out at 1215. This North American opening was the earliest in the day ever from Devon.

Colin Fallaize's, MU0FAL, highlights in July were ER6AA/P and ER1FF/P (KN47), CN8YR* (IM63), 3A/OH2BC*, VP2V/W6JKV*, UR7TO* (KN39), VE9AA* and 3A/OH9MM. The aurora on the 15th took a while to get going on Guernsey, and from 2200 the whole band was one big pile-up. ODX were G0JHC (IO83) and GD0TEP (IO74), who was a new DXCC country after three years of trying.

Mike Johnson, GU6AJE, lists 110 QSOs in the 22 July to 13 August period, pick of the bunch being ZD7VC on 4 August, a first for the St Helena station and maybe a first GU/ZD7? 24 July was "a monster day" with lots of very short skip into EH1, F, PA and even G. Next day he picked up a few new Finnish grids, JO96, JP92 and 93, and KP43.

GW7SMV lists some fine DX worked; here is a selection. In July, 4X1RF (KM72) on the 21st, WA1ECF* (FN41), PP5JD (GG52) and PY5CC next day, K5AND*, VO1BC and TF3GW (HP94) on the 23rd. SV3/DK7ZB (KM16), SV9/IW0FQZ (KM24) and EW6DI (KO45) on the 24th. TF8ITT (HP84), RN6HW* (LN16) and TF3KET (HP94) on the 29th and FR1GZ (LG79), ZS6PJS and ZD7VC, his 100th country, on the 30th. 5 August brought a QSO with JY9NX (KM71) and SV1EPP (KM17) and next day with another Icelander, TF3WOT/M (IP24).

70MHz

Derek, G8TOK (BR), lists six S5s in JN65, 76 and 86 worked, plus SP5XMU (KO02) cross-band to 50.185MHz. The S5s, especially S51DI, are using FM on 70.450MHz but are sometimes obliterated by locals who don't QSY after establishing contact. No S5s were heard in the Trophy Contest on 13 August when his

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NASA	http://spacescience.com/headlines/y2000ast14aug_1.htm?list
LA0BY	www.qsl.net/la0by/result00.htm
EA Firsts	www.qsl.net/ea6vq/firsts.html

ODX were GM4SIV/P (IO75) and M0AFC/P (IO84).

David Dodds, GM4WLL, was out portable at IO85NR (TD) in the contest and completed 41 QSOs in 36 districts, four countries and 17 grids. The best three contacts were G3TCU/P and G4BVY/P (IO70), and G0GCI (JO01), all over 500km. The weather was horrible, with thick mist, driving and static rain. Conditions were reasonable and activity good. He wonders if six hours is too long for this event - any comments?

GU6AJE caught S51DI (JN76) via Es on 5 August. Mike was QRV in the contest completing 11 contacts, ODX being GM4SIV/P. He got a few MS pings from GM4AFF, GI3TDR, GM4DIJ and MM0CPS/P.

144MHz

Between 1447 and 1523 on 24 July, G0FIG worked 16 stations via Es in DL, HG, OK, OM, SP9 and YU7 in JN68, 89 and 99, JO70 and KN05 grids. Alec reckons this has been one of the best years for Es on 2m for years. In early August G1UGH worked into DL and F and Terry heard EI, GI and GM stations in the aurora on the 12th.

Steve Barrett, G4IVH (PE), caught the Es opening on 22 July, working YU7EW, YU7AR and YO2BBP (KN05), LZ2ZY (KN13) and YU7BW (JN95). The Es on the 24th didn't start till 1730, but had been going on all day in the Mediterranean. Stations contacted were 9A5ST/P (JN83), HA5CW (JO97), HA8BE (KN06), IW4DTP (JN54), OM5LD and OM5KM (JN98), HA5CTA (JN97), IK0LZR (JN52), I8MPO (JN70), IK5YJY (JN53), IW1ESM (JN45) and IK5CQV (JN53).

John Regnault, G4SWX (IP), reckons that, if you know where to look, FAI propagation is very common in the UK and he participated in two more events recently. On 27 July he worked 9A1CAL (JN86) at 2046. On 6 August he completed with 9A2SR and T91EDO (JN95), 9A2KK and 9A5Y (JN85), 9A3VD (JN75), 9A1CAL and S51FB (JN86). All were CW QSOs, with John beaming at 80° while the Balkan stations were beaming at 330-350°. John has some interesting observations on FAI mode and I'll include them in a later issue.

GW7SMV caught the Es on 22 July, but missed most of the fun on the 24th due to having to work. In the Perseids period on 12 August, Jamie had tropo QSOs with OK1VVT/P (JO60) at 0642, OK2ZZ/P (JN89) at 0818 and DH2KT at 0827.

LOCATOR SQUARES TABLE
Starting date: 1/1/1979

Call	50	70	144	430	1296	Total
G3IMV	630	19	612	125	53	1439
GJ4ICD	753	1	267	121	79	1221
G4RGK	409	-	345	233	78	1065
G0FIG	460	-	385	94	-	939
G4DEZ	485	18	256	81	67	907
G0JHC	770	25	48	4	-	847
G0EVT	416	14	292	77	16	815
G0FYD	502	1	259	10	-	772
G1SWH	338	42	222	81	30	713
GW6VZW	488	-	146	6	-	640
GW7SMV	461	-	179	-	-	640
G4YTL	-	50	490	72	-	612
G8TOK	329	31	133	55	29	577
G3XDY	-	33	246	170	120	569
GU7DHI	415	-	85	14	-	514
G7CLY	238	-	221	13	-	472
G6TTL	220	-	133	90	27	470
G0XDI	196	-	213	59	-	468
G3FIJ	236	29	105	50	23	443
G0GCI	279	19	99	39	-	436
G1UGH	270	-	130	16	-	416
MM1BUO	296	-	76	31	-	403

Call	50	70	144	430	1296	Total
G8XTJ	247	-	137	-	-	384
GU6AJE	311	13	32	-	-	356
G7LRQ	212	-	60	36	34	342
G4OBK	279	-	58	-	-	337
G4ZHI	39	-	238	32	-	309
G1EFL	219	-	64	-	-	283
G3FPK	30	-	246	-	-	276
G0ISW	170	-	80	22	-	272
2U0ARE	238	-	18	12	2	270
G0ISW	162	-	80	22	-	264
GM1ZVJ	235	-	-	-	-	235
GW3EJR	233	-	-	-	-	233
G4APJ	155	-	43	20	-	218
G8NGI	136	14	39	18	-	207
G4UCJ	141	-	26	-	-	167
G4OUT	-	23	107	-	-	130
G4FUJ	57	17	19	4	5	102
EA7IT	-	-	90	-	-	90
G3NKS	5	52	12	4	-	73
MM0BQI	44	-	18	1	-	63
M0CNP	-	1	31	12	-	44

No satellite, repeater or packet radio QSOs.
If no updates received for a year, entries will be deleted.
Next deadline is 12 October.

