RadCom

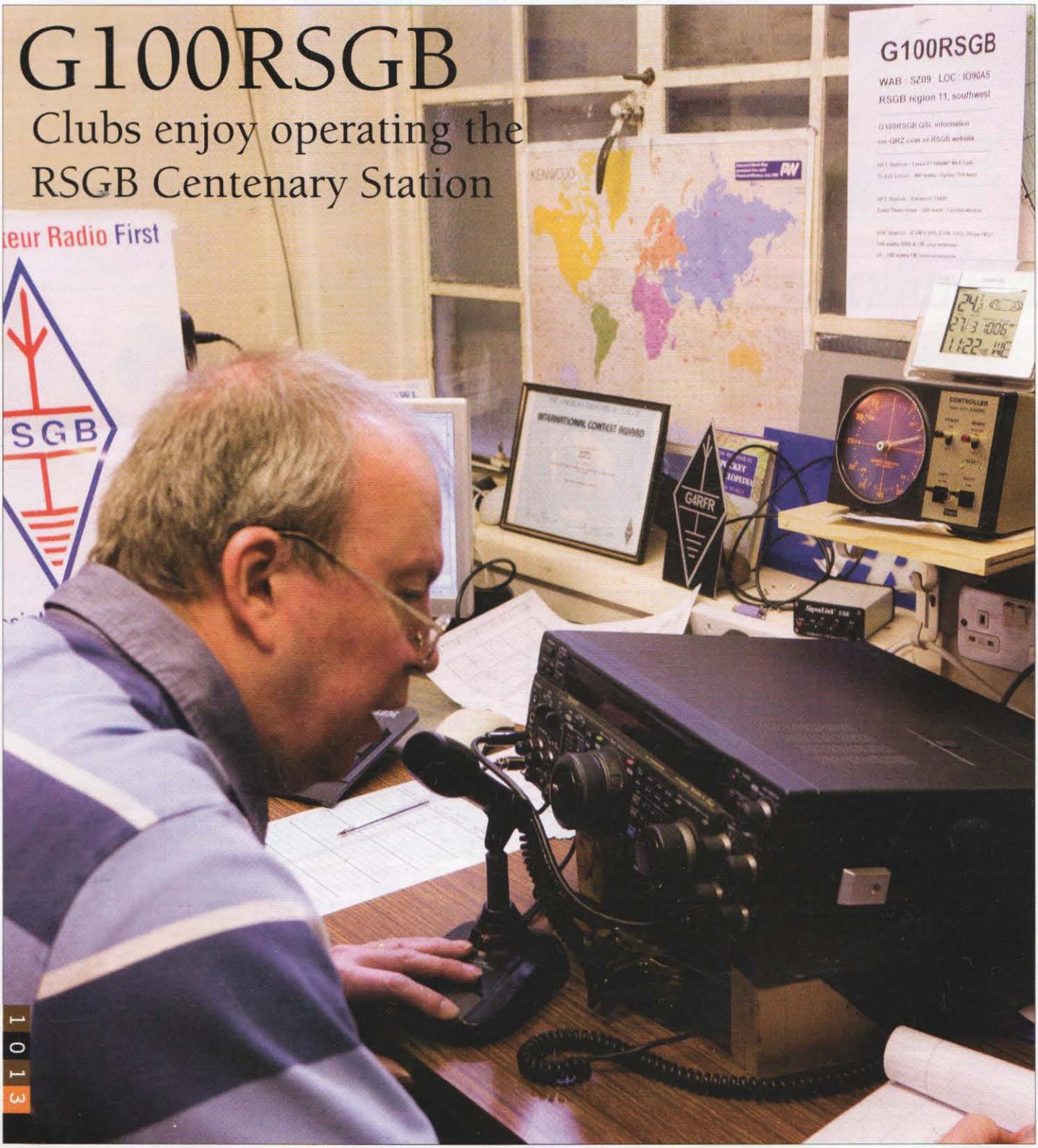
RADIO SOCIETY OF GREAT BRITAIN ◆ 100 YEARS WORKING FOR AMATEUR RADIO

Radio Society of Great Britain
100 YEARS 1913 - 2013

OCTOBER 2013 ◆ VOLUME 89
NUMBER 10 ◆ £4.95

G100RSGB

Clubs enjoy operating the RSGB Centenary Station

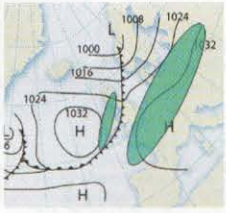


Design Notes

G0API using a portable 10GHz monitoring setup

RSGB Convention

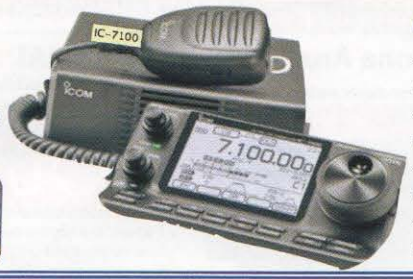
Another high quality lecture programme awaits visitors



Getting started in...

Watch the weather to understand tropospheric propagation

ICOM IC-7100 HF - 70cms inc 4M!



Available NOW £1249.95c

- *HF, 6m, 2m, 70cm Multi-band, All-mode*
- *DSTAR DV Mode • Intuitive Touch Screen Display*
- *Easy-to-see, Easy-to-use Slant Top Controller*
- *Built-In SD Card Slot & USB • Built-In Speaker*
- *Dual DSP deliver great processing performance*
- *Built-in RTTY demodulator and decoder*
- *Voice recording and playback functions*
- *Optional RS-BA1 IP remote control software*

The Alex Loop

Buying A Loop Antenna?

Loops using 14SWG wire have inferior performance. RF currents flow on the element surface and the Alex loop presents a surface area 600% larger! That means better efficiency. It also uses the conventional inductive loop coupling which is more efficient than a simple capacitor. All in all the `lex Loop is **JUST MORE EFFICIENT!**

40m - 10m up to 15W
Folds away in minutes!

The Alex Loop folds up into its compact carry case in minutes. Assembly is quick and positive and it can be hand held or mounted. The special sliding plate capacitor means low loss, extended frequency range and very accurate tuning.

£329.95c

Peter G3OJV: 'This is my favourite antenna for QRP work. Compact, efficient and rugged

KENWOOD TS-990S 160m - 6m Transceiver - In

RadCom: "Performance Second to None" - "performed impeccably on strong and

PART EXCHANGE WELCOME

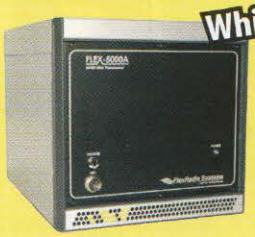
PHONE OR EMAIL US FOR A REALLY GREEAT DEAL.

£5999.95d

The TS-990s 160-6m 200W transceiver is the product of many months of work carried our by the Kenwood engineers, and has resulted in a radio that is surely right at top of current radio technology. Its comprehensive colour display forms the centre of the design. The large heavy flywheel drive is a joy to use and underlines the mechanical superiority of the TS-990s.

FlexRadio Deals

Whilst Stock Lasts!



Flex-3000 160m - 6m 100W Auto ATU £1269

The ideal radio to try out SDR with. 5W all modes 160m-6m and a great receiver. *Special*

Flex-5000 160m - 6m 100W £1699

Flex-1500 160m - 6m 5W £569!

YAESU

NEW

Yaesu quality and performance at an amazing price. This is a radio that you can afford to buy to keep in the car or your briefcase. This is a very special price so order now and don't miss out.

FT-252E 2m Transceiver

Specification
144-146MHz (Rx 139-174MHz)
Loud 800mW Audio for mobile use
Tx 5W, 2W and 500mW
CTCSS & DCS Tx & Rx
9 DTMF Auto Dial Memories
200 Memories
5kHz & 2.5kHz deviation
1Ah Li-ion Battery & Charger

IN SYOCK

£79.95

NEW ICOM ID-51E 2m/70cm DSTAR 5W

- *Dual Bander*
- *Rx. two simultaneously*
- *D-STAR DV*
- *Integrated PS*
- *AM/FM Broadcast Rx.*
- *Submersible Construction*
- *Voice Memory recorder*
- *MicroSD Card Slot*
- *1304 Memory Channels*
- *Rapid Charge DC Power Jack*

TS-590S 160m - 6m Transceiver

Kenwood has won the admiration of the radio press and hams all over the world. It is probably one of the best transceivers that Kenwood have ever produced. The best dynamic range in its class, digital IF, narrow roofing filters and auto ATU. Also FREE PC control program that can be downloaded. Exceptional value.

IN STOCK £PHONE FOR DEAL

Handheld Transceivers

ID-31E 70cm 5W D-Star Handheld with GPS

A sleek and lightweight radio, but don't let size fool you...inside the ID-31E is an integrated GPS receiver and fully functional D-Star radio.
* IPX7 submersible * Micro SD card slot * 1252 memories * 5W output
* Full Dot Matrix Display & Directional Keypad * Automatic Repeater List * Multiple Scan Functions *
CS-31 Cloning Software **£349.95d**

VX-3E
2m / 70cm
Handheld Wide-band receive
£129.95d

VX-6E
2m/70cms
Handy, Wide-band Receive
£179.95c

TH-K20E & TH-K40E
Two new handies from Kenwood. "K20E" offers 5.5W output and rx from 136-174MHz. "K40" offers 5W out and rx from 400 - 470MHz.
£119.95d each

VX-7R
Waterproof triple band handy (silver/black)
£299.95c

VX-8DE
Triple Band 6/2m/70cm Upgraded APRS
£369.95d

IC-E80D
2m/70cm
D-Star CTCSS & DTCS
GPS Compat.
£329.95d

IC-E92D
Dual band 2m/70cm waterproof fitted D-Star. Rugged radio.
£387.95d

TH-F7E
Dual band 2m/70cm + wideband receive inc. SSB
£236.95c

TH-D72E
Dual band 2m/70cm with GPS & TNC + SiRF
£426.95c

TG-UV2
Dual band 2m/70cm with CTCSS DCS & LED torch!
£84.95d

KG-UV6D
Dual band 2m/ 70cm 5W/4W SMA
£94.95d

1.8 - 23cns* All Modes - 0me Box!

KENWOOD TS-2000 160m - 23cn*

A base station that does every thing. All modes, 160-2m 100W, 70cms 50W and 23cm (option) 10W.
£1549.95c

ICOM IC-9100 160m - 23cn*

The latest all mode DC to light radio from ICOM. 160-2m 100W, 70cms 75W and 23cm (ption) 10W.
£2899.95c

ASK ABOUT OUR INTEREST FREE CREDIT!FF

ICOM IC-7600 HF Transceiver

HF - 6m 100W
Dual DSP and three roofing filters. 3 - 6 & 15kHz
Double conversion superhet - super image refection
Display 5.8" with ultra wide viewing angle.
Real time specrum scope - USB for flash card or leyboard
PSK and RTTY Operatioon with external keyboard.
104dB dynamic range for great receier performance
IN STOCK £3299.95 D

AR-8600MKII Base/Portable

This base or portable station receiver covers 530kHz - 3GHz. All modes AM FM FMW & SSB with standard rotary tuning. The ideal general coverage station receiver. Every Ham radio station needs a means of monitoring the signal that is being transmitted. Wethink that this is the one. **£699.95**

NEW FG-01 MkII Antenna Analyser

The new FG-101 antenna analyser that covers up to 72MHz with larger screen and will include a matching AC charger and PSU. This highly portable unit features dual impedance and VSWR traces with colour screen. **£239 b**

Mobiles

TM-281E

Latest 2m FM 65W mobile. Superbly built**£169.95 D**

FT-8800E

FT-2900E

75 Watt 2m 3W Audio, CTCSS, DTMF mic & "WIRES" internet.
£142.95 D

FT-7900E

FT-8900R

Quad band 10/6/2m/70cm FM 50W (70cm 35W) **£329.95 D**

FTM-10E

ID-E880

50 Watt Dual band 2m/70cm with D-Star and airband receive. **£439.95 D**

TM-D710E

Dualband Mobile 50W / 30W Great Value
£284.95 D

2m/70cms mobile 50/40W CTCSS, DTMF, internet, wide Rx
£219.95 D

2m/70cms Blue Tooth & built-in mic.
£324.95 D

50 Watts 2m/70cms with APRS
£445.95 D

FTM-350AE

2m/70cm Mobile Bluetooth GPS APRS
£399.95 D

TM-V71E

2m/70cm Mobile with Echo Link
~~£299.95~~
£259 D

Add A Quality Dash-Board Speaker!

SP-160

* 8 Ohms * Power rating 1.5W * 3m of lead with 3.5mm jack * Size 97 x 67 x 27mm * Weight
£9.95b

SP-180A

6W Ampified Speaker 6W * Gain and on/off control * 12V DC cigar plug, bracket, audio lead with3.5mm plug. **£20.95b**

Carriage Charges: A-£4, B-£5, C-£8.50, D-£11

HF - UHF Compacts - One Box! GREAT PRICES

YAESU

FT-897D base or portable. This 1.8 - 440MHz transceiver is great value. 1.8 - 50MHz 100W 2m 50W 70cm 20W.
£749.95d

FT-857D The great value mobile or base HF-6m 100W, 2m 50W 70cm 20W. **£679.95d**

WATSON HF-VHF Mobile Whips

MultiRanger 9 £49.95c

- 80 - 2m non WARC
- Impedance: 50 Ohms
- Power Capacity: 120 Watts
- Connector: (PL-259)
- Length: 1.9m Max

MultiRanger 2000 £69.95c

This antenna is the same as the MultiRanger 9 but adds the WARC bands of 30m, 17m and 12m, 200Watts

HF on a BUDGET!

YAESU

FT-450D
Has extra IF filter & an Auto ATU built in. 100W 160m - 6m with 3 IF filters 300Hz, 500Hz & 2.4kHz. **£789.95d**

IC-718 SSB CW 100W from 160m-10m. You won't find a more cost effective HF radio! **£594.95d**

ICOM

ICOM

IC-7200 this 100 Watt radio covers 160m-6m and includes digital IF filters. **£839.95d**

KENWOOD

TS-480SAT A very HF transceiver giving 100 Watts from 160 - 6m and includes auto ATU. **£779.95d**

TEN-TEC

Jupiter-538CE 160m - 10m 100 Watts SSB CW AM FM with on-screen CW reader and socket for PC keyboard.

IN STOCK **£1649.95d**

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Why Buy From Us?

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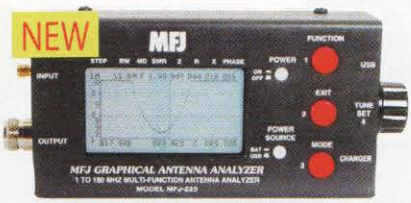
MFJ

Just Great Ideas!

MFJ-225 Antenna Analyser with USB VNA!

It's the most comprehensive antenna analyser available for ham radio use and built to a very high standard.



Introductory Offer **£399.95b**

We are pleased to announce the introduction of the new antenna analyser from MFJ. This is a new step forward in design with built in VNA and can even be powered from the USB port of your PC.

FEATURES

- *VSWR with variable bandwidth sweeps 1-180MHz*
- *3" LCD panel for detailed data display.*
- *Impedance and reactance*
- *Return cable loss and phase angle*
- *Capacitance and Inductance measurements*
- *Coax length and loss - Coax break location*
- *VNA works with your PC - USB connection*
- *Power: Internal AA cells, Ext, 12v or USB*

Antenna Analysers To Make Antenna Adjustments EASY!

MFJ-266 HF/VHF/UHF Digital Ant Analyser

Covers HF, VHF, plus UHF amateur & commercial frequencies with digital precision. Also displays SWR, Complex Impedance, & Impedance magnitude simultaneously - all on the same easy-to-read LCD screen. Use it to measure Capacitance, Inductance, Field Strength, Frequency & generate test signals. Fine tune stubs, analyse coax, test baluns & RF transformers, and perform many other important RF-related tasks around the shack

£329.95 c SPECIAL!

MFJ-269PRO Professional Digital Analyser

Instantly check and tune any antenna from 1.8 to 170MHz and 430-520MHz with this antenna test lab! It measures SWR, return loss, reflection coefficient, match efficiency, RF resistance, reactance, impedance and phase angle of antennas and antenna resonance, and Q. Even determine coax cable loss, velocity factor, length and electrical degrees.

429.95c

MFJ-986 1.5kW 1.8-30MHz ATU

Differential-T Tuner uses a differential capacitor making tuning easier. Broadband coverage ends constant re-tuning. A rugged roller inductor atu that handles 1500 Watts PEP SSB power and covers 1.8 - 30 MHz continuously.

£359.95c

MFJ-269 HF/VHF/UHF Digital Analyser

* Freq Coverage 1.8-170, 415-450MHz
* Frequency Counter * LCD readout
* SWR & impedance or SWR Bargraph
* Coaxial loss meter * VSWR Meter
* Signal Generator * N-socket (Ant),
Freq Counter) **£389.95c**

MFJ-259B HF/VHF Digital Analyser

* Frequency Coverage 1.8-170MHz
* Frequency Counter * LCD readout
* SWR & impedance or SWR Bargraph
* VSWR Meter * Signal Generator
* Connectors: SO-239 (Ant), BNC
(Counter) ~~£289.95~~ **£249.95c**

MFJ Vertical HF Antennas

MFJ-1796 40m-2m No Traps No radials

Only 12ft high with a tiny 24 inch footprint! Use base or portable. Fitted choke balun to eliminate coax radiation. Independent band adjustment. Rated up to 1500W. No radials needed **£244.95d**

MFJ-1798 80-2m No Radials

Operate 10 bands -- 75/80, 40, 30, 20, 17, 15, 12, 10, 6 and 2 Meters with no ground or radials! Full size performance is achieved using separate full size radiators for 2-20 Meters and highly efficient end loading for 30, 40, 75/80 Meters. **£349.95d**

MFJ-974B 3.5-30MHz Manual ATU 300W

A fully balanced line antenna tuner. Gives you superb current balance throughout a wide matching and frequency range. Handles 300 Watts SSB PEP and 150 Watts CW. ~~£194.95c~~

SPECIAL! **£175.95 c**

MFJ-974HB Same as MFJ-974B but covers 1.8-54MHz.

~~£199.95~~ £189.95 C

MFJ-9982 1.8-30MHz 2.5kW Manual ATU

Continuous Carrier atu handles 2500 Watts continuous carrier output on all modes and all HF bands into most unbalanced antennas -- even on 160 Meters where even the best atu's fail! 6-position antenna switch, 4-core balun, dummy load, true peak/average lighted SWR/ Wattmeter, 6:1 reduction drives with detailed logging scales, 3-digit turns counter

£684.95c

MFJ-263 300W Load DC-3GHz

NEW

DC-3GHz with N socket. Handles 125W continuous and 300W for10 secs.

MFJ-263 b £99.95 b

MFJ-251 Calibrator Load

NEW

This 300W load lets you switch 6.6, 25, 50, 100 or 150 Ohms to provide 1:1, 2:1 and 3:1 VSWRs (high and low impedance) **£TBA b**

MFJ-912

The fanous W9INN 4:1 1.5kW balun is for feeding ladder line via coax cable. Two large insulators for ladder line and SO-239 for coax. loss. **£76.95c**

MFJ-941EK ATU KIT!

NEW

Now you can build your own ATU, have fun and save money!

300W 1.8 - 30 MHz Coax , wire or balanced - includes case. **£145.95c**

MFJ-971 1.8 - 30MHz Portable ATU (QRP)

The MFJ-971 is ideal for portable work and as well as dual ranges of 30W and 300W, it is possible by changing an internal jumper to convert to QRP 6W or 30W FSD. Wire, coax or balanced.

£119.95c

MFJ-941E 1.8 - 30MHz 300W ATU

Here is amazing value. A cross needle meter, antenna selector switch, and the ability to match wire, coax and balanced feed. This makes a great base station gtuner capable of up to 300W and has internal 4:1 balun. 12v illumination **£119.95c**

MFJ-993B IntelliTuner Auto ATU 300 W 1.8-30MHz VALUE!

Lets you tune long wire, coax or balanced feed. Features analogue cross-needle meter & LCD display! MFJ's exclusive algorithm gives you ultra fast tuning with 20,000 memories! Beat that! Select 300 Watts for 6-1600Ω matching or 150 Watts for ultra wide 6-3200Ω. Versatile antenna selection and pre-used setups are found in milleseconds! **£279.95d**

MFJ-925 Ideal For IC-7000/FT-857D

This ATU sits nicely under the IC-7000 or FT-857D. A complete automated station that will match any antenna!

£174.95d

MFJ-929 World's Fastest Compact Auto ATU

200W handling matches any antenna with near perfect VSWR. Get the best from your antenna!

£214.95c

MFJ-991B 300W Auto ATU

Handles 300W, cross needle meter. Wide range: coax, balanced or wire. 300 Watts matches 6-16000 hms, **£214.95c**

MFJ-998 1.5kW Auto ATU

Highest power model matches coax, balanced feed - fast tuning. Cross needle metering & LCD display.

£659.95d

1.5kW Handling Power!

MFJ-998RT 1.5kW Remote Auto ATU

MFJ's 1500 Watt remote automatic antenna tuner is built into a weather-tight ABS plastic cabinet top with a stainless steel bottom. Includes MFJ-4117 BiasTee Power Injector to send DC/RF down the coaxial line. When you key your transmitter, MFJ's InstantRecall checks to see if that requency has been used before. If so, tuning is instantaneous. Measures 13 3/4W x 6 3/4H x 17 1/2D inches. It's the true fit and forget Auto ATU for those using linear amplifiers. **£779.95d**

MFJ-994BRT 600W Remote Auto ATU

As you're ragchewing, contesting or DXing, your MFJ IntelliTuner is learning! to operate in milliseconds! We've made this tuner to suit the UK market, so that those with linear amplifiers can enjoy the benefit of auto ATU. Includes coax DC feed. **£449.95d**

MFJ-993BRT 300W Remote Auto ATU

The Remote IntelliTuner is mounted in a durable hard plastic case. Covers 1.8 to 30 MHz, has heavy duty 16 Amp / 1000 Volt relays and a highly efficient L-network. It also includes the MFJ-4117 BiasTee Power Injector to send DC/RF down your coax.

£329.95d

MFJ-926B 200W Remote Auto ATU

MFJ-926B Automatic Antenna Tuner covers the entire HF band and will match a random wire or coax-fed antenna 1.8 - 30 MHz at a full 200 Watts SSB/CW. Matches impedances 6-1600 Ohms (SWR up to 32:1). **£299.95d**

MFJ-927 200W Remote Auto ATU

Weather protected remote auto tuner for coax/ wire ant., includes MFJ-4116 Power Injector. Most MFJ-929 features, no LCD/buttons. This is a low cost ATU that will get you on all HF bands using just a single wire. **£259.95d**

REMOTE CONTROL FOR YOUR TRANSCEIVER

NEW

Check www.wsplc.com regularly.

RBC-212 is an another exclusive product to come from W&S. It enables you to remotely control you radio via DTMF tones from phone. or PC Using the telephone you can fully control the radio, antenna switching and even rotator. And of course the audio goes both ways. Price and details shortly.

MFJ-945E 300W 1.8-50MHz Coax ATU

If you are looking for a wide range ATU that will handle quite high VSWRs, this is just the job. Just place between transceiver and your coax line to get a perfect match. It will handle up to 300W and it's cross needle power/VSWR metering has ranges of 60W and 300W. Can be used for base or mobile use **£134.95c**

MFJ-949E 300W 1.8-30MHz ATU with Load

SPECIAL!

More Hams use the MFJ-949E ATU than any other model. Match any antenna. Wires, coax, balanced, plus 8-way antenna switch Large 3" cross needle and internal dummy load. ~~£199.95~~ **£179.95c**

MFJ-260C 300W Dummy Load to 70cms

Every station should have a dummy load for testing and adjustment purposes. This one is our top seller and is available with SO-239 (C) or N (N) type sockets. It will handle up to 300W of power. **£45.95c**

MFJ-976 1500W Balanced Manual ATU

The MFJ-976 is a 1500 Watt balanced antenna tuner. You get superb balance, very wide matching ranges & continuous 1.8-30 MHz coverage including all WARC bands! It handles a full 1500 Watts SSB and CW.

£479.95c

Stop Press **NEW INNOVANTENNAS CP4 HF QUAD_BAND YAGI**

We are Exclusive Resellers

This antenna covers 20-15-10-6m and can handle up to 2kW. No traps, coils or discrete matching units. It has a single feed point to one driven element. Other drivers are close coupled. The boom length is just 3.7m long and element spacing is optimum for each band. Thick wall large diameter full sized elements are used which results in almost no element sag and an exceptionally clean sky line. Rated up to 100mph wind speed.

Available for immediate shipment £999.

ORDER NOW!
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PayPal VISA

Carriage Charges: A-£4, B-£5, C-£8.50, D-£11

RadCom

THE RADIO SOCIETY OF GREAT BRITAIN'S MEMBERS' MAGAZINE

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Layout and design by Kevin Williams. Original concept by Imotea Creative Mediadesign.

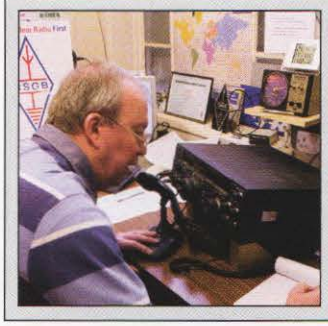
The online *RadCom* is at www.rsgb.org/news/radcom/

News and Reports

Features

Reviews

The National Hamfest is coming – P30



Cover image: Operating G100RSGB at the Flight Refuelling Amateur Radio Society

Photo: Mike Richards, G4WNC

Clubs have fun with G100RSGB – P32

Technical Features

Regulars

Centenary Club of the Year

This year is Centenary Year, and thus the focus of the Club of the Year competition will be how clubs have contributed to and used the opportunities that this has presented. The competition is open to all RSGB affiliated clubs and groups.

Once again, we are indebted to Waters and Stanton for their generous sponsorship of this competition.

Clubs are free to provide a submission using a format of their choice but please observe the 'Conditions of Entry' below. The judges will rank the submissions to ascertain Regional winners using the following criteria.

- **RSGB Membership.** For example percentage of club members who are in the RSGB, growth over recent years and number of 'Centenary offer Members'
- **Membership age profile.** How successful has the club been in encouraging 'new blood' into membership?
- **Training and advancement of members.** How has 2013 been an exceptional year for training, and advancement of members? How have the club used Centenary opportunities (eg G100RSGB, Centenary contests, construction competition) to develop the interests and skills of their members?
- **Spectrum Use.** How active is the club on the air and how has 2013 been different from previous years? How has the club used different bands / modes to extend their use of the Spectrum and members' interests?
- **Outreach and Promotion.** What outreach activity has the club undertaken and how has the Centenary helped them promote amateur radio? How has this outreach contributed to the development of the club/RSGB/amateur radio?

These same criteria will be used by the Board when determining the overall National winners.

Conditions of entry

- Only one entry per RSGB affiliated club/group is allowed.
- Entries must be for club activities undertaken from 1 January 2013 - 31 December 2013.
- All entries must be received no later than midnight on 31 January 2014.
- All entries must be a maximum of 1000 words. The maximum number of photos/pictures allowed is 6 per entry; however a club logo is allowed as an extra.
- All activities mentioned in an entry must be the work of the club and not done by individuals alone outside the club.
- All entries must have a declaration from two club officers (Chairperson, Secretary, Treasurer etc) stating that the entry truly reflects the information provided and that all activities have been club activities, and not done as non club members. No signatures are required.
- All entries must be in Microsoft Word format and entered by e-mail - postal entries are not allowed.
- Upon submission, all entries become copyright of the RSGB.

The regional judges have the right to enquire about the contents of any entry they receive and any entry containing false or misleading information may be disqualified. Please ensure that there is a contact person identified on the application to whom enquiries may be addressed.

Please note:

- Entries or part entries may be used for RSGB promotional purposes and articles on the winning entries will appear in *RadCom* after the winners have been announced.
- The judge's decisions are final and no correspondence will be entered into.
- The winning club from each of the 13 Regions will be automatically entered into the National final.
- Entries received after the closing date will not be judged.
- On entering the competition, you agree to the Conditions of Entry.

Process

All entries must be received by the Manager of the Region in which the club or group has its main premises by the due date.

In order to determine Regional Winners, entries will be judged and ranked by a Regional Manager from outside of the Region to ensure impartiality.

The Board will determine the National winners using a published scoring system.

The National winners will be announced at the RSGB AGM in 2014 and the winners keep the engraved trophy.

This year, the National Club of the Year winner was Lincoln Short Wave Club. They were presented with their trophy at the 2013 AGM in London.

New President Needed!

Members will be aware that Dr Bob Whelan, G3PJT, became our President at the AGM at the invitation of the Board because there were no candidates proposed by the Membership for this role. Bob's agreed term of office ends at next year's AGM and it is never too early to start the search for his successor. There will be a formal invitation for candidates to apply later in the year but any Member who may be interested is encouraged to make contact with Rupert Thorogood, Company Secretary, g3kkt@rsgb.org.uk. For an informal discussion about the role, Bob can be contacted by e-mail to g3pjt@rsgb.org.uk.

There is also a vacancy for an elected Board Director, and nominations will be sought to fill this post at the same time.

NRC Update

Recently we heard from Andy, UU1CC in the Ukraine who has an interest in building old valve radios and has a particular desire to build a copy of G6YL's radio. He, along with his friend VE3AWA, had been unable to find any details of the exact design of it. Peter, G4XEX, one of the National Radio Centre volunteers was able to photograph G6YL's radio that resides in the NRC. We wish him success in his re-creation.

G6YL's radio on display at the National Radio Centre.

Noise Floor Study – legacy funding

A proposal for funding to support the long-term understanding of the RF noise floor has recently been approved by the RSGB Legacy Trustees managing the generous legacy provided by the late Ken Rowell, G5RL. The proposal sought just over £10k that includes some contingency, to be spent over the next few years. The funding is for two related projects. First, web support for the Noise Measurement Campaign, announced in the July 2012 edition of *RadCom*, and secondly support for one or more MSc projects at the University of Leicester.

The MSc projects will be aimed at understanding the extent to which our radio noise-floor is being raised through the aggregation of noise propagated via the ionosphere from devices such as PLA, switched mode power supplies, etc. It is also hoped that in conjunction with the RSGB EMC Committee a better understanding can also be gained as to the extent to which amateur band notching actually works. Further information on the project can be found on the RSGB website at http://rsgb.org/main/technical/propagation/noise-floor-study.

John Gould, G3WKL, who drew together the proposal, commented, "It is really good to get some work underway to help meet a recommendation agreed at the IARU Region 1 Conference to set up a scientifically valid long-term assessment of the noise floor".

Gwyn Williams, G4FKH, a co-author of the proposal said, "The improved web presence for the Noise Measurement Campaign and the university based research should significantly advance Members' interest and knowledge concerning our radio noise floor". Prof. Mike Warrington, Head of Embedded Systems and Communications Group, University of Leicester, commented, "As a licensed amateur I can appreciate the value of bringing scientific vigor to this area of research, and at the same time provide me with some worthwhile projects for my students. I look forward to working with the RSGB."

The Legacy Committee, chaired by Nick Henwood, G3RWF, is keen to receive other proposals for projects or lasting Member benefits that would not normally be funded as part of the Society's operating budget.

Advanced Supplement

Following the success of the New Starters newsletter, the Society is considering a regular electronic publication with a more in-depth technical content. In the first instance, we are looking for volunteers who would like to contribute to this venture with an outline of any ideas you may have. Please contact Phillip Brookes, G4NZQ by e-mail to g4nzq@rsgb.org.uk.

Staff Changes at HQ

The Society continues to face cost pressures, and the need to contain our management costs within the budget has meant that a revised management structure has been introduced. Fortunately, the new IT system that is due to be commissioned on 1 October will help us provide the same level of service with fewer staff. As a result, the staff numbers at HQ have been reduced by two posts. Leonie Morton (who worked in the Commercial Department) left us last month to take up another job and her post will not be filled. At the same time, the opportunity to reorganise the way services are provided by the Amateur Radio Department has been taken and, regrettably, Carlos Eavis, G3VHF was selected for redundancy as a result. Carlos had worked for the Society for 12 years and we wish him well for the future.

Please note that the full range of services provided by the Society continues and, in particular, enquiries can continue to be made to the amateur radio department telephone/e-mail address at HQ as usual.

CONGRATULATIONS

To the following Members whom our records show as having reached 70, 60 or 50 years' continuous Membership of the RSGB.

70 years

Mr G G Gibbs	G3AAZ

60 years

Mr N B Cottrell	G3JFR
Mr M Watson	G3JME
Mr G J McGee	G3MDM
Mr G C Price	GW3MPP
Mr M Probert	GW4HXO

50 years

Mansfield ARS	G3GQC
Mr J H Moxey	G3MOE
Dr R J Butcher	G3UDI
Mr R A J Smith	G3VKT

RSGB Half Year Results

Unaudited Income & Expenditure Account
For the six months ended 30 June 2013

	30-Jun-13	30-Jun-13	30-Jun-12	30-Jun-12
Income				
Subscriptions	426,391		427,009	
RadCom Advertising	79,476	505,867	77,379	504,388
Books and Products for Resale		187,355		158,778
Sponsorship		2,500		2,083
Other Services - inc Examination Services		59,162		74,090
Total Income		**754,884**		**739,339**
Contribution from Subscriptions, *RadCom*, Publication and Services				
Subscriptions net of *RadCom* Publication Costs	326,296		328,407	
Amateur Radio Costs, net of Income, Sponsorship & Exams	(50,635)		(42,527)	
GB4FUN net of Sponsorship	(1,551)	274,110	(4,841)	281,039
Books and Products for Resale		55,407		51,557
Other Services net of expenses		6,638		6,650
Total Contribution from Activities		336,155		339,246
Less Non Activity Specific Overheads				
Commercial Costs		(68,205)		(64,741)
Bletchley Park		(19,813)		(19,394)
Administration		(204,022)		(143,556)
Office Costs		(38,274)		(39,283)
Landlord Costs		(9,615)		(10,398)
Net Surplus/(Deficit) from Activities		**(3,774)**		**61,874**
Interest Income		6,124		6,329
Disposal of Fixed Assets		4,323		10,667
Spectrum Defence Fund donations		0		194
Legacies		3,500		1,140
Net Surplus (Deficit)		**10,173**		**80,204**

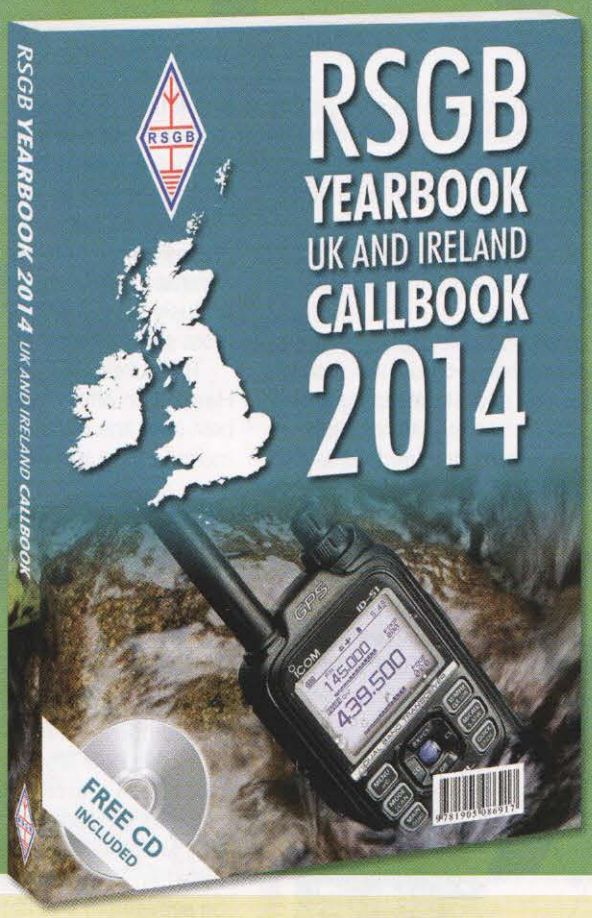
The net surplus for the six months ended 30 June 2013 was £10,173 (June 2012 - £80,204). This result is a small improvement on the Board's projected forecast and means that the finances for the year are broadly on track.