FINALE

APOLOGIES TO those who contributed but haven't been mentioned, but your input is much appreciated. The December deadline in **12 October** and the January date is a *very* early **9 November.** My telephone answering and fax machine is on 020 8763 9457 and my CompuServe ID is g3fpk. ♦

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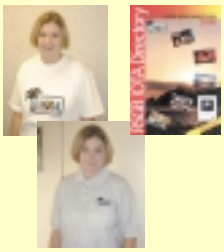

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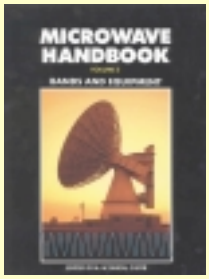

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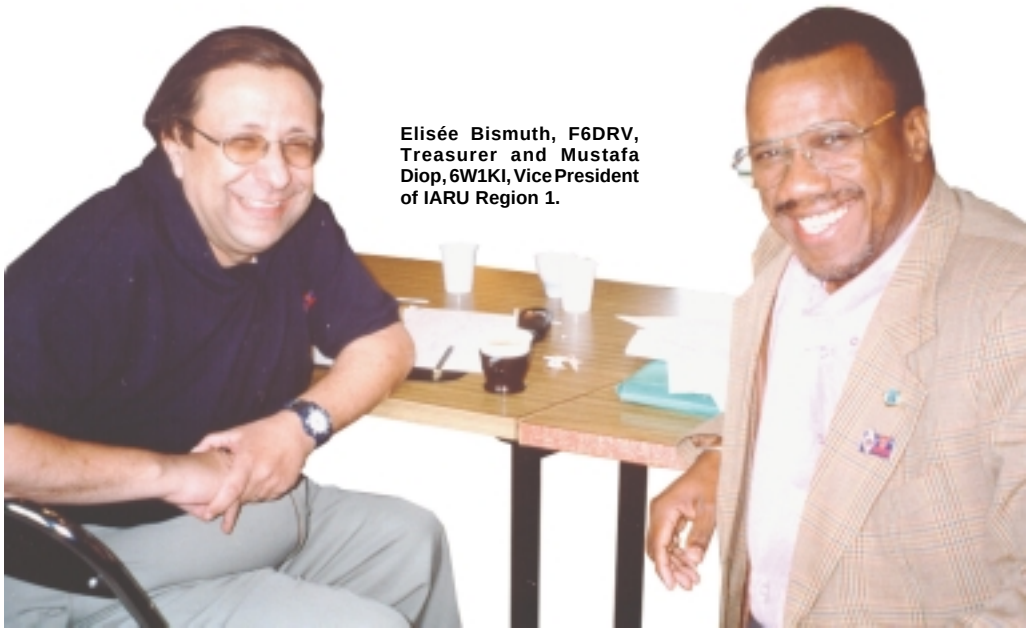


Elisée Bismuth, F6DRV, Treasurer and Mustafa Diop, 6W1KI, Vice President of IARU Region 1.

WRITING IN the latest issue of *Region 1 News* the Chairman, Louis van de Nadort, PA0LOU, said "Prior to WARC 79, leading amateurs from the three IARU divisions had come together at the initiative of the President of the ARRL to work out a combined strategy in order to operate at that Conference as one delegation with one voice and promoting our interest with the national authorities on that same basis. IARU, as we know, was very successful". It can be added that it continues to be successful.

PRESERVATION AND PROTECTION

THE PRIME PURPOSE of the International Amateur Radio Union is the preservation and protection of our amateur bands; without the latter there would be no amateur radio. It is equally important that all of the 150 member societies have the same aims and objectives, and that is why an international organisation is essential. All radio amateurs benefit from this, whether they are members of their national societies or not; in mundane terms, the non-members share the benefits without making the financial contributions. The late Roy Stevens, G2BVN, a former Secretary of IARU Region 1 and a Past President of the RSGB, often reminded us that radio waves do not stop at the English Channel!

CONTINUING RSGB INVOLVEMENT

RSGB MEMBERS continue to play an active role within the IARU, its expert consultants including Peter Chadwick, G3RZP, and Julian Gannaway, G3YGF; one of its Technical Representatives is John Bazley, G3HCT. Tim Hughes, G3GVV, is a regional representative on the IARU Administrative Council, as well as being Secretary of Region 1. Within Region 1 (Europe, Africa, the Middle East and the CIS) our members have several appointments which will be mentioned in a future issue.

At the recent World Radio Conference (WRC-2000), the interests of radio amateurs were overseen by the representatives of IARU: Larry Price, W4RA (President); David Sumner, K1ZZ (Secretary); together with Wojciech Nietyksza, SP5FM (a member of the Executive Committee of Region 1 and former Vice Chairman). Serving as members of their national delegations were Paul Rinaldo, W4RI (ARRL Technical Relations Manager); David Wardlaw, VK3ADW (Vice President IARU); Ken Pulfer, VE3PU; and Jay Oka, JA1TRC.

Immediately after the conclusion of WRC-2000, planning for the next conferences (WRC-03 and WRC-06) commenced in Istanbul, on 7 and 8 June. SP5FM was assigned as the IARU representative to attend the Conference Planning Meeting (CPM-03/1). The terms of reference include technical matters, operational, regulatory and procedural bases. The purpose of this session is to settle the structure of the CPM Report to the next WRC, allocate necessary preparatory studies concerning future WRC agenda items to Study Groups, establish a work plan and necessary schedules.

DISASTERS

WE ARE - I trust - all familiar with the paragraphs of 1(1) and 1(2) of the *Amateur Radio Licence (A) or (A/B) or (B) Terms, Provisions and Limitations Booklet*, BR68, which refers to operations conducted by a User Service, and to frequencies available for international disaster communications. Primarily these are concessions which allow us to use our equipment and knowledge for the good of the community; secondarily, they help in providing part of the justification for the retention of amateur bands.

W4RA, an acknowledged expert on disaster communications, was invited by the United Nations OCHA (Office of the Co-ordinator of Humanitarian Affairs) to attend a meeting in July of the Economic and Social Council (ECOSOC), one of the permanent organs of the United Nations. This gave him the opportunity of describing the way in which our service can offer assistance whenever and wherever it is needed. In his own words at this occasion "Yes, amateur radio still exists and yes, we can and do assist in disaster communications". ♦

ATV

ROGER JONES, G3YMK
Millfield House, Alton Lane, Four Marks, Alton, Hants GU34 5AL.
E-mail: G3YMK@aol.com

SUMMER CAME - eventually, but the poor weather did not deter members of the Severnside Group holding their activity weekend early in July. As well as club station G7ATV/P being active for the whole weekend, many stations braved single-figure temperatures to join in the fun and try out new portable gear on 23, 13 and 3cm. Similar events are planned later in the year. For details take a look at the group's website http://www.qsl.net/stg

DIGITAL - WHICH WAY?

IN THE SAME way as the first PAL ATV colour transmissions took place in the late 1960s, some amateurs working in the industry have gained access to the complex modulators used for domestic DTV. Receivers are becoming available relatively cheaply and it seems we are not too far away from seeing the first 'amateur' digital TV transmissions. Noel Matthews, G8GTZ, has submitted an excellent draft proposal for a 13cm repeater to be located near Basingstoke in Hampshire. Full 'ON-digital' DVB-T OFDM modulation would be used with 'soft' encryption, which enables use of relatively inexpensive set-top boxes with an S-band downconverter.

This does raise the question as to how digital ATV will develop. It had always been assumed that bandwidth reduction using compressed MPEG and the consequent advantages would be the driving force. Domestic DTV actually uses bandwidths similar to analogue and simply crams in more 'channels'. It is possible to produce perfectly acceptable colour pictures at a data rate of under 2Mb/s, which could be accommodated in the 70cm band. Whatever the outcome, we are certain of a most interesting time.

ATV CONTESTS

COMPARED WITH other contests, ATV events are somewhat leisurely affairs. The technique normally used is to establish a 'phone' contact first on one of the talkback frequencies, carefully align beams and then exchange a personal set of four numbers in vision only. A simple computer with video output can be used to produce such a screen.

Roger, GW4NOS, and his friend Geraint were operating from a hilltop in South Wales during the Severnside Activity Weekend.

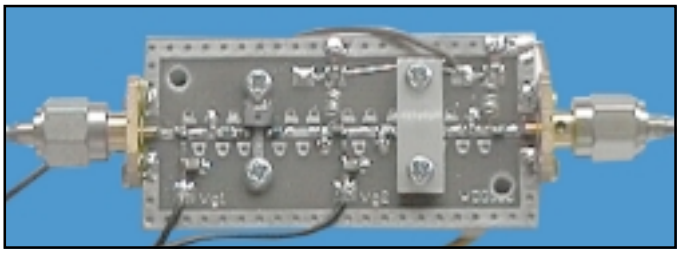
Such contests were popular at the start of the last decade, but now there are only a few annual events. Undeterred, BATC has appointed a new contest manager to revitalise UK events. He is Richard Guttridge, G4YTV, and he would be happy to provide you with a calendar of future contests. In the past, BATC seemed to have an ability of arranging good propagation conditions whenever they ran a contest, especially on 70cm!