Income is £15,545 higher than in 2012 as a result of increased sales of books and other products related to the Centenary. The Centenary memorabilia was attractively priced and has proved popular with the Membership. However, the profit margin on these items was less than for our normal product range, which means that the cost of sales was higher than last year. As a result, the total contribution from activities was slightly lower than last year (£336,155 compared to £339,246 in 2012).

Administrative costs increased as expected by £60,466 over the period. This reflects the full costs of the General Manager as well as planned IT expenditure on the new Membership database, new hardware and the new website. Marketing costs are also greater than last year, mainly due to the Centenary Membership offer.

The Society expects to report a roughly break-even result at the end of the year.

RSGB shop



P&P FROM FREE
see page 76 for full details

NEW

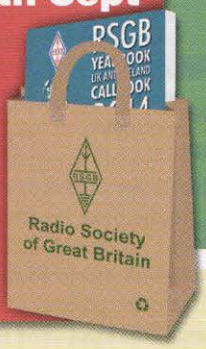
Official Launch at the

NH National Hamfest

27th & 28th Sept

FREE goodie bag

For the first 100 customers per day who purchase a copy at the show



E&OE All prices shown plus p&p

RSGB Yearbook 2014

Edited by Mike Browne, G3DIH

The *RSGB Yearbook 2014* contains all of the usual features, from over 81,500 amateur radio licences on issue, to the pages of the very latest amateur radio information, making this book the indispensable guide for every amateur.

The *RSGB Yearbook 2014* is much more than the latest update of callsigns. You will find all manner of local information organised into regions so you can find local clubs, repeater and emergency groups, and examinations in the area alongside details of the RSGB Regional Manager Team. There are details of how the Society is organised, the services it offers, committees, who to contact for assistance, etc. There is a wide range of information included from Repeaters, Beacons, HF Propagation Predictions for 2013, Special Event stations, Features on National Affiliated Societies and much, much more.

As every year, the *RSGB Yearbook 2014* provides the very latest Ofcom callsign data, now sorted into those who release their personal details for amateur radio purposes and those who don't. The callsign data is then sorted further into postcode, surname formats. There are also listings of special contest callsigns, permanent special event callsigns and those in the Republic of Ireland.

FREE CD

Some buy this book for the CD alone, not only do you get all of the information section of the yearbook in a fully searchable format you also get, over 600MB of bonus material. There are samples of RSGB books, masses of amateur radio software, extra club information and more, all in an easily accessed formats.

210x297mm 528 pages
ISBN: 9781 9050 8691 7
Non Members' Price £19.99
RSGB Members' Price £16.99

Features:

- Over 81,500 UK callsigns
- Irish callsigns
- Callsigns sorted by name and postcode
- Licensing Information UK and International
- National and Featured Club Information
- Prefix Lists
- Latest Band Plans
- Award and Contest Information
- Technical Help
- And much more

MEMORY STICK - LIMITED EDITION ECO VERSION

For those who want the *RSGB Yearbook* in an easy to use format we are pleased to offer it on a USB memory stick. This new limited edition Eco version of the book is cased in bamboo and measures 60x20mm. It also saves the space and paper associated with the printed version. This isn't all though as the memory stick is based on the popular *RSGB Callseeker* so includes calls from all of Europe as well.

All the information pages are included along with a host of amateur radio software. There is even space spare to save extra items if you want to.

Non Members' Price £16.99
RSGB Members' Price £14.44

Radio Society of Great Britain **www.rsgbshop.org**
3 Abbey Court, Priory Business Park, Bedford, MK44 3WH. Tel: 01234 832 700 Fax: 01234 831 496

QSL Matters

SHORT WAVE LISTENERS. Helpful reports from SWLs have always been welcomed by radio amateurs, and receiving a card in return is often an important part of the first steps into a lifelong interest in amateur radio.

Other countries nowadays seem to maintain a stronger SWL presence than ourselves and most cards arrive from EU countries such as Netherlands and France. Reports are as valid today as they have ever been, particularly with newer modes such as WSPR, and the bureau provides a QSL service to all members, transmitting or not.

The Society has thousands of RS members listed on its database (although it may be that many are now licensed and have not updated their details) but relatively few use the QSL bureau service. If you are an RS member and an active listener, you have a significant contribution to make.

MM SERIES. Manager Brian Shearer, MM1HMV is holding 1000+ cards for which he has no envelopes and has recently received more cards from the bureau. If you live in Scotland and hold an MM series callsign, now is the time to send more envelopes, or check mm1hmv@hamcall.co.uk.

SLOVAKIA – OM. The Slovak Amateur Radio Association's QSL Bureau has a new postal address: Slovensky Zvaz Radioamaterov (SZR), PO Box 14, 900 31 Stupava, Slovakia.

However, those who use courier services must not use the PO Box, but send the cards direct to the QSL Bureau Manager, OM3JW: Stefan Horecky, Mlynska 2, 900 31 Stupava, Slovakia.

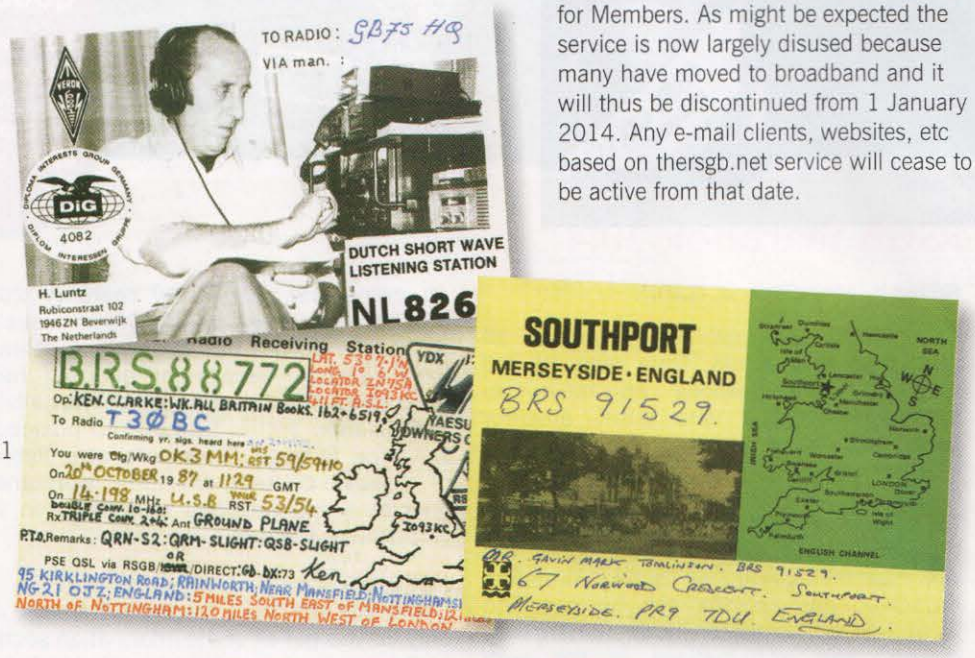
MOLDOVA – ER. There is also a change for Moldova. Please include the contact name shown here to help ARM avoid possible import charges – QSLs are, after all, a 'free gift'. Lisii Weaceslav, c/o Moldavian QSL Bureau C. P. 112, Chisinau, MD-2012 Moldova.

POLAND – SN-SR, HF, 3Z. National Society PZK has recently experienced issues with an unofficial bureau and wishes to remind everyone that they are official bureau for Poland. We are happy to confirm that as our sister IARU partner, PZK is our only recognised destination in Poland.

CHECK FIRST. There are around 340 'radio' countries in the world but only 178 have recognised IARU bureaux, with some 22 of them currently closed. For this reason we would ask Members to check that the countries you are sending cards to have an operational QSL bureau, otherwise your cards may be returned to you, unsent.

RSGB Members are reminded to always ask the contact if they can receive a bureau QSL card, as this is almost exclusively a, 'members only' benefit in most countries.

The bureau will be at the National Hamfest to offer advice on how to get the best from the bureau and looks forward to meeting new and old friends.



thersgb.net closing

A number of years ago the RSGB introduced a free dial up internet service for Members. As might be expected the service is now largely disused because many have moved to broadband and it will thus be discontinued from 1 January 2014. Any e-mail clients, websites, etc based on thersgb.net service will cease to be active from that date.

WELCOME

The RSGB would like to welcome to the RSGB family the following new Members who have joined their voice to ours and are helping to keep the RSGB strong.

Mr M Mitchell, 2M0BEC
Mr T McIntyre, 2M0TAX
Mr S Markwick, G0MUC
Mr A Goldstraw, G0PSH
Mr R Coulson, G1IID
Mr M Tucker, G1SDC
Mr J Lee, G4EQJ
Mr J Stockton, G6IKU
Mr D Ward, G7CWO
Mr G Phillips, G7HHW
Mr R Cone, G7JBZ
Mr D Clarke, G7JGD
Mr G Stephens, G7SHW
Baldock Radio Station ARS (RSGB Group), G8GPO
Mr R I Horsford, G8LKK
Mr D Reid, G8WHZ
Mr C Harding, M0XCH
Mr D J Tinker, M1FJQ
Mr R J Earland, M6BHP
Mrs A Forber, M6BWV
Mr N Greengrow, M6CGA
Mr J Prodger, M6CZI
Mr P Gregory, M6CZZ
Mr P J Holman, M6EMP
Mr D Kershaw, M6EOR
Mr J Melhuish, M6TJC
Mr J Summers, M6WDW
Mr D Madden, MM0HHO
Mr R Buchan, MM6DHI
Mr T J Brown, N4RZZ
Mr E Martin, N5WR
Mr T Ripatti, OH2LTR
Mr G J Staal, PA2PGU
Mr G Gibbs, RS214392
Mr P D Joyner, RS214404
Mr D Wells, RS214408
Mr D Antcliffe, RS214409
Mr J Bell, RS214411
Mr P Joyce, RS214434
Mr J Joyce, RS214436
Mr I F Harrison, RS214503
Mr T Buck, RS214505
Mr A Clarke, RS214506
Mr P Bowler, RS214510
Mr D Capstick, RS214511
Mr M Hirst, RS214519
Mr F Eichel, VE7AWV
Mr J K Marsh, ZL2TAS

Apologies to Raymond Nahl, W2CH, whose name was omitted from the New Members listing due to an admin error.

The RSGB would like to welcome back the following Members who have rejoined the Society.

Mr M D Crawley, 2E0MDC
Mr T McIntyre, 2M0TAX
Mr D J Christy, G0KHC
Mr M Free, G0OGE
Mr E G Wright, G0SVH
Mr J W Brett, G0WWG
Mr T H Sheppard, G1IZQ
Mr A P Mitchell, G3YJZ
Mr D G Cutts, G4FAW
Mr D J T Seabrook, G4LJG
Mr P C Bridges, G6DLJ
Mr D A Clark, G6OFQ
Mr A E A Powell, G7LOY
West Kent Raynet, G7TYR
Mr J P Argyle, G8FED
Mr R J Woodward, G8GRS
Mr K Edwards, GW1EWW
Mr P D Rosser, GW7DET
Mr K Zobelius, M0PKZ
Mr K Eastwood, M1ADP
Mr D Coubrough, M3CAD
Mrs P J Webb, M3UNL
Mr M Reed, M6CQA
Mr N Wrigley, M6NKS
Mr R W Moodie, MM0AMV
Mr D L Leech, MM0LOZ
Miss A J Stephens, RS182282
Mr L Salmon, RS199335
Mr K B Whittle, RS214373

Apologies to Mark Butler, M3MGO, for the error in his callsign.

CDXC Committee

CDXC held its AGM at the QTH of Neville, G3NUG and, once again, it was in brilliant sunshine. The Club has had another record year with membership now standing at 830, an increase of 70 in the past year.

The members present appointed the Committee for the coming year as follows: G3NUG (President), G3SVL (Chairman), G3USR (Treasurer), G4LDL (Secretary), G3RFX (*Digest* Editor), G4AXX (Reflector Moderator) and G4FKA.

At the AGM, the Chairman announced a new Marathon DX Challenge to complement CDXC's existing LF and HF Challenges. The Marathon will run from 1 January to 31 December each year and will start in January 2014. All CDXC DX Challenges are open to non-members, but only paid-up members are eligible for awards. Full details are available on the CDXC website.

Following the AGM, 100 members and their partners enjoyed a BBQ in the sunshine and a raffle with a top prize of an FT-450D donated by Yaesu UK and prizes from InnovAntennas, Kenwood, Martin Lynch & Sons, Nevada Radio, Waters & Stanton and many more.

More information on CDXC, including a membership pack, is available at www.cdxc.org.uk.

First prize in the CDXC raffle. Photo: G4JKS

Anniversary celebrations

Waters & Stanton recently celebrated their 40th anniversary, the last 23 years of which have been at their current premises in Main Road, Hockley. They opened for business at the height of the 3-day week and have carried on through more than one nationwide recession. These days, as well as supplying the amateur community they have contracts with the NHS and government departments.

Brownies to celebrate 100 years

2014 will see the Brownies celebrate their 100th birthday, with various exciting activities and challenges available. Ofcom has agreed that stations may apply for the special GB100 prefix to their usual Thinking Day On The Air callsigns. The NoV applications will need to be accompanied by a supporting letter from one of the Girlguiding leaders also involved with the event. An information pack will be available from Girlguiding, 17-19 Buckingham Palace Road, London SW1W 0PT and downloadable from the Guides on the Air website, www.guides-on-the-air.co.uk.

TDOTA is an opportunity for the members of the Guide Association from the youngest Rainbow to the oldest Trefoil Guild member to talk to other members of the World Association of Girl Guides and Girl Scouts all over the world via amateur radio. As always, it will take place on the third full weekend in February, 15/16 February 2014.

Kenwood dealer of the year

Kenwood UK has announced that ML&S Martin Lynch & Sons are their UK's top amateur radio dealer for the 2012/2013 season. During a recent visit to ML&S, David Wilkins presented Martin and his team with their trophy to commemorate their success.

Martin Lynch was delighted to win the award, saying "Because of my team of support engineers and workshop staff, ML&S are able to offer a complete package to radio amateurs in respect of pre and after sales support. When negotiating for something as advanced and complex as Kenwood's new TS-990S flagship, it's important that my staff understand customer requirements and more importantly, can offer meaningful technical support after the sale has been made. Needless to say we are all looking forward to more amateur products from the Kenwood stable."

David Wilkins, Kenwood visits ML&S.

Battery charger for FUNcube-1

The AMSAT-UK FUNcube-1 CubeSat carrying a 435/145MHz SSB/CW transponder remains on schedule for a November launch on a Dnepr rocket from Dombarovsky near Yasny. Every CubeSat needs to have the capability to charge its on board batteries when in its launch pod. This means having a suitable battery charger and it needs something quite special so as to be certain that there is no risk of overcharging or other disaster.

Wouter Weggelaar, PA3WEG has designed and constructed such a charger for FUNcube-1. Smartly presented in a blue anodised case, this charger can be set to charge the lithium-ion battery to the best voltage for long term storage, approximately 7.6V, and can also be used to enable the final pre-launch testing of the spacecraft and its flight software before launch.

Pictures of the charger and further information on FUNcube-1 can be seen at http://amsat-uk.org/2013/08/18/funcube-1-cubesat-charger/.

National Hamfest launch

InnovAntennas will launch a new range of HF multibanders including the new CP3 (20/15/10) and CP4 20/15/10/6) multiband Yagis at the National Hamfest. The CP3 3 band Yagi has a 3.4m boom while the CP4 has a boom length of 3.7m. The longest element is 11.5m. However, the CP3C & CP3C have a much more compact structure due to the deployment of G0KSC's Spiral Capacity Loading on the 20m element tips which provides a much more compact 8.9m longest element with virtually no associated loading loss (unlike those losses seen within traps and coils).

Both antennas have a single feedpoint for all bands and provide excellent performance for such short antennas.

As with all InnovAntennas products the CP3, CP4 and compact versions use marine grade stainless steel fixtures and fittings along with RF friendly insulators (no polyamide is used within any of the insulators because this material is not best suited for RF applications).

The introductory price for the show is £999.95 with free delivery to certain parts of the UK but for a limited time only.

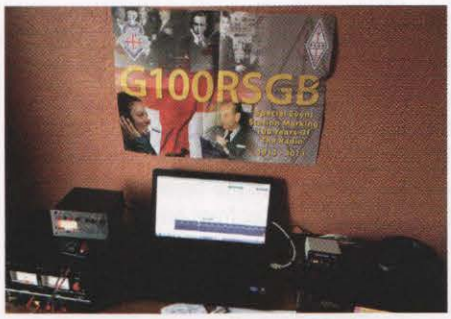
Latest news of continuing RSGB Centenary celebrations

CENTENARY STATION. Not a great deal to report this month in part as there are some detailed accounts of recent operations on page 32. Operations from Region 12, East England, were busy, with a full calendar of takers. Region 6, North Wales started mid-August with quite a few gaps, but our thanks go out to Mark, M0UTD and Brian, M0STY/M6OXO who put on some portable operations at short notice for us to enjoy.

Mark, M0UTD operated on two separate days. For the first he chose to activate Holy Island, IOTA EU-124, as that would also attract IOTA chasers as well as those working toward the Centenary Award. He wasn't wrong and made 650 QSOs across all continents, with a total of 52 DXCC countries. Mark's day started at 2.30am for his journey to Holy Island, picking up fuel for his generator during the two and a half hour journey. His operating site was near the South Stack Lighthouse, which looks out over the Irish Sea. Mark's station comprised an Icom IC-756, Acom 1000 amplifier, Hi-Sierra 1800 motorised aerial with ground plane kit and a home-made 40m dipole. Operations commenced at 7.20am with VK4SP in the log!

Mark's operation created quite a bit of interest. A local 2W0 visited, whose wife works in the café at the lighthouse, who would be a useful contact future visits, and a few ex-radio amateurs, who having listened to a few contacts and browsing the RSGB leaflets voiced interest in returning to the hobby. Mark was also spoken to by a lady who said her father was a radio amateur, and within 10 minutes G3CIO, who rarely uses SSB, was in the log. Mark's last QSO was at 6pm with KD4QMY who is a big centenary station hunter and pleased to make the contact.

His second operation was from the Ponderosa Café at the Horseshoe Pass, near Llangollen, focused on datamodes and CW. Limited by time, a 100W output and the lack of a tempting IOTA location, the number in the log was much lower, however, some good contacts were made into JA and the USA, and lots of coverage across Europe.



GW100RSGB operating from the Ponderosa Café at the Horseshoe Pass, near Llangollen.

The visits by Brian, M0STY/M6OXO (Chorley Six Shooters) to Flint and the Waun-y-Llyn Country Park, near Mold were somewhat different operations from those of Mark, as Brian operates QRP. Despite this he made some good QSOs including JW on 20m and EI on 2m. Conditions are all when compromises have been made with the station, so spotting on the Cluster makes quite a difference to the operation. Brian found DF3CB's *Fast Log* [1] excellent for subsequently converting his paper log into the required ADIF computer file; his low power operation meant that he couldn't run a laptop during his operation.

Big thanks are due to Mark, MW1MDH and others resident in North Wales for the last-minute additional operations, the stations calling in all helping to keep the Centenary station going during its period in North Wales. As a final note on the Centenary station, probably due to poor spotting on the DXCluster, the odd operator slip and some typos on GB2RS/*RadCom* the QSL Bureau is getting some cards for GB100RSGB. This callsign hasn't been issued. Our preference is not to receive cards, but for bureau and direct cards to be requested by the Online QSL Request Service [2].

RSGB CONVENTION. There will be a number of lectures at the RSGB Convention, 11 to 13 October, to continue with the Centenary theme. Terry Giles, G4CDY will demonstrate his Aerial Circus that was extremely well received on Centenary Day at Bletchley Park. There will also be two other lectures continuing on the Dip into the Archives theme covering amateur aerials over the last 100 years and a look at the transatlantic tests of the 1920s. We are also pleased to have Dr Elizabeth Bruton from Leeds University to speak about the contribution amateur radio made to communications in WWI. Paul Cort-Wright, G3SEM will also talk about the role of the Voluntary Interceptors in WWII, another lecture that was very well received on Centenary Day. See the article on page 25 for more details.

CENTENARY CONSTRUCTION COMPETITION. This event will take place at the RSGB Convention in October, with the judging and the presentation of prizes on Saturday 12th. Registrations for entering the competition can be made up until the end of September [3]. There are excellent prizes on offer for winning entries and with many clubs running their own competitions throughout the year there must be some excellent projects that could be entered into one of the categories.

CONVENTION-ON-THE-ROAD. Members can borrow a couple of lectures for running at local clubs, etc [4]. More lectures will be added after the RSGB Convention in October. Terry, G4CDY, has done a tremendous job re-creating Dud Charman, G6CJ's famous Aerial Circus as those who saw it demonstrated at the AGM and more recently our Anniversary Day will testify. Terry plans to develop a transportable kit that groups can borrow to create their own demonstration at their local club, etc. More information will follow.

LINKS WITH THE PROFESSIONAL COMMUNITY. One of the objectives for the Centenary events was to raise the profile of amateur radio within the engineering and technical professions within the UK. The most obvious route for this was to approach the Institution of Engineering and Technology (IET) that incorporated the IEE that had such a close association with the early days of the RSGB. As a result we will be jointly hosting an evening lecture programme in London in the first half of December – further details to follow.

In our discussions with the IET, we were put into contact with the Institute of Telecommunication Professionals, (ITP), who were keen for us to provide an article for their Journal this summer. Their suggestion was that we focus a little on the relationship between the RSGB/amateur events and the emergence of broadcasting within the UK. The article, expertly researched and written by Doug Brown, GM8FFE, can be read on our website [5].

STATION CALENDAR FOR OCTOBER

Region 5: West Midlands, G100RSGB

1st Oct	Hallam DX Group
2nd Oct	Loughborough & DARC
3rd – 4th Oct	Linc Mobile DXers
5th – 6th Oct	Hucknell Rolls-Royce ARC
7th Oct	Northants Communications Club
8th Oct	Pending
9th Oct	Pending
10th Oct	Pending
11th – 13th Oct	Bromsgrove & DARC
14th Oct	G8VHI
15th Oct	Gloucester AR & Electronics Society
16th Oct	Telford & DARC
17th – 20th Oct	Wolverhampton ARS
21st – 25th Oct	Central Amateur Radio Circle
26th – 27th Oct	Telford & DARC
28th – 30th Oct	Coventry ARS
31st Oct – 1st Nov	Wythall RC
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WEBSEARCH

1: Fast Log: www.df3cb.com/fle/

2: Centenary station QSLing: http://rsgb.org/main/operating/centenary-station/centenary-station-spots-log-and-qsls/

3: Centenary Construction Competition: http://rsgb.org/main/about-us/rsgb-centenary-2013/centenary-construction-competition/

4: Convention on the Road: http://rsgb.org/main/about-us/rsgb-centenary-2013/convention-on-the-road/

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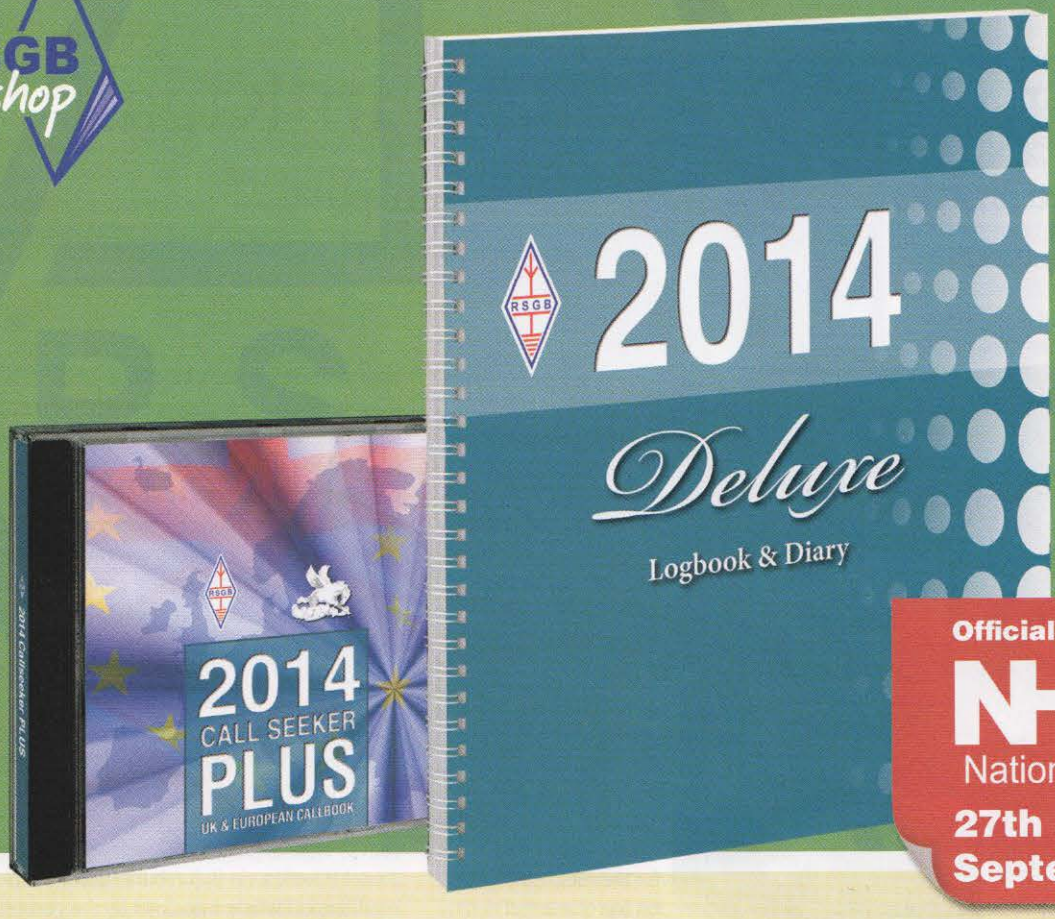

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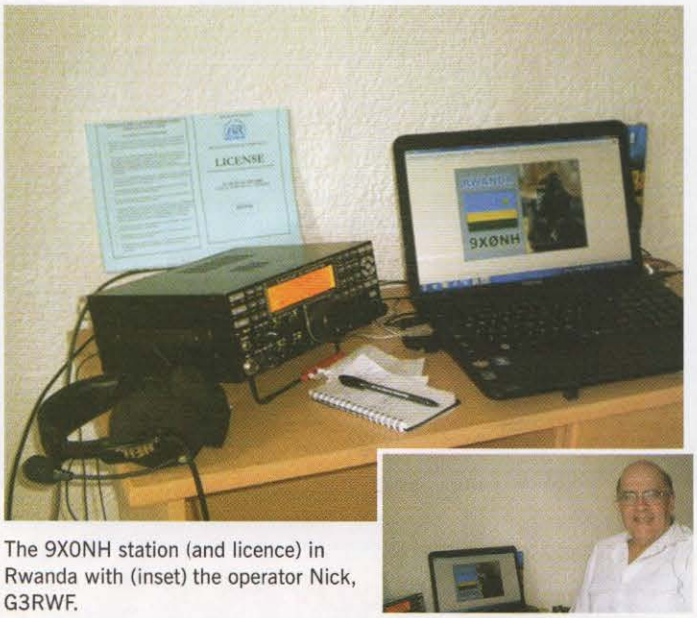
Commonwealth Contest in Kigali

The first time a station in Rwanda has taken part in the contest



The 9X0NH station (and licence) in Rwanda with (inset) the operator Nick, G3RWF.

FIRST ON THE AIR. Since Rwanda became a member of the Commonwealth in 2009, I have wanted to give it a first airing in the RSGB Commonwealth Contest. This seemed feasible because for the past five years I have been in Uganda operating only about 350km north of the Rwandan capital, Kigali.

Rwanda is one of a very small number of Commonwealth member countries whose history does not include a period of British colonialism. Its recent membership brings it closer to its neighbours Uganda, Kenya and Tanzania, which do have such a history. It has also very recently adopted English as a national language, replacing French.

Getting a licence is often quite difficult in Africa – largely because it is not easy to know how to make contact. I had originally intended to go to Rwanda from Uganda in 2012 to sort things out but my trip was shortened and I did not make it. I am very grateful for advice from both Colin, G3PSM (who was active from Rwanda in the immediate post-genocide period) and Carl, SM6CPY (also 9X0PY). With the right contacts I was eventually able to communicate very effectively with the licensing authority by e-mail. I booked to travel with written confirmation that a licence would be waiting for me.

WHERE TO STAY. I had no idea where to stay – preferably somewhere very tall with a steel mast on top and a very stable power supply! The Foreign Office website (always worth a look in addition to the helpful CIA site) had some reservations about travel to parts of Rwanda, following the seizure of the border town of Goma by Congolese rebels last November and the suspension of UK aid (now restored). Travelling on your own with a lot of luggage is always a bit of a problem if you want to hang on to it all. Without a recce, it therefore seemed sensible to stay in Kigali, the capital.

Kigali is known as 'the City of a Thousand Hills' – good news for the radio amateur on top of one but perhaps not so good if tucked in behind one. I started looking for an hotel but the prices were high – it looks like the UN presence has pushed things up hugely. Anyway, posh hotels are often strangely diffident about loads of amateur radio gear unless they are desperate for guests. After a couple of unanswered enquiries I moved on to guest houses and came across one with good write-ups and that actually answered my e-mails. Yes, they thought they could accommodate my very odd requirements. A look at Google Earth suggested some slightly rising land to the north west (not ideal) but in other ways it looked OK, apart from being single storey with no roof for antennas. The deal was done and I booked in for 10 nights.

The target was to be the Commonwealth Contest and the plan was to work lots of fellow amateurs to show that Rwanda is in the Commonwealth – and inject a bit of excitement about a new contest country.

EQUIPMENT. Next, what to take? My trusty K3 was first into the bag along with all its bits and pieces. I bought a new Power Mite PSU to replace one that died recently after many years of good service. The antenna situation was a complete unknown. I decided against verticals (which are often not ideal in city gardens) and took my lightweight inverted V dipole that covers all bands from 10 to 40m with additional links available for 80m. Assuming there would be no supports available, I took my six section 24 foot aluminium mast and the usual 10m fishing pole. Tested in Kent, and lashed together with three jubilee clips, they support the dipole at just over 40 feet. It is not pretty but who cares? I also took another fishing pole, a fan dipole for 10, 15 and 20m (useful for the Commonwealth Contest), wire to turn a fishing pole into a 40m dipole and lots of coax. From past experience I knew that it would all fit into my bag and be acceptable to the airline. I didn't take my excellent KPA500 amplifier – a step too far for weight I thought. Also, although I had asked for agreement to list it on the licence, I did not know what the licence would say about power (actually 100W, so I was right!). Oh yes, I also took some clothes for ten days and, as I had some spare weight allowance, a spare rig (IC-7000) and power supply that were never taken out of their bubble wrap.

GETTING THERE. The flight out was fine – my path to Nairobi is now very well worn. From there I travelled via Bujumbura (Burundi) to Kigali airport where I was met by the guest house pick up. I could not have had a better reception. I was told to make myself at home and also asked whether the 40 foot flagpole mast outside the front door would be useful. There were few guests and I was offered choice of rooms – also very helpful. I was delighted to find that the guest house overlooks much of the city and with a good take-off in most directions. Happy as a pig in muck – up went the home-made mast with the flagpole to follow!

ON THE AIR. The next morning (Monday) my first call was to the licensing authority (RURA) where I collected my licence after a bit of shuffling between banks to pay the (£110) bill for 10 months. Quickly back to the guest house and the first pile-up began. Conditions were good and I was particularly delighted to be told that I had (briefly, no doubt) a bigger pile-up than Clipperton. In my first session I worked through over 300 stations on 12m before seeking refreshment. The internet only worked in the public dining room and in my bedroom (shack) the connection would occasionally flicker but it was too poor to be used – although I did manage one very surprising Skype call that came through while I was deeply mid pile-up.

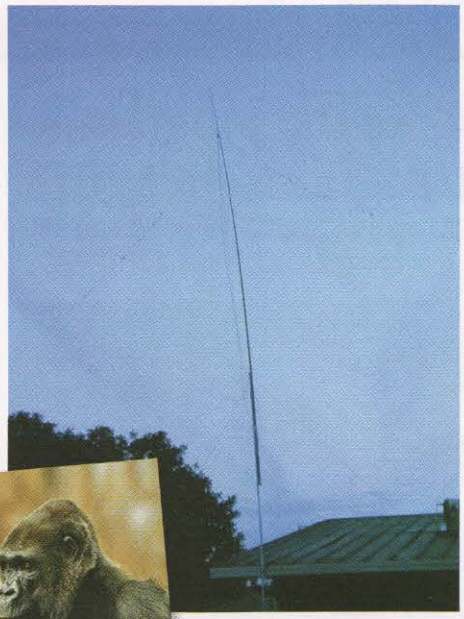
My visit was short so I set a personal target of 1000 QSOs per day – allowing some time to see Rwanda, particularly Kigali itself. The cheapest, if mildly hazardous, form of transport is the taxi moto (motorbike) and I took quite a few journeys. In Kigali, riders are more careful than in Uganda and passengers are required to wear crash helmets. The main problem was ensuring the driver knew where you wanted to go. Interrogation of the bike owner about knowledge of the proposed destination took place

in English, then possibly French and preferably involved some bystanders to make sure the bike went to the right place. The situation is slightly complicated because the old road names have been replaced with numbers – which few appear to use. I often failed to arrive directly.

MY VISIT. Kigali is wonderfully tidy and well organised compared with most African cities I have been to. Roads are well paved. Pavements are swept and tidy. Grass is cut and deep storm drains are kept immaculately clear, ready for the next downpour. Bearing in mind events in Rwanda over the past 19 years (since the genocide) that sense of orderliness seems a remarkable achievement.

I also found a refreshing lack of graft and corruption and the high level of security-awareness rather reminded me of a visit to Israel.

Among other places, I visited the Genocide Memorial Centre that provides a vivid explanation and reminder of events in Rwanda during the 1990s. It is the mass burial site for about 250,000 men, women and children – there are many others elsewhere. On the basis of my brief visit, the response by Rwandans to disaster appears to have been almost miraculous and deserves great respect.



The inverted V dipole at about 40 feet used at 9X0NH and (inset) QSL card for the operation.

BACK TO RADIO. For the Commonwealth Contest I had three antennas as I added the fan dipole (up the flagpole) and erected a 40m ground plane. That took up all my coax cable but gave me some choices. I was in touch by internet before and after the contest with Alan, G3XAQ, operating as 5X1XA in Kampala. For the preceding days we had been swapping information about signal strengths and antennas. As usual I fiddled at the last minute to get an 80m antenna up and that was not wonderful – neither enough room nor height.

How was the contest? Well, a great success in terms of getting Rwanda on the air but, in fact, conditions were not as good as the previous week (how often does that happen!). I found myself digging stations out of the noise with whom I had enjoyed strong SSB QSOs even the previous day. Interestingly, Alan, 5X1XA in Uganda, only 450km away, had some significant differences in propagation. For example, 10m remained almost dead in Rwanda on the first day but Alan managed over 50 QSOs in Kampala. Both of us found 40m very disappointing. We had hoped it would be a 'bread and butter' band but it was hard work to get calls in the log. In Rwanda, it was often very difficult to stop incessant 'non-Commonwealth Contest' callers. Some of them transmitted on top of potential contest contacts for many minutes, despite every attempt to shake them off both in a friendly and then more direct manner.

On the Sunday, after a slow start, 10m really opened up to the UK from Rwanda. I managed to pass 400 QSOs (phew), then 500 (getting better) and finally just cleared 600 when the whistle blew. Not brilliant but respectable. I had gone for quantity rather than tactical scoring but at least I felt the number of QSOs was reasonable for a restricted section entry, effectively 'portable' and from a strange location. The bands did not open well to the Caribbean, which was disappointing, and conditions to Canada were not ideal. As an equatorial reminder, there was a mammoth storm in the middle of the night – the rain on the roof made it impossible to hear anything and I retired to bed for three hours.

This was my fifth Commonwealth Contest from East Africa and, while great fun, it is not a particularly easy area from which to get a good score – especially since openings to North America and the Caribbean are so uncertain. Stations further south often seem to get better openings there. However, I was competing with well established permanent stations while using a totally hand-carried temporary station and antennas. Life was also not improved by the discovery that *Wintest* did not include Rwanda as a Commonwealth country (although I personally used SD for logging). For those using it, *Wintest* initially refused to accept Rwanda and it has an effect on spots and skimmers for those who use them (more than you might think, I suspect!). On the positive side, there seemed less static in Rwanda than in Western Uganda, where it has been such a problem. Overall, there was quite a lot of interest in how the contest went both at the Licensing Authority and among the guest house staff which was encouraging.

AFTER THE CONTEST. I stayed on for a couple of days after the contest to get some more QSOs in the log and to be on the air for the 50th anniversary of being licensed as child operator G3RWF(!). I found 9X more popular than I had expected and the pile-ups were often on the cusp of my comfort zone. The K3 worked flawlessly – it now has about 110,000 QSOs on the clock from various places. There were only a very few short cuts in mains power although it 'coughed' from time to time – enough for the K3 to trip. Finally, with 8,160 QSOs in the log I pulled everything down and planed it back to the UK. The temperature I left in Kigali was 31° but Heathrow greeted me with -2° and a light sprinkling of snow.

OPERATING STANDARDS. I have become quite despondent about the standard of operating – mainly from Europe. Poor operating is now plumbing the depths. One problem in East Africa is that Southern Europe and the former USSR are *very* strong and rarely not present – but the contagion is more widespread than that. The lunatics really have taken over the madhouse. It detracts greatly from any operating pleasure when no attempt is made to allow you attempt to dig out a weak station or correct a part call. Even when you are just completing a 'normal' QSO, callers start continuously. Amusingly at one point during the Commonwealth Contest I gained a personal 'band cop' who sent the usual rude strictures to anyone calling me from outside the Commonwealth. Some of the idiots are both ignorant and malicious. I didn't appreciate DQRM (deliberate interference) of which there was some – or indeed, the pirating of my call. One morning I decided to concentrate on working DX – ZL, Oceania and long path to the West. For my efforts I got a bad internet 'spot' for not working European callers. Such selfishness leaves a sour taste. Of course, things would have been easier if I were a really 'ace' operator – but that's not the point. At times, bedlam beckons. What motivates these madmen?

Was it worth it? – an interesting question in view of recent fierce discussion of the sponsoring of DXpeditions. Well, DXers got good value – just the cost of their own electricity and postage for a card, if not on Logbook Of The World. I hit my own QSO targets and actually feel very comfortable about entirely funding my own activity.

For the record, and looking just at my costs, each QSO cost me about 19p. QSL costs should at least balance out; and don't believe anyone who says they don't! I don't feel beholden to people, despite some of the really naff pressure that is applied. I am very fortunate that I am able to fund it – my hobby, my holiday and my pleasure to give out QSOs to those who share my interests. On the other hand this was equatorial Africa; not a Pacific island without transport links. Anyway, thanks guys – good holiday.

IOTA

Changes as the programme goes from strength to strength

IOTA AT THE CONVENTION. This issue of *RadCom* contains the last 'stand-alone' IOTA column, at least for some time. From next month, I will be taking over the HF column from Don, G3XTT and will merge news of important IOTA activations with other more general DXpedition reports and other HF news. Important IOTA management announcements will appear separately in the RSGB Matters section of *RadCom*.

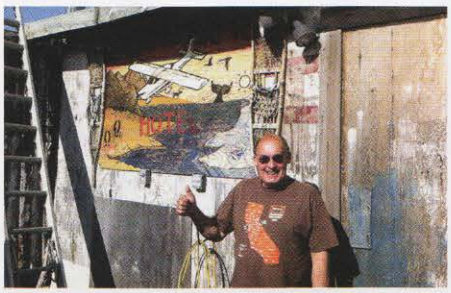
There will be a strong IOTA element to the RSGB Convention at Horwood House in October when Mike, K9AJ will be presenting on his recent DXpedition with Nando, IT9YRE to Sikaiana Atoll (OC-285). However, for a convention this month you may just have time to consider the Russian Domodedovo Amateur Radio Festival in Moscow from 19-22 September. The festival offers an extensive program which includes DXpedition presentations, youth and VHF forums, quizzes and even an IOTA versus DXCC football match. For more information contact the organising committee via hamfest2013@srr.ru.

INDONESIAN ACTIVITY. Indonesian amateurs have been having a busy time recently, though sadly the activations of the very rare Tambelan Island (OC-122) and Serasan Island (OC-109) had to be postponed as the wife of one of the operators became seriously ill just before the planned start date at the end of August. Their licences are valid until the end of September but I'm not optimistic that these islands will be reactivated soon. The rare Indonesian groups are a particular problem because licences are normally only issued to Indonesian residents and not to fly-in DXpeditioners, unless they are invited to join a larger team of locals.

A YB team is planning to activate Anambas Island (OC-108) in mid-September and a separate team will be QRV from Kimaan Island (South Papua Coastal Islands OC-275) from 10-16 September. This latter group has never been activated before so the pile-ups will be big. See www.yf1ar.com/2013/08/oc-275-south-papua-coastal-new-iota.html for more information.

YB9Y from Bras Island in the Mapia Islands Group (OC-276) is a large-scale operation by ORARI, Indonesia's national radio society, and is another first-time activation. The dates are 20 to 28 October and will include the CQWW SSB contest. See YB9Y.com for more information.

OCEANIA. JA1NLX will be QRV as P29VNX from Lissenung Island in the Bismarck Archipelago of Papua New Guinea (OC-008) from 8-13 September. It appears he will be operating CW, RTTY and PSK31 on 10 to 30 meters. QSL, direct only, to JA1NLX.



K6VVA outside his luxury hotel on NA-050.

Transport for K9AJ and IT9YRE to Sikaiana.

K9AJ and IT9YRE operating from Sikaiana.

KZ1W and N7QT will be on the air from Raivavae Island (OC-114) in the DXCC entity of the Austral Islands. The call is likely to be one of the general purpose TX5 calls used all over the French territories. The ops will be on CW, SSB, RTTY and PSK on the 3.5 to 28MHz bands and they hope to post their logs daily to *Club Log*.

Yoshi, JJ8DEN/KH0PR, should be on the air by now from French Polynesia. He will be on Napuka Atoll, in the Disappointment Islands (OC-094) until 16 September, then Reao Atoll (OC-238) from 18 to 25 September. Listen for him on CW, RTTY, PSK31 and JT65A on 10 to 80m. QSL via JJ8DEN.

VK5CE hopes to activate Red Island (OC-255) in Queensland in the 16 to 21 October time period. The island off the northern tip of Queensland is totally uninhabited and is claimed by only 15.4% of IOTA claimants. The group was only activated once before, for four days, back in 2002.

NORTH AMERICA. The Invoker Team, including Col, MM0NDX, has announced their next IOTA operation to six Panamanian island groups and will use the HP0INT callsign until 19 September. They plan to activate NA-071, 072, 088, 170, 202 and 203. /1, /2, /3, /4 and /9 portable designators will be used from the various places. See www.invokerteam.com/hp0int/.

Rick, K6VVA, who recently activated NA-050, plans to go to NA-004 and NA-172 in July 2014. First to Crescent Island (NA-004) on 16-18 July, then to Endeavor Island (NA-172) on 21-22 July. He will be on HF CW only. See www.k6vva.com/iota/na172 or http://twitter.com/k6vva.

ASIA. A group from the Royal Omani ARS (ROARS) plans to activate A42MI from Masirah Island (AS-014) on SSB, CW and digital modes from 20-24 September. QSL via A47RS.

PA0RRS will be active as 9M2MRS from Penang Island (AS-015) from 31 December until 23 February 2014. He will operate CW, RTTY and PSK on 10 to 40 metres. QSL via his home callsign, direct or via the bureau.

EUROPE. The unusual call of 5Q7Y is an operation planned for 14-21 September from Langeland Island (EU-172). QSL via DL8AW, via bureau or direct. You can also use *Club Log* OQRS.

The Martello Tower Group will be operating from Herm Island (EU-114) from 4-9 October. Activity is expected on 10 to 80 metres, including the WARC bands, on SSB and digital modes. They'll be using the call GP0PKT with three stations. More details can be found on their QRZ.com page and their website at www.martellotowergroup.com/gp0pkt. QSL via G6NHU. They will also be posting their logs to *Club Log*.

SOUTH AMERICA. Bone, PP5VX is a permanent resident on Sao Francisco Island (SA-027), one of the 17 islands in the Santa Catarina North Group. Check his QRZ.com entry for contact info.

The dates for the forthcoming YL IOTA DXpedition to Los Roques (SA-035) will be 7 to 10 November. YW5RYL will be QRV on RTTY, PSK, CW and SSB on 1.8 to 50MHz. The expedition is being organized by the Radio Club Venezolano, YV5AJ. QSL via YV5AJ either direct or OQRS.

That's it for this month – I will be back with a wider range of HF and DX News in the November issue of *RadCom*.

Homebrew

UHF and microwave amplifiers

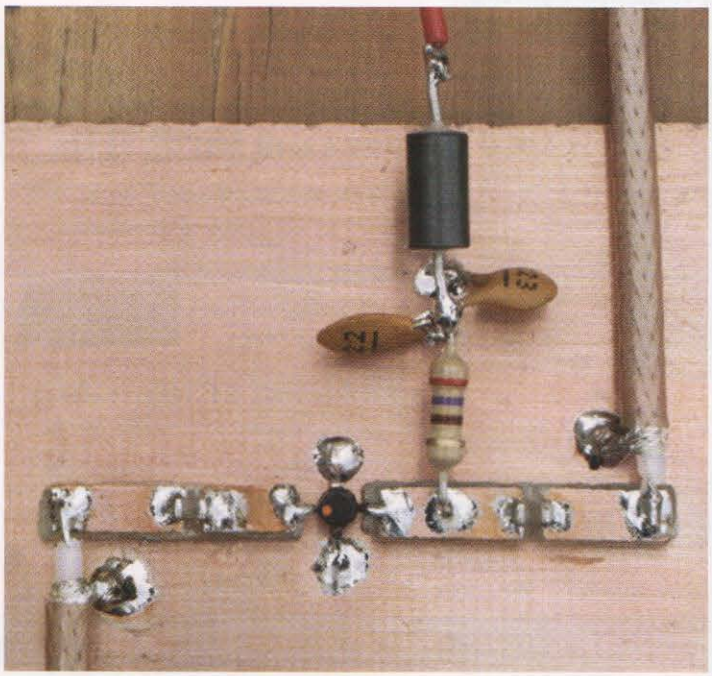


PHOTO 1: My MMIC amplifier test circuit.

BUILDING BLOCKS. UHF and microwave circuit construction was once considered as something of a 'black art'. Only the elite few who had the necessary electronic, mechanical engineering and plumbing skills would be able to build microwave circuits. In more recent times, modern components and construction techniques have brought the microwave bands within easy reach of every home constructor. One component in particular has had a major impact on microwave design and construction techniques. MMIC (monolithic microwave integrated circuit) devices are RF integrated circuits (usually amplifiers). Most MMIC devices are supplied in a small pill-size plastic or ceramic package. The most common type of package is shown in **Figure 1**. MMIC devices are generally pin-compatible with similar devices from other manufacturers. The input pin is usually indicated by a small dot. As the miniature package doesn't allow much room for component markings, in some cases, the colour of the dot may be the only indication of device type. The two ground pins (2 and 4) are arranged so that it doesn't matter whether the device is viewed from above or below. MMICs are usually designed for input/output impedance of 50Ω. This allows for easy interfacing with other circuits, test equipment and inter-stage coupling when multiple MMIC devices are connected in cascade. MMICs are available in both PTH (plated through hole) and SMT (surface mount) packages. In many cases, the only difference between the 'conventional' and surface mount version is whether the connecting leads are straight or bent.

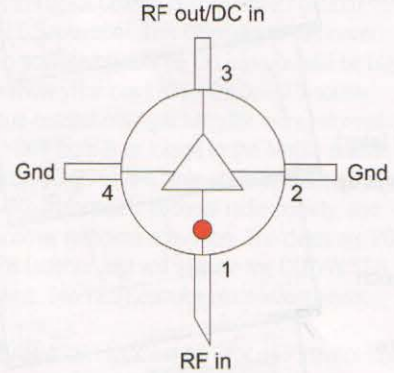


FIGURE 1: The usual package for MMIC amplifiers.

Figure 2 shows the basic configuration of an MMIC. The circuit comprises two transistors connected as a Darlington pair and a few resistors for DC biasing. As you can see, there is nothing special about the circuit configuration. The performance of modern MMICs is due to the excellent high frequency characteristics of the transistors. Older MMICs are typically useful at frequencies up to around 2GHz. Newer devices specified for use up to 6GHz or more are becoming commonplace. This suggests transistor fT values in the tens of GHz range. Manufacturers are constantly working to make smaller, faster devices with lower power consumption. No doubt the next generation of RF ICs will be even faster. Let's hope they continue to supply them in amateur-friendly packages.

Figure 3 shows a typical MMIC amplifier configuration. This circuit is based on the test configuration used in Mini-Circuits [1] data sheets. For someone used to designing circuits based on discrete components, the information available seems rather sparse. As the device is designed for I/O matching of 50Ω, there is no need for any matching networks. Many data sheets don't even bother to recommend values for the input and output coupling capacitors (C1, C2). It is assumed that the designer will use values that have a low reactance relative to 50Ω at the lower extreme of the amplifiers frequency range. This really is 'black box electronics' where you can pick a suitable gain block from the catalogue and plug it into your circuit. Capacitor values for I/O coupling and power supply decoupling are not that critical. The only component that calls for any effort on the part of the designer is the DC bias resistor. This must be chosen to match the DC supply voltage used for Vcc. The nominal DC operating voltage for the amplifier will be specified in the datasheet and is typically 5V or 3.3V. Vcc must be greater than this value and the resistor must be chosen so that the correct current is drawn from the supply. Where the difference between the amplifier supply voltage and Vcc is small, R_bias will have a small value. In this case, it will be necessary to use a choke in the bias circuit. The choke should have an inductive reactance of several times 50Ω. A 1.5μH miniature moulded choke will be adequate for frequencies above 50MHz. At UHF and above, RFC may be a narrow length of PCB track or a straight length of wire. Where the Vcc is relatively high, the correct value of R_bias may be as high as several hundred ohms. In this case, RFC is optional and it may be omitted from the circuit.

IN USE. My MMIC test circuit is shown in **Figure 4**. The device is a MAR-2 (the MAR-3 has almost identical characteristics). 2.2nF was my arbitrary choice of I/O coupling capacitance. This is a capacitive reactance of 50Ω at 1.447MHz so the capacitance is sufficient (perhaps excessive) for my intended application as a HF-UHF amplifier. The MAR-2-SM+ main specifications are:

Gain	~12dB
Frequency range	DC – 2.0GHz
I/O return loss	17.5dB
1dB compression	+7dBm
Noise figure	3.7dB
Operating current	25mA
Operating voltage	5V

The other specification that caught my eye is for mean time between failures: "Expected MTBF is 10,000 years at 85°C case temperature". I wonder if they will last longer in my cold outdoor shack?

With a 12V supply and a fixed device operating voltage of approximately 5V, the

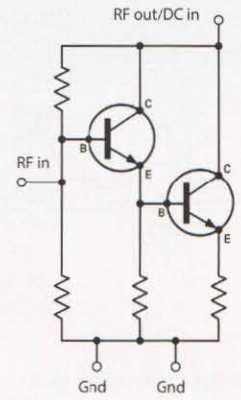


FIGURE 2: Typical internal configuration of a MMIC amplifier.

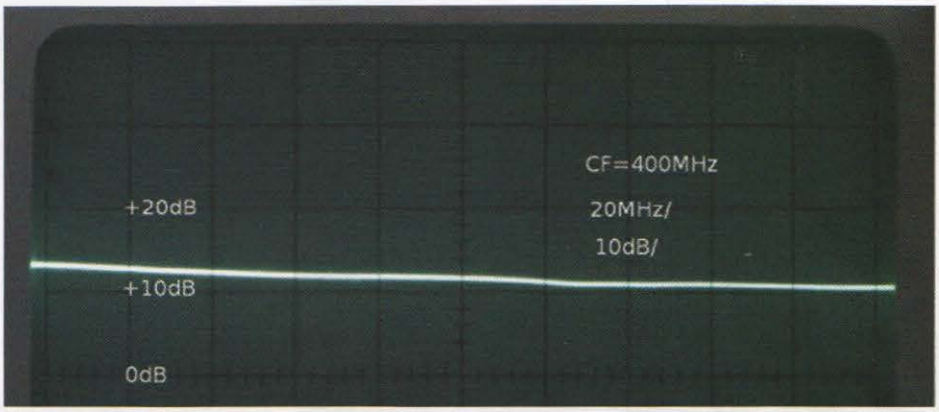


PHOTO 2: MMIC amplifier gain sweep from 300-500MHz.

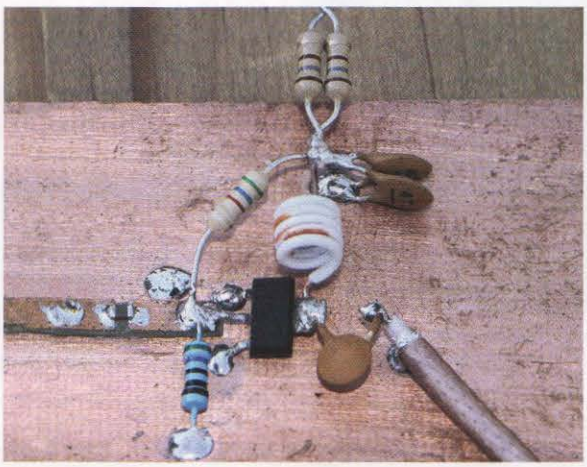


PHOTO 3: Prototype driver stage based on a BFG135.

voltage across the bias resistor will be 12–5 = 7V. The required operating current of 25mA will be achieved with a bias resistor of 7/0.025 = 280Ω. I used the nearest standard value, 270Ω. If a 13.8V supply is used, 330Ω would be closer to the required value. The MAR-2 datasheet has a table of resistor values for various supply voltages. If you are really lazy, you can use a web-based resistor calculator **[2]**. As R_bias in my circuit is significantly higher than 50Ω, I tested the amplifier with and without the RFC installed. There was no measurable difference in performance when the 1.5μH choke was removed, so it was omitted from the final design. **Photo 1** shows the finished amplifier. Amplifier gain measured over a 200MHz span from 300MHz to 500MHz is shown in **Photo 2**. Gain is in the expected 12dB range. Measured input and output return loss was broadly in line with the device specification of 17.5dB. The amplifier was built on a strip of copper laminate and the input/output coupling is via surface mount capacitors mounted on glued 50Ω line (see Homebrew, August 2013).

LINEARITY. As with most Class A amplifiers, linearity tends to be proportional to DC input power. MMICs that dissipate more power tend to be more linear. The specified 3rd order intercept point for the MAR-2-SM+ is +22dBm. This is quite close to the DC input power to the amplifier of 5*0.025 = 125mW = +21dBm. The remainder of the total input power (Vcc*I) is dissipated in the bias resistor. There are however practical limits to how much power you can put into a device no bigger than the head of a match. Running more than a few hundred mW to a standard size MMIC package creates some interesting thermal design problems. Operating temperature can be lowered by reducing the thermal resistance between the chip and the PCB ground plane. My rough-and-ready construction has an advantage here because the entire ground plane is on the same side of the board as the IC. On a conventional PCB, it is common practice to place several vias (through board connections) close to each ground pin. As well as reducing ground connection inductance, this also tends to reduce thermal resistance. This approach can be taken a step further by running a ground track directly under the chip between pin 2 and 4 and placing a line of vias under the IC package. This isn't very homebrew-friendly because plated-through vias are required.

Figure 5 shows a typical layout for MMICs on a conventional double sided PCB and also illustrates how easy it is to cascade multiple MMICs.

HIGHER POWER. For the higher power stages of the transverter project, I resisted the temptation to use one of the RD06HHF1 MOSFET amplifiers that were developed for the 2011 HF transceiver project. This amplifier shows useful gain from 1.8MHz well up into the UHF region. It would have been too risky to use a HF rated MOSFET for a UHF amplifier. My two prototypes worked well at UHF, but there is no guarantee that such a design would be reproducible when MOSFETS from a different manufacturing batch are used.

I would have liked to use one of the more powerful monolithic amplifier ICs for the pre-driver and driver stages of the 70cm transverter. I may explore this option later. For the moment, no suitable ICs are available, so a BFG135 transistor will be used for the low-to-mid power stages. The goal is to make a few hundred mW, which will be used to drive a Mitsubishi PA module.

My prototype amplifier is shown in **Figure 6.** The circuit was built on the same board as the MMIC amplifier described earlier. The base of the BFG135 was soldered directly to the end of the output line of the MMIC amplifier and the two emitter leads were soldered directly to the copper ground foil (**Photo 3**). This makes a mechanically stable

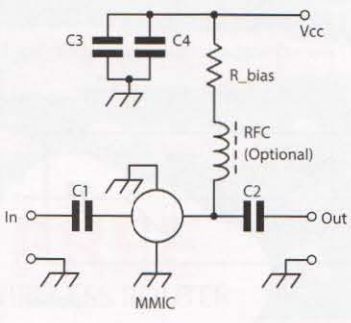


FIGURE 3: A standard arrangement of a MMIC amplifier 'gain block'.

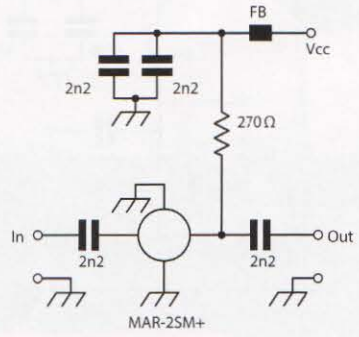


FIGURE 4: My MMIC amplifier test circuit.

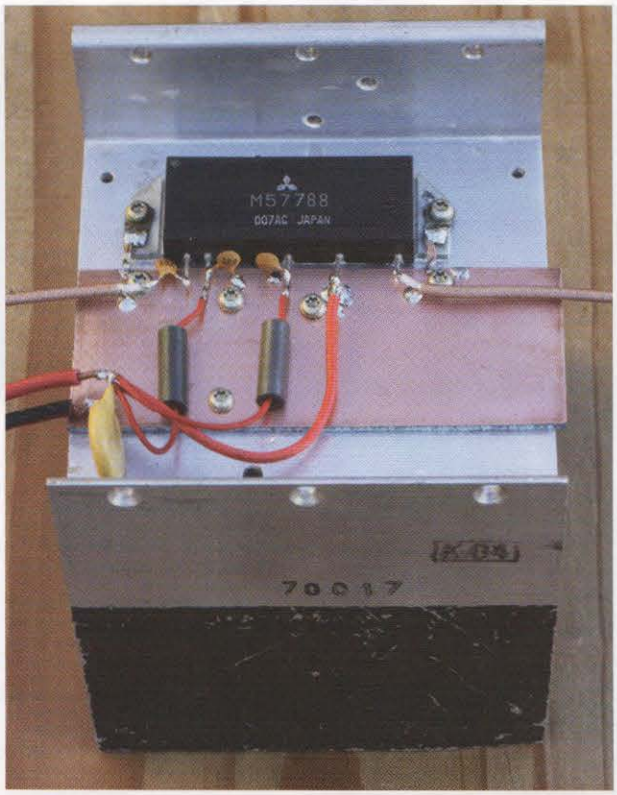


PHOTO 4: A 40W UHF power amplifier based on a Mitsubishi 'brick' – essentially a big MMIC.

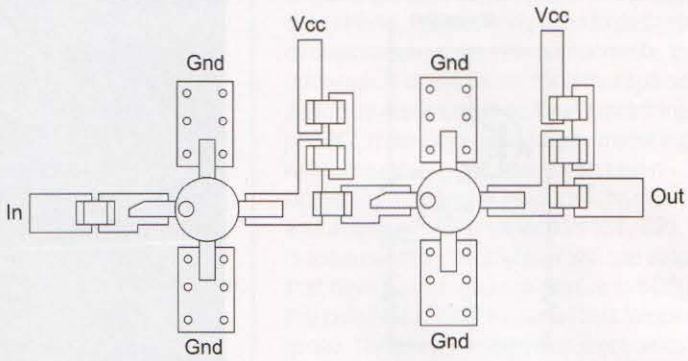


FIGURE 5: MMIC devices can easily be cascaded to increase gain.

unit with very short connections and ground leads. RFC is 5 turns of single strand insulated wire (stripped from 4 core phone cable), close wound with inside diameter of 4mm. A 4mm drill bit can be used as a former.

The 470pF capacitors are standard ceramic disc types with the leads cut as short as possible. The combined gain of the two amplifiers (MAR-2 and BFG135) is just over 44dB from 400-450MHz. Gain is not as flat as measured with the MMIC alone. This is of no consequence for our intended application.

THE PA STAGE. I have a few options for the driver and PA stage. As usual, my preference would be to build a complete new unit from scratch. As I have been planning to build a 70cm transverter for quite a long time, I have accumulated a few transistors that may be suitable for the job. Some of these are UHF transistors recovered from scrap mobile phone transmitters (900MHz) and old UHF TV equipment. However, it wouldn't be easy for other constructors to find a source for some of these devices. It looks as if the only viable options are to buy some new UHF MOSFETS like the Freescale device used in the 2012 2m 400W linear or to buy a Mitsubishi RF PA module. As I am a bit reluctant to run high power on 70cm due to my high probability of local TVI issues, I have decided to buy a suitable module. The RA30H4047M 30W 400 – 470MHz MOSFET PA module looks like an ideal candidate and, at about £1.40 per watt, seems like reasonable value.

While I am waiting for the new linear PA module to arrive, I have set up a PA using a Class C module designed for 12V mobile FM applications. **Figure 7** shows the configuration of a typical UHF PA module. This is a three stage module specified for 400 – 430MHz. All ground connections are direct to the heatsink flange. The only other connections are the RF input, connections for the three individual DC supplies, one for each stage and finally, the RF output. It really is that simple to configure one of these units. You could say they are the high power equivalent of the MMIC amplifier described earlier. Yes, it does come in a 'black box', about two inches long. The module and a strip of PCB laminate were installed on a heatsink. The entire project took about one hour. Most of that time was spent drilling and tapping the holes in the heatsink. The assembled unit is shown in **Photo 4**.

The PA was tested using the two stage (MMIC + BFG135) amplifier described earlier as a driver. With peak output of 100-200mW, it falls a bit short of the 400mW drive requirements of the PA module. However, it did produce about 25W for long enough to get my 50W UHF dummy load nice and warm.

The module was mounted on the heatsink using a thin film of heatsink compound. Because of the lower power levels involved and the very large area of the heatsink interface on the PA module, keeping the device cool is quite easy, particularly when compared to some of our previous high power PA projects.

Since last month, I have found time to put up my 70cm beam (April 2008). I didn't test the PA on air because I don't have a suitable LPF installed. Harmonic suppression from these modules is specified as -30dBc so additional filtering will be required. I also need to set up the Rx/Tx switching so that I can listen before transmitting.

Next month: the receiver section of the UHF transverter.

WEBSEARCH

[1] www.minicircuits.com

[2] www.changpuak.ch/electronics/mar_era_bias.php

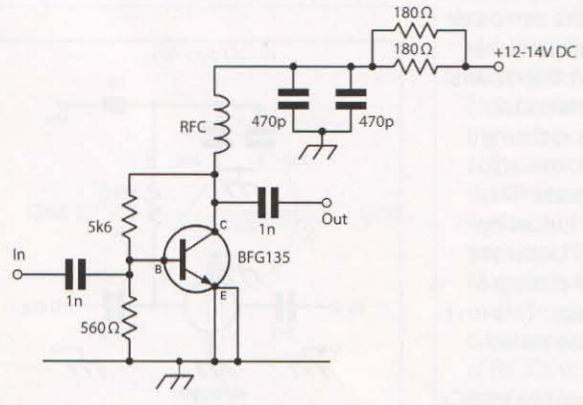


FIGURE 6: My UHF buffer amplifier, with about 100-200mW peak output.

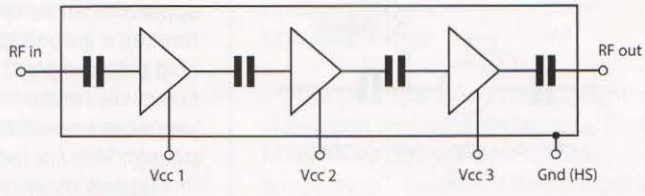
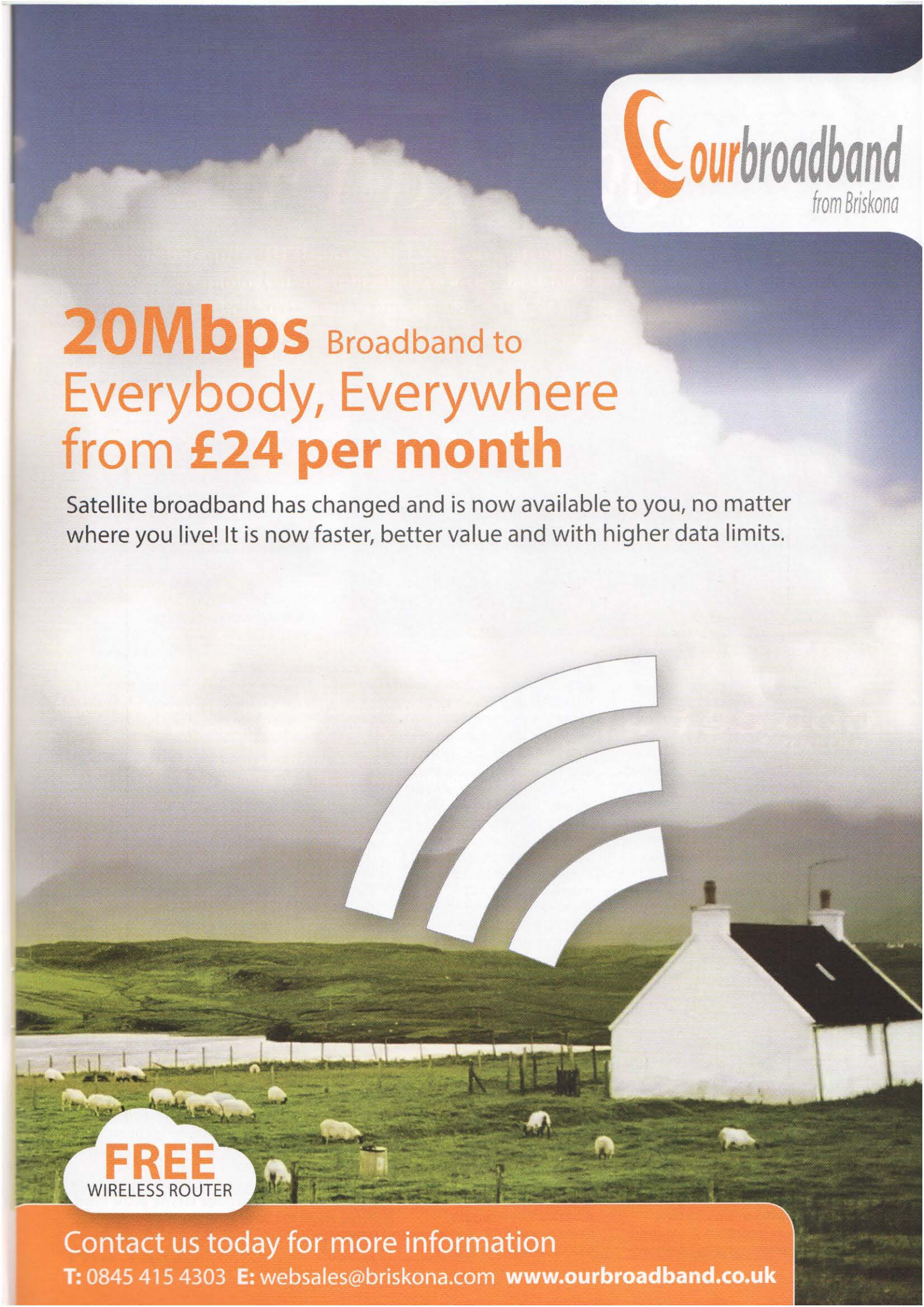


FIGURE 7: Internal configuration of a typical modern power amplifier 'brick' – typically 50Ω in and out and giving 40W of RF for about 400mW of drive.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RSGB Convention

11-13 October at Horwood House in the Buckinghamshire countryside

Horwood House is located in the Buckinghamshire countryside.