REPEATER NEWS

EVERY CLOUD HAS a silver lining. Many repeater groups have been faced with site rental increases which, despite the RSGB having obtained a seven-year period of graduated increase to a fraction of commercial rates, even the first year increase is beyond the means of many. This is especially so for specialist ATV groups and, faced with this dilemma, the GB3WV group have decided to share the new site of voice repeater GB3CH in Cornwall. The move from North Hessary Tor will eliminate coverage in the very active Torbay area of Devon. A group has been formed under the chairmanship of Colin Coker, G4FCN, which is proposing a new TV repeater, GB3TB, to be co-sited with 2m voice repeater, GB3TR. In the longer term it is intended to link GB3WR and GB3TB. This is an excellent example of how groups can help each other. Information regarding the new group can be obtained from G4FCN, QTHR in the *2000 Yearbook* or via e-mail to torbaytv@btinternet.com

The SCART group has been testing the GB3IW voice repeater site for their new unit to cover the Portsmouth area, GB3PT. The site at Stenbury Down near Ventnor, the third highest hill on the Isle of Wight, gave G7JTT and G8CKN excellent results, and some 20 stations were worked two-way during an evening portable session in late June. The aerial used was a plate similar to GB3AT and various power levels were tested. The site is very close to a high-power radar installation that did cause some interference during the tests, but aerial and filter guru G8CKN is confident that suitable filters will eliminate any problems.

The Mendip Repeater Group newsletter reports that GB3UT has been restored to full health following water damage to the feeders and aerials. This repeater is unique in the UK as it operates in AM mode. The group have been considering conversion to FM and would be interested in hearing your views. Their address is PO Box 73, Wells, Somerset BA5 3YB.



The new 1W power amplifier for 13cm by G3WDG, available from the RSGB Microwave Component Service.

Graham Hankins, G8EMX, has been trying to find a suitable site for a Birmingham ATV Repeater. If anybody is interested in such a project, he can be contacted at 17, Cottesbrook Road, Acocks Green, Birmingham B27 6LE or by e-mail to graham@ghank.demon.uk

Expect new activity in Nottingham, where GB3MV has been licensed on its new site, and in Eastbourne, where the new 10GHz repeater GB3XV has also been approved.

THOSE VIDEO SENDERS

THANK YOU for the considerable amount of feedback regarding the 13cm video sender units available in DIY shops. Of particular interest was a copy of an article written by Doug Ingham, ZL2TAR, in the March issue of *Q-Bit*, the magazine of the Wellington VHF Group. Doug has been working with mixed success on the popular 'Response' unit. His conclusion agrees with my own - the units as supplied do the job intended, but need considerable work to make them suitable for amateur use. The modules do have considerable potential though, if used as the heart of an exciter such as the F1GE and G1MFG units mentioned in the August column. The F1GE exciter produces just over 1 watt output when used with a G3WDG amplifier. F1GE is now also able to supply a 1-watt amplifier ready-made for 400FF which, when tested, gave marginally less output than the G3WDG unit, but on air no difference was seen. Both amplifiers are very small and have potential for masthead mounting, hence reducing the effects of feeder loss at these frequencies. An article about constructing the F1GE kits can be found in *CQ-TV* 191, BATC's quarterly magazine, which was published in July 2000.

SIGN OFF

THANKS for all the feedback and especially the pictures. Keep them coming either by post or e-mail to G3YMK@aol.com ♦

EMC

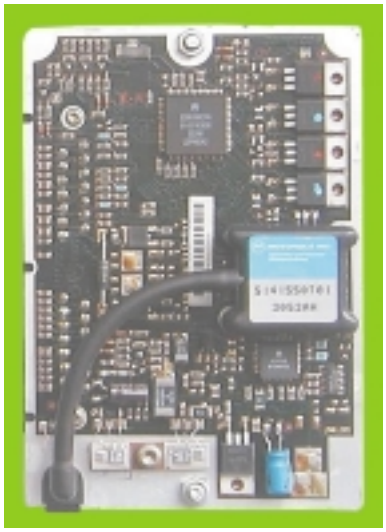
DAVID LAUDER, G0SNO
20 Sutherland Close, Barnet, Herts EN5 2JL.
E-mail: emc.radcom@rsgb.org.uk

THERE ARE several important topics 'in the pipeline', including new types of filter, vehicle EMC, intruder alarms and water conditioners. Thanks to everyone who has written or sent e-mails on these and many other subjects. This information is very useful and I am dealing with these enquiries as fast as possible, in between writing this column every other month.

If you are e-mailing me, please use the address shown at the top of this column, in preference to the earlier work e-mail address @herts.ac.uk. E-mails sent to me via RSGB are forwarded to another account that I download from home via a modem. Please bear this in mind before attaching large files (more than about 100kB).

AUTOMOTIVE EMC

SOME MEMBERS HAVE asked about fitting amateur radio transceivers to recent models of car. Most handbooks for modern cars contain a warning that fitting radio transmitting equipment could affect vehicle electronic systems and advise car owners to contact their dealer for advice. Some members who have tried this have found that the dealer doesn't have any detailed information and refers them to the manufacturer, who refers them back to the dealer!



Automotive Engine Control Units (ECUs) are one of a number of electronic systems in modern cars that could be affected by strong RF fields from an on-board radio transmitter.

The EMV Referat of DARC, the German National Society, has contacted 29 motor manufacturers, enquiring about recommendations for fitting of amateur radio transceivers. Most have replied and we now have a copy of the June 2000 edition of the DARC information. When I have translated and checked it, we plan to publish further details.

PUMPING STATIONS

BOB, GW3ECH, REPORTS that engineers have visited the water pumping station at Llanywern (see August 'EMC') and have agreed to fit interference suppression. On his regular 3.5MHz net he has found that his S-meter was going down to zero and he was still (just) reading fellow club members in Devon.

Laurence Howell, GM4DMA, sent an e-mail about radio communications for the July 2000 Peter Storm Challenge, a sponsored charity walk over the Brecon Brecons in South Wales. Some 500 walkers completed the 26-mile walk over mountains like Pen-y-Fan. There were six checkpoints and two mobiles. Each station had VHF and used HF communications for paths where the VHF path was blocked by hills. The HF links used Near-Vertical-Incidence Sky-wave (NVIS) propagation on a non-amateur frequency allocation around 5MHz. The Land Rovers were suitably equipped and patrolled the course, always in contact with base back at Brecon.

Laurence was very interested to read about the interference from the Llanywern pumping station, because last year he experienced an HF noise problem at another location near Brecon, Talybont-on-Usk, which should be an electrically-quiet rural area. The noise appeared to be centred around a water pumping station. Again, it was broad-band 'hash' peaking at S9+ on the mobile, making communications difficult around this area, within a radius of some 400m. He reports that similar interference was being re-radiated by telephone and power lines and could still be detected up to 4km away.

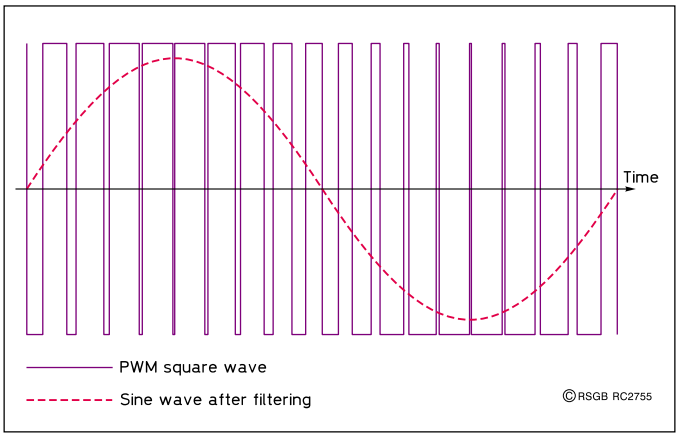


Fig 1: The principle of a variable speed AC drive, as used for induction motors in commercial and industrial applications. Pulse-width modulation (PWM) is applied to a square wave at 1 - 30kHz (not to scale). This is then low-pass filtered to produce a variable-frequency sine wave from a few hertz up to hundreds of hertz. This is used for driving induction motors with typical powers of a kilowatt or more. Efficient filtering is required to minimise RF interference.