HIGHLIGHTS. This year's Centenary Convention more than lives up to its name and provides another high quality lecture programme. In order to reduce overcrowding, a number of lectures are being repeated throughout the weekend and lectures are staggered to improve the service during the lunch period and coffee breaks. You will see that we've joined two of the large rooms together for part of Saturday and all of Sunday to allow as many people as possible the opportunity to take part in the presentations. My sincere thanks to all the presenters for giving so generously of their time and expertise.

Joe Taylor, K1JT, is an American astrophysicist and Nobel Prize in Physics for his discovery, with Russell Alan Hulse, of a new type of pulsar, a discovery that has opened up new possibilities for the study of gravitation. In 2010 he led an expedition to use the Arecibo Radio Telescope to conduct moonbounce contacts using voice, Morse code and digital communications. He has written several computer programs and communications protocols, including *WSJT*, which is a software package and protocol suite that uses computer-generated messages together with transceivers to communicate over long distances. *WSJT* is useful for passing short messages via non-traditional radio communications methods, such as moonbounce and meteor scatter and other low signal-to-noise ratio paths. It is also useful for extremely long distance contacts using very low power transmissions. He will be speaking on this DXing with weak signals, which is sufficiently broad to allow an overview of both HF and EME related applications.

Paul Jarvis and Ash Gohil from Ofcom will host a session on Sunday where they'll introduce the forthcoming Licence Review and the process Ofcom will be following. This is an extremely important subject and I encourage as many of you as can to attend. An RSGB web page (http://rsgb.org/main/rsgb-consultations/ofcom-consultations/) will be a focal point for where the RSGB will provide or link to additional information, including an opportunity for all amateurs to express their views via a moderated discussion forum.

IOTA has traditionally taken a number of slots at the Convention and this year is no exception. Mike McGirr, K9AJ will be presenting Sikaiana Atoll, the last of the Solomon Islands IOTAs, Keith Orchard will talk about activating 16 Scandinavian IOTAs and Roger, G3KMA has agreed to do a talk entitled 50 Shades of IOTA – sounds intriguing! I'm sure he'll take the opportunity during his talk to mention ideas to celebrate the 50th Anniversary of the IOTA programme that is planned for July next year.

Other island DXpeditions include Phil, G3SWH who will present his exploits as H44KW on the DXpedition to Guadalcanal, which is OC-047. Then Tom, GM4FDM will talk about his trip to Tuvalu operating as T2GM, whilst Donald, VE7DS recounts the tales of his trip to Campbell Island on the ZL9HR DXpedition. Michael, G7VJR was part of the DXpedition that went to Easter Island earlier in the year and Livlu, YO4FNG will recount his 4000km on 2m achievements. Livlu's talk is sponsored by The Radio Company, www.theradiocompanyonline.com/.

For those who would like to get to grips with those tiny surface mount components, perhaps you should make time to join Dave Powis, G4HUP for his talk and demonstration on SMT construction techniques for the fearful. Dave assures me that everyone can conquer this type of construction.

John, G4BAO is going to talk about contesting on the GHz bands, which will follow on from his recent column in *RadCom* 'Four reasons for not trying the GHz bands' namely: There's no cheap equipment available, it's too technical, the QSO rate is too low and, my site's not good enough plus the other reason often given we're too far away from activity to make it worthwhile.

NEW - TECHNICAL DINNER

This year we have decided to host an addition to the usual Gala Dinner - a new Technical Dinner. The idea is to give choice on the Saturday night so you can choose to attend either the traditional Gala Dinner with the various trophy presentations or the new alternative. The Technical Dinner is expected to be a quieter more relaxed affair where guests will have the opportunity to relax over the same meal etc as the Gala dinner. The dinner will be concluded by an Technical after dinner speech.

This year, the after dinner speech will be a presentation by Rev. George Dobbs, G3RJV. George is well known as founder of the GQRP club and a writer on all things QRP. He is though also an accomplished, humorous speaker. His presentation this year will be "amateur radio - a sideways look" and will no doubt be interesting and thought provoking.

The dinner can be booked as a stand alone meal or as part of a package staying at the event. If you would like to book simply visit www.rsgbevents.co.uk.

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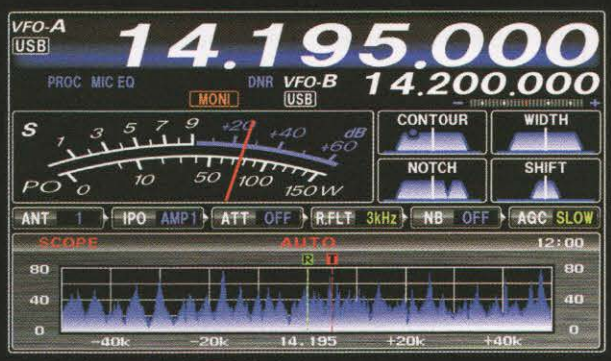
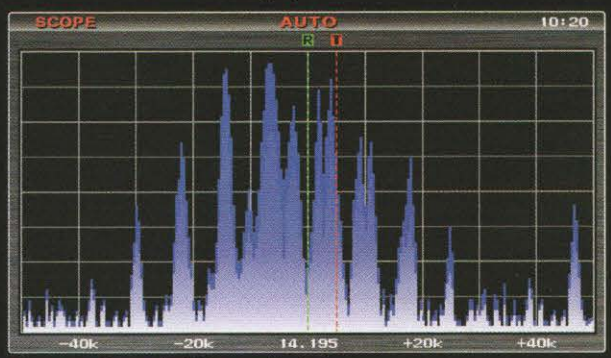


The Full Color 4.3 inch TFT display



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Many of the talks have been to full rooms - this year will, no doubt, see the same.

Neil, G3RIR will describe the impact of severe interference from certain LED lighting systems, from personal experience.

Richard, G4HGI, who writes the VHF / UHF column each month in *RadCom*, is putting together some ideas on how to encourage more activity on the 70cm band, outside of the usual monthly Tuesday night UKAC contest, Field Day and other infrequent contests.

Mike, GM4HCQ has over twenty years service as a Radio Officer on board the ships of the British Antarctic Survey and has seen great changes in the methods of communication used from CW, Telex and FAX through to e-mail and now full internet access. Throw in a few penguins, seals and polar bears and this should make for an interesting talk.

There are a number of space related talks in the programme David Hooper from the Rutherford Appleton laboratory will be talking about STFC, Dave Johnson, G4DPZ, representing AMSAT UK, will be presenting FUNcube and UKube-1 and Dr Chris Bridges from the Surrey Space Centre will give an update on the STRaND 1 project.

CENTENARY LECTURES. As this is the RSGB's Centenary year there will be a number of lectures on this theme. Terry Giles, G4CDY will be demonstrating his re-creation of Dud Charman's Aerial Circus. This has proved extremely popular when demonstrated at both the AGM and, more recently, at the Centenary Day celebrations at Bletchley Park. Dr Elizabeth Bruton, from Leeds University, found her interest in the history of communications began with a small project on the history of mobile telephones as part of her undergraduate degree. This was further focussed on wireless history with her postgraduate dissertation, 'Marconi Wireless Telegraphy in the British Army during World War One'. She has featured on several television and radio programmes looking at the history of communications and will speak at the convention on the role of radio amateurs in World War 1. There will be two more talks from the archives looking at 100 years of amateur aerials and the transatlantic challenge in the early 1920s when all kinds of experiments and rivalries took place.

EXAMS. All levels of UK and US exams are available during the Convention weekend. Candidates for the UK exams must book their exams prior to the event. For further information and to book exams contact the Exams Department at RSGB HQ on 01234 832 700. The closing date for applications is 20 September. Candidates for the UK Foundation or Intermediate examinations must contact Steve Hartley, G0FUW, by e-mail to g0fuw@tiscali.co.uk so that progress on practical assessments can be verified.

The US exams will be available on Sunday 13th. Candidates will need some ID, photo ID is preferred, the exam fee, which is the Sterling equivalent of $15, a USA postal address for the FCC to send your licence – and a pen. For the self-study needed prior to the exam, the ARRL website is a good place to start, www.arrl.org. The US exams will be classed as a 'Walk In' session – anyone can turn up and take the exams without pre-booking, although it would be appreciated if you let us know in advance.

PRIZE DRAW. This year the prize draw has an Icom IC-7200 HF/6m all-mode transceiver kindly donated by Icom UK as a main prize, with other prizes fro Kenwood and Yaesu too. There will also be a Centenary Morse Key (this key is number 2 – our Patron has number 1). It's made by Vibroplex and only 250 were made – and they have sold out. Tickets will be on sale throughout the Convention and the draw takes place at 3pm on Sunday 13 October. Our grateful thanks to Icom UK, Kenwood and Yaesu UK for their generous donation of prizes.

The raffle, as always, is run on behalf of the RSGB DXpedition Fund. DXpeditions are welcome to apply for funding from the scheme, provided that the DXpedition has a good chance of working a significant number of stations in the British Isles, the country being activated must be well up the European wanted lists, the QSO target is in excess of 15,000 and the application for funds is made in advance of the DXpedition. In recent years, funding has been given to South Orkney Is VP8ORK, Christmas Island, VK9X, Cocos Keeling Is VK9C/G6AY, Andaman Is VU4PB, East Timor 4W6A and Kiritimati T32C.

SOCIAL SCENE. Visitors to the Convention can enjoy the MLS Buffet on Friday evening with early evening entertainment from Steve Dean with his unforgettable close-up magic. On Saturday, due to overwhelming demand, we have an addition to the usual Gala Dinner. You can choose to attend either the traditional Gala Diner with the various trophy presentations or an alternative Technical Dinner. Jim Lee, G4AEH will run this year's table quiz with a mixture of radio questions, photos and audio clips, including some Centenary questions. The new Technical Dinner will be a more informal affair and will include an after dinner speaker. Rev. George Dobbs, G3RJP will be giving a talk on amateur radio – a sideways look. If you have already booked for the Saturday evening you will have been contacted for your choice and new bookings should indicate which dinner they wish to attend when booking online.

If you wish to reserve a table for you and your friends, drop an e-mail to me at dwilson@btinternet.com and let me know how many and who your guests are on your table.

BOOKINGS. The 2013 RSGB Centenary Convention is once again kindly sponsored by Martin Lynch & Sons and takes place at Horwood House Hotel and Conference Centre, which is about 11 miles outside Milton Keynes on the A421 heading towards Buckingham. Horwood House, set in some 38 acres of landscaped gardens, as well as having a spa, sauna, heated swimming pool and gym, has an all weather tennis court and jogging trail so no excuses for not getting active!

Weekend packages and dinner tickets (Friday ML&S buffet, Gala Dinner or Technical Dinner) are *only* available online from www.rsgbevents.org. Day tickets are *only* available at the door, £10 per day or £18 for both Saturday and Sunday.

See you there.

Saturday 12 October				
Cook 1	Cook 2	Columbus	Raleigh	Manor Lounge
Official Opening - RSGB President - Bob Whelan, G3PJT Followed by DXing with Weak Signals Joe Taylor, K1JT 9.00-10.00				
		Activating 16 Scandinavian IOTAs Keith Orchard, G3TTC 9.30-10.15	GHz bands - contesting?? You've got to be kidding! John Worsnop, G4BAO 9.30-10.15	Emerging EMC Threats Member EMCC 9.45-10.30
COFFEE	COFFEE	COFFEE	COFFEE	
Cycle 24, Propagation, and Beyond Cycle 24 Carl Luetzelschwab, K9LA 10.30-11.15	Recreation of "Dud" Charman's Aerial Circus Terry Giles G4CDY 10.30-11.15	50 Shades of IOTA Roger Balister, G3KMA IOTA Manager 10.45 -11.30	Trainers Forum Steve Hartley G0FUW 10.45 -12.30	COFFEE
				A Dip into the Archives - No 3 Elaine Richards, G4LFM 11.00 - 11.45
Yagis optimised for "signal to noise" instead of "gain" Justin Johnston G0KSC 11.30 - 12.15	The Role of Radio Amateurs in World War 1 Elizabeth Bruton 11.30 - 12.15	Sikaiana Atoll, the last of the Solomon Islands IOTAs, OC-285 Mike McGirr, K9AJ 11.45 - 12.30		SMT construction techniques for the fearful Dave Powis G4HUP 12.00 - 12.45
LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
tbc	100 Years of Amateur Aerials Elaine Richards, G4LFM 13.30 - 14.15	H44KW Phil Whitchurch, G3SWH 13.45 - 14.30	Development of the Sentinel HF SDR noise measurement receiver and HF Active Antenna, Chris Moulding, G4HYG, 13.45 - 14.30	Remote Station Operation John Regnault, G3SWX 13.45 - 14.30
Raspberry Pi Peter Goodhall, 2E0SQL 14.30 - 15.15	MS for beginners using FSK441 Lyndon Leach, GW8JLY 14.30 - 15.15	Tuvalu T2GM Tom Wylie GM4FDM 14.45 - 15.30	Spreading the sewage - the increasing number of dirty signals on HF Peter Chadwick, G3RZP 14.45 - 15.30	tbc
Tea	Tea	Tea	Tea	Tea
4000kms on 2m Liviu YO4FNG 15.45 - 16.30	From Morse code to the World Wide Web, Mike Gloisten, GM0HCQ 15.45 - 16.30	ZL9HR Campbell Island Dxpedition Donald Studney, VE7DS 16.00 - 16.45	60 years of Raynet - Past, present and future, Charlie Morrison, GI4FUE & Greg Mossop, G0DUB 16.00 - 16.45	The Role of Radio Amateurs in World War 1 Elizabeth Bruton 16.00 - 16.45
STFC Rutherford Appleton Laboratory David Hooper 16.45 - 17.30	FUNcube and UKube-1 Dave Johnson, G4DPZ 16.45 - 17.30	Easter Island XR0YG Michael Wells, G7VJR 17.00 - 17.45	The role of the Voluntary Intercepters in WWII Peter Cort-Wright, G3SEM 17.00 - 17.45	A Modern 70MHz Transverter Sam Jewell, G4DDK 17.00 - 17.45

Sunday 13 October				
Cook Suite		Columbus	Raleigh	Manor Lounge
VHF Awards Presentation 9.00 - 9.45		Tuvalu T2GM Tom Wylie, GM4FDM 9.15 - 10.00	Remote Station Operation John Regnault, G3SWX 9.15 - 10.00	BATC Noel Matthews, G8GTZ 9.15 - 10.00
HF Awards Presentation 10.00 - 10.45		LED Lights interference A horror story from a victim Neil Ackerley, G3RIR 10.15 - 11.00	Recreation of "Dud" Charman's Aerial Circus Terry Giles, G4CDY 10.15 - 11.00	Get out and about on 477 Graham Brown, G0NDB 10.15 - 11.00
COFFEE	COFFEE	COFFEE	COFFEE	COFFEE
Outline of the forthcoming Amateur Licence Review Paul Jarvis, Ash Gohil - Ofcom 11.15 - 12.00		Sikaiana Atoll, the last of the Solomon Islands IOTAs, OC-285 Mike McGirr, K9AJ 11.30 -12.15	STRand1 Update Dr Chris Bridges, Surrey Space Centre 11.30 -12.15	A Dip into the Archives - No 3 Elaine Richards, G4LFM 11.30 - 12.15
Raspberry Pi Peter Goodhall, 2E0SQL 12.15 - 13.00		LUNCH	LUNCH	LUNCH
LUNCH	LUNCH	ZL9HR Campbell Island Dxpedition Donald Studney, VE7DS 13.00 - 13.45	Yagis optimised for "signal to noise" instead of "gain" Justin Johnston, G0KSC 13.00 - 13.45	100 Years of Amateur Aerials Elaine Richards, G4LFM 13.00 -13.45
DXing with Weak Signals Joe Taylor, K1JT 14.00 -14.45		Easter Island XR0YG Michael Wells, G7VJR 14.00 - 14.45	The role of the ETCC Noel Matthews, G8GTZ 14.00 - 14.45	Activity on 70cm outside contest times Richard Staples, G4HGI 14.00 - 14.45
Raffle 15.00 - 15.30				

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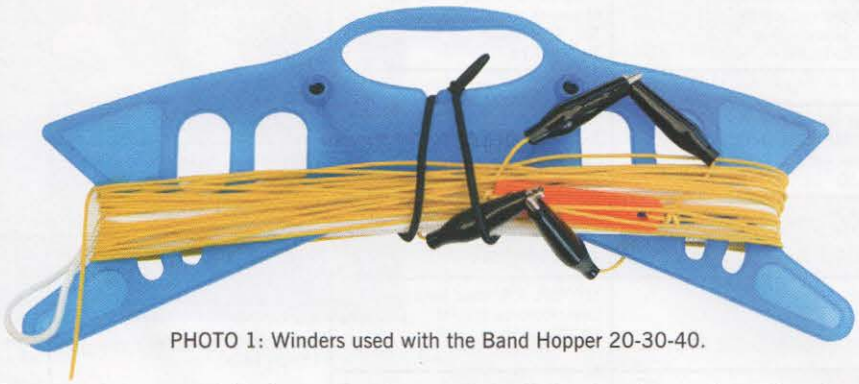


PHOTO 1: Winders used with the Band Hopper 20-30-40.

WHAT DO YOU GET? The combination tested here is the Band-Hopper III antenna plus the optional antenna bag with pegs and the SOTA Pole 7m mast. The SOTA Pole is a 7m long, 7 section, collapsible, fibreglass tube tapering from 35mm at the base to 2mm at the top. When collapsed into its carry case, the pole is just 1.15m long and weighs 690g. The antenna is the Band Hopper III linked dipole antenna. As you can guess from the name, this is a multi-band system and there are a number of band combinations available. For the review I was testing the 40-30-20 model that covers, yes you've guessed it, the 7MHz, 10MHz and 14MHz amateur bands. The antenna is supplied fully assembled and ready to go with the guys and feeder pre-attached to the antenna elements. The feeder is approximately 10m long and uses 50Ω RG-174 cable terminated in a crimped BNC plug. The antenna elements and feeder are wrapped onto three string winders similar to those used for kites (see **Photo 1**).
In addition to keeping the wires tidy, the winders can be used to secure the antenna in rocky terrain by wedging them behind a rock, or on heavy snow coverings they could be used as snow anchors.

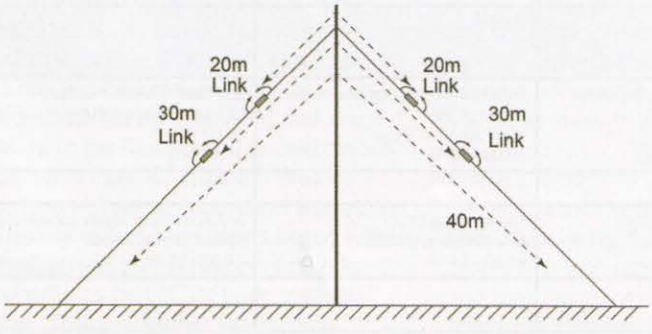


FIGURE 1: Band Hopper linked dipole configuration.

The cable winders and the three ground pegs fit inside the compact soft carry case and the complete system weighs just 460g (excluding the pole). That makes a complete multiband HF antenna system that weighs just 1150g when you include the pole and case.

HOW DOES IT WORK? The design is extremely simple and the multi-band linked dipole is simply a half-wave dipole for 40m that is broken at the lengths for 30m and 20m half wave dipoles (see **Figure 1**). As you can see from **Photo 2**, each break in the antenna is bridged by a spacer and a pair of crocodile clips. These allow you to alter the length of the dipole by either joining or disconnecting the crocodile clips. The result is a half wave dipole on each of the bands specified. When used with the SOTA pole, the antenna is erected as an inverted V with the feed point at the top of the mast and the end points a few feet above ground. Although the pole only provides just over 6m of elevation to the feed point, the trick is to operate at a good location where you can take advantage of a naturally good take-off.

IN PRACTICE. Before I set out into the New Forest for some portable operation, I watched the excellent instructional video on the SOTAbeams website. The video has lots of useful tips on antenna erection and I can confirm that the advice is spot on. We don't have any particularly high hills around us, so I decided to head for a site with a clear take-off to all points. I also wanted to find a site where I could park close to the antenna as I was intending to use the car's battery to power the station. The chosen site was just off the A31 on the old wartime Stoney Cross airfield (50.907421N, -1.642531W, IO90EV). This is a large flat area at 356m above sea level with plenty of parking spaces close to the grassy areas.

Once parked up, the first job was to extend the pole and lock the sections together by twisting them. The pole was then placed on the ground with the top end pointing into the wind. According to the video, orienting into the wind makes antenna erection easier. The next stage was to insert the top section of the pole through the hole in central antenna spacer. The hole was just right for the top section to pass through but not the second section. The antenna wires were then set out on the ground at 90° to the pole using the winders to release the wire. I found that by holding the winder with one finger whilst walking, the wire unwound easily. The next step was to secure the pre-attached guy lines to the pegs. To do this, I moved in about 2m from the end of each leg and inserted the peg and attached the guy string using the pre-tied loop. Once the two antenna ends had been secured, the instructions suggest moving the slack back to towards the centre of the antenna. At this point you need to decide which band you want to use and open/close the crocodile clips as necessary. The feeder was then unravelled from the third winder followed by the back-stay.

I was now ready to erect the antenna. With the back stay in one hand, I lifted the pole with the other from a point about 2m from the ground end and swung it vertically into place. I then moved the base around to get pole as near to vertical as possible

and walked with the back stay to fix it to a third tent peg; job done. I think it took me longer to write this description than it did to erect the antenna! It really does only take about 5 to 10 minutes maximum to erect. The great point about the design is you can erect it single-handed even in quite windy conditions. Once erected, the feeder length was just right for operating portable beneath the antenna. I thought changing bands might be a bit tricky as you have to lower the antenna to reach the clips. However, my pessimism was misplaced and it was very easy to swap over. To make the change I released the back guy and gently lowered the antenna, adjusted the crocodile clips and gently raised it back to the operating position. I did this several times during my operating spell and it went without a hitch every time, taking only a couple of minutes to change.

For the review, my station comprised the new Zeus ZS-1 digital transceiver coupled to a laptop and feeding directly into the Band Hopper III feeder. Before connecting the Zeus, I checked the SWR of the Band Hopper that showed 1.3:1 for the range 7.000MHz to 7.190MHz and 1:1 for 7.060MHz to 7.120MHz. The SWR results were similar for the other bands and fine for direct connection of the Zeus. The first thing I noticed was the extremely low noise floor, which was around -120dBm (S1) on 7MHz in the afternoon. Back at the home QTH the noise floor was -85dBm (S7) at the same time of day – that's 35dB worse and a jolly good reason for operating portable! The antenna has a maximum power rating of 125W but in the spirit of portable operation, I ran QRP with just 5 watts into the antenna. The setup worked extremely well for me and I made contacts into Ireland and Germany with good signal reports. As the afternoon went on, the wind was increasing but the low drag of the antenna allowed it to remain stable.

SUMMARY. I was very impressed with the Band Hopper antenna system. Whilst it is based on a simple half-wave dipole, the construction makes for a very compact, lightweight and easy-to-use antenna system that can be erected single-handed in just a few minutes. The instructions were also accurate and easy to follow. The Band Hopper III costs £37.50 whilst the antenna bag is £5.99 and the SOTA Pole is £22.50.

TABLE 1: BATTERY MONITOR STATUS

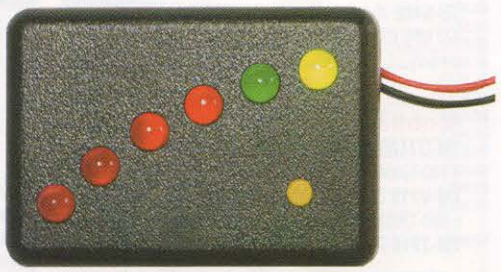
LED State	Battery
1st Green	100%
2nd Green	95-99%
1st Orange	60-95%
2nd Orange	40-60%
1st Red	20-40%
2nd Red	<20%
2nd Red Flashing + beep	Discharged

PHOTO 2: Close-up of the crocodile clip band selection links.

WATERPROOF LOGBOOK. To cope with our climate and the demands of SOTA operators in remote summits, SOTAbeams have produced a compact, waterproof, logbook. The logbook uses the A6 format and so measures approximately 148mm x 105mm with 25 double sided sheets and 25 entry lines per page. That gives the potential for 1250 QSOs per book. The first four columns are titled Date/Time, Call, Out and In with the final two columns left blank for custom use. The line spacing was quite tight at just a fraction under 5mm but I soon became accustomed to it. You can use a ballpoint pen or pencil to write in the log but using a pencil makes the pad re-usable as you can rub out the entries with a standard pencil eraser. I found the best results were obtained using a relatively soft pencil (I used a Faber-Castell 2B). This produced clear text on the paper and I was able to remove enough to make the pad reusable. It may be that a different pencil / eraser combination may provide better results. To test the pad's waterproof capabilities I submerged the pad in a dish of water after I had entered some stations and then tried adding more entries whilst the pad was soaking wet. This all worked absolutely fine and I was able to make new entries with no problems. I did have to be careful when drying the log because any significant rubbing caused the soft pencil entries to smudge. However, blotting the pad dry with a cloth or paper worked well with minimal smudging.

Overall, the SOTAbeams Waterproof Logbook works just as you would expect and is excellent for record keeping in poor weather conditions. The Waterproof Logbook cost £5.99.

BATTERY MONITOR. One of the worries for any /P operator is battery condition, so a monitor that can show the current state of your battery is almost an essential. The SOTAbeams Battery Monitor comprises a small plastic box measuring 35mm x 50mm with a row of 6 LEDs, a single push-button and a pair of red/black wires for the connection to battery pack. Despite its simple appearance, this is a sophisticated monitor with a PIC 12F675 microcontroller doing the hard work under the bonnet. The LEDs are used to indicate the state of the battery with two green LEDs for the high end of the range, two orange for the mid-range and two red LEDs for the low end. When the battery is exhausted the final red LED will flash and beep to make sure it gets noticed.



SOTAbeams Battery Monitor.

Installation is simply a case of connecting the black and red leads to the positive and negative terminals of your battery pack. In the interests of conserving power, the Battery Monitor goes into sleep mode 10 seconds after the last button press and in that state it consumes almost no power. To check the battery state, a single press of the button lights all the LEDs briefly, followed by a single LED indicating the current battery state. If you prefer, you can also set the monitor to remain on permanently.

In order to provide a useful indication, the monitor needs to know the type of batteries it's monitoring. This is done using a simple sequence of button presses that enable you to set the monitor to any one of six pre-set power sources. These were: 9V alkaline, 12 volt lead acid, LiPO/LiIon 3-cell, LiPO/LiIon 4-cell, 12 volt alkaline 8-cell pack and a standard 13.8 volt power pack. I've shown a table of the LED indicators in **Table 1**.

In my tests, the Battery Monitor worked extremely well and is a very convenient way to keep an eye on your battery condition. It costs £15.99 and, like all this equipment, is available directly from SOTAbeams (www.sotabeams.co.uk). My thanks to SOTAbeams for the loan of the review equipment.

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National Hamfest

27 & 28 September at the Newark and Notts Showground, Newark

BEST SHOW EVER! The National Hamfest, organised by the Lincoln Short Wave Club (RSGB National Club of the Year) in association with the RSGB, is lining up to be the best show ever! The event is growing in stature year on year and, as a result, the amateur radio manufacturers and dealers are bringing all the latest equipment to the show.

HIGHLIGHTS. Yaesu will be there with the new FT DX 1200, FT DX 3000D and their latest handhelds, Kenwood will have the new TS-990S flagship base station rig and Icom will have the long awaited IC-7100.

Elecraft will also be with us this year, courtesy of Waters and Stanton, bringing a K-Line setup that will be in use at the Special Event Station, GB13NH, throughout the show. Bring your licence and ID along and you can come and have a go at operating this much talked about radio and help us to 'manage' the inevitable pile-up that the National Hamfest SES always attracts.

Waters and Stanton have been appointed the European distributor for Apache Labs SDR products that cover 160m to 6m. There are currently three models in the range. The ANAN10 offers 20W, whilst the ANAN100 produces 100W. Both can run up to seven receivers within the software. The top range model is the ANAN100D that has two physical receivers and can run 14 software receivers. All have multiple antenna outlets and transverter terminations. W&S will have an Apache Labs designer on hand from India to discuss the range and answer all your questions.

Linear Amp will launch the Gemini, an all new linear amplifier range. Designed, manufactured and assembled entirely the UK, the Gemini is a solid state linear amplifier with 300W output will be available in 6, 4 and 2m versions. It incorporates a complete integral 50V linear power supply so no external PSU is required.

Those looking for antennas will be spoilt for choice with the huge range being offered by Innovantennas, Moonraker, Sandpiper, Vortex, M0CVO Antennas, to mention just a few. New to both the UK and the Hamfest is EAntennas from Spain. Their Yagis are monobands from 80m to 70cm as well as multiband antennas. Their antennas are made with the best materials and are rated at a minimum of 160kmh/100mph. There are even a number of mast suppliers to put all this lovely new metalwork in the air with masts and towers from Upshot Towers, Total Mast Solutions and first-time visitors Clark Mast Solutions.

Ofcom will be attending to offer advice and deal with your licensing questions as well as dealing with your licence revalidation, should it be necessary. Some amateurs have not yet revalidated their licences and Ofcom will be able to give advice and assistance on the process.

RAF Waddington Amateur Radio Club is lending their expertise by running the ever popular Bring & Buy stand. You can download a pre-booking in form on the website to save time on the day. All terms and conditions for the Bring & Buy sale can be read there too.

For aspiring CW operators, we have Morse tests on demand. They are conducted by our friendly examiners, who are very welcoming and put you at your ease. Our information desk in the main hall entrance will have details.

RSGB IN FORCE. As always there will be a large RSGB presence with various committees in attendance. A full list is opposite. There will also be the usual RSGB bookstand featuring the 2014 Yearbook with free goodie bag.

Whether you are looking for a new radio, antenna, accessory or a single component, you are sure to have plenty to choose from at the National Hamfest.

LECTURES.
There is a packed lecture programme with a number of contributors including Eric Swartz, WA6HHQ, one of the founders of Elecraft, Klaus Lohmann, DK7XL/DL0SDR from Flex radio and Rob Mannion, G3XFD who will be sharing with us his experiences as life as editor of Practical Wireless.

OUTSIDE ATTRACTIONS. Outside the main hall you will find the car booters/flea market. They will, no doubt, have a vast range of things too. You never know what you'll find. Details of flea market terms can be found on the National Hamfest website www.nationalhamfest.org.uk.

FREE RAFFLE. It wouldn't be the National Hamfest without the fantastic free-to-enter raffle. There are a number of superb prizes again this year including an Elecraft T1A portable auto ATU, a 4-ele 144MHz OWL antenna, a 2-ele 50MHz LFA antenna, Peak DCA Pro, FT-252E 2s handheld, TH-K20E VHF portable, TH-K40E UHF portable and a Icom ID-31E UHF D-Star digital transceiver amongst other prizes. Our thanks to those traders who supplied the prizes. Just complete the details on the back of your entrance ticket and post it in the box at the RSGB stand. The raffle will be drawn at 1pm on each day in the main hall.

OPENING TIMES. The gates will open at 9.30am on both days to allow visitors to grab early bargains at the outside flea market with the doors to the main hall opening at 10am.

LECTURES

Friday

Practical Wireless	10.30am to 11.15am
Royal Signals (AGM)	11.30am to 12.30pm
Elecraft	12.45pm to 1.45pm
Klaus Loweman (SDR developments)	2pm to 3pm
Ofcom	3.15pm to 4pm

Saturday

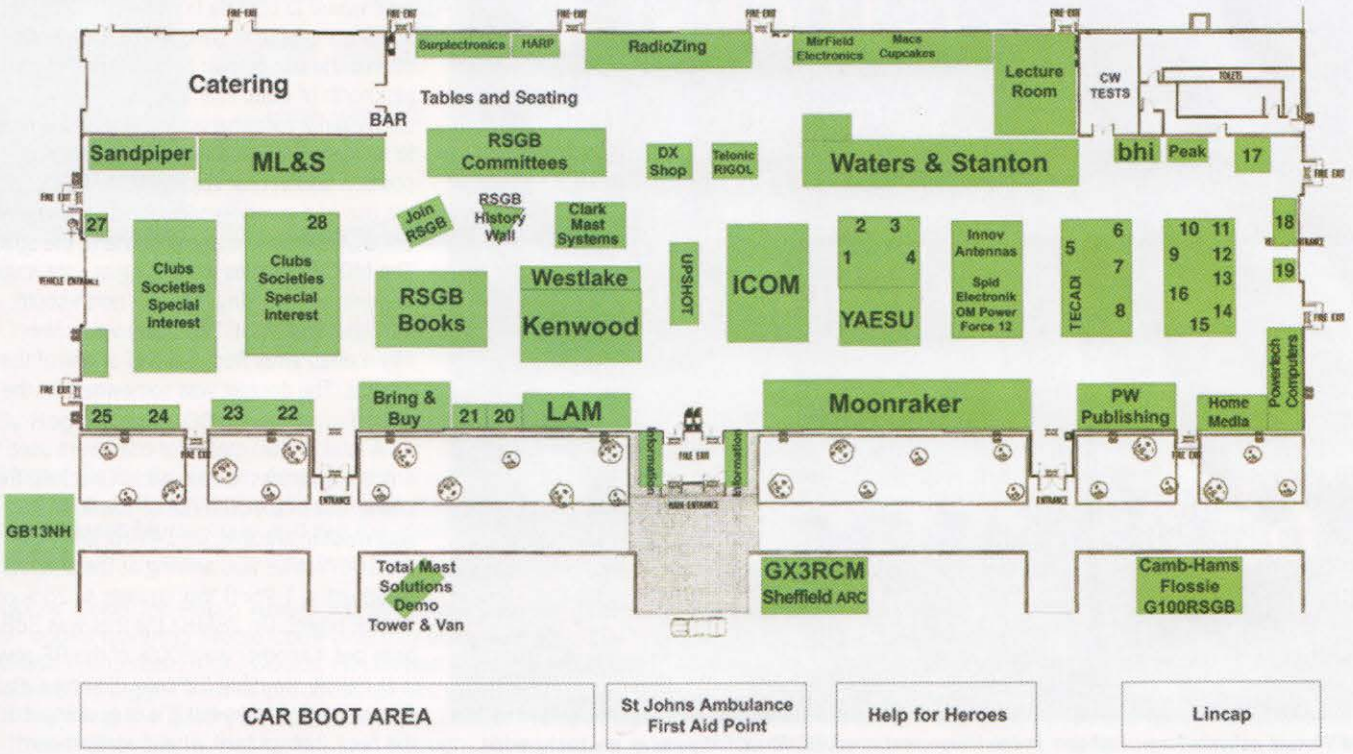
RAIBC (AGM)	10.30am to 11.15am
Elecraft	11.30am to 12.30pm
BYLARA (AGM)	12.45pm to 1.30pm
Klaus Loweman (SDR developments)	1.45pm to 1.45pm
AROS Lecture	3pm to 4pm

One of the raffle prizes, the Icom ID-31E UHF D-Star digital transceiver

Waters & Stanton are launching the new range of Apache Labs SDR products that cover 160 to 6m.

The new Gemini linear amplifier will be launched at the National Hamfest.

NATIONAL HAMFEST 2013



Exhibitors

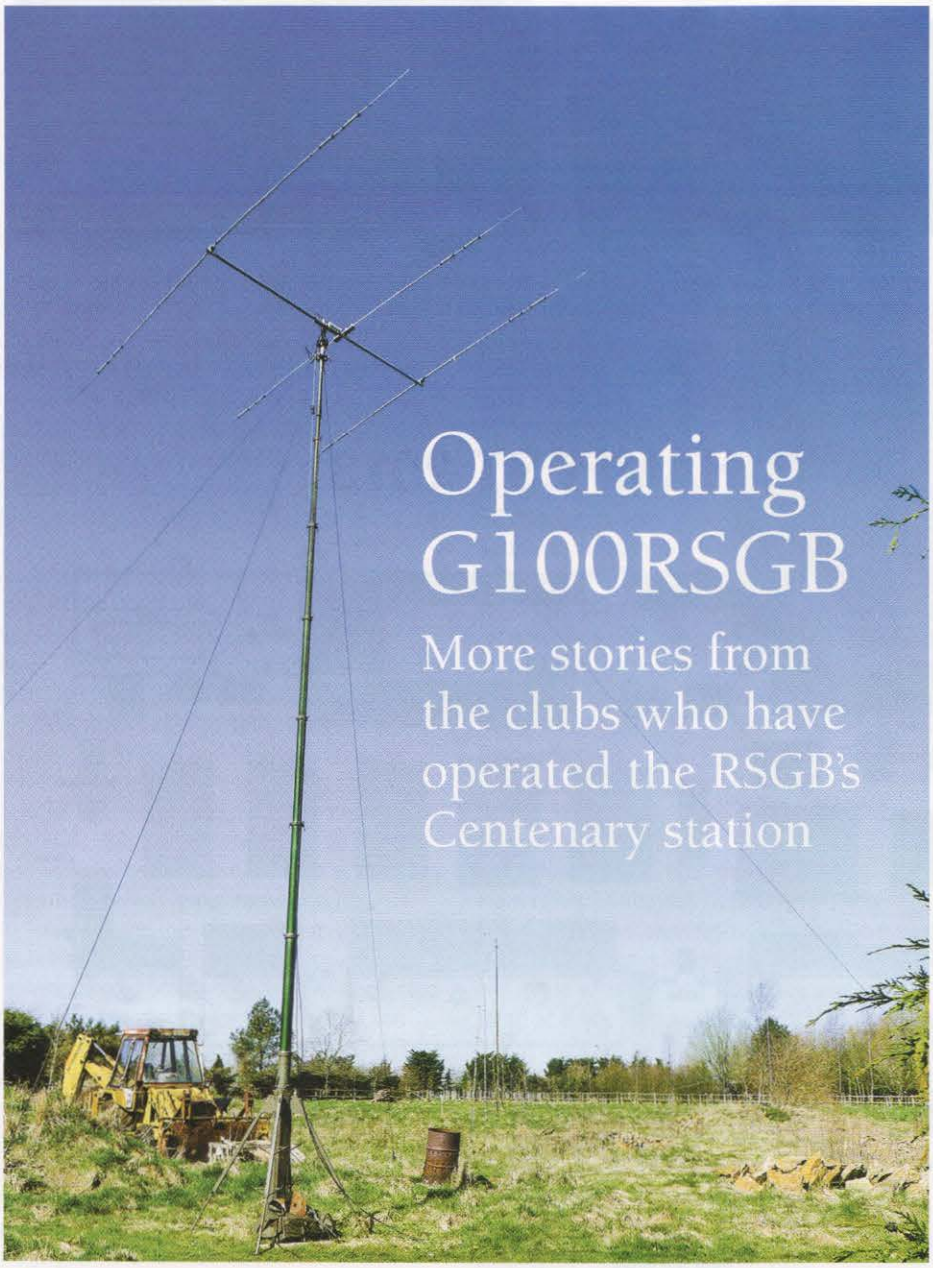
AM Tools (16)
bhi
Bonito (3)
Bowood Electronics (5)
By Vac (10)
Clark Mast Systems Ltd
Cross Country Wireless (6)
Czech Morse Keys (12)
DX Shop
Eantennas-Angro Comms (28)
Fernpatch Engineering (8)
Force 12 Antennas
G4TPH Mag Loops (19)
Go365 Gadgets (1)
HARP Badges
HiFi SSB (13)
HomeMediaOnline.com
Icom UK Ltd
Innovantennas
J Birkett (25)
Kanga Products (9)
Kenwood UK Ltd
LAM Communications
MOCVO Antennas (2)
Macs Cupcakes
Martin Lynch & Sons
Marts Brackets (7)
Mastrant (15)
Mickeys Electronics (22)
Mirfield Electronics
Moonraker
OFCOM (21)
OM Power
Peak Electronic Design (4)
Peter Hall Embroidery
Powertech Computers
Pro Whip Antennas (23)
PW Publishing
RadioZing
Radixon (17)
RF Design UK Ltd (11)
RigExpert (18)
Sandpiper
SOTA Beams
South West Broking (20)
Spid Electronik
Surplectronics (Friday only)
Tecadi
Telonic Instruments Ltd
Tony Kruszelnicki (14)
Total Mast Solutions
Upshot Towers
Vortex Antennas (24)
Waters & Stanton
Westlake
Yaesu UK Ltd

Clubs, Special Interest Groups (SIG) and Societies (Soc)

BRARS
BYLARA
Derby & DARS
FISTS CW Club
International Short Wave League
Lincoln Repeater Group
March & DARS (27)
RNARS
RAFARS
RAIBC
RAOTA
RSARS
Spalding Radio Club
UK Tesla Coil Builders
VMARS
WAB Group
West Midlands Repeaters

RSGB

RSGB Book Stand
RSGB Committees
Amateur Radio Direction Finding
Amateur Radio Observation Service
Exams & Training
Planning Advisory Committee
Propagation Studies Committee
QSL Bureau
RadCom
RAYNET
Spectrum Forum
RSGB History Wall
RSGB Membership Stand



Operating G100RSGB

More stories from the clubs who have operated the RSGB's Centenary station

The Wessex antenna farm; Jaybeam in the foreground, the M0CVO OCF dipoles in the background. The JCB provided an excellent 2m ground plane for the mag mount!

WESSEX WHO? The Wessex Contest Group are not a traditional contest group, in fact, at the time of writing, the group had never entered a single contest. However, we have had lots of fun playing radio and have two mini-DXpeditions under our belts. We activated G100RSGB on 22 April and we do not claim to be 'the best' but we certainly had some fun (Wessex rule number one).

The group has been running for a couple of years and is formed entirely from 'graduates' of the Bath Radio Classes, and me, the lead trainer. Although we wanted to be a 'no formal rules' Society, we had to draw up a constitution to get RSGB affiliation, but our formal rules include the 'must have fun' ethos. We came together with the intention of enjoying radio operation with a vague notion of entering a few contests and doing some 'low key' DXpeditions. The contest bit is still on the 'to do' list, but the rest is coming along nicely. In 2011, the Scilly Isles were activated and we spent a week on the Isle of Skye in 2012, enjoying some great local hospitality and some amazing radio action.

When we saw that the G100RSGB callsign was available to clubs, we thought that might be a good opportunity to gather again and warm up the ionosphere. We were allocated a day in April, the AGM turning into a planning meeting and so it began.

WHAT WAS THE SETUP? We planned to put on two HF stations plus one VHF station and to operate for the full twenty four hour period; Skye had shown us what DX was possible 'after dark'. In the end we had four HF stations on the go with VHF and UHF activation in a kind of /P way from the field outside the shack. Two of the HF rigs were driving amplifiers to full legal power and two were barefoot 100W rigs. We had two M0CVO off-centre fed dipoles for 10-40m, a homebrew doublet for 80m and other HF bands, and an old Jaybeam three element Yagi for 20, 15 and 10m. The HF antennas were supported on a number of masts, two 12m SCAMs, four 10m aluminium telescopic poles and one 7m SOTA fishing pole. The VHF/UHF stations were low power SOTA style set ups.

One of the best additions to our kit has been a set of W3NQN band pass filters. These were homebrewed from articles on the web and they are truly amazing, allowing us to operate on different bands at the same time without causing interference to each other.

WHERE IS WESSEX? Wessex is an old Saxon kingdom covering a big chunk of the South West of England. Whilst we were mulling over where to operate from for our Centenary station, a couple of Dan, M0TGN's friends offered the use of their field in Cold Ashton, just north of Bath.

We did a reconnaissance visit and it proved to be ideal with lots of space, an elevated position and almost zero QRM. We negotiated the use of a garage/workspace as a shack and calculated how to make best use of the space. The M0CVO dipoles were hung at right angles to minimise coupling; one ran north-south, the other east-west. The beam was some fifty metres away from the end of one of the dipoles. The doublet was somewhere in the middle.

A total of 300 metres of coax were used to link the antennas to the shack. Checking the power loss in a 100m run of 'low loss' RG213 was most instructive; on 14MHz just 75W of the 100W drive was arriving at the antenna feedpoint: a 1.25dB loss equates to 25% of the RF power. On 28MHz the loss was 3dB, or to put it another way, 50% of the RF power was merely warming the coax. You read about this in the textbooks but it is only doing it 'in the field' that you see what it really means.

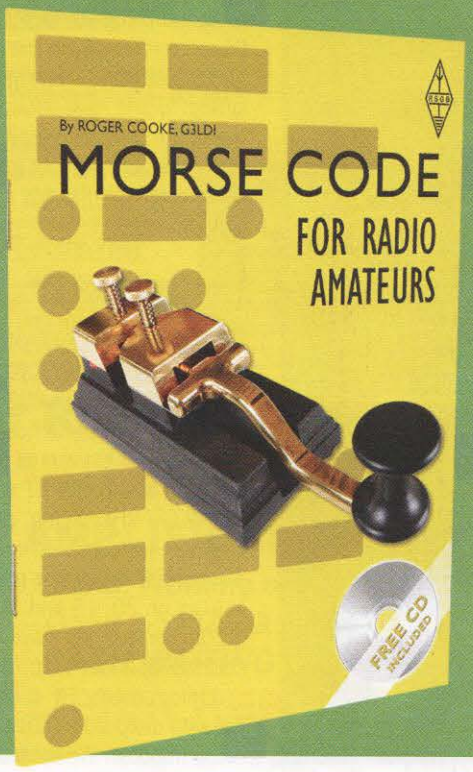
WHEN WAS THIS? Our activation was on Monday 22 April. We would have preferred a weekend but the demand for slots was pretty heavy in the South West and we all decided this would be good reason to take some time out of our busy day jobs for some relaxation, or a real work out, as it turned out! The weekday slot also meant we did not have to do battle with any contests.

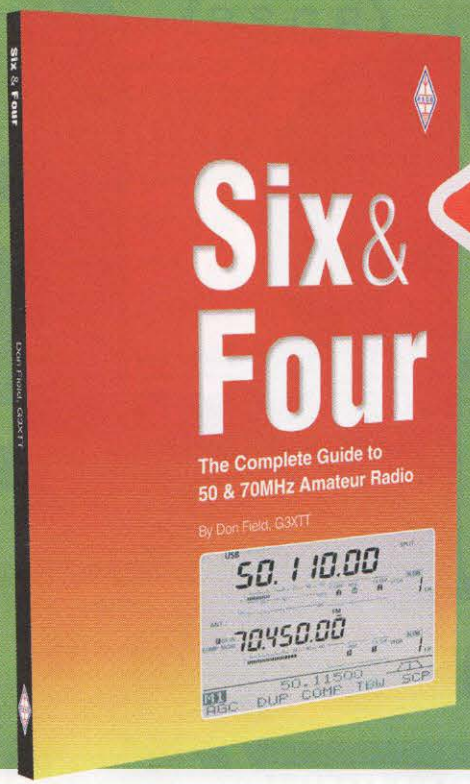
We committed to running for the full twenty four hours and invited some guests to help us out; more ex-students and exam invigilators from the Bath classes. In the end we had eleven different operators, some with only a handful of contacts to their name and others with considerably more experience. Everyone helped each other and everyone increased their QSO tally by the end of the day. Dan, M6DNB, had only one QSO to his name when he arrived. He watched the others then had a go on the mic under supervision; first station worked was in Japan, the second in Barbados!

RSGB shop

P&P FROM FREE

see page 76 for full details





NEW

E&OE All prices shown plus p&p

Morse Code for Radio Amateurs

11th Edition

By Roger Cooke, G3LDI

Morse Code for Radio Amateurs is the latest, updated and expanded 11th edition of the RSGB's book designed to show how to learn Morse code and get the maximum enjoyment from using it.

Morse Code for Radio Amateurs has always set the standard for books covering Morse code and this edition is no exception. Morse enthusiast Roger Cooke, G3LDI has expanded this edition to be 50% bigger than its predecessor. As you would expect this book covers the history of Morse but there is much more besides. There are sections that guide you through abbreviations and prosigns, getting started, using computers and how to increase your speed. There is even a chapter on keys that discusses the way to use a straight 'pump' as well as modern keys and paddles. The book also describes the latest learning techniques involving computers and provides a guide to operating in contests.

FREE CD:
Included with this book is a free dual mode audio/ computer CD. There is nearly an hour of Morse code audio recordings, providing the opportunity to learn Morse code in the car or at leisure by playing it in any regular CD player. The computer readable section also contains these audio files as MP3 files and a whole host of Morse software from learning to contesting, along with lots of bonus material.

Morse Code for Radio Amateurs is the essential guide to Morse Code and there is no better start for anyone wanting to add "code" to their skills.

Size 210x297mm, 208pages,
ISBN: 9781 9050 8692 4
Non Members' £8.99
RSGB Members' Price £7.64

Six & Four

The Complete Guide to 50 & 70MHz Amateur Radio

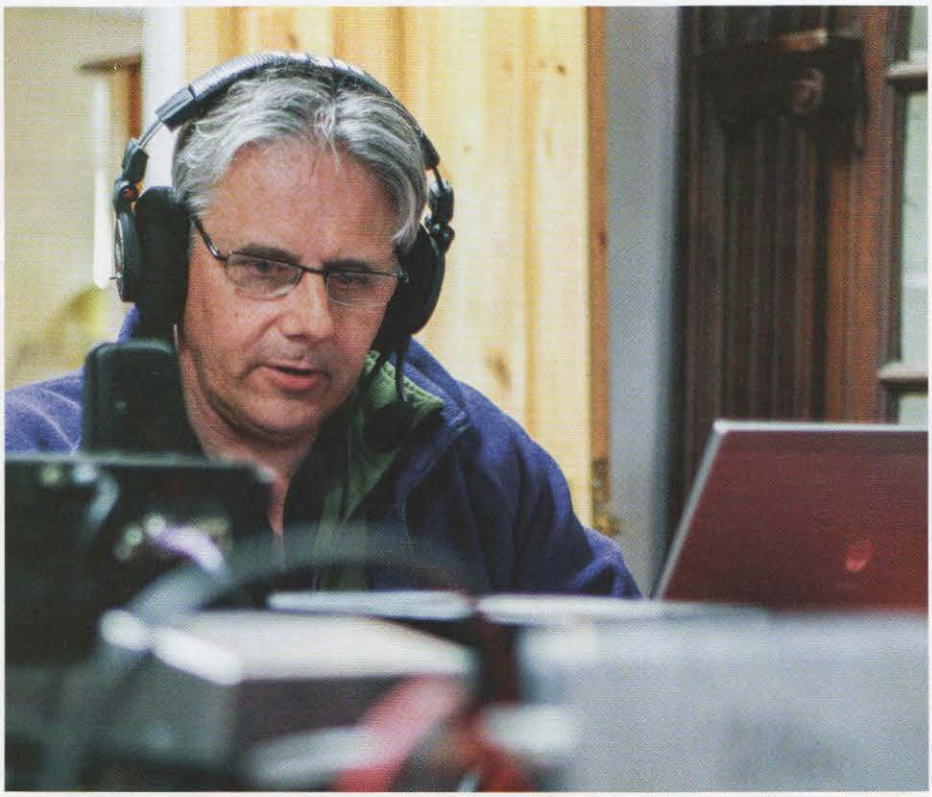
By Don Field, G3XTT

Six Metres (50MHz) – the 'Magic Band' – has always been 'different'. It sometimes behaves as an HF band, with world-wide propagation, but at other times acts more like a VHF band, enjoying the benefits of Sporadic - E, meteor scatter and other occasional propagation modes. Because it has so many facets, 6m is both a challenge and an enigma and it draws amateurs from both the VHF and HF worlds. Six & Four is the complete guide to this fascinating band and the similar Four Metre (70MHz) band.

Six & Four is based on the hugely popular 6 Metre Handbook, which is credited by some with doing much to popularise the 50MHz band. This book has moved on and is intended as a handbook for both the 6m and 4m bands. It includes a host of new material on the 4m band and the 6m material has been extensively rewritten to bring it fully up to date. There are details of the new equipment that has become available, especially by way of software-defined radios. There have also been some significant advances made in antenna design and EME ('moonbounce') activity has increased. There are new challenges, made possible by technological developments such as the WSJT and capabilities for remote operation have come on apace. And there are many ways to stay abreast of band openings and activity, through smart phones and other technologies. Six & Four covers all this and a lot besides.

Six & Four is essential reading for all radio amateurs, especially those who want to try something new and different. There's something for everyone, from the beginner who has never been on 6m or 4m, to those who might already have 200+ countries confirmed on 6m! Both bands are a lot of fun, as this book shows!

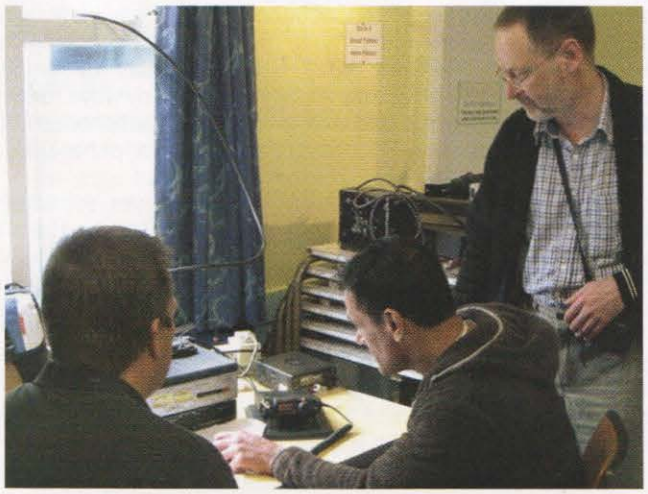
Size 210x297mm, 288pages,
ISBN: 9781 9050 8690 0
Non Members' £13.99
RSGB Members' Price £11.89



G0FUW working into the Middle East on 17m with one of the off-centre fed dipoles.

The UTC timing almost caught us out but the week before, Pam, our Regional Manager, confirmed that our time would begin and end at 0100 local time. It may have been spring, but it was mighty chilly in the wee small hours out there in the Wessex countryside.

WHY DID YOU DO IT? The main reason was rule one: to have some fun with radio. Wessex members are all RSGB members so there was also some degree element of contributing to the Society's Centenary celebrations and it was a jolly good excuse to get the club station together again. There are those that say clubs are not what they were but this one is definitely keeping the camaraderie and team spirit going in bucket loads. It may sound corny, but it is unbelievable what you can achieve by working together on a project like this.



Bromley and District Amateur Radio Society operate G100RSGB.

HOW DID IT GO? Rule one was achieved, big time! Everyone that contributed went home with increased interest and excitement for the hobby; Rob, M0TFO, operated for about five hours then went home and worked the station on no fewer than six bands. Philip, M0PHI, made his first contacts with Canada and China, used computer logging and operated commercial gear in anger for the first time. Jan, M1DHW, made his first contacts for over ten years and went home to get his rigs out of the loft, and some of us went without sleep for the longest periods in years. Simon, M0TTE could not stop smiling for days having worked around a hundred USA stations in the last hour of operation.

Scores on the doors? We had contacts on 80, 40, 30, 20, 15, 10 and 2m as well as 70cm. Most contacts were SSB but there were some Morse and a good number on PSK31. In just twenty four hours we worked 146 DXCC entities with 1,280 contacts across 6 continents. That maybe standard for the 'regular' contest groups but for us it was simply amazing.

ANY LESSONS? What could we have done better? Not a lot really. The bands went pretty quiet during the morning, 80m especially, but there is not a lot we could do about that. Getting the doublet higher would have helped and bandpass filters for 30, 17 and 12m would have allowed more flexibility (our filter set does not cover these bands because the filters are intended for contest work). Having a more formal 'shift' system would have allowed more sleep but whilst the core team were shattered at the end of the session, I do not think any would have volunteered to miss any more of the time than they did.

Steve Hartley, G0FUW

BROMLEY'S OPERATION. On 18 June, Bromley and District Amateur Radio Society were the first club in RSGB Region 9 – London & Thames Valley – to host the special station celebrating 100 years of the RSGB. We operated two 100W HF stations on SSB and a 150W 2m VHF station, on FM.

Antennas consisted of a doublet at 10m on 40m and 80m, with a trapped rotary dipole at 10m on 20, 15 and 10m. We also trialled a 20m vertical half wave. On 2m we used a collinear at about 12m.

Unfortunately, HF conditions were rather flat with deep slow QSB sometimes lasting 10 or 20 minutes. We tended to work 10 or more stations in relatively quick succession for say 5 or 6 minutes then nothing for a while. During the afternoon we did have some Sporadic-E into Germany on 10m. During our session of operating, we made QSOs mainly to UK and Europe with the Middle East, Asia and the Americas also appearing.

The day's log has been sent in for those looking to claim contacts for the Leaderboard, etc. It contains 195 QSOs, with 24 countries having been worked:

112 England
21 Germany
7 Netherlands
6 Scotland
5 Wales
5 Italy
5 European Russia
4 United States of America
4 Northern Ireland
3 Spain
3 Poland
3 France
2 Slovak Republic
2 Faroe Islands
2 Eire
2 Denmark
2 Asiatic Russia
1 Ukraine
1 Saudi Arabia
1 Morocco
1 Czech Republic
1 Brazil
1 Boznia Herzegovina
1 Austria

WEBSEARCH

Wessex Contest Group: www.mx0wcb.com
Bromley & DARS: www.bdars.org

Data

Self-organising networks and licence-exempt UHF data

FEEDBACK. After reading June's Data, John Nelson, G8KLA wrote in to say, "You comment about JT9 on any band above 1.8MHz and that operators are reporting their failings trying to use them generally at HF. Joe Taylor, K1JT has recently provided a beta version of WSJT-X where JT9 is an entirely new mode optimised for weak-signal communication on the LF, MF and HF bands. Note: *HF bands*. WSJT-X incorporates automatic reporting to PSK Reporter (pskreporter.info/pskmap.html) where it can be seen that JT9 reports are being made worldwide. I have provided a JT9 monitoring station for about two weeks and can see reports from Tasmania to South America. Seems to work very well. I thought you might be interested."

It will be interesting to see how slow narrow band modes generally hold up on the higher HF bands where spreading is prevalent. It would also appear that my comments about the use of WSPR at VHF created some dissent within the WSPR-Net community – presumably from those who had managed quite successfully to use WSPR at 50MHz and up. But, as I received no communications directly from them, and only heard about the comments on WSPR-Net by chance, I have no way of knowing what was being said.

WIRELESS LANS AND AMATEUR RADIO. The two Wi-Fi wireless networking frequency bands at 2.4 and 5.7GHz overlap the two amateur bands and there are several 'channels' that are common to both services. For some time amateurs have made use of this convenient overlap, modifying Wi-Fi equipment so it operates outside the 802.11 specification for WLANs, but inside the terms of the amateur licence. Now, a sort of semi-standard appears to have formed, generated mainly from within the USA, in an attempt to rationalise the use of WLAN equipment in this way and merge the data traffic with other amateur radio networking and digital communications.

It is referred to as 'High-Speed MultiMedia radio' (HSMM) and is described by the HSMM Organisation [1] as "... the implementation of wireless data networks over amateur radio frequencies using commercial off-the-shelf (COTS) hardware such as 802.11 access points and D-Star equipment. Licensed amateur radio operators may use amplifiers and specialised antennas to increase the power and coverage of the 802.11 signal. The idea behind this implementation is to use the various UHF and microwave

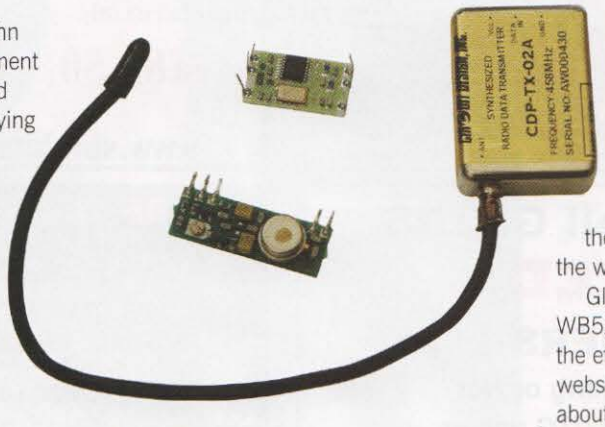


PHOTO 1: Typical low power UHF transmitters for the licence free bands of the type used in high altitude balloons.

amateur radio bands under the US Federal Communications Commission (FCC) Part 97 rules (amateur radio service) instead of the Part 15 rules (unlicensed). This enables amateur operators to legally use higher output power for wireless devices and allows for longer-range communications. Such communications can be used to assist in emergency communications and disaster relief operations and in everyday amateur radio communications.

"HSMM can support most of the traffic that the Internet currently does, including video chat, voice, instant messaging, the Web (HTTP), file transfer (FTP) and forums. The only differences being that with HSMM, such services are community instead of commercially implemented and it is mostly wireless. HSMM can even be connected to the internet and used for web surfing although, because of the FCC regulations on permitted content, this is done only when directly used for ham radio activities (Part 97). Using high gain antennas and amplifiers, reliable long-distance wireless links over many miles are possible and only limited by the radio horizon."

Hardware has now been developed and a description taken from [1] is: "HSMM-Mesh is a high speed, self discovering, self configuring, fault tolerant, wireless computer network that can run for days from a fully charged car battery, or indefinitely with the addition of a modest solar array or other supplemental power source. The focus is on emergency communications. In its current form it is built using the Linksys WRT54G/GL/GS wireless routers and operates on channels 1-6 of the 2.4GHz ISM band, which overlaps with the upper portion of the 13cm amateur radio band. Other platforms and bands are in development at this time. Next will be Ubiquiti equipment with others supported as development resources permit.

"Broadband-Hamnet is currently being designed, developed and deployed as an amateur radio broadband communications system. It originated in Austin, Texas but has spread all across the USA and many other countries around the world.

Glenn, KD5MFW, David, AD5OO, Bob, WB5AOH and Rick, NG5V are spearheading the efforts, while Jim, K5KTF keeps the website up and running to provide information about the project. There is a distributed development community with users in a number of areas of the USA and other continents."

BALLOONS AND RADIO LINKS. Many amateur balloonists fly high altitude balloons with radio telemetry transmitters sending GPS-derived coordinates and other environmental information. Since under the terms of the amateur licence airborne operation is not permitted, they make use of the licence free allocations at 433MHz or higher to radiate a few tens of milliwatts. Off the shelf transmitters such as those shown in **Photo 1** are frequently tweaked, or otherwise adjusted to give the lower frequency shift for RTTY or narrow frequency shift keying, suited to weak signal operation. Most balloonists now make use of a customised version of *FLDigi* [2] for decoding the often weak long distance signals, uploading the decoded data directly to a web server.

Balloon launches are widely advertised in advance and anyone with a 433MHz SSB receiver and a modest beam can usually track these flights to several hundred kilometres line of sight.

YOUR INPUT IS NEEDED. When writing this column, I am somewhat disappointed at the lack of input I receive from datacomms operators. There is a lot going on out there; you only have to listen or watch the LF to HF bands to hear the data traffic going on. But what are *you* doing? What is new? What works? What doesn't? Where's it going?

Can you send your reports and findings, please, to the e-mail address at the top of this page.

WEBSEARCH

[1] HSMM-MESH Organisation: www.hsmm-mesh.org
[2] Customised *FLDIGI*: www.w1hkj.com/downloads/fldigi/fldigi-3.21.72_setup.exe; user guide: www.ukhas.org.uk/guides:tracking_guide

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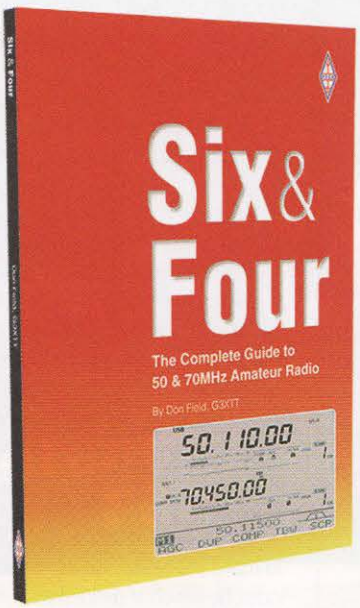
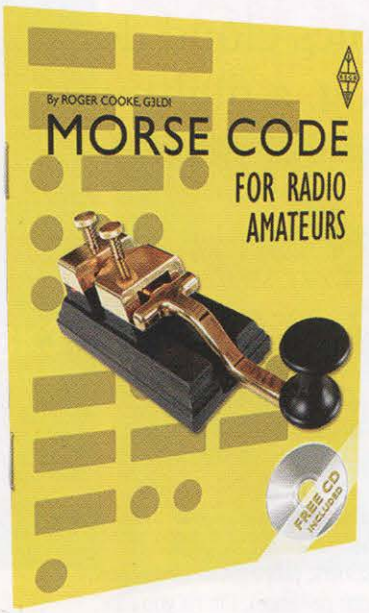
Book Review

Of Morse and Magic





Six and Four
By Don Field, G3XTT

Lots of people call 6m (50MHz) the 'magic band', where you get the best of both HF and VHF propagation. Many of the same techniques and effects also apply to the four metre (70MHz) band and indeed this book is based on the earlier *Six Metre Handbook*.

Opening with a review of the basic characteristics and history of six and four metres, the book continues with a description of the kinds of equipment that are available. Whilst 6m has been popular around the world for many decades – since WWII in the case of the USA – the band has only been on general release to UK amateurs since the late 1980s. On 4m the situation is reversed, with Brits having access since 1956 but other countries only recently catching up and no sign of the US joining in anytime soon. The net result is that there is quite a lot of 6m-capable equipment on the amateur market but 4m gear is scarce, DIY and/or expensive. Antennas are reported as less of a problem, with good quality designs readily available for both bands.

The real magic of 6m and 4m comes in the form of the propagation characteristics of the bands and this is where I felt the book really gets into its stride. Don's years of experience shine through as he explains the various normal and unusual propagation modes, where you can expect to work, when and how.

Operating, in both strong and weak signal modes, is very well covered – including such wierdies as one-way propagation that you can get when operating EME. There are chapters on general and weak-signal operating, portable / DX operating and contests / QSLing – in total, nearly half of the book is dedicated to such solid, practical advice about being on the air.

This book certainly lives up to its billing of the "complete guide to 50 and 70MHz amateur radio" and is well worth a place on anyone's bookshelf.

ISBN 9781 9050 8690 0
208 pages, 210 x 174mm
Non-Members' price £13.99
Members' price £11.89

Morse Code for Radio Amateurs
By Roger Cooke, G3LDI

Morse, or CW, is a venerable communication mode that has been in use since well before the birth of radio. Developed in 1835 by Samuel Morse and Alfred Vail, it is a human-readable digital mode that until the last couple of decades offered the most reliable method of communication in weak signal conditions. Despite losing this crown, CW remains beloved by many amateurs worldwide and can still be widely heard on the bands.

Morse does have the advantage that it can be sent using very simple equipment. This month's GHz Bands column describes how a 150km DX 'contest exchange' took place on a microwave band using a hand in front of the (low power) transmitter to interrupt and thus 'key' the signal.

Morse code for Radio Amateurs is, in part, a celebration of Morse's illustrious history but much more about how you can learn the code and enjoy using it. The book concentrates on telling you the stuff you need to know in order to learn Morse, for example discussing various well-established teaching methods such as Farnsworth, Koch and Candler, plus various computer-based options. The RSGB GB2CW Morse Scheme gets a mention, too, as a useful source of help, and I was fascinated to learn that there are software packages out there that will simulate a contest pileup.

There's advice on different general types of key and paddle – including a fascinating look at the number of keystrokes required for sending on straight, bug and paddle keys – plus a number of electronic keyers. Overall, this book is a treasure-trove of useful information related to Morse code and has a fresh and exciting feel – not bad for a book that was first published (under a slightly different title) in 1947 – and this 11th edition is 50% bigger than its predecessor. If you're interested in Morse, this book will be a great investment.

ISBN 9781 9050 8692 4
48 pages, 210 x 174mm
Non-Members' price £8.99
Members' price £7.64

Getting started with Tropo propagation

Sometimes cloud does have a silver lining... dense fog, a nightmare for motorists, but it can be good news for radio amateurs!

FIRST Es, NEXT... Here we are again and another season of Sporadic-E (Es) behind us. I hope you were persuaded to give it a try this year using the tips in my Getting Started in Es article back in May. It's all gone quiet now and I expect you're wondering where the next excitement on the VHF bands is going to come from?