In his radio report, Laurence voted the area around Talybont-on-Usk to be one of the noisiest in the UK, and recommended avoiding the area to the East of the bridge as a 'no receive zone'. In July 2000, the noise was still there and just as bad.

In practice, the actual level of radiated emissions from such equipment can be greatly affected by the way it is installed. Paul, G4IJL, builds control panels that use variable speed motor drives and has sent details of earthing, filtering and suppression measures to minimise RF interference. Paul refers to further information in a book marketed by Telemechanique.

Tony, a GW8 from Newport, has sent a user manual for Jaguar AC variable speed drives which mentions EMC and possible interference emissions from 100kHz to 5MHz. Most manufacturers of this type of equipment issue recommendations for installation, but it can be nearly impossible for a radio amateur to find out whether the recommendations have been followed in a particular installation.

VENTILATION SYSTEM

AROUND OCTOBER 1999 Martyn, G3RFX, of Bristol, noticed a continuous noise source from about 2 to 14MHz. It consisted of 'hash peaks' spaced at intervals of 10kHz with audible 'churning motor' sounds. The peaks were strongest around 3 - 4MHz (S9 +20dB) falling to S7 on 7MHz and S4 on 14MHz. This interference was a nightmare for Martyn as he is the local GB2RS news reader on 3.5 and 7MHz.

He went out to look for the source and soon located it at the Bristol University Students' Union (SU) building some 250m away. He asked if they had installed any new electrical equipment recently and they had. It was a 'state of the art' fan/ventilation system for the SU bar. The control gear was installed in a small room high up on the third floor. The SU electrician was helpful and agreed to switch the equipment off for a short time to prove that this really was the source. The SU General Manager was also helpful and offered to do everything he could to find a lasting solution.

After a series of tests in the University's Radio Lab, it was decided that the likely cause was either inadequate screening and/or filtering of the system's fan power controller or the long cables to the ventilation units themselves. The motor power controller could be described as 'switch mode' and presumably uses pulse-width modulation (PWM) to produce a variable speed motor drive (see **Fig 1**).

Getting the original contractors to come back and tackle the problem proved to be far from easy, however. Although the equipment was still under warranty, they regarded any work to reduce RF interference as being above and beyond the original contract and therefore required extra payment.

In the meantime, the SU General Manager agreed to switch the system off completely when not really needed, ie weekdays during the day and on Sundays. Around the end of May 2000, an agreement was finally reached 'behind the scenes' and the filtering and/or screening was installed, apparently costing around £1,000. It did make a substantial difference and the 'hash' peaks on the 3.5MHz band are now reduced to S7 instead of S9 + 20dB.

This is still a far from insignificant level, but pending further negotiations (and available money), the SU General Manager has agreed to continue switching the system off when not really needed.

Martyn considers himself lucky that Bristol University has done all that it has, even although the amateur radio service is classed as 'non-protected' against interference to reception. He has found them extremely helpful and co-operative at all times and doubts whether he would have received the same response if the source had been in a commercial or industrial building.

As with the water pumping stations, this case raises the question of EMC standards for commercial or industrial equipment, particularly if switch-mode power supplies or variable speed motor drives are used. Such equipment needs to be tested for conducted emissions into the mains supply, but not for radiated emissions below 30MHz. There appears to be a need for an additional radiated emission limit for the actual installation. If this were exceeded, it would then be the responsibility of the installer to reduce the level of interference at no extra charge.

HF RADIO 2000

THE IEE EIGHTH International Conference on HF Radio Techniques and Systems took place at the University of Surrey, Guildford on 10 - 13 July 2000. I presented a paper entitled *Prediction and measurement of HF radiated emissions from data communication networks that use unscreened cables*. This was one of several papers on the subject of noise and interference, including *The threat to new radio systems from distributed wired-communication installations*, by J H Stott of BBC R & D. Mr Stott's paper looks at how interference from DSL and PLT could affect Digital Radio Mondiale (DRM). DRM is a new system for high-quality digital broadcasting in the LF, MF and HF bands that is currently undergoing trials.

One theme that emerged from the conference was that many users of HF radio communications are concerned about man-made interference sources that emit broad-band noise and raise the background noise level. Various HF communications services such as international broadcasting and military users are now moving to digital modulation systems designed to cope with the vagaries of HF propagation (see **Fig 2**). At times, such systems operate near the background noise level, and any man-made increase in this level can cause complete loss of communication.

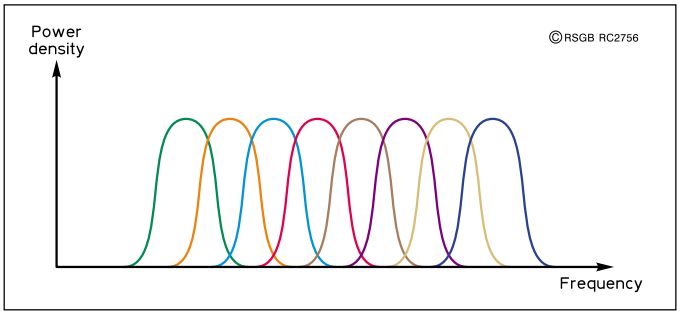


Fig 2: Outline of multi-carrier modulation as used in digital audio and video broadcasting. Such transmissions are relatively immune to narrow-band interfering carriers, but can be jammed by broad-band noise-like interfering signals.

When installing amateur radio transceivers in modern cars, manufacturers' advice should be followed, especially regarding antenna location. An external antenna should be used and it should be well grounded to the car body shell like the one in the foreground which is bolted to a threaded hole intended for mounting a roof rack. Magnetic mounts like the one in the background should not be used.

IARU EMC

EMC IS AN INTERNATIONAL issue, and is governed by European standards and Directives. The International Amateur Radio Union (IARU) plays an important role in dealing with these international issues. One such issue is a new European EMC Directive. This follows the 'SLIM' initiative, Simplified Legislation In the single Market.

Many manufacturers of electronic equipment do not like the original European 1989 EMC Directive, 89/336/EEC, because it requires electronic equipment to be tested for immunity to various types of electromagnetic disturbance including RF fields.

It is argued in some quarters that immunity should be a 'quality issue' that is, it should be up to the manufacturer to decide how much (or how little) immunity is required. As many radio amateurs know only too well, when a piece of electronic equipment suffers lack of RF immunity, the owner often blames the operator of the radio transmitter rather than the designer of the affected equipment. At one point, it appeared that the SLIM initiative might result in the abolition of compulsory immunity testing but, fortunately, this now appears unlikely.

A working draft of the new SLIM EMC Directive was discussed at a meeting of the IARU Region 1 Eurocom Working Group at Ham Radio 2000 on 23/24 June in Friedrichshafen, Germany. There were various aspects of the draft Directive with which the IARU EUROCOM Working Group was not happy. EUROCOM Chairman Gaston Bertels, ON4WF, submitted some comments to the European Commission Working Group that is drafting the new EMC Directive.

First, there was no exemption for 'home brew' amateur radio equipment and kits. The EUROCOM proposal is to include an exemption for amateur radio equipment that is not available commercially, for kits assembled by radio amateurs and for commercial equipment modified by and for the use of radio amateurs.

Secondly, the draft Directive contained a clause stating: "This Directive shall not apply to equipment which, by the inherent nature of its physical characteristics, has an emission level far below the most stringent limits, and for which experience shows that it operates satisfactorily in its intended area of use".

The last part of this sentence is open to interpretation. It could be interpreted in a way which means that new products (eg audio amplifiers) for which there is no record of interference are excluded from the Directive. If some interference problems appear later on, the National Authorities would not be able to pursue the case, as the equipment would not be covered by the Directive. The EUROCOM proposal is to remove or modify this clause but this is still under discussion.

WIRELESS INTERNET

A MEMBER HAS sent me a press release from Tele2 (UK) Ltd about a new Internet access service called Wireless Digital Subscriber Line (DSL). According to another press release on the RA web site, the RA is licensing Tele2 (UK) Ltd to provide Fixed Wireless Access (FWA) services in the 4GHz band. From the amateur radio EMC point of view, this seems far more satisfactory than DSL using existing phone wires as it does not use frequencies in any amateur band. ♦

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VHF Antennas and amplifiers

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TWO METRES - 25W in / 200W output £289. 10W in - 350W output £509.

We also sell valve amplifiers from **Henry Radio** USA. Call for more info.

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We are ***delighted*** to be appointed UK distributor for PST rotators. All these excellent rotators have non-reversible worm-gear drives, so do not need a separate braking system. Controllers are all digital readout; options inc. preset & RS232 controllers, larger mast clamps, elastic mast joints etc.

Here is the *PST 2051*

This superb rotator is built like a tank, and will handle the largest triband yagis - yet costs only £459. The range starts from an economical £339 for the PST641 (med to large tribanders) to the £899 PST71, which is designed for rotating towers or 80m beams (!) call us for info.

HF Amplifiers

Here is the *ALPHA 99* amplifier

Conservatively rated at 1.5kW o/p power from 160-10m, it replaces the Alpha 9lb. (Reviewed by Peter Hart as "excellent in all respects".) The high quality of this unit, now made in the USA, comes at a very reasonable £2,395, inc. 2-yr warranty.

And here's the *ACOM 2000A 2 kW* amplifier

We show just the control head of the 2000A. The "works" can be located up to 10ft away. The 2000A is automatic. Just a whiff of RF will cause it to QSY in a second anywhere from 160-10m. At a commanding 2 kW output, with full protection from overdrive, high VSWR or any other misuse - at £3,495 it's unbeatable value

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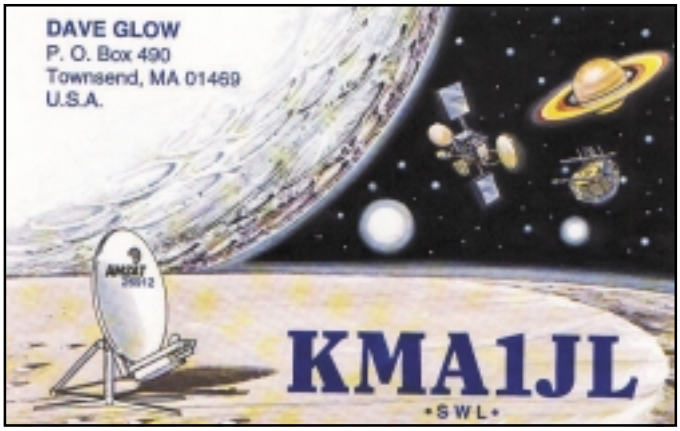
We can now supply the full range of IF filters from **INRAD** of the USA. These are renowned for excellent shape factor / skirt selectivity. Examples follow, but **INRAD** offer many more. Contact us for info!

FT1000MP	Mod 702C SSB - 2100 Hz, 455 kHz IF.	£135
	Mod 701B CW - 400 Hz, 8.8 MHz IF.	£99
	Mod 703C CW - 400 Hz, 455 kHz IF.	£135
IC746, 756, 775, 765 etc,	Mod 110 SSB - 2100 Hz, 9MHz IF.	£95
	Mod 314 SSB - 2100 Hz, 455 kHz IF.	£135
	Mod 116 CW - 400 Hz, 455 kHz IF.	£135
TS850, 950, 930, 940 etc.	Mod 93 SSB - 1800 Hz, 455 kHz IF.	£135
	Mod 95 SSB - 1800 Hz, 8.8 MHz IF.	£85
	Mod 528 CW - 500 Hz, 455 kHz IF.	£135

SWL

BOB TREACHER, BRS32525
93 Elibank Road, Eltham, SE9 1QJ.
E-Mail: brs32525@compuserve.com



Another interesting card from the USA. Can anyone explain how SWL callsigns are allocated in the USA?

IT SEEMS HARD to believe that I am compiling the October 'SWL' column and I am left wondering where the year has gone! By the time this column appears, we will have left the summer conditions behind us and can look forward to an exciting autumn DX and contest season on HF.

The HF bands had been noticeably quiet during morning hours, but were quite lively later in the day. Best DX of late July and early August was probably the logging of the FR/F6KDF/T DXpedition on 3.5MHz SSB. Signals were quite good – about S6 here – at about 2140 UTC. As this may well be the last DX trip to Tromelin Island for a while, it was disappointing that a week's holiday meant that I missed them on 18MHz – the only band I needed them on!

CHASE SOME ISLANDS

MY SON, Simon, RS177448, has taken to chasing islands. He has logged 25 in no time at all – all on or around the IOTA frequency of 14.260MHz. His best DX so far has undoubtedly been HL0C/4 on AS-085. His first priority was to order the *RSGB IOTA Directory 2000* so that he was aware of the IOTA requirements, as well as being able to keep a check on the island groups he was hearing.

Simon will be getting QSL cards printed so he can collect them in order to claim the main IOTA awards, but it is worth noting that the IOTA 2000 Award can be claimed without the need to have cards. It is still not too late to start chasing islands for this award. Island stations appear quite readily; Simon seems to log 2 or 3 islands every time he turns the receiver on! More details on the IOTA program can be found on the Society's web page or on the CDXC site: www.cdxc.org

NEWS

THE ONLY full report I have this month is, once again, from Robert Small, BRS8841. He had returned from an early July holiday, so had missed the early July happenings. Most of his new countries have been courtesy of the major DXpeditions to 7P8 and FR/T, but he found that conditions were quite mixed. Robert's best DX was hearing 7P8AA on 160m. 14MHz had provided KL7/W6IXP (NA-214), FO0PT, FO0MOT (OC063), 9M6JU, HH2/F8CUP, VK7TS/P (OC233), BO2YA and W8MV/KH4. 18MHz gave OX5NUK, JW7M, FO0PT, 7P8AA, 4W6GH and FO0MOT. 24MHz was kind to Robert, as he heard 7P8AA on CW and 1A0KM on SSB. Robert reports a quiet month on the QSL front, but I'm pleased to see he received his M2000A card!

As we are deep into the holiday season as I write this, it would be interesting to hear of any listeners who took a receiver on holiday with them and to have a brief report of the stations heard.

SWL TABLES

THIS COLUMN used to feature annual and all-time DXCC country tables. There are now several listings – the latest prepared by Venca, OKL7, but entries from the British Isles are very scarce. The lists show that there is immense SWL activity in France and the Czech Republic, but only four active SWLs in the British Isles. This cannot give a true picture of SWL activity here. If listeners would like to write or e-mail me their current country totals, I will see that the two SWLs who maintain the tables receive your scores. The details I will need are your scores per band – SSB, CW and a Mixed SSB/CW figure, too. If your score is 'All SSB' or 'All CW', just say so. I look forward to some scores which I can reproduce in this column.

SWL.it

JON, G1NAU, HAS a series of radio domains in his collection. One is 'SWL.it'. He also has 'UHF.it', 'VHF.it' and 'QRP.it' He is looking for an SWL to take control of the domain name and create an interesting SWL site. He is happy to provide free hosting. So, if you fancy an e-mail address like BRS32525@SWL.it or you'd like to find out more about controlling 'SWL.it', drop Jon an e-mail at Jon@YourName.at ♦

Closer to home: Glenfinnan in Scotland. The attractive QSL card of Frank Bennett, RS179956.

CQWW SWL CHALLENGE 2000

The aim of the Challenge is to log as many countries as possible.
SSB: in the 48 hours from 0000 UTC on 28 October 2000 to 2359 UTC on 29 October 2000;
CW: in the 48 hours from 0000 UTC on 25 November 2000 to 2359 UTC on 26 November 2000. The rules are the same for both the SSB Challenge and the CW Challenge. Please read the rules very carefully.