INTRODUCTION. Well, I have the next one for you to try. Allow me to introduce you to Tropo, which is the shortened form of its full title, anomalous tropospheric propagation (also known as 'Anaprop' in radar parlance). I think you can see why it was shortened! It's the 'tropospheric' in the name that gives the game away. It happens in the troposphere, the lowest part of our atmosphere – the bit that contains the clouds and, obviously, our weather. We can zoom in closer and say that the Tropo mode takes place in the lowest part of the troposphere, say the bottom 1.5km closest to the surface, see **Figure 1.** It is this closeness to the Earth's surface that provides one of the main components needed to be able to predict Tropo, namely moisture. The involvement of the weather is in a completely different way to our summertime exotic mode, Sporadic-E.

WEATHER BASICS. Whereas Sporadic-E in the lower ionosphere partially involves weather, the Tropo mode is wholly dependent upon the weather and therefore we must now spend some time looking at how the weather can get involved

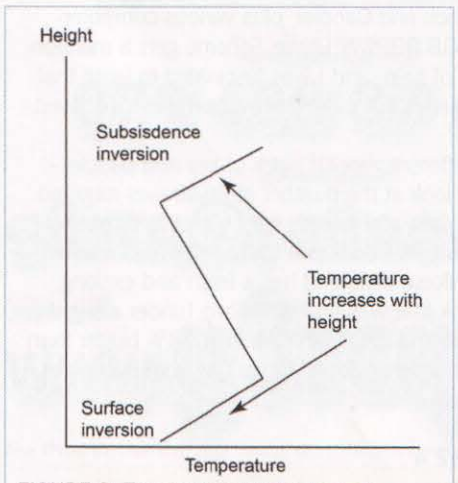


FIGURE 2: Temperature inversions can occur at different heights.

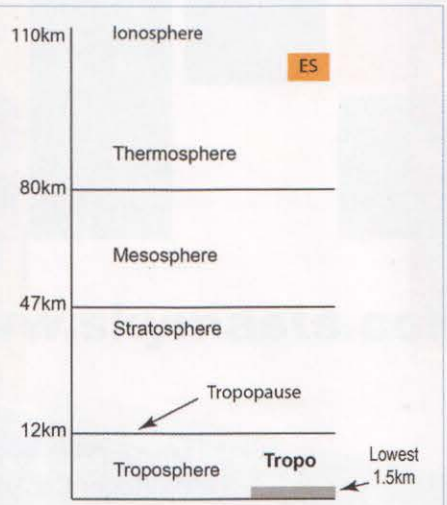


FIGURE 1: Tropo is found in the lowest part of the atmosphere.

in yet another propagation mode to produce what we amateurs call 'a bit of a lift on'.

REFRACTIVE INDEX. I imagine you are familiar with the notion that when you place a stick in water, it appears to bend. The reason is that light, an electromagnetic wave like your 2m signals, only moves at a constant speed in a vacuum, and its speed in the real world is affected by the medium it goes through. Light passing through air does not travel at the same speed through water and it is this difference along the interface, on the surface of the water, that causes the light rays to change direction and make the stick appear to bend. The amount the light beam bends depends upon the change in the refractive index between the two mediums.

We can do a bit more with this by looking at what determines the refractive index and note that since 2m or 23cm signals are also electromagnetic waves, then the same principles work for VHF/UHF radio signals as with light rays. The refractive index of air is calculated using readily available measurements contained in meteorological observations; the key items being Temperature (T), Pressure (P) and Moisture (M). Of course, the amount of moisture in the air is very small, but it is vitally important to our weather and, as it turns out, to causing changes in the refractive index. This moisture is held as an invisible gas called water vapour; it's not steam, but a gas like oxygen. Since we need to know this information through a depth of atmosphere, this task involves not just surface weather observations, but also those from the upper atmosphere. The measurement therefore gets more challenging, but it's not impossible because there are many balloon launched radiosonde instrument packages that go way past where we need to look. We can also use, in a predictive sense, output from the modern mathematical forecast models that show the same parameters into the future.

To summarise where we are; the refractive index (usually referred to as n) is given by:

n = [some function of] (T, P, M)

The more precise form of the equation reveals a very useful analysis option in that the calculations can be split into a dry part and a wet part containing the moisture term. This, we will see later, can be very useful in estimating the potential for Tropo events. The refractive index is very nearly 1, and small changes are very important in producing Tropo. The actual value might be 1.00035 and it is changes as small as 0.00002 that can make all the difference to a lift. To make life easier, we use a modified refractive index N, which is defined as $N = (n-1) \times 10^6$. Our value of n, above, now becomes N = 350 and changes of say 20 can make a big difference. If you want to have a go yourself, the equation is shown below, but be careful with the units.

$$N = (77.6 \times P)/T + (3.733 \times 10^5 \times e)/T^2$$

where
T = temperature in degrees Kelvin
P = pressure in mb
e = vapour pressure in mb

You will notice that the second term is the only part containing moisture (e) and this term (in blue) is called the WET term and the other, containing only references to pressure and temperature (in red), is called the DRY term. The actual refractive index is the sum and the equation now becomes N = WET + DRY

TEMPERATURE INVERSIONS. The next part of our exploration into weather concerns how contrasts in the refractive index occur naturally. The normal state of affairs is that the temperature decreases at a fixed rate as you move upwards (approx 3°C/1000ft). This is to be expected, since the source of heat for the air is actually the earth's surface that is warmed by the sun and then warms the air from below by conduction. Various processes then redistribute the heat through the atmosphere. The basic rule is that temperature usually decreases with height. Now, there are occasions when the air higher up is actually warmer and the temperature rises as you move upwards, see **Figure 2**. The height at which the temperature trend changes direction is a 'temperature inversion' in that it inverts the normal decrease of temperature with height. It is also important for another reason: it prevents vertical motion in the atmosphere at that level,

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RSGB Antenna File

The Radio Society of Great Britain (RSGB) has been promoting antenna experimentation for 100 years and publishing much of the work in its monthly journal. *RadCom* has therefore developed a reputation for producing some of the best material on antennas published anywhere. This book is a compilation of some of the best articles about antennas that have been published by the RSGB.

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The *RSGB Antenna File* reproduces the articles and is broken down into five logical sections. *HF Antennas* is the first and largest section, followed by a section covering *VHF, UHF and Microwave Antennas*. Readers will also find sections on *Feeders and Baluns* and *ATUs and Antenna Matching*. Also a section of the less easily defined antenna article called *Miscellaneous Antenna Articles*.

Size 210x297mm, 288pages
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RSGB Members' Price £12.74

RTTY & PSK31 for Radio Amateurs

By Roger Cooke, G3LDI

Data modes appear to be a daunting prospect to newly licensed radio amateurs, but they do not have to be. This book is a practical guide to the two most popular data modes, RTTY and PSK31.

This book is an expanded and fully updated 2nd edition of the popular *RTTY and PSK31 for Radio Amateurs*. At 50% bigger that the 1st edition, there is no better guide to these data modes. Readers will find details of where to find data modes on the amateur bands, through getting started, to making the most from both these modes.

RTTY is the oldest real Data mode and was first used on the amateur bands over 50 years ago. In those days it was a complex mode to use, with teleprinters and home made transmitters to modify. However, in the computer age, it is much easier to both use and set up.

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Computers In Amateur Radio

Edited by Steve White, G3ZVW

For most, the personal computer has become the essential tool to get jobs done quicker, easier, quieter and in less space than ever before. When radio amateurs connect a personal computer to a radio, then it takes the potential of both to another level. *Computers in Amateur Radio* provides a practical guide to what is possible for radio amateurs who wish to combine these two technologies.

This thoroughly revised and updated edition of *Computers in Amateur Radio* has been expanded to include new material on the phenomenal possibilities of Raspberry Pi and the wide variety of data modes now available. Chapters are dedicated to the computer modelling of antennas, propagation and even terrain for HF, Remote Operation, Software Defined Radio, APRS, SSTV and log keeping. A whole host of live Internet uses are also covered. There is even a chapter dedicated to the EMC of computers, with information on choosing systems and how to avoid - or deal with - the interference they can cause or suffer.

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This book is supplied with a CD packed with nearly 640MB of software.

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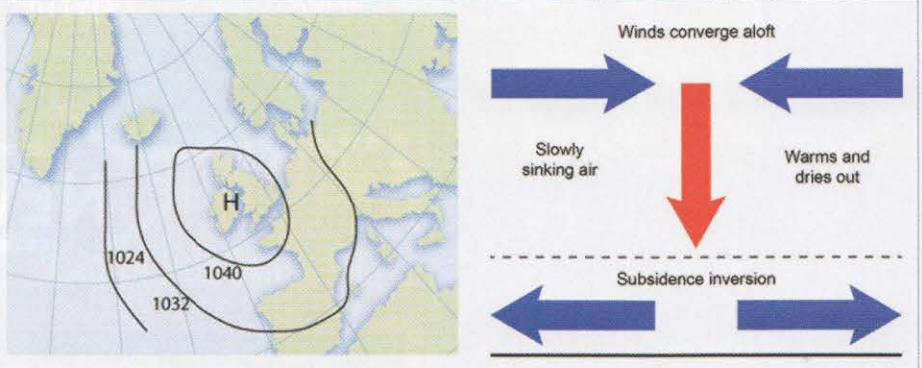

FIGURE 3: Subsidence inversions can produce widespread Tropo on VHF/UHF.

since rising convection currents or thermals find warmer air aloft and are therefore no longer buoyant and stop rising. Inversions are found at all sorts of heights in the troposphere and in the lower portion there are two important inversions for making Tropo. One is a surface inversion caused when the ground cools at night and the air above is warmer because air is a good insulator so it is affected less by the cold ground as you increase in height. Inversions are often dispersed very quickly after sunrise. The second and most important inversion for Tropo DXing is known as a subsidence inversion formed in regions of high pressure by slowly descending air, as shown in **Figure 3**. Pressure is highest at the surface so, as it descends, it is moving into higher pressure lower down and warms adiabatically, which just means all of its own, without adding external heat: it happens simply by increasing the pressure.

Other elevated temperature inversions are available, for example because of warmer air being blown in from another direction as weather fronts approach. Another can be found at the very top of the troposphere where the absorption of UV radiation by the ozone layer forms a warmer layer in the stratosphere. This sets the upper limit of rising air, called the tropopause, keeping the weather below it. You can spot inversions easily because they are usually marked by a tendency for cloud to become layered or spread out. In the lowest part of the atmosphere that we're interested in, inversions can be found at the top of a fog layer in a valley or where smoke from a chimney suddenly turns at right angles and goes sideways (**Figure 4**). Remember that each inversion forms a boundary where your VHF/UHF signals can become refracted or ducted as if in a waveguide over long distances.

MAKING THE 'LIFT'. The toolkit now contains temperature inversions and the refractive index of air that varies with temperature, pressure and moisture. The temperature inversions are the key to this process, since they can trap cool moist air near the surface, overlain by warmer drier air aloft, which maybe results from that nearby area of high pressure. The ideal situation is one whereby the high has been around for a while, since this allows time for the subsidence inversion to strengthen and sink closer to the surface.

At the base of the inversion, the point at which the temperature starts to rise with height, there can be dramatic contrasts in the refractive index. Over the short height interval across the inversion there is little change in pressure, but there can be a noticeable change of temperature and most important, a very marked change in moisture that is shown by the dew point trace of a typical opening, **Figure 5**.The moisture change (the spacing between the temp and dew point curve) has the biggest impact upon the refractive index. This is why it is very often the addition of moisture, as evidenced by fog or low cloud under the inversion, which turns an average high into a Tropo producing one.

The normal state of the lower atmosphere, with its background levels of moisture, causes the signal to bend a little anyway and means that the earth's radius appears to be larger (usually taken as 4/3) when plotting line of sight paths, which is really what VHF/UHF is all about... or is it?

For the normal atmosphere the change in dry air is about -40N/km, it's negative because N decreases with increasing height. Now, if the change in our modified refractive index across the inversion is more than -157N units/km in the vertical, then the radio wave experiences bending and, instead of being lost to space, will be bent back towards the ground or even become trapped in a duct. This allows your 2m signals to travel very large distances (way beyond line of sight) and, because the high pressure systems are usually slow moving, a 'lift' can last a very long time, sometimes days even. This is totally different from the fleeting Sporadic-E propagation and requires different operating techniques.

The graph in **Figure 6** shows the contribution of moisture to a typical lift in that the bulk of the total change in refractive index across the inversion is almost entirely due to the effect of the moisture contrast, which alone exceeded the -157N/km threshold. It turns out that the temperature change of the inversion is not very important of itself, but the temperature inversion does impose stability on the atmosphere, trapping the moist air near the surface and enhancing the contrast with the dry air above the inversion.

A major event, often driven by a large slow-moving area of high pressure, has plenty of time to develop a strong temperature inversion, which slowly sinks with time. This can build a marked contrast of moisture across the inversion and hence a very strong change in refractive index. The useful period of enhancement may last for several days and is only broken when low pressure arrives, increasing the wind and breaking the inversion by mixing the air, and the final curtain will often be a cold front moving in from the Atlantic.

GETTING THE DATA. A lot of data and forecast charts are available on the web to help you keep on track during the lift. William Hepburn's Ducting Forecast Maps site [1] shows the output of one of the weather forecast models in terms of refractive index gradients. The output is regional and can be selected for Europe to show the broadscale areas of enhanced conditions and I leave it you to relate these patterns to the surface weather charts from the Met Office, for example. You will soon build up a knowledge of where on the typical TV weather maps you should expect to find VHF/UHF DX paths.

As with the Sporadic-E charts of Gabriel Sampol, EA6VQ [2] mentioned in the previous

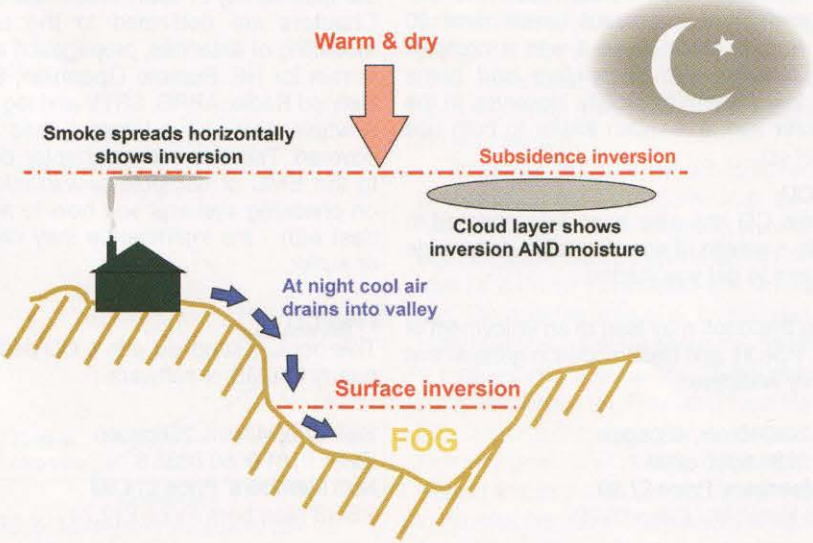

FIGURE 4: You'll soon learn the visible signs of inversions.

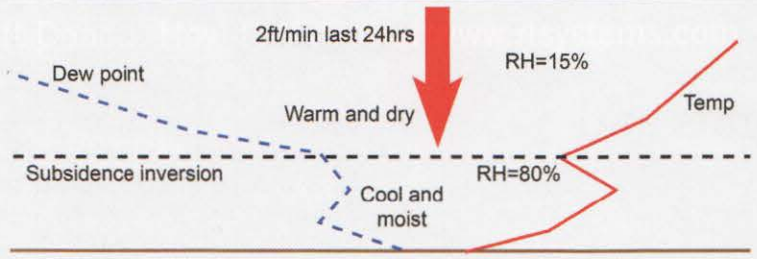

FIGURE 5: Typical temperature and dew point change across an inversion shown in radio sonde measurements.

article, they also detail recent Tropo activity and will soon highlight any preferred paths. This is particularly useful in that Tropo is quite often a long lasting enhancement, so the path information is a very good predictor of where to turn the beam.

Lastly, I will mention a piece of software, RAOB [3], which is used in the meteorological community to plot the results of a radiosonde balloon ascent. This is not the place to go into detail about the plots as such, but the program does give helpful listings of atmospheric parameters at various heights as the balloon rises and, lucky for us, includes the refractive index in N units and the heights of significant inversions. You can then plot your own profiles and see if the height of the inversion is lowering since the previous balloon ascent 12 hours ago, or maybe compile a cross-section of sites across Europe to explore the extent of the opening. Another useful technique is to look at a succession of plots for the same station to reveal any time changes in the inversion height or strength.

OPERATING GUIDE. Now that you know the main ingredients of Tropo, we can work up some operating rules that I hope will fill in some of those missing squares that are too close for the summer Es to provide.

WEATHER TIPS

A Check the weather charts for signs of high pressure: they are needed to make the subsidence inversion.

B Avoid beaming right across the centre of the high because the inversion may be too low and your signals will be ducted into the ground. Try around the edge.

C Do not go too near the neighbouring low, since the isobars are closer together and the stronger winds will destroy the inversion.

D Look for signs of moisture near the ground, like misty low cloud or fog patches. This is linked to the old wisdom that the lift comes when the pressure starts to fall after a period of high pressure. Usually the high would move away to the east and this would allow moister air from Biscay to move in under the inversion, **Figure 7**.

E Sometimes smaller transient highs form between moving lows, but these are not very effective since they will not have had time to develop a strong inversion.

F Occasional quirky lifts can occur parallel to, and just to the rear of a cold front.

G A summer sea breeze can introduce low level moisture under an inversion. Paths across the Channel or North Sea are often enhanced during the summer when hot dry continental air drifts out across a cool sea surface. Moving up and down the cliff path can sometimes find you a 'sweet spot' where you are coupled into a duct. I know of VHF operators in the valleys of South Wales who have poor take off, suddenly being coupled into a 'Tropo waveguide' as a sea breeze floods up the valley from the coast. This can bring an impressive lift across Biscay as far as northern Spain or even the Canaries!

H Fronts are regions of rising air and destroy subsidence inversions. Usually a cold front will bring an end to a prolonged opening.

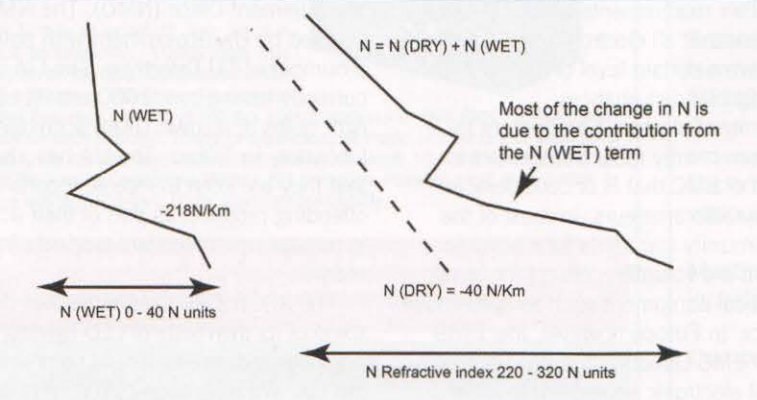

FIGURE 6: The major contribution to change in refractive index come from moisture change across an inversion.

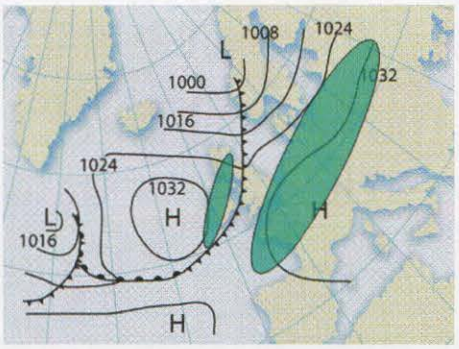

FIGURE 7: The weather chart will show you where to look for Tropo.

RADIO TIPS

A Higher frequencies are best: 23cm and 70cm are enhanced more than 2m.

B Lift often stronger overnight and around dawn when nocturnal surface cooling inversion is stronger. If you're on the early shift for VHF NFD, then make use of the dawn lift before the next day's sunshine erodes it. (Then get ready for Es later!)

C Distances can be as long as the length scale of large highs, say up to 1500km. This means Tropo paths can take you into southern Scandinavia and the Baltic or down to Spain.

D Don't rush it. The high will probably last for some time until the weather pattern changes.

E Fancy a challenge? The Brendan Trophy is awarded by the IRTS for a transatlantic QSO on 2m and requires a rare combination of high pressure areas across the whole Atlantic. This is more likely to be composed of two separate highs with a weak cold front between them, rather than one huge high covering the whole distance (never seen it in my 45 years as a meteorologist!). Good luck with that one...

F If you get into a Tropo opening, don't be tempted to head for the highest hill in normal VHF SOTA fashion. If you have climbed above the haze or fog/cloud layer you will be above the inversion and out of the game!

G Use simplex and try SSB and CW. Repeaters get to be very difficult in major lifts and after all you are only getting into the same local receiver, so push the station limits and get a directional antenna. Also make sure to tune carefully: if your digital rig is set to 12.5kHz steps for FM channels, then you'll miss most of it if you don't use continuous tuning or very small increments when on CW or SSB.

H Most DXing at VHF/UHF is done using beams and horizontal polarisation.

There we have it, a winter of 'fine-business' operating using what can seem like quiet bands. Let's get some activity down the band in the CW and SSB sections: you may be amazed at how much the weather can help!

WEBSEARCH

[1] www.dxinfocentre.com/tropo_nwe.html
[2] www.dxmaps.com
[3] www.raob.com'

EMC

100 years of EMC, LED lights and wireless power transfer

100 YEARS OF EMC. 2013 not only marks the centenary of the Society but other significant events in the history of radio communication. The 'Audion' or triode valve was invented in 1906 and its capability as an amplifier was discovered in 1912. Then, in 1913, Edwin Armstrong developed the regenerative receiver and also discovered that the triode can oscillate. These were major advances in the design of radio transmitters that allowed 'continuous wave' coherent carriers to be generated rather than spark transmission. They also allowed transmission of sound by amplitude modulation. Radio receivers with triode amplifiers had much greater sensitivity than crystal sets and they also allowed the use of a loudspeaker rather than headphones.

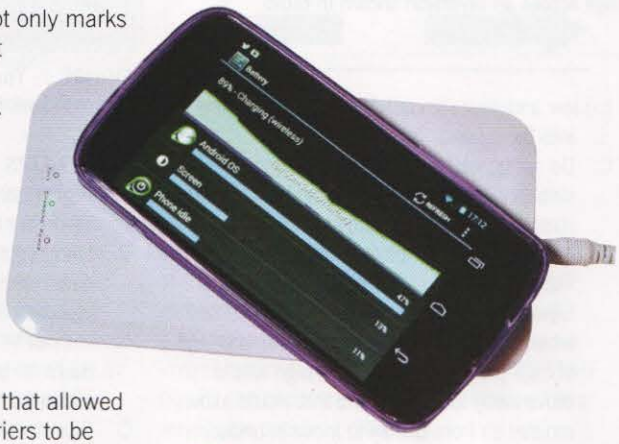

PHOTO 1: Wireless (inductive) charging of a smartphone using a Qi-compliant charger.

With the advent of more sensitive radio receivers followed by the start of radio broadcasting, the need to regulate radio interference became more apparent. Sources of interference included electrical machinery, high voltage power lines, trams, trolley buses and electric railways plus equipment used for medical and industrial purposes. There was also a need to measure such interference, to define standards and to set interference limits.

In the 1920s, many papers on RFI were published and the BBC was established in 1922. Interference from vehicle ignition systems was studied in 1923. In 1924, the German VDE association formed a High-Frequency Committee. In 1928, they published VDE 0759 on construction and test of RF medical equipment, which was a potential source of RFI.

In 1933, informal discussions in Paris led to the formation of a Joint Committee of the International Electrotechnical Committee (IEC) and the Union Internationale de Radiotéléphonie (UIR, International Sound Broadcasting Union). This was called the Comité International Spécial des Perturbations Radioélectriques (CISPR). It started in 1934 with representatives of six national committees of the IEC (Belgium, The Netherlands, Luxembourg, France, Germany and UK).

In the 1930s, joint committees of the Institution of Electrical Engineers (IEE, now IET) and the British Standards Institution (BSI) did much technical and experimental work up to 1939. After WWII in 1946, work by CISPR restarted and additional representatives joined from the USA, Canada and Japan. CISPR publications form the basis of most EMC standards that we have today.

In the UK, the first UK Statutory Instrument (SI) on control of ignition interference from motor vehicles was introduced in 1952. Other UK SIs followed covering household appliances and electro-medical equipment. With the advent of home and office computers in the 1980s, the UK lagged behind other countries such as the USA and Germany. There was no requirement to meet UK standards for RF emissions from home computers until the European EMC Directive 89/336/EEC was implemented in UK as The Electromagnetic Compatibility Regulations 1992. These came into force in 1996 and introduced various other requirements including the requirement that all electronic equipment should have a certain level of immunity to electromagnetic disturbances.

Immunity of electronic equipment to signals from nearby radio transmitters is an aspect of EMC that is of considerable interest to radio amateurs. In most of the world, immunity standards for electronic equipment are voluntary, except for certain safety-critical equipment such as automotive electronics. In Europe however, the 1989 European EMC Directive and its successors require all electronic equipment to meet certain Essential Requirements that include both emissions and immunity. Although the field strengths specified in some of the immunity standards are relatively modest, there appears to have been a substantial improvement in immunity of electronic equipment since 1996.

Nowadays, the RSGB EMC Committee sees far fewer cases of electronic equipment that is 'wide open' to the slightest 'sniff' of RF from a nearby transmitter. Where such cases do occur, it may be due to the equipment in question not complying with the relevant RF immunity standards.

Emissions are another story however. Although the generic emission standards haven't changed, the limits were always too high to protect weak signal reception and nowadays there is far more equipment that is emitting. This includes switch mode power supplies in almost every piece of electronic equipment and almost every charger for a mobile phone, laptop PC, etc. There has also been the well publicised matter of attempts to relax EMC emission standards for the benefit of power line telecommunications (PLT). Then new developments such as solar PV and LED lighting have resulted in yet more switch mode power supplies.

After about 100 years since the need for EMC regulations first started to become apparent, we have a comprehensive range of regulations and standards but these are only effective if there is sufficient enforcement to ensure that electronic products actually comply with the regulations. Although most do, it can be seen elsewhere in this column that there are some notable exceptions, particularly with LED lighting.

LED LAMP INTERFERENCE. Lighting Industry Association (LIA) is the UK trade association for lighting and lamp suppliers / manufacturers. According to a recent discussion thread on Which? Conversation, the LIA is aware of reports of interference of LED lamps with DAB radio and some TV signals. They are also aware of an increasing number of cheap imports that fail to comply with the regulations.

The LIA has started a market surveillance project in conjunction with the National Measurement Office (NMO). The NMO is charged by UK Government with policing a number of EU Directives. The LIA is currently testing over 1000 retrofit LED light bulbs at its own UKAS accredited test laboratory in Telford. The LIA has also stated that they are keen to receive reports of offending products as part of their activities to remove non-compliant products from the market.

The RSGB EMC Committee has done some of its own tests of LED lighting products and results should be of interest to the LIA. We have seen LED drivers that are 30 – 40dB over the applicable conducted emission limit in the frequency range 150kHz – 500kHz and are also significantly

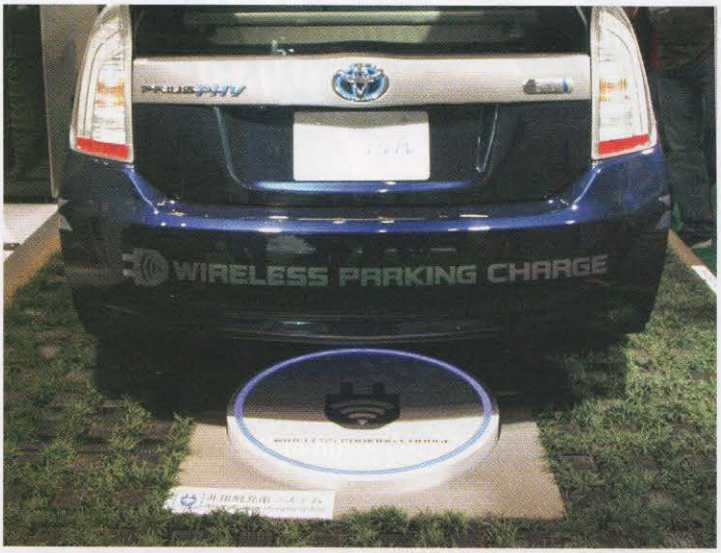

PHOTO 2: Demonstration of wireless charging during parking, at the Tokyo Motor Show 2011. (Image: Wikimedia Commons / NJo).

over the limit at various frequencies in the HF bands up to 30MHz. The main reason for this is a complete lack of RFI filtering components on the mains input and no space on the PCB for such components to be fitted.

WIRELESS POWER TRANSFER. The idea of charging a rechargeable product without a direct wired connection started some years ago with some electric toothbrushes. The base unit contains the primary winding of a mains transformer and the toothbrush contains the secondary. Each half of the transformer has iron laminations, it operates at 50Hz and it does not cause any radio interference.

The next step has been to apply a similar inductive charging principle to recharging products such as mobile phones. To reduce the size and weight of the transformer it is driven at frequencies up to about 200kHz in some cases or several MHz in other cases. These systems that operate in the LF, MF or HF bands use transformers with resonant windings.

There is also some data communication between the charger and the device being charged, to regulate the power transfer. One interface standard for inductive charging is the 'Qi' standard, pronounced 'Chee'. This standard has been developed by the Wireless Power Consortium (WPC) for inductive electrical power transfer over distances of up to 40mm, although 5mm would be usual in practice.

A typical chip set for WPC compliant inductive charging uses a switching frequency between 110 and 205kHz. The frequency changes according to the amount of power required by the device that is being charged. That would allow it to track across part of the Long Wave broadcast band including 198kHz so it doesn't sound very EMC friendly to LW broadcasting in Europe. In the US and Japan however, where most wireless power standards were developed, EMC standards are different as there is no AM broadcasting below 500kHz.

Various portable devices such as smart phones and tablet computers have become available recently with integrated wireless charging using the Qi standard and other standards. See for example **Photo 1**. The original Qi specification is for 'low power' inductive charging up to 5W. A medium power specification is under development for powers up to 120W. In March 2013, WPC published a 'white paper' about cordless kitchen appliances from 100W to 2.4kW. These could include cooking appliances such as pots and pans to be used on worktops or induction cooktops that have inductive power sources integrated.

Other inductive charging standards also exist including Alliance for Wireless Power (see Websearch), which uses a frequency of 6.78MHz in an Industrial Scientific and Medical (ISM) band. That is the sort of thing that ISM bands are intended for so it should be reasonably compatible with HF radio communications provided the levels of harmonics are low enough.

Another standard is Witricity, which originated at MIT (see web search). Initial demonstrations powered a 60W light bulb using inductive coupling between two 600mm diameter copper coils, each with five turns. A separation of 2 metres was achieved with a claimed efficiency of 45% efficiency – but efficiency could be improved significantly by using a smaller separation. For the initial demonstrations, a frequency of 9.9MHz was used, but this is not in an ISM band.

Another inductive charging system is defined by the Power Matters Alliance (PMA) (see Websearch). The Duracell Powermat is an example of a PMA compliant product.

ELECTRIC VEHICLE INDUCTIVE CHARGING. 'Park and charge' inductive charging systems for electric cars have been demonstrated, see for example **Photo 2**. Another inductive wireless charging system for electric vehicles has been developed by Witricity. It can deliver an output power of 300W to 3.3kW DC to the vehicle with a separation distance of 10 – 20cm, which is compatible with typical vehicle ground clearances. The nominal operating frequency is 145kHz.

A further development has been inductive charging of electric buses. A 12km (7.5 mile) section of road in South Korea has been equipped with inductive charging equipment. Electric vehicles including buses that are fitted with compatible equipment can recharge without stopping as they drive over it. They can also be fitted with smaller than normal batteries.

The system is reported to operate at a frequency of 20kHz and can transfer a power of 100kW to an electric vehicle with up to 85% transmission efficiency. Wireless charging equipment has also been installed at some bus stops in Torino, Italy and Utrecht, the Netherlands. A similar scheme has been announced for Milton Keynes in autumn 2013.

EMC STANDARDS FOR INDUCTIVE CHARGING. Some small inductive charging systems claim compliance with EN55022 and EN55011 standards. The latter includes a test for magnetic field emissions from 9kHz to 30MHz, measured using a 'Van Veen' Loop. There are moves to simplify testing by using just EN55022, which only measures conducted emissions on the mains cable below 30MHz. This standard is for Information Technology Equipment (ITE) and it was not designed for something that drives several watts of power into what is effectively a small magnetic loop antenna.

For larger inductive charging systems, particularly for electric vehicles, the prospect of driving 100kW at 20kHz into the primary of a leaky transformer raises questions. What happens to the 15kW that isn't transferred to the batteries in the bus? Much of this would be dissipated in resistive losses or eddy current losses but what about radiated magnetic fields and harmonics of the operating frequency? How low will the harmonics be in amateur bands, particularly 1.8MHz and 3.5MHz? Needless to say, the RSGB EMC Committee is keeping a close eye on inductive charging systems both large and small. We would also be interested to receive any reports of RF interference generated by such systems.

WEBSEARCH

Wireless Power Consortium: www.wirelesspowerconsortium.com/
Alliance for Wireless Power: www.a4wp.org/
Witricity Corp: www.witricity.com/
Powermatters Alliance: www.powermatters.org/
BBC News Item, South Korean road wirelessly recharges OLEV buses: www.bbc.co.uk/news/technology-23603751

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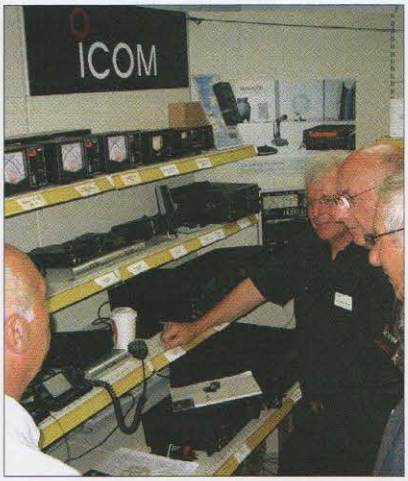
73 Martin G4HKS



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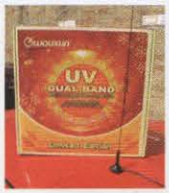

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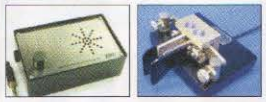

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QRP

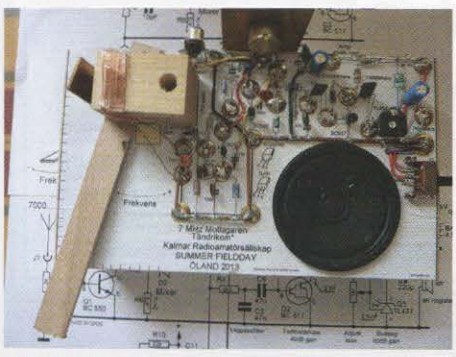
DIY amateur radio thrives

SIMPLE PROJECTS. It has been my pleasure to edit the G QRP Club journal *SPRAT* for some 40 years. 'Edit" is perhaps too fancy for what I do; I guess I just compile it. Articles are submitted by members and apart from a little fiddling with spelling and perhaps grammar and a CAD drawing or two where required, the articles appear much as they are sent. *SPRAT* is an ideas exchange medium and certainly not a Learned Journal. The only claim made for the efficacy of the articles is 'someone built this once and it worked'. This flimsy assurance has brought forth a goldmine of ideas, circuits and projects over the years as the club DVD of every copy of *SPRAT* testifies. Many of the projects are simple but well suited to the kitchen table tinkerer or shed boffin. Receiving a constant supply of material like this for 40 years has been a source of great pleasure and the pleasure continues.

The Chopping Board Receiver by Peter, VK3YE.

For some years, the G QRP Club has run an annual competition for the W1FB Trophy. Doug DeMaw, W1FB was the doyen of amateur radio construction. He was the Technical Editor of *QST* magazine; the American equivalent of *RadCom*. His lucid practical articles brought me out of the world of valves into my first solid state projects. This year the challenge was to design and built a simple receiver, for one or two bands, capable of being built by a beginner. Entries were a little slow but then I received three in a week. These began with the Chopping Board Receiver from Peter Parker, VK3YE. The whole receiver, for 80 and 40 metres, including a spiderweb wound coil, is contained on a plastic kitchen chopping board (Ikea supply the main part!). The receiver has only 3 transistors but sufficient output to driver high or low impedance phones. The VK3YE receiver appeared in *SPRAT* 155 for summer 2013.

Then, very shortly after the Chopping Board Receiver, I received the Mouse Trap Receiver from Johnny Apell, SM7UCZ. Johnny is an avid constructor and a frequent contributor to *SPRAT*. Over the years he has become known for his novel circuit ideas and this is no exception and comes with a story worth telling. Each year Johnny helps to organise an informal field day at the end of June for a group of amateurs along the Baltic coast of Sweden. This includes practical projects to build, outdoor HF band stations and a lot of eating. This year they were joined by Dom Baines, M1KTA; the G QRP Club Communications Manager. The event was held at a campsite on the Baltic island of Oland. Johnny brought along kits of parts for a basic low power transmitter and a rather novel direct conversion receiver for 40 metres.



The Field Day Radio a DCR for 40m.

The Mouse Trap Receiver by Johnny, SM7UCZ.

The Field Day Radio is based upon the RA3AAE mixer/doubler circuit; a delightful little circuit in which two back to back diodes act as both mixer and frequency doubler. This means that a variable frequency oscillator for 80 metres is used for a 40 metre receiver; maintaining frequency stability at half the required frequency makes the task easier. As is usual in direct conversion receivers, the overall gain of the receiver occurs mainly in the audio stages. Johnny used a Darlington Pair transistor (40dB gain) after the mixer and an unusual audio output stage based on the TL431 adjustable shunt regulator (60dB gain).

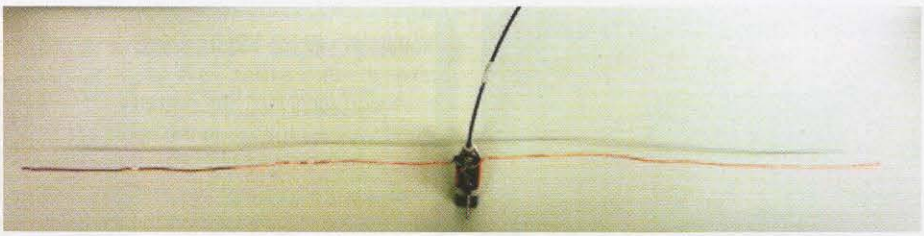
The tuning control is equally unusual and based on an idea by PA2OHH. Onno, PA2OHH, is a Dutch radio amateur who lists his interests as 'simple homemade QRP equipment'. The receiver requires a VFO that will tune from 3.50 to 3.60MHz and a Colpitts circuit was used with permeability tuning. This is a method of adjusting the frequency of a tuned circuit by adjusting the value of the inductance rather than the capacitance. This is commonly done by moving a metal core in and out of the inductor coil. The photograph shows how this was achieved in the field day radio by mounting a piece of brass on a wooden swinging arm. As the arm is moved in relation to the coil (wound on a wooden former) the change in inductance alters the frequency of the oscillator. Moving the brass towards the coil increases the frequency; and vice-versa. The result is a stable oscillator with controllable frequency variation at very low cost. Despite its simplicity, the radio works surprisingly well on 40 metres.

Johnny wished to use the field day radio as an entry for the W1FB competition but decided to amend it a little for the purpose. The result was the Mouse Trap Radio. This was identical to the Field Day Radio except for the arrangement for permeability tuning. The tuning coil was wound on a section cut from a broom handle. The end was decorated to look like a mouse. The frequency control was achieved using a single turn link designed to look like a mousetrap that moved over the mouse-like coil. Once again this gave reasonable control over the range from 3.5 to 3.6MHz. So another novel, but buildable, project is published in *SPRAT*. Details of the G QRP Club may be had from www.gqrp.com.

DON'T FORGET. Don't forget that the G QRP Club Convention (in conjunction with the Halifax Radio Society) will be held at the Rishworth School in Ripponden, West Yorkshire HX6 4QA on Saturday 20 October. It opens at 10am and has all the usual annual attractions. Further details at www.gqrp.com.

LF

Old band re-born

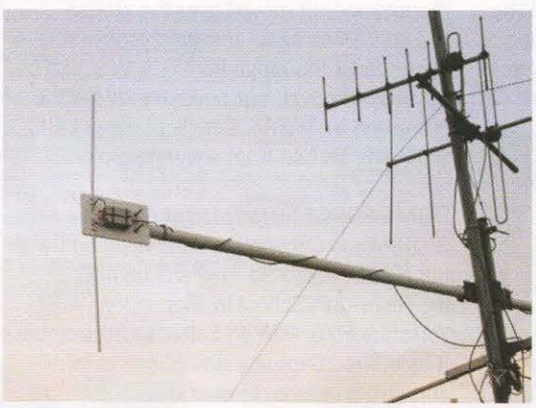


DK7FC's PP3 powered preamp and optical TX.

73 TO 73. Back in the mid-nineties, the RSGB helped a group of keen LF experimenters to get an experimental LF band allocated by NoV. At the time it was anticipated that the 136kHz band would soon be internationally sanctioned, but in the interim they were allowed to use 71.6 to 74.4kHz. The 136kHz band arrived in 1998 and the '73kHz' band NOVs were set to expire in 2000. After some gentle lobbying we were allowed to continue until 2003. Since then it has been quiet.

UNTIL... On 3 August 2013, a group of US amateurs received a special experimental licence to operate on 68 to 76kHz with 10W ERP using any mode they like including SSB. The '73kHz' band was reborn!

Like the other American 'Part 5' special authorisations (for 136 and 500kHz), all stations will use the same callsign, each with a different numerical suffix. In this case the call is WG2XRS and the usual suspects are involved. 'XRS/1 is Warren, K2ORS, /2 is Jay, W1VD, /3 is John, W1TAG, /4 is Bob, W2ZM and /5 is allocated to Dex, W4DEX. As in the early days in the UK, some are using QRO audio amplifiers to produce a few hundred watts on 73kHz and others are constructing large Class D transmitters or modifying old Decca PAs. So far quite a few transmissions have been made but no signals have yet been copied on this side of the Atlantic. It should certainly be possible to receive them once they get up to a watt of ERP because 10 years ago the late G3AQC used to be regularly copied over there on 73kHz. The next few months should be interesting. Keep an eye on 72.4kHz QRS where most transmissions are currently taking place.



JF1DMQ's active dipole mounted on his tower.

BELGIUM ON 472kHz. From 14 August, all full licence holders in Belgium have access to the 472kHz band with 5W ERP on a secondary basis. There are no restrictions on modes that they can use. Rik, ON7YD went straight into the shack on receiving the news, only to be greeted by a bang and a puff of smoke after one minute of transmission. He'll be back on soon when the damage is fixed.

CANADA TO GET 472kHz. Industry Canada, the telecoms regulator for Canada, has recently published some proposed revisions to the Canadian table of frequency allocations. One of the additions is the 472kHz band for the amateur service. Let's hope the Canadian authorities are faster than the French in implementing this!

Whilst on the subject of MF permits, Lubos, OK2BVG reports that his special permit to operate on the band has been renewed for another year.

NOVEL AERIAL DESIGN. Stefan, DK7FC has been experimenting with an active receiving aerial that uses an optical fibre to send the LF/MF signal back to the receiver. The advantage of this is that there is no copper connection between the two, therefore no noise currents can be coupled from the receiving location back to the aerial. It also enables a balanced aerial, with no reference to earth, to be built.

So far there is a shortage of gain for the completely floating design, but the basic idea of using fibre-optic cable to bring the signal in the shack is working well. Stefan is using an SFH-750V optical transmitter with a FET preamp, powered by a PP3 battery at the aerial end, and an SFH-350V optical receiver into a FET buffer at the receiver end. The optical cable is standard 'TOS-Link' type used for digital audio interconnections.

Hideo, JF1DMQ has also been experimenting with short active dipoles. His has two 0.5m rods connected to the inputs of an AD8429 instrumentation opamp. The signal is fed back to the receiver over coax that is very well decoupled by earthing it at the tower base, winding it around a large toroid as a common mode choke and then earthing it again at the shack end. This system appears to give pretty good isolation and allows the opamp to be powered from the shack down the coax.

I remember Datong selling a small active dipole aerial many years ago but I don't know what its performance was like on LF.

136kHz TRANSATLANTIC. On 136kHz the summer transatlantic propagation is working as well as it has in previous years. The fact that it is supposed to be the peak of the sunspot cycle doesn't seem to be having any detrimental effect. DF6NM and DK7FC have both been copied regularly on the east coast of the USA and VO1NA has been copied over here. Not many signals from the USA recently, but I think most of the usual 136kHz operators over there have been concentrating on getting their 73kHz stations up and running!

FIRST ARGENTINA TO VENEZUELA ON LF. Oscar, LU1DOW's QRS30 signal was received by Martin, YV7MAE in early August. The distance is 5106km and the signal path crosses the equator. Oscar is one of a small group of Argentinians who have been putting a great deal of effort into a beacon project on 136kHz. You can read the fascinating story on the web at www.proyectobeacon136.com.ar. You may need to use a translation service if you can't read Spanish.

LIGHTHOUSE ON MF. As part of the recent Lighthouses & Lightships on the Air weekend, OH1OH operated on 472kHz from a lighthouse at Utö in the Finnish archipelago. High static levels made the going difficult but signals were heard in Sweden, Germany and the Czech Republic and several contacts were made.

SAQ 89 NOT OUT. The historic alternator transmitter in Sweden, SAQ, on 17.2kHz, was active again on Alexanderson Day in July and despite summer static the signals reached W1VD in Burlington, Connecticut better than he's ever heard them before. Laurence, KL7L in Wasilla, Alaska also reported good signals and ZR1AIK near Cape Town heard them for the first time. Not bad for a station built almost ninety years ago.

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HF

Some excellent results even though conditions were disappointing

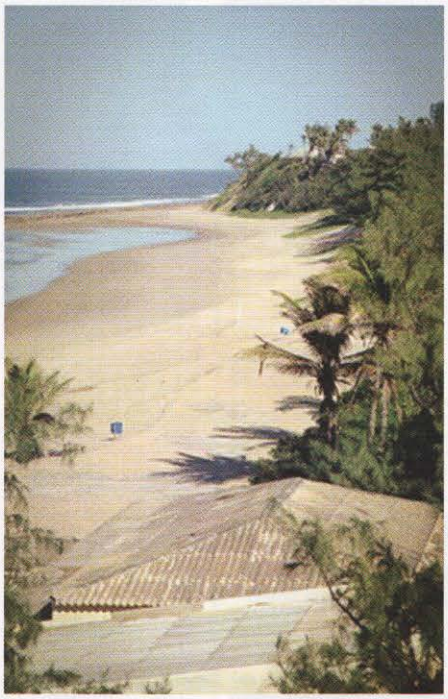
CHANGES. As Don mentioned last month, he's off to pastures new and we wish him all the best in the new venture. It's been a pleasure to work with him. From the November issue, Martin Atherton, G3ZAY will combine his IOTA column with HF and take over Don's role within *RadCom*. Please send all your HF and IOTA news to Martin at g3zay@btinternet.com.

DXPEDITION NEWS. The Italian DXpedition Team has announced the callsign of their next DXpedition, which is to Mayotte Island, AF-027. They will be using the special call TO2TT from 3 to 17 October and plan to use the IH9GPI real-time online log. The HF pilot station will be IK7JWY, while IK0FTA will do the 6m working. The team's official website is www.i2ysb.com and they have a forum at www.hamradioweb.org.

The CYOP DXpedition to Sable Island will take place from 1 to 11 October as it has been approved by Parks Canada and the Canadian Coast Guard. The permits are now in the hands VE1RGB and WA4DAN. The two ops have chartered the Britten Norman Islander airplane from Maritime Air Charter. The P suffix in the callsign is for Parks to recognise the newest Canadian National Park. The October 2012 expedition was cut short due to 'super storm Sandy'. The operation will be on the 10 to 160m bands using CW, SSB and RTTY.

Luc, F5RAV, tweets he's heading back to Somone in Senegal as 6V7T from 9 to 17 October with a side trip to N'gor Island (AF-045) for three days. He'll be on the 10 to 40m bands using SSB and PSK. QSL via F5RAV.

The upcoming October C82DXpedition team heading to Mozambique now has their website up and running at www.c82dx.com/. (Editor's note: It looks really nice!) Low Band operations remain the primary objective and they have secured both Titanex and Battle Creek Special verticals. They have also obtained the sponsorship of Array Solutions with one of their new shared apex loop array Rx systems and W3YY FSK/CW interfaces. They join Icom (the main equipment supplier with IC-7600s) and SteppIR (CrankIRs) as the major donors to the DXpedition. During the day they will operate all HF bands including 6 metres. Chris, ZS6EZ, one of the team members received his C92Z callsign and Tjerk, ZS6P is C91TJL.



View of the beach awaiting the C82DXpedition team. Photo courtesy Tjerk, ZS6P.

COUNTRIES WORKED, 2013 (starting 1/1/13, listed by Mixed Mode total)

Call	CW	SSB	Data	All
G4FVK	65	62	0	97
G3HQT	46	0	100	100
G4XEX	0	120	73	128
M0BVE	150	0	0	150
M0BKV	121	108	22	164

ON THE AIR. Dave, G4FVK has e-mailed with his latest totals for the 2013 table saying, "it's been very slow going this month... this must be one of the worst sunspot maximum's on record". Despite that, Dave did add two new countries on CW, CU and OY, both were on 17m.

John, G4ATA also uses G8DYT and, most recently, M4D in contests. So far, all calls have been used from the same QTH, however, he has purchased a camper van that he intends to be used for a /P contest location.

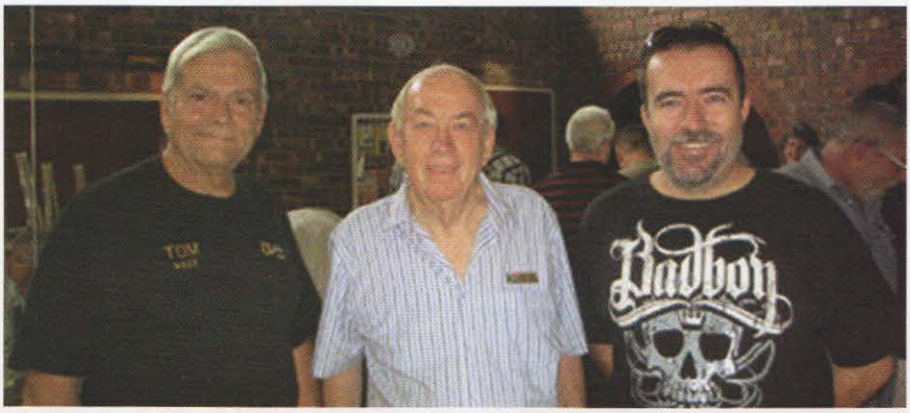
At home, as an addition to his InnovAntennas 28MHz 4-ele LFA Yagi, he has recently installed (in early June) a homebrew Moxon for 21MHz. The Moxon is mounted on the same mast as the LFA, just 1m below, and there appears to be no interaction between the two. John says he is very impressed with the performance of the Moxon in such a short time.

Just to give you a flavour recent DX he worked in July as G4ATA on 15m, all CW 3B8CF, D2QV, CO8LY, V44KAI, HH5/KC0W, ZA/IZ4JMA, TT8/US3EZ, BY4IB/4 & HI3LFE. John found 10m pretty poor recently, though on CW he bagged HH5/KC0W and V44KAI. For the month of July he applied for a NoV to use GV4ATA for the RSGB Centenary and managed to log the following DX on 15m SSB: PJ4D, 9Z4FI, PJ2/ON6DX, PJ7/AF6WU, FG5DH, FG5GP, FM5AN, CX8BT, YV7OMF, HI8JQE, ZP6RF, KP4/HI3RST, 8P6FX, Z80ID, JW9JKA, VR2XMT, ZS2AL, YB4IR, ZD7FT, ZD8LP, ZB2JK/P, 6V7S, KP2/AA1BU, XW0YJY, FR4PV, DU1/JA3FJE, RI1ANU, P29FR, TJ3AY, JY9ET, HD082QRC, HC5EG, 8P6FH, XE1YQQ, HK3C, HQ8D, JA9GPG, JA3KVT, JH1EIG, ST2MH, VA7XX, Xe1AJ, VE7BST, K7YDL, C91GBA, 6O0LA, Z21LV, FY4PR and VE1CHW. There were of course others, and some nice short skip conditions and excellent signals from Europe.

During his time operating as GV4ATA on 10m he managed the following on 10m SSB: V47JA, VP2ETE, PY2VI, CX6DRA, FM5WE, YB0MWM, FG5FU, ZP6DYA, and a great QRP QSO with Frank, I5KAP. John answered his QRP CQ call and gave him a report of 57, he was running barefoot, 100W, at the time and he gave me 59 +40dB. He was surprised to learn Frank was running just 500mW and a 4-ele Yagi, and was still copying him Q5 when he reduced power to 100mW. Frank reported John's 5W (the lowest he can turn his FT-2000 down to) signal at a solid 59.

Peter, G4XEX tells us that it has been an interesting and enjoyable month on air, mainly due to the GV NoV. He says that he has enjoyed the various NoVs over the past couple of years, which is good to hear. He's another who has found band conditions have been somewhat disappointing with many days of flat conditions. That said he has worked a number of Middle and Far East stations, his favourite being P29FR for a new country. Best of the rest was on 15m SSB: OD5ZZ, A61R, YB0NFL, VR2XMT, A65BX/M, 9M8Z; on 17m SSB JW9JKA, P29FR, HVOA, A41KJ; 20m data JA5UFD, JE2PMC, BG8GAM, ZS4PF, 4S7BRG.

Dave, M0BVE has been on the air and, as usual, it's all been CW. He found a few decent DX contacts including, on 40m, V55V (Namibia) and KP4MS in Puerto Rico, on 30m there was PJ7TM (Sint Maarten). He found the most on 20m with RI1AMP (Antarctica), K6VVA/KL7 (Hawaii), VK6AA (Australia) and FO5RH (French Polynesia). Finally, on 17m, he found KH7Y (Hawaii), DU9/AI1PBV (Phillipines).



Some of the C82DXpedition team: N4XP, ZS6P & ZS6RI.

Following an e-mail exchange with G4AKY on 160m ZL skeds, John, G3PQA says that from the results in last few years he has found the best time of year for ZL and particularly Pacific DXpeditions to work UK on 160m has been October or February, depending on area. Obviously the north Pacific is better in our winter, but even to places like KH6 we occasionally get skew paths at the equinoxes at less favourable times of the sunspot cycle. Signals are usually E/SE or W/SW, often more than 100° skewed from the Great Circle path. He explains that in our summer, sunset and sunrise times are only close enough for possible QSOs in UK evening/ ZL morning.

At John's location, sunset goes from 2000UTC at the end of May and July to 2022UTC at midsummer, the end of June. ZL sunrise goes from 1945UTC at the ends of May and July to 2004UTC at midsummer, the end of June. We are in the peak of a (weak) sunspot cycle and, despite this, results on 160m in midsummer were worse than he expected. He had *no* QSOs for 10 weeks, spanning midsummer almost exactly. Not even a half QSO! He did hear traces of ZLs or the odd character or bits of their call a few times, but not close to midsummer. The last actual QSOs were 30 May and 17 August. Mainland EU stations who were on had slightly better conditions, but not much better, so the poor results on 160m appear to be due to propagation differences between seasons – paths and MUFs etc rather than sunset/sunrise times. However, generally conditions have been poor on 160m this sunspot peak, hardly surprising as usual with the increase in MUFs and geo-magnetic activity.

John says that this is not new information and a lot has been written about the mechanism of skew paths by ON4UN, NM7N, K9LA, VE7VV *et al*, with actual results beautifully documented on Luis, IV3PRK's website.

John is one of the best Top Band operators and we thank him for his advice.

SILENT KEY. It is with deep regret that we report the passing of Steve Hodgson, ZC4LI on 31 August. He was 69. He had been ill for some time. He was an enthusiastic contest operator and had won many awards. I'm sure his call will be sorely missed.

VHF/UHF

Perseids meteor shower produces amazing radio and visual conditions

AUGUST OVERVIEW. Peak conditions during the Perseids meteor shower actually came good in quite spectacular fashion. Predictions from numerous sources are all well and good but rarely seem to come to fruition. However 2013 will be remembered for some superb visual and radio conditions, with interest being stirred by frequent references to the shower on the TV and radio. Indeed, these conditions led to record-breaking contacts on 144MHz with the magical 3000km boundary being broken on 12, 13 and 14 August. Tropospheric conditions were also good on 144MHz and the dying embers of the Sporadic-E (Es) season gave DX contacts on 50 and 70MHz to Europe. DXpedtions also created considerable interest on 6, 4 and 2m. More extreme tropo contacts were made from the South West of the UK to Portugal, the Canaries and Azores. Early August gave many stations on 6m the chance to work North America and the Caribbean with intensive openings.

RECORD BEATING METEOR SCATTER CONTACTS. At 2128 on 14 August, after a couple of incomplete attempts, John, G4SWX (JO02) worked EA8TJ (IL18) at a distance of 3040km. Many might think that this would be a 'once in a lifetime' QSO, however Domingo's QSO with John was just another in a series of tests that has proven that the range of 144MHz meteor scatter can be vastly extended by coupling into a tropospheric duct.

During these tests, the world distance record for 144MHz meteor scatter was broken by a QSO between EA8TJ and S50C (JN76) at a distance of 3377km on 13 August. This QSO was completed near the peak of the Perseids meteor shower with the MS reflections from EA8TJ being copied by many 144MHz DX chasers across Western Europe including Clive, GM4VVX (IO78) and Peter, OZ1LPR (JO44). If either GM4VVX or OZ1LPR had managed to work EA8TJ it would have raised the record to 3427 or 3625km.

Most experts agree that the propagation mechanism was a combination of ionised trail meteor reflections in the ionosphere coupling into a tropospheric duct off the North African coast. After analysing the propagation characteristics, John concluded that the critical feature was the point and the angle where the MS signal hits the tropo duct. If this angle is too steep, the signal will not enter the duct and just hit the ground/sea. John suspects that the duct entry points had been changing during the Perseids period, probably for NW Europe somewhere around locator square IM58, but he suspects for the

The G4DHF 4 Yagi system for 2m.

Swiss, Italian and Slovenia QSOs it may have been nearer to locator IM65.

This would allow the MS signals to enter and exit the duct at only a couple of degrees. From the number, length and strength or reflections John thinks that the MS path for him was between 1500 and 1800km, which would make the entry/exit angle about 2-3 degrees.

There was some early debate whether E layer MUF was having an effect, particularly as the tests were stopped on 14 August at 1815 for a Sporadic-E opening during which many in Holland and Germany worked into EA8.

The QSO between G4SWX and EA8TJ was in the evening at a time when there was little or no E layer enhancement. Does this represent the limit for 144MHz meteor scatter? Probably not: think about a station more than 1000km further distant coupling into the duct between G4LOH and D44TD, which was already over 4000km.

David, G4DHF (IO93) also noted the 144MHz FSK441 MS QSOs made between EA8TJ and stations in Europe, including G4SWX and the received bursts at GM4VVX. David also comments that someone on the ON4KST Chat Channel referred to it as 'TRAMS', (TRopo Assisted MS), which seems apt. Importantly, this has shown another propagation mode that had only previously been suggested and is yet another example of amateur radio pushing the known boundaries.

It is important to note that stations throughout Europe from S50 to GM appeared to be receiving almost the same bursts, with the bigger stations benefiting from increased antenna gain or location in decoding the weaker bursts. David passes on his congratulations to EA8TJ and the other EU stations who managed to complete the QSOs. He some fine bursts from EA8TJ, some over 30s in duration, complete with CW ID at a distance of 3028km. He has now worked two EA8s via tropo from his inland location and this was just as exciting. The Perseids was good for David generally using his 4 Yagi station, completing on FSK441 with around 70 stations. These were mostly on random, including UR5WD, UA2FT, RA1WZ, RZ1AP, RA1TBH, UA1ALD, RU1MS, EW1CD/2, UW8SM, RK1AS, UX2SB, UT3UX, RA1AW and IT9VDQ in JM68. SM5EPO/2 was worked in several high latitude locators. The peak was not particularly pronounced as many of the reflections over the weekend were long and loud, but the period around 0900 – 1100UTC on the 12th seemed to have produced some amazingly long reflections from RU1MS, along with other Baltic stations. David was receiving bursts and calling stations up to 2500km, including UA3WM (KO72).

Clive, GM4VVX confirms the reflections received in IO78 from EA8TJ when he swung the beam down towards the Canary Islands. Tuning to 144.354MHz, Clive found a burst of incoming FSK signal that ran for a further 6 seconds after he had landed on the frequency. This decoded at 5dB with "CQ EA8TJ" repeated many times. He then called for numerous periods. Over the next 30 minutes, Clive received a further 3 pings with more "CQ EA8TJ". Many OZ, PA & G operators and Clive were recorded by John, G4SWX on back scatter calling EA8TJ. Eventually, the EA8 operator announced via the ON4KST site that he was going QRT. Subsequent reports revealed that the PA station who worked the EA8 was a lucky guy and it was only a kilometre or two short of the world record ODX MS QSO. A QSO between locators IL18RJ and IO78TA would have been a distance of 3424km. The rig at GM4VVX consists of an old TR-751e driving an AmpUK Discovery PA at 400W into a single long spaced 10-ele Yagi with a SP2000 LNA.

In summary, the Persieds seemed to peak about midday on 11 August when Clive worked RA1AW and RA3LE, both at distances well over 2000km. Later on the 12th, the predicted peak didn't seem to materialise and was about what would be expected for random MS work. All attempted QSOs to the south were failures except F1HMQ in JN23.

Thanks to Mike, M5MUF (IO92) for a monster multi band report in which he comments that there had been something good to work on one band or another virtually every day during August. A summary of Mike's 'Daily Diary' follows with excellent results on all bands, particularly on 6m where he still uses either a single element dipole or quad loop antenna. This is a perfect example of how to establish a good station using simple horizontally polarised antennas and achieving great results. 70MHz produced the bulk of activity. The 4m Trophy Contest brought GD for new a DXCC, 4 GM stations and GV3TCU/P on Isle of Wight. Despite falling asleep for an hour in the middle of the contest, Mike came 9th out of 34 entrants! The contest had some good Es in the first hour including a QSO with 9A/S51DI/P who was welcome after two previous failed sked attempts. Mike also owns a Mighty Meon

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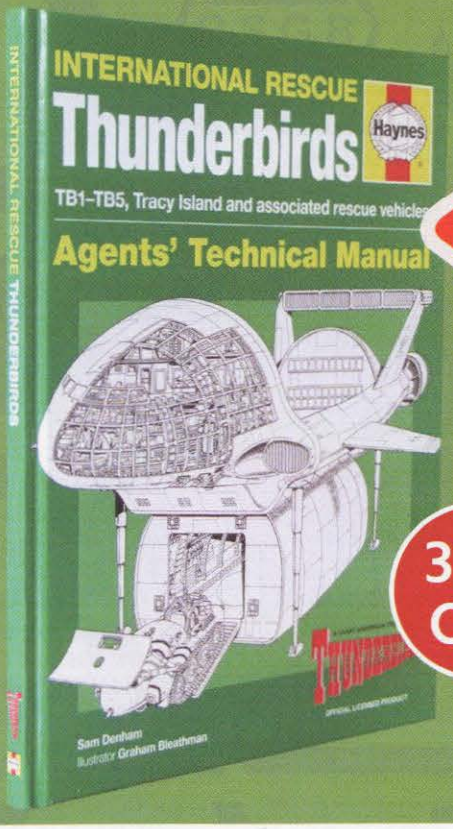

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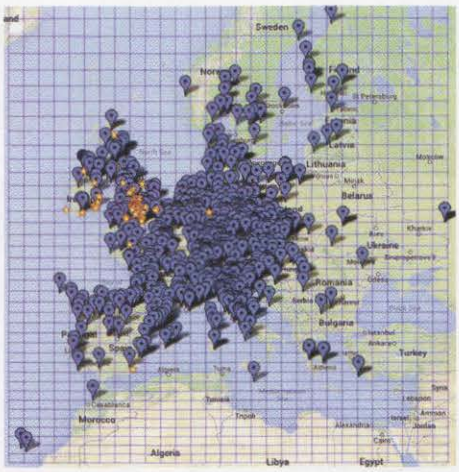
70MHz transverter that seems to be going well, working the following DX: SP3RNZ/4, OZ2M, DI2AN, DI2BK, PF7M, OK1MAC, SP3OCC, IZ5ILX, 9A/OK1TEH/P, IW9HII, EA8TX and GM4VVX in IO78. Perseids MS QSOs included EI9E/P (IO55), GM4VVX/P (IO77), OZ3ZW, IZ3KSO (JN55), GM6VXB/P (IP90), Shetland, S51DI, GW4MBN (IO71 via backscatter), ES3RF and OZ1JXY in JO46. Mike has been keen to test the different operating modes of the *WSJT* suite of software. These include JT6M, FSK441, JTMS and ISCAT-B modes, which indeed perform better on certain bands and propagation conditions. Interestingly, a test with Richard, GU8FBO revealed solid tropo signals overlaid with good MS reflections, using JT6M on 4m. This mode was chosen for the test as Mike thought it would perform better for long tropo signal periods as opposed to FSK441. The completed QSO with IN89 made his 100th square on 4m, so a nice landmark QSO. Whilst Richard, GU8FBO was trying a MS test with Andy, GM8OEG, Mike could hear both stations well, but they also showed a fairly constant, but weak signal visible on the trace for whole periods. A QSO was subsequently completed with GM8OEG on 4m and then 6m using JT6M, with the weak constant signal being evident on both bands, along with numerous MS pings and bursts.

JT6M was used to make a 6m tropo contact with G0LFF (IO90), then MS tests with EI4DQ (IO51) resulted in completed QSOs using both ISCAT B and JTMS modes. Both were surprisingly easy over the 479km path with pings happening in most periods, and bursts of up to 10 seconds. These were Mike's first attempts with the two new modes, but overall he feels that the QSOs would have been easier with FSK441. He will keep testing them and see if he can improve the performance. In a short time back on the bands and relatively modest equipment Mike has achieved excellent results with 29 DXCCs on 5MHz, 27 on 70 MHz and 15 on 144MHz.

John, GW4MBN (IO71) thought the Perseids were a little disappointing on 4m, although he had some excellent visuals from his 'dark' Pembrokeshire back garden. Stations worked



EI9E/P 6m QSO map.

on 70MHz FSK441 included M5MUF, PA7MM, IK4PMB, OZ1JXY, GM8OEG, GM3NKG and PA7ES. There was a nice little late season Es opening on 27 August. JT65A mode on 50.276MHz was used and John worked YL2CA, OZ1MAX, SM5EPC, CT1FJC and EA7DUD. He was using the latest Beta of WSJT-X v1.2 r3563, which works very well and can decode both JT65 and JT9 modes.

Stan, G6HPP/SQ8PDP (JO02) sends in a nice report from his Southend QTH about working HB9Y for the first time during a contest with a high pressure system positioned over Europe. Interestingly, Stan e-mailed the HB9Y team to find out their working conditions and site information and got a reply from Christian, HB9VH the next day. The station was based at 3321m (10,000ft) on Mount Fort and they used an IC-7000 with 1kW linear, 17-ele Yagi and 20dB preamplifier. The contact was 743 miles, which was indeed a first for Stan and this has given him the impetus to try more DX contacts on the 2m band.

Jonathan, M5AEO (IO91) was active on 70cm during the last UK Activity Contest. With his 'ultra-light' set up he operated from the roof of his block of flats using an FT-817 at 2.5W with a rubber helical antenna. Jonathan managed 8 QSOs during a half hour operating period before climbing back down to the shack when the wind got chilly and the battery started to run out. Although this isn't a report of fantastic DX, the session gave Jonathan immense pleasure using such simple equipment and low power. Indeed it has inspired him to get out portable more often and develop the station.

Bill, M0BTZ (IO90) completed his 4m transverter and 10W amplifier just in time to catch the Sporadic-E opening on 4 August. Stations in the log were IK4BHO, IK0SMG, IZ5EME, IK0FTA, IZ5ILX, IK5GQK, IW0FFK and IK0VAQ all in the JN61/52/53/54/64 area. On 6m, Bill has worked 128 QSOs in 21 DXCCs and 82 locator squares during the month. Not bad for a 2-ele wire beam antenna in the loft space! Bill rightly comments that it just goes to show that if you are in a restricted QTH, then you don't need lots of aluminum in the sky to join in the 6m Es (though it does help a lot!).