RULES

1. SWLs may listen at any time during the 48 hour periods.
2. Only *one* station from each DXCC country may be logged on each of the main amateur bands (28, 21, 14, 7, 3.5 and 1.8MHz).
3. There will be 3 sections – A: Single Operator. B: Multi-Operator/Multi-Receiver. C: Multi-Operator/Single Receiver.
   NOTE: Any SWL with access to the packet cluster or web-cluster *must* enter Section C.
4. Points will be allocated as follows:
   (a) Countries in the SWL's own continent score 1 point on each band. Countries outside the SWL's own continent score 5 points on each band.
   (b) The final score will be the total of the countries heard on the six bands multiplied by the total number of points from each of the six bands (for example, 400 countries x 900 points = a score of 360,000).
5. Entries must show (a) date; (b) time (UTC); (c) callsign of station heard. The callsign of the station being worked is *not* required; (d) RS(T) of station heard at SWL's QTH. No station may be logged whose RS(T) is less than 33(9). Separate log sheets *must* be provided for each band.
6. A country multiplier check sheet *must* be provided. Only countries shown on the official DXCC list will count as multipliers. Each entry *must* have a cover sheet which shows the claimed score.
7. Any entry not complying with all of these rules may be omitted from the results listings.
8. Any entry which is poorly presented or is not within the spirit of the challenge will be omitted from the results listings.
9. Logs should be sent to: Bob Treacher, BRS32525, 93 Elibank Road, Eltham, London SE9 1QJ, England.
10. Logs *must* be postmarked no later than:
    SSB CHALLENGE: 29 November 2000
    CW CHALLENGE: 29 December 2000
11. Certificates will be awarded. Entrants wishing to receive a copy of the results booklet *must* include £1, $1 or two IRCs to offset the cost of printing and postage. The results may also be published on the Internet.

DATA

ANDY TALBOT, G4JNT
15 Noble Road, Hedge End, Southampton, SO30 0PH.
E-mail: data.radcom@rsgb.org.uk

AT THE recent IEE conference on HF Radio Systems and Techniques, some of the latest trends in HF data communications were unveiled. The French Trillion project, a large multi-faceted research programme aimed at multimedia transmission of images over HF, aims for data transmission at 64 – 128kb/s. In the present experimental form it uses several 3kHz channels with considerable image coding and data compression to force the data rate needed into the available bandwidth.

Other papers included details of waveforms and coding of military standards for 9.6kb/s and higher data transmission over various HF links. One paper detailed trials between three manufacturers' waveforms, showing how, in spite of considerably different approaches to the problem (serial tone versus multiple parallel tone modems to name just one), results of real on-air testing gave similar performances for all three variants, suggesting that state of the art has now been reached.

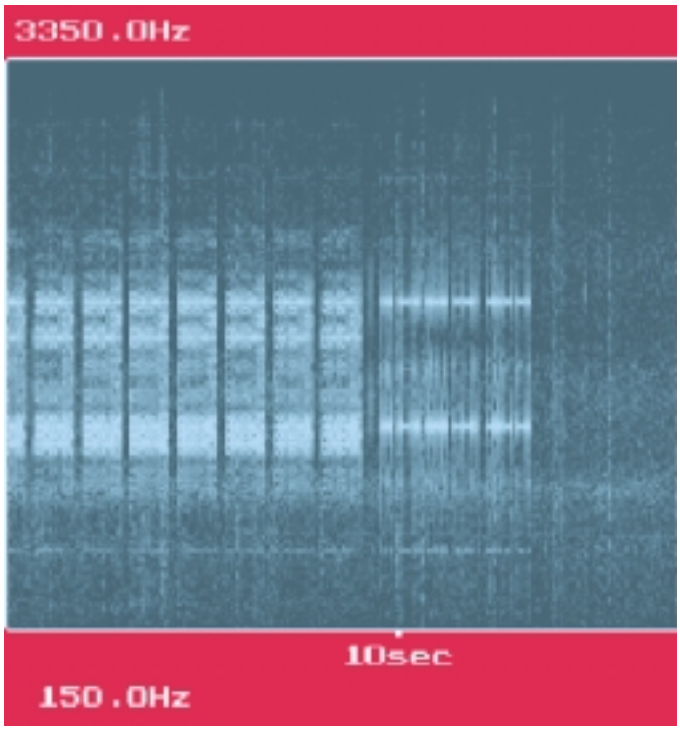
AUDIO CONNECTION PROBLEMS

PETER, G3PLX, writes: "Many amateur digital modes are transmitted by feeding a modulated audio tone from a data controller or computer sound card into the microphone input or auxiliary audio input of an SSB transmitter. Sometimes instability can occur when using this method of transmitting data, often resulting in a spurious emission modulated with a distorted version of the intended digital data which can often cause severe adjacent-channel interference. See the photograph for an illustration of this.

"RF feeds back into the transmitter microphone input or into the audio source. The high level of RF getting into the audio circuitry causes demodulation of the RF, the demodulated audio feeding back into the transmitter generating a feedback loop, which manifests itself as a parasitic oscillation. This often shows up as an extra audio tone which is exactly half of the intended tone frequency. For FSK with 200Hz shift generated by means of an audio tone into a USB transmitter, a spurious emission appears 600Hz lower down the band with a shift of 100Hz. The problem seems to be quite common with some commercially available data controllers and with some types of computer sound card.

"The problem is often difficult to spot, because the spurious signal is present only when radiating a wanted signal, so it never appears by itself and is unlikely to occur with a dummy load on the transmitter. A test which will often give a clue is to set the data source to output a steady tone then turn the level up slowly. If there is a sudden jump in the transmitter output, we have a sure sign that a parasitic oscillation has started. An oscilloscope across the transmitter output will often show a clean carrier at low power levels, but spurious modulation will appear suddenly as the output is increased beyond a critical level.

"The cure is to stop the RF output from getting into the audio circuitry. Ferrite toroids often help with the audio cable from the data controller or soundcard wound through the toroid, and there may be some improvement possible in the earthing to prevent RF return currents passing through the shack wiring. Audio isolation transformers can provide a cure and, since these are also useful for curing 50Hz hum problems, it may be a good idea to build a pair of these, for audio input and output, into a dedicated interface box between the data controller and the transceiver. Connect so that there is no direct path between the transmitter chassis and the data controller chassis via the audio cable."



A waterfall plot from EVMSPEC, showing an off-air Pactor signal demonstrating the divide-by-two RF feedback effect. The unsuppressed carrier can be seen faintly at the bottom of the trace, then the 100Hz-shift divide-by-two oscillation, then the main signal at 200Hz shift, with a CW ID and then the background noise. See 'Audio Connection Problems'.

D3	D2	D1	D0	P3	P2	P1
X		X	X			X
X	X		X		X	
X	X	X		X		

Fig 1: 7:4 Hamming code parity generation and checking. The data bits are those labelled D0-D3 and the three parity bits P1-P3. Parity checks are made across the fields indicated by an X. It can be seen that, for any particular single bit in error, a unique pattern of parity errors is generated, pointing to the corrupted bit, and allowing it to be corrected.

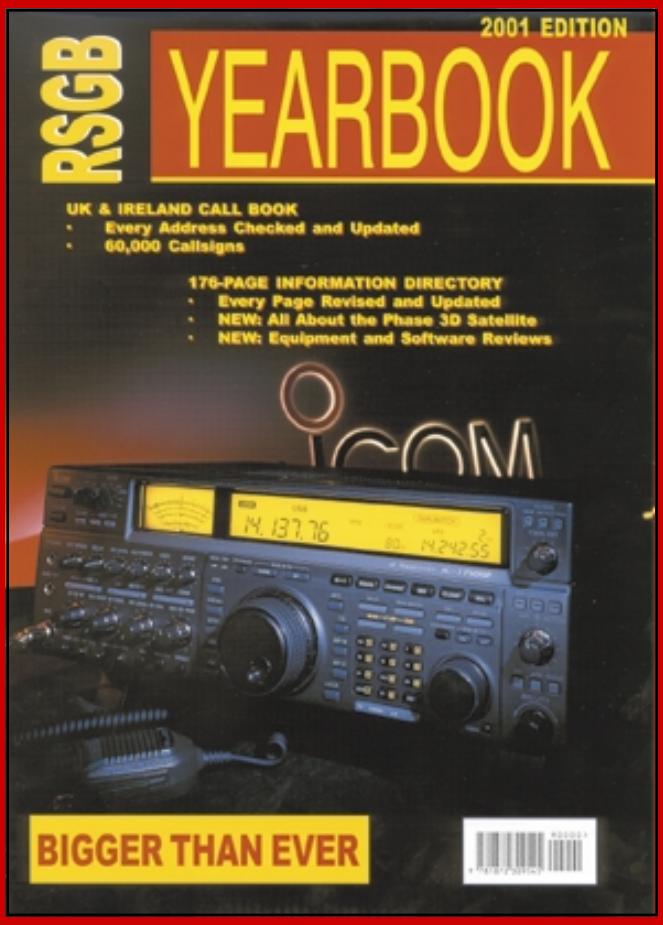
FUNDAMENTALS

LAST TIME, error-checking based on a single parity bit was discussed. For detection and correction of errors, we can increase the number of parity bits in a way such that the particular error in a block can be detected. One old but often-used system is a simple Hamming code.

Take blocks of four bits at a time and add three extra parity bits making a total of seven, so that each parity element checks a different field of the input data bits as shown in **Fig 1**. Given any single bit in error out of the seven possible, when the data is checked for each of the three fields at the receiving end, one or more parity checks will show an error. The particular pattern of checks showing an error - called the syndrome - is unique for each bit that could possibly be corrupted, and thus the particular bit in error can be identified and corrected. One bit error per block of seven can be corrected. We can *detect* but not *correct* two bits in error and may or may not detect errors of more than two bits. The overhead is the need to send a total of seven bits per four wanted ones. Another variant checks 11 data bits using four parity bits.

The error-correction scheme just described was simple enough to be built in the hardware available in the 1970s, ie TTL logic, and this particular method is in widespread use for transmitting the headers of Teletext pages on TV signals. An error here would prove very annoying to those trying to access a particular page. ♦

YEARBOOK 2001



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the last Word

To Have or Have Not

Having been a user of 'scopes for some 45 years, when I read the letter from G3BIK ['The Last Word, *RadCom*, August 2000] I began to wonder why I had never before considered the lack of numeric displays a disadvantage. The only conclusion I could think of was that I had always used test equipment for the purpose it is best at.

'Scopes are extremely good at displaying waveforms, and 99% of the time that is basically the reason why the 'scope has been used. A few times when measurements were needed it was always for peak values or a DC level, so no problem simply reading off the graticule. But more relevant in the early days of home built or army surplus 'scopes I owned, they did not have a graticule or much in way of calibration on the controls, so 'measurement' was not seriously considered. That is no doubt why whenever something such as an AC voltage needs to be measured, I have become accustomed to simply using an AC voltmeter.

A service engineer in the field working in difficult situations would obviously benefit from having to carry around as few separate items as possible, but for bench work I still prefer separate test equipment. This provides far more flexibility, separate and independent measurements can be done simultaneously and - more importantly - if it goes wrong it is easier and cheaper to repair or replace a single-function instrument (plus you still have use of all the others while doing so).

M Perry, G8AKX

Sticking to its Guns

I learn that RSGB is not only sticking to its guns on getting rid of the compulsory Morse infliction, but it has detected and acted upon a plot to sneak it back in by the back stairs.

Dare I at last congratulate it wholeheartedly, and even imagine the pounds of paper I sent out over many years added some infinitesimal impetus?

But oh how I wish this could have happened fifty years ago – or even twenty would have done me a lot of good.

Sandy Dick, GM0IRZ

Horse for Courses

I became a radio amateur in the early 1980s. My fascination for the hobby over the years has not waned. I still wonder at the miracle of being able to speak to someone on the other side of the world in an instant, using simple equipment.

It is regarded by many that the declining interest in our hobby is largely due to the Internet and its advantages in worldwide communication. In fact, almost every one of us is becoming more and more reliant on mobile phones and the Internet. That reliance should not, and for the great majority of us does not, conflict with our hobby in any way.

At the end of the day the angler switches off his computer and goes fishing, the golfer goes golfing, and I and tens of thousands of others call CQ!

Martin Russell, G0CAK

Disgusting Behaviour

I was listening on 40 metres the other Saturday afternoon when I came across what I thought was an ordinary net, but to my horror what I then heard was not what I have come to expect from so called 'responsible operators'. As I listened I heard several stations being outrageously rude and abusive to one particular station. This is not the behaviour I have come to expect from stations that have had their tickets for quite some time, going by their callsigns.

I had been a short-wave listener for many years and due to ill health I decided to sit the RAE in May 1999, so I studied at home and to my delight I managed to pass, but I was not satisfied and just had to go for the Morse. I took the Morse test in May this year and passed my 5WPM test so that I could get on the HF bands, but on listening the other Saturday afternoon I almost wondered why I bothered at all.

To hear several stations being downright abusive to another amateur was, to say the least, very shocking. It was the last thing that I had expected to hear over the air, not to mention that there are various special event stations all over the UK at weekends. This is not the sort of behaviour we ought to be portraying for the future of amateur radio. Furthermore, the stations concerned ought to be ashamed of themselves in this childish, pointless attitude.

We have to try and stamp out this kind of disgusting behaviour and make amateur radio the great and wonderful hobby it always was. If people could clean up their act it will stay that way.

Here's hoping the stations concerned take note and be nice to one another, as life is all too precious.

Dave Rogers, M5SSB

A Gentleman Remembered

I read with great sadness of the passing of Louis Varney, G5RV, silent key [August 2000 *RadCom*]. In July 1998 I had the pleasure of working Louis a couple of times on 80m CW. He was 87 years old at the time and what I will always remember was his excellent CW. As a CW man I could detect the sharpness of his brain and remember thinking to myself that I hope my brain is as good as his at his age.

What was so pleasing to me was that on the QSL card he sent to me he remarked that he enjoyed our QSO "and would be pleased to QSO with me again" from time to time. Sadly we did not meet on the air again. He remarked on his QSL card that he was 87, but still key bashing. What a man!

He will be sadly missed but his memory will live on through his call sign and famous G5RV aerial.

Roger Davey, G4VLW

Classy Operators

Perhaps I have totally missed the point of OM 'Nobby' Clark's letter 'Young Scruffs' ['The Last Word', *RadCom*, August 2000), but what on earth does he mean by "in my class"? School class (referring to his age?); social class (who cares?); licence class (ditto)? What arrogant nonsense!

As for the statement implying that most RSGB members had 'had to be in uniform' - that has not been accurate for many years; conscription ended around 40 years ago in the UK (I'm 53, wore a uniform 30 years ago, but have managed to progress a bit since then). Customs change over the years, society moves on, and dress rules have become more relaxed. Is this a problem? Judge people by who they are, not by what they wear or what imaginary 'class' they belong to.

Furthermore, as a linguist, the use of '73s' does not disturb me any more than 'QSOs' or 'QSLs' in a phone conversation, and does not display a lack of discipline at all. These are arbitrary CW code expressions that, strictly speaking, have no place in a phone conversation at all. Of course '73' means 'best wishes' in a CW context, but 'PSE QSL' (itself a corruption of the original Q-code used by professional radio operators) stands for '/please/ /send me a confirmation card/'. How then can we refer to having received 20 QSLs from the QSL bureau? Is this unacceptable usage? Does OM Clark refrain from such undisciplined speech?

Let me tell you who I can pick out on the air: Self-important, self-appointed guardians of the standards of a mythical Golden Age, most of whom can only speak their mother tongue; who refuse to talk to people with call signs with the wrong prefixes (M5, 2M1, etc); or to amateurs from the wrong countries (UT5, YU1, etc) and represent the biggest barrier to the progress or even continued existence of this hobby. I haven't switched my HF rig on for four months now, after hearing a couple of the aforementioned brethren referring on 80m to holders of M5 call signs as "CBers". Need *I* say more?

Colin Hall, GM4JPZ,
N6OET (Extra class), DJ0ZF

Twinning

G3KTC ['The Last Word', *RadCom*, September 2000] wants to read the conditions of the amateur licence more carefully - nothing therein prohibits the discussion of politics. As a town twinning association is not a political organisation, it is perfectly in order to use amateur radio to promote it.

Jim Dunnett, G4RGA

Do we have to peddle the kind of ignorant statements made by G3KTC? I nearly fell off my chair! Town twinning a backdoor way to the so-called federal superstate? Thanks to 'Brussels' (incidentally, fully supported by the British government) I am allowed to pay my taxes here, spend my 'Ham Pound' with British suppliers, etc. Let's have some fun with club twinning - why not?

Klaus Werner, G7RTI

Please note that the views expressed in *The Last Word* are not necessarily those of the RSGB. All letters received by the Editor are considered for *The Last Word*, unless marked 'not for publication'. Letters may be passed to the relevant person, department or committee.

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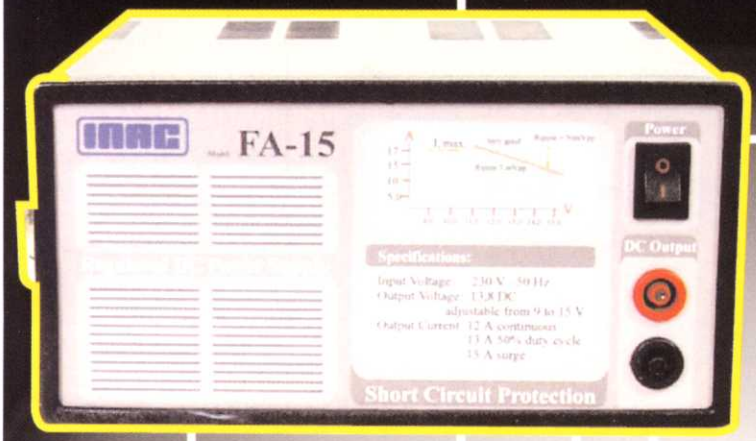

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* Carry handle
* Built-in speaker
* Weight: Depends on model (4.8-8.8kg)
* Size: 200 x 100 x 320mm
* CE & LVD approved

Product Code	
FC-10	£74.95 B
FC-15	£84.95 B
FC-25	£94.95 C
FC-36	£99.95 C

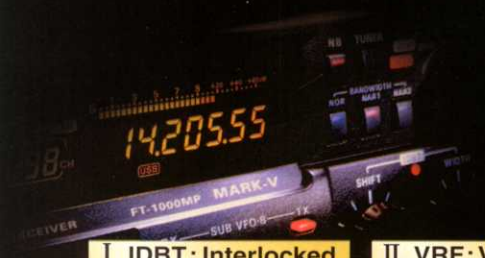
FC-10 10A max, 8A continuous 9-15V DC
FC-15 15A max, 12A continuous 9-15V DC
FC-25 25A max, 22A continuous 9-15V DC
FC-36 36A max, 30A continuous 9-15V DC

The new range of INAC microprocessor controlled power supplies cover a range of 10A to 36A. Each power supply features a twin digital display with Current/Temp/Volts. Control of the microprocessor is through membrane keypads on the front of each unit. Designed for a nominal AC input voltage of 230V, the units provide a variable output voltage of 9V to 15V . Full over current, over voltage and short circuit protection is included. Output is delivered via a pair of recessed terminals, (front), screw type terminals (rear).

Waters & Stanton PLC, Spa House, 22 Main Road, Hockley, Essex, SS5 4QS

Telephone: 01702-203353 Fax: 01702-205843 E-mail: sales@wsplc.com

"Brick-Wall" Selectivity



Today's Premier class operators demand the best RF weaponry available. Yaesu's exciting new MARK-V FT-1000MP answers the call, with an expanded array of receiver filtering, 200 Watts of power output, and Class-A SSB operation capability for the cleanest signal on the band. Enhanced front-panel ergonomics saves you precious seconds in a DX or contest pile-up. Yaesu HF design and manufacturing know-how ensures that no short-cuts have been taken in our effort to bring you the best HF transceiver money can buy. For more QSOs in your log, and more awards on your wall, there is only one choice: the MARK-V FT-1000MP from Yaesu!

I. IDBT: Interlocked Digital Bandwidth Tracking System

The IDBT feature greatly simplifies operation by matching the bandwidth of the DSP (Digital Signal Processing) system to the net bandwidth of the 8.2 MHz and 455 kHz IF stages. The IDBT system monitors the settings of the SHIFT and WIDTH controls, and automatically sets the DSP bandwidth to match the user settings within the net bandwidth of the Analogue IF Filtering.

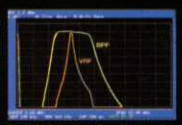
IDBT: A Breakthrough in Selectivity!

10-pole Collins® Mechanical SSB Filter

II. VRF: Variable RF Front-End Filter

Protecting the MARK-V's receiver components from strong out-of-band signals, the VRF system acts as a high-Q "Preselector," located between the antenna and the main bandpass filter networks, providing additional RF selectivity on the 160-20 meter Amateur bands for multi-operator contest teams, DX-peditions, or for operation near MW/SW broadcast stations.

VRF Features Large, High-Q Coils and High-Quality Relays



VRF Typical Bandpass Response (3.5 MHz)

III. 200 Watts of Transmitter Power Output

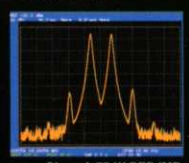
Utilising two Philips® BLF 147 Power MOSFETs in a 30 V push-pull configuration the MARK-V's Transmitter generates up to 200 Watts of the cleanest RF Power output available thanks to the conservative design of the PA Section.

Philips Power MOSFETs

High-Speed Automatic Antenna Tuner

IV. Class-A SSB Operation

Exclusively available on the MARK-V FT-1000MP , a press of a front-panel button engages Class-A SSB operation of the transmitter, at a power output level of 75 Watts. Class-A operation produces incredibly clean signal quality, with 3rd- order IMD suppressed 50 dB or more, and 5th- and higher-order products typically down 80 dB or more!



Class A 75 W PEP IMD

V. Multi-Function Shuttle Jog Tuning/ Control Ring

The immensely-popular Shuttle Jog tuning ring, which is concentric with the Main Tuning Knob, has a new look in the MARK-V: it now includes the activation switches for the VRF (left side) and IDBT (right side) features, so you don't have to move your hand position to activate these important circuits during contest or pile-up situations!

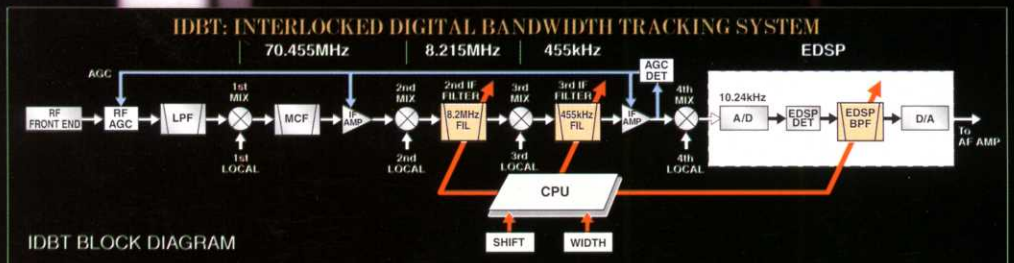
Access VRF and IDBT Features via Shuttle Jog Dial

DC 30 V / 13.8 V Power Supply FP-29

Photo shows optional MD-100A8X Deluxe Desk Microphone

HF 200 W All-Mode Transceiver

MARK-V FT-1000MP



IDBT BLOCK DIAGRAM

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