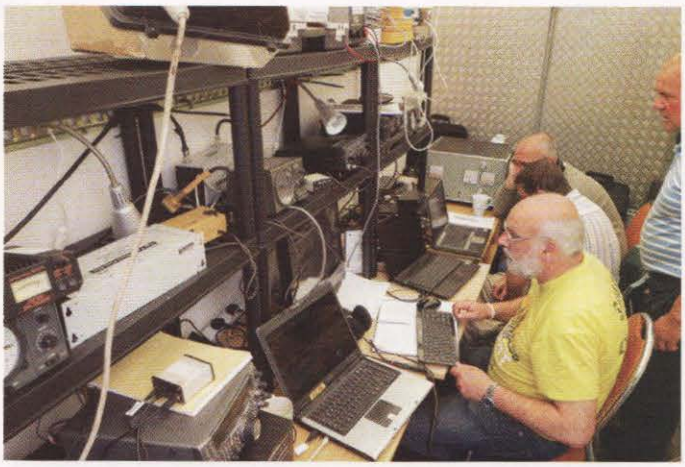
Peter, G8BCG (IO70) is now on 4m and reports good success so far. He also reports missing part of the biggest North American opening this year on 2-4 August while he was at the G3WOS 6m BBQ! However, on the 14th he worked Ran, BV2DQ for DXCC #224. This QSO was via EME with the moon below 2°. New initials VK5SIX and VK3GHZ were worked via EME on 18/19 August. Peter also logged Boyd, HR9BFS for DXCC #225 and a nice quick QSO with ZL3NW in a 6 minute common moonset/moonrise window. After a few near misses, Peter finally worked J45EME on 26 August for DXCC #50 via the moon.

EI9E/P PERSEIDS EXPEDITION. The EI9E group chose IO55VD for their Perseids Expedition located near to Magheraroarty overlooking Ballyness Bay in County Donegal in the far north west of Ireland. To maximize the QSO rate on all bands, the Perseids period was chosen to give many European operators a chance to work this rare square.

The site had a good immediate take off but was shielded in the distance by high mountains to the SE. So, although it was ideal for meteor scatter and Sporadic-E, the takeoff for tropo QSOs was not good. The team comprised John, EI2FG, Mick EI6GF, Tom, EI5ASB, Declan, EI9HQ, Mick, EI4CKB, Billy, EI7FJ and Pete, G4CLA.

MS conditions were found to be only average, but Es on 6m was fantastic with openings on most days. This shows in the superb 6m results with 1034 QSOs worked in 218 squares. Best DX on 6m was SV5/SV1LK at 3445km in KM46CK. 4m also faired well with 90 QSOs in 54 squares with IK0OKY in JN61 as the best DX at 2150km. Although there were no fireworks as such on 2m, 139 QSOs were completed with best DX being S51AT. Thanks to Pete, G4CLA for providing the information and there will be a blog set up to catalogue the trip with plenty of interesting photographs soon.

CONCLUSION. Pushing the propagation boundaries on VHF has always been in the heart of many operators looking for that record breaking QSO. Clearly there is more to do in this area. It is interesting to see this month that stations with high gain antenna systems were able to take advantage of the tropospheric conditions and 'hook up' to distant MS reflection points. With QSOs being made from Cornwall to Cape Verde, could it possibly be that we are likely to work South America on 144MHz terrestrial first rather than the North American continent? Time, technology and 'rig time' will tell. Thanks to all contributors this month.



EI9E/P team in action.

GHz Bands

A look at a 23cm transverter board from the US and news of the first 10GHz Web SDR in the UK

LIMITED CHOICES. On returning from holiday, my 'digital detox' where I leave behind amateur radio and the internet for a while, I found a Tweet asking for advice on transverters for 1.3GHz. I often get asked this question; I trot out the usual limited choice of fully built units and the few kits available. The answer depends so much on your budget and how much of the 'rest' of the 1.3GHz system you're prepared to homebrew (or hack 'n make, as the term now seems to be! [1]). Even a fully built transverter is only a system component and you'll need an antenna and changeover and maybe a preamp and sequencing. My point is that GHz band operation is not just "what box do I buy?" – you need to do more. Think of it more as 'system design and maintenance', then you'll appreciate what microwavers do and why QSO rate is not everything.

This month I got a chance to play with one of the kit offerings so, in contrast to last month's focus on microwave propagation, this month we look at some starter hardware that can be built from a kit.

A CHEAP AND SIMPLE 1.3GHz STARTER KIT. Back in 2008, Paul Wade, W1GHZ published a simple and cheap 1.3GHz transverter board (**Photo 1**) plus a companion local oscillator (LO) [2]. Both PC boards are available, see [3] for more details. Like all Paul's designs, they have a beautiful simplicity that hides carefully thought-out design to a price. They are easy to build using SMD and printed filters. Iain, G4DPF recently built one. He brought it round to my workshop to take advantage of the UK Microwave Group's (UkuG) tech support service [4] and we put it on the test gear. The LO board uses a cheap 64MHz packaged oscillator followed by a MMIC doubler and comb line filter to 192MHz then a x9 MMIC multiplier/filter/amplifier combination to produce around -5dBm at 1152MHz. Iain's LO board measured the correct level but we found the worst spurious products were closer to -27dB than the -30dB claimed. I think that this can be put down to the board not being in a screened box. I measured the output frequency as around 7.5kHz high, not bad considering that the oscillator spec was just 100ppm! For more serious use, the LO could be replaced with a better, lockable, synthesised LO such as those described recently by Andy, G4JNT. The transverter board has a MMIC LO buffer and a packaged mixer with no filtering or matching on the IF output. The RF output/input at the mixer feeds a simple resistive splitter to feed a pair of MMIC buffers on transmit and a receive front end using a single MMIC. We measured the whole Rx converter as having 3dB of conversion gain and a noise figure of around 9dB. This is as expected considering the various gains and losses of the front end, mixer and filter. On Tx, the level was around +12dBm, frustratingly short of the level required to drive a Mitsubishi 'brick' to full power! A further buffer amplifier such as my design in *Scatterpoint* [5] would be needed, plus suitable band pass filtering. The output spurii were all around 25dB down, the main ones spaced by the 64MHz LO frequency. To quote from Paul's documentation "This transverter is intended as a simple, cheap, starter... it costs a lot less than $100 and could be a way for VHF operators and contesters to try 1296MHz... it also has potential as building blocks for a more serious station, but real metal filters are recommended for operation with power amplifiers or in high-RF environments."

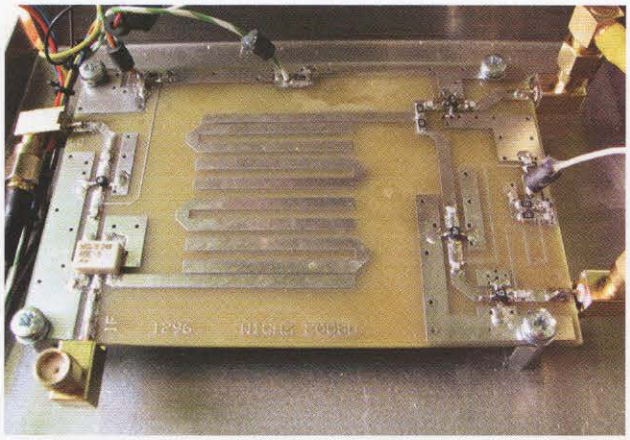


PHOTO 1: The W1GHZ 1.3GHz transverter board. Photo: G4DPF.

To use as a serious system, you'd need to add a masthead preamp, PA stage and associated switching but, while not my recommendation, even the boards alone with a changeover relay would get you some local contacts.

10GHz WEB SDR. With little fuss or publicity, a group of microwavers have set up a WebSDR receiver for remote 10GHz beacon monitoring [6]. It is located at Mow Cop on the Staffordshire/Cheshire border (SJ859575) and monitors 192kHz of the amateur 10GHz beacon band. It is centred on 10368.855MHz and should be accurate to a couple of hundred Hz. The receiver is an omnidirectional waveguide antenna feeding an LNB into a 'Bernie Box' [7] downconverter, into a modified 'Finningley' SDR [8] running at 18MHz. More information on the receiver can be found at [9] and general information about the WebSDR project can be found at [10]. Thanks go to Bernie, G4HJW and David, G6GXK for the hardware, Martin, G7CKX for installation and Garry, G6LJC for access to the excellent site at Mow Cop.

PHOTO 2: G4HQX (L) and G3TKH on Jersey. Photo: G4HQX.

ACTIVITY REPORTS. ***Microwave Field Day***. Not too many reports from the UKuG Microwave Field Day, so I'd be forgiven for thinking that 10GHz activity has migrated

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north of the Border. John, GM8OTI sent me a report from his roving activity from three different locations. The first was at sea level, just 21km across the water from Alan, GM0USI/P, who was setting up on the Mull of Galloway. This made for a quick test of the gear, and also an attempt with Tony, G4CBW that didn't succeed despite a path that "ought to have worked". The second location was selected to favour contacts up to the Edinburgh area where Brian, GM8BJF/P and Pete, GM4BYF/P were due to be out. Again a QSO was made with GM0USI/P, now at 46km, only to discover that Brian and Pete had gone to Alan's usual site in the Kilsyth hills – not at all suitable for the site John had chosen! However he was able to detect carriers and some audio from both of them over a very obstructed 125km path, and GM4BYF/P heard a carrier from John. The third location was chosen to work Tony, G4CBW and they had an easy contact over 221km, a mostly sea path. Only four completed contacts but a lot of fun, and more experience gained. John is "not that enamoured with using a mobile phone to set up microwave contacts", but admits that's how most people do it and he's found that 2m talkback is not much used. He's still struggling with the problem of reliable ON4KST access from remote locations to attract more attention from the south.

GJ3TKH/P & GJ4HQX/P operation from Jersey. Pete, G4HQX and GW3TKH were on Jersey with 10 and 24GHz gear for the UKuG Cumulative contest. From the site at IN89WG, a quick test on Friday afternoon showed S9+ signals from GB3MCB & GB3SCX on 10GHz and GB3SCK on 24GHz at S2 with QSB, at 181km. A contact with G4ALY confirmed 3cm was working. On Sunday morning they tested with John, G0API and G4JNT who were at a site on the Purbeck Hills, Dorset. On 24GHz there was no sign of GB3SCK this time but John was copied by GJ3TKH/P at 549 though there was nothing the other way. After many adjustments they settled for a one way at 150.3km. The Jersey team's best DX was F6DKW in JN18CS at 321km on 3cm, but

PHOTO 3: G8AGN setting the new daylight optical record. Photo: G8AGN.

they had the most unusual QSO with G4JNT/G0API. Andy had taken along a recently built synthesised JT4G beacon module for 10GHz running 100mW output with a small 19dBi PCB horn antenna and John took along an Octagon LNB and handheld scanner for its 618MHz output – you can see they weren't taking 10GHz seriously! Keith could hear the GB3SCX beacon on 10GHz, so Andy switched on his beacon source, taped the horn to the top of a fence just one metre off the ground. Keith immediately heard it 59+ and relayed the signal back on 144MHz. By placing a hand in front of the horn and using the relayed 144MHz signal as a sidetone they sent the 'contest exchange' details in CW using a flapping hand as the 'key'. Signal loss (= noise) was key down. So that was a one-way QSO made at least, but it didn't end there. The signals over the 150km path were so strong that John then fired up his Octagon LNA built into an old searchlight / torch housing. With just its 90° beamwidth horn and using the very ancient AOR scanner, Keith's 10GHz signal was found and a two-way FM/CW QSO was completed. This qualifies, I think, as one of the weirdest microwave contacts of all time. Semaphore arm waving CW in one direction from a beacon transmitter with a PCB horn tied to a fence post, and FM on the return link using an LNB and scanner.

Nice to see Peter, G3PHO active again after his house move and despite his self-confessed "been there and got the T shirt" attitude. He reports activity out /P in the 24GHz trophy and did his usual 'roving circuit' around the Peak District, starting with Alport Heights, IO93FB from where he had a couple of QSOs with G3UKV/P, who moved to a new site to have the second contact. While Martyn was driving to a second location Peter tried the 175km path to GW3TKH/P on the Blorenge as this would have given Keith his best DX on 24GHz. Sadly it was a 'no go'. G3ZME/P then came on from IO82rq and, as signals were down to S1-2, CW had to be used to make the QSO. Peter's gear consisted of a tripod mounted modular system driving a 2W PA into a 60cm offset dish using a W1GHZ feedhorn. 144MHz talkback (50W from an IC-706 MK2 G and 3-ele Yagi) was used, as Peter finds it much more effective than KST when everyone involved is /P and may be roving. On Sunday 28 July, Peter tried his new home QTH IO93gg on 10GHz, using his 60cm offset on a tripod with a 5W 10GHz transverter on his veranda. The new location seems much better than the old one in Sheffield and the final tally of the day was eight QSOs, ODX being G4ALY (IO70vl) at over 360km. Peter is now enthused enough to be planning put up a permanent home microwave station for the very first time in some 43 years of microwaving!

Another nanowave (optical) record. On 16 August G0RPH and G8AGN extended the 54.9km daylight record set in December 2011 by G0EWN and G8AGN to 83.4km. G8AGN/P (**Photo 3**) was located at High Bradfield (SK281935) and G0RPH/P located at Claxby (TF117960). Both stations used Phlatlight transmitters, running AM baseband modulation, with A4 size Fresnel lenses. G8AGN's receiver was a KA7OEI version 3 type, while G0RPH used a new circuit developed for daylight use. A4 size Fresnel lenses were used on both receivers. Barry believes that this is a world record for daylight communication using red LEDs as the light source. If anyone knows differently, please let him know.

UPCOMING MICROWAVE EVENTS

27-28 Sept	National Hamfest, www.nationalhamfest.org.uk
28-29 Sept	French 1296MHz And Above activity day
5 Oct	1400- 2200 RSGB 1.3 and 2.3GHz trophy contests
5-6 Oct	1400- 400 RSGB 432MHz and Up contest
6 Oct	0800 - 1400 UKuG 1.3/2.3/3.4GHz contest
6-11 Oct	European Microwave Week, Nuremberg, www.eumweek.com
11-13 Oct	RSGB Convention, www.rsgb.org/rsgbconvention
15 Oct	1900 - 2130 1.3GHz UKAC
18-19 Oct	Microwave Update, Morehead, Kentucky, www.microwaveupdate.org
22 Oct	1900 - 2130 SHF UKAC
26-27 Oct	BATC Convention, Finningley www.g0ghk.co.uk
26-27 Oct	ARRL EME contest 50-1296MHz
26-27 Oct	French 1296MHz And Above activity day
2 Nov	Scottish Roundtable, www.rayjames.biz/microwavert

WEBSEARCH

[1] UK Hackspace foundation: http://hackspace.org.uk
[2] W1GHZ transverter: www.w1ghz.org/MBT/1296MHz_Transverter-Right_Side_Up.pdf
[3] W1GHZ's excellent website: www.w1ghz.org
[4] www.microwavers.org/tech-support.htm
[5] A 2.5 Watt LDMOS Driver for the 1.3GHz band – *Scatterpoint*, January 2013
[6] 10GHz Web SDR: http://mowcopsdr.boldlygoingnowhere.org:8901/
[7] Bernie Box: www.earf.co.uk/3cm_conv1.html
[8] Finningley SDR: www.earf.co.uk/finningleysdr.htm
[9] Mow Cop SDR receiver: www.earf.co.uk/Bawdsey.htm
[10] Further Web SDR information: www.websdr.org/

Antennas

In defence of the quad antenna

EARLY DX ANTENNA. My very first DX antenna was quad for the 15 and 10m bands. With this antenna I was able to work the world using a homebrew 60W AM transmitter. Mind you, this was in 1959, at the peak of the largest sunspot cycle the world has ever seen.

The choice of a quad was imposed because suitable aluminium tubing was not available for making a more conventional beam antenna and I had to settle for garden canes, insulated wire and insulation tape. I recall that it was a popular antenna at the time but I am unable to remember where the design that I used came from.

The basic design of the cubical quad comprises two full wavelength wire loops. One loop is used as the driven element and the second (with an added tuning stub to lower its resonant frequency) as a parasitic reflector. In the early days garden canes were used as element supports as shown in **Photo 1**.

QUAD ANTENNA. The quad can easily be configured as a multiband antenna simply by nesting the various band elements on the element supports. Furthermore, additional parasitic elements can be added to increase the gain and an example of this shown in **Photo 2**. This antenna arrangement was constructed by the late Al Slater, G3FXB and comprised four elements on 15 and 10m and three elements on 20m. This antenna formed part of a top grade station that helped Al achieve very high contest scores.

G6XN QUAD ASSESSMENT. I consulted G6XN's books **[1]** and **[2]** for additional information on the quad and found it discouraging. He notes, "Loop arrays such as the quad, which though satisfactory in terms of performance, are not advised for rotary beams since they are heavy, unsightly, expensive and, due to high wind loading, frequently blow down."

G6XN also puts the quad antenna in a category 'Antennas with Adverse Features' with the following comments: "Despite the popularity of the quad its use as a rotary beam is strongly deprecated for reasons that can be summed up by quoting remarks made to the author during the writing of this book. For much of the time he was using a fixed (reversible) quad and many of the stations contacted, after commenting on the excellence of this type of antenna, added that they used to have one themselves but it blew down. This in some cases has reduced them to using an inferior type of antenna such as a typical commercial trapped beam."

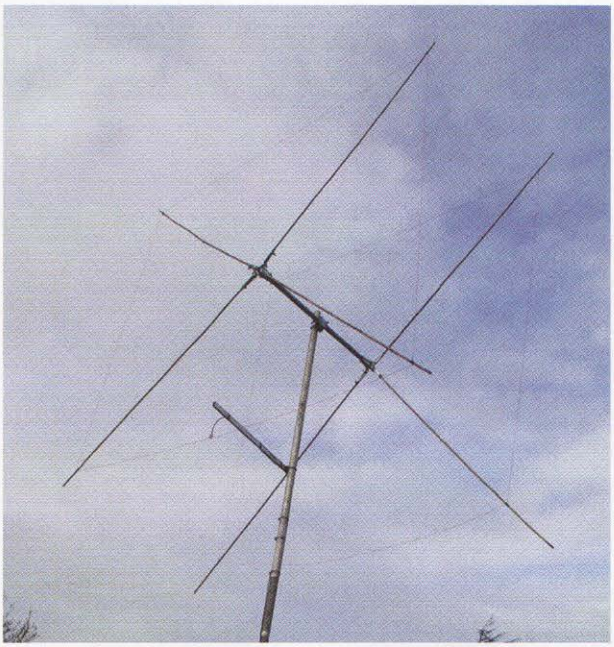

PHOTO 1: Basic single band cubical quad using plastic covered wire elements fixed to garden cane supports using plastic insulation tape. The canes are fixed to the boom using shelf brackets.

THE G3LDO QUAD. The quad in current use at my QTH was first described in 2007 **[3]** and 2008 **[4]** and is designed around a commercial boomless aluminium structure known as a 'spider', see **Photo 3**, plus second hand fibreglass spreaders. It covers the 20, 17 and 15m bands. The use of this spider causes the element supports to lean away from the hub at an angle of about 25° from the vertical. The result is that multi-band elements spacings are optimum for each band, see **Photo 4**.

One criticism often levied at the quad is that it unsightly, but I guess it depends on how it is built. The front cover of the latest *RSGB Antenna File* book **[5]** has been enhanced with a photo of my quad – so this antenna must have *some* aesthetic merit.

G6XN notes that the quad is heavy. Again, I suppose it depends on how it is built. I estimated the weight of my antenna by weighing various components. They add up as follows: four fibreglass poles, each 800g = 3.2kg; 1.5kg for the alloy spider and 1.4kg for the wire, making a total of just over 6kg. This compares favourably with commercial multiband beams, which start at around 10kg.

I do have a large steel multiband quad hub (described in [4]), which weighs around

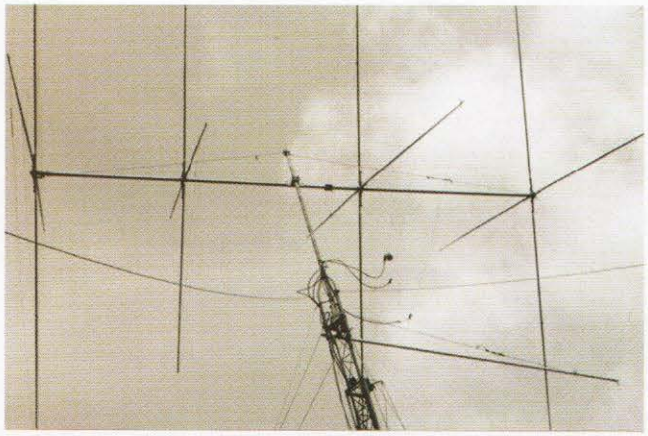

PHOTO 2: The G3FXB quad comprising four elements on 15 and 10m and three elements on 20m.

PHOTO 3: Lightweight aluminium boomless 'spider' reputed to have been made by Labgear.

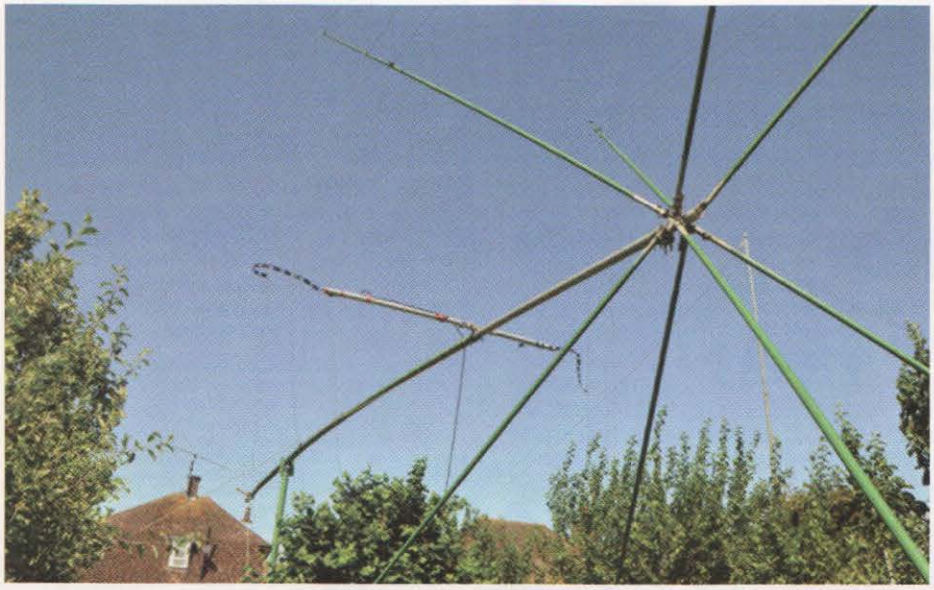

PHOTO 4: The G3LDO multiband boomless quad for 20, 17 and 15m, fixed to a counter-weighted fold over mast.

7.5kg. If I used this it would put up the weight of my antenna to 10.4kg. In my case, weight is an important consideration because it is fixed to a counter-weighted mast (seen in Photo 4) that can be raised or lowered in under a minute, all in the interests of experimenting and antenna adjusting.

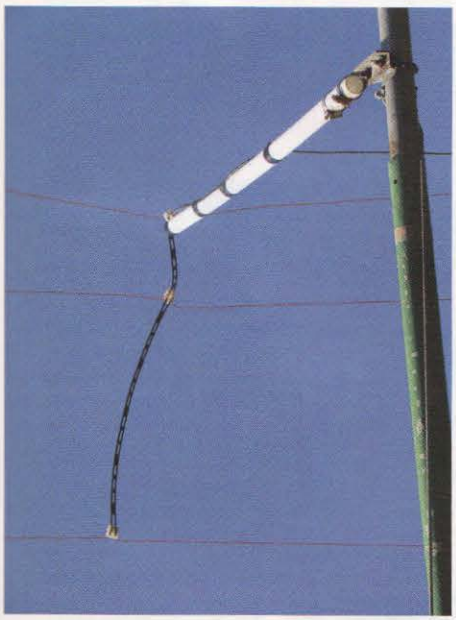

PHOTO 5: Multiband driven elements connected in parallel via 350Ω ladder line to the coax feed using connector blocks

PHOTO 6: Improved method of connecting the coax to the multiband driven elements using 450Ω ladder line and soldering the connections.

This quad has now been up and in use for over 6 years and is located about 400m from the sea, which puts it in an exposed and corrosive environment. So how did it fare? In the early stages of development I found that I could circumvent some of the elaborate driven element feeding arrangements often seen in the literature simply by connecting the elements in parallel via ladder line as shown in **Photo 5**. Each element is connected to the ladder line using connector blocks. Earlier attempts to connect the various band elements directly in parallel were less successful.

Over the years this method of connecting the elements to 300Ω ladder line feeder turned out to be less than ideal. The connector block connections corroded and the elements tended to become disconnected. The fix was to use a stronger 450Ω ladder line and to solder all the connections, as shown in **Photo 6**.

The original method of connecting the elements to the element supports was to use tie wraps and jubilee clips (hose clamps). The sun and weather caused the tie wraps to weaken and break. The fix was to replace these tie wraps with nylon strimmer cord, see **Photo 7**, which is much tougher.

TUNING AND PERFORMANCE. The quad construction plan described in **[6]** uses the formula L (inches) = 250/f (MHz) for each side of the driven element and L = 258/f for the reflector. These lengths have to be multiplied by 4 to get the total element circumference. The element spacing is quoted as S = 118/f. You could make both elements L = 250/f and use a tuning stub to lower the frequency of the reflector, as shown in **Photo 8**. In fact most early quad designs used this approach.

PHOTO 7: Improved method of fixing non-insulated wire elements to the element supports using jubilee clips (hose clamps) and strimmer cord.

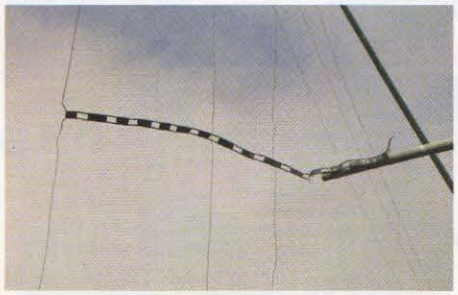

PHOTO 8: Method of tuning the 20m reflector using 450Ω ribbon line. It shows signs of the length being adjusted while tuning.

The quad shown in Photo 4 uses large reflectors on the 17 and 15m bands and a tuning stub on 20m. I favour the non-stub approach because there is less material to flap around in the wind. However, my second hand fibreglass poles were too short for the non-stub design.

No matter how carefully you follow an antenna construction plans with regard to dimensions you will be lucky if you get it right first time. It is no surprise that top DXer stations perform well because their owners spend considerable amounts of time and effort honing their antennas for maximum performance. The method I used for tuning for performance and directivity was described in **[7]**.

As a measure of the performance of this quad I have worked over 100 countries on 14MHz CW using the vintage rig described in the July 2013 edition of *RadCom*. On other bands the performance is equal or better.

REFERENCES

[1] *HF Antennas for all Locations* 1st Edition, P91, P222, L A Moxon, G6XN, RSGB
[2] *HF Antennas for all Locations* 2nd Edition, P104, P313, L A Moxon, G6XN, RSGB
[3] Antennas, *RadCom*, October and November 2007
[4] *Building Successful HF Antennas*, Peter Dodd, G3LDO, RSGB
[5] *RSGB Antenna File*, RSGB
[6] *All about cubical quad antennas*, Bill Orr, W6SAI and Stuart Cowan, W2LX
[7] Antennas, *RadCom*, December 2007

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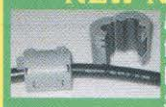

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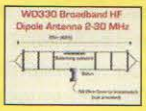

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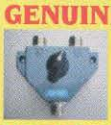

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(5 x 3 foot)	(6x 3 foot)	(6 x 3 foot)
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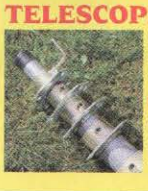

9m (closed HT-2.8m)	£150.00
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12m (closed HT-2.6m)	£399.99
15m (closed HT-2.6m)	£449.99

Design Notes

RF power, LNBs and transverter topics

POWER METER FOLLOW UP. First of all, a big thank you for everyone who e-mailed to commiserate with my blowing up of the power meter head detailed in the August column. Several offers of replacement heads were made at prices that ranged from the quite reasonable to the fully commercial. However, Mathew, GW6KOA suggested I look at Stewart of Reading where they listed that item in their surplus stock at a reasonable price. They even sorted me out a tested and calibrated head, so all is back as it should be. While the 20dB safety attenuator isn't actually *glued* onto the replacement head, it is firmly held with self amalgamating tape to discourage my trying to remove said item!

After reading that article Stewart, G3YSX, wrote in to say "...the G4COL design was limited in performance by the RF choke although as I recall it did surprisingly well up to 50MHz. However the head that Derek, G3GRO and I worked on and published in *RadCom* Jan/Feb 2000 had a design a little closer to the HP432 head; even though it had a single bulb and lots of wire leaded 100Ω resistors it was good to 0.5dB beyond 2m and was just 1.5dB off at 350MHz. We did not bother with the multiplier, since the error due to the approximation was less that 1dB from -7dBm to +17dBm. Of course in the late 1990s when we designed this, a correction chart was rather more viable than a computer based compensation. What would be very interesting would be to produce another head using the same bulb but SMT resistors and capacitors on a PCB".

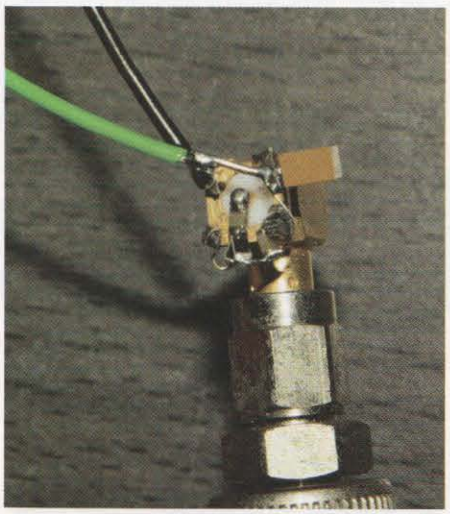

PHOTO 1: Thermistor bridge breadboard made using 0805 size thermistors.

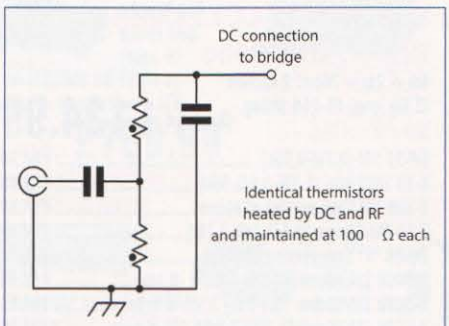

FIGURE 1: Using two thermistors in a parallel RF, series DC arrangement that removes the need for any bias chokes.

THERMISTOR TEST. Instead of a bulb, I used 0805 sized surface mount thermistors to try a direct copy of the HP432 style bridge. The reasoning was that as thermistors were resistive devices, a small 0805 chip should be good up to the GHz region. How wrong I was! Farnell part number 2042902 looked suitable; a negative temperature coefficient thermistor with nominal resistance of 330Ω. My intention was to use two of these in the same arrangement as used in the HP432, as shown in **Figure 1.** The thermistors are in series at DC and in parallel for RF. There is no need for an inductor that would limit the frequency response and DC blocking capacitors were unlikely to be a problem for a wideband measurement head. Each thermistor would have to be supplied with enough DC from the bridge to heat it up to a temperature where its resistance falls to 100Ω. This would be in the region of 70 – 80°C according to the equations give in the data sheet. The two devices were mounted along with 0805 chip capacitors on an SMA connector as shown in **Photo 1.** Short wires were used to thermally isolate the chips from the metal chassis and give mechanical stress relief. The two thermistors were soldered directly together so they both kept the same temperature. The two DC blocks were initially set at 1000pF as I was only interested in how high a frequency the unit could be made to work. 1000pF has 5Ω reactance at 32MHz (Zo /10) so its effect is insignificant.

Using a 1% 200Ω resistor in the top and two 6.2kΩ 1% resistors in the other arm, I set up a bridge similar to that in the HP432. I carefully adjusted DC drive for balance and applied 20mW of RF at 50MHz. The balance point shifted; I adjusted the DC drive and carefully noted the change in voltage. The reduction in DC power supplied was not far off 20mW – it appeared to work. Buoyed up, I then connected the breadboard unit to my DG8SAQ network analyser and measured its match over the range 1 to 500MHz. The results were appalling. The best match that could be obtained was about 14dB return loss at 10MHz (equivalent to about 1.5:1 VSWR). Above this frequency the match progressively worsened; below, the 1nF DC blocking capacitors were contributing excessive reactance. Clearly the thermistors were anything but nice simple resistors. I replaced the capacitors with 100nF chip ones to see just what sort of performance could be expected and measured the new match. **Figure 2** shows the input impedance over 1 – 500MHz plotted as a Smith chart, along with the return loss in dB. At least the low frequency end is properly matched, but if we take a figure of 20dB return loss as being the minimum acceptable for what is intended as a precision item of test equipment in a 50Ω system, it looks as if these thermistors are only going to be useable up to around 15MHz. This is very much worse that Stewart and Derek's design using a small light bulb! Studying the actual impedance in the Smith Chart plot suggests the mismatch is more than simply just shunt capacitance. It must contain an inductive term too in order to bring the impedance back to a purely resistive 25Ω or so at 500MHz, the left hand end of the curve. Well, it was a nice idea.

Somewhat coincidently, the summer 2013 edition of *VHF Communications* [1] shows a reprint of a 1983 article on a homebrew thermal power meter. They use a bolometer technique. A tiny precision thermistor is glued onto a 50Ω chip resistor then, assuming temperature rise is linearly proportional to power input, the temperature rise is measured and used to indicate power. Calibration can be performed by feeding the 50Ω resistor with DC. Good performance up to several GHz is quoted. Perhaps this is the way to go for a modern version. These days, with digital processing, built in calibration tables and even smaller resistors than the 1206 one used there, a really good precision instrument ought to be possible.

SATELLITE TV LNBS ON 10GHz. The latest generation of low noise blocks (LNB) for satellite TV now incorporate crystal controlled synthesised local oscillators whose stability and phase noise makes them more than suitable for amateur narrowband (eg SSB) operation. The noise figures are usually state of the art and well below 0.8dB, so a really potent 10GHz receiver is possible. One such unit is the Model OTLSO Twin LNB Slim OPTIMA 10.7 – 12.75GHz. Without opening it up to make any modifications (such as changing the crystal),

the LO frequency is fixed at 9750MHz, which means the frequency for the amateur narrowband centre of activity at 10368MHz comes out at an IF of 618MHz. This IF is covered by a number of scanning receivers, or can be converted to a more useable IF such as 144 or 28MHz with an external downconverter.

John, GOAPI, uses one of these as a portable 10GHz monitoring setup; he uses a handheld AR8000 receiver that has SSB receive capability. Although crystal controlled, the Octagon LNB is susceptible to rapid temperature changes, which can easily shift the multiplied-up LO (and hence the received IF output) by many kHz. This makes SSB reception a bit fraught in windy conditions that cool down the LNB, or when sunlight warms it up. To counter this, John mounted his unit in an old searchlight torch housing. The LNB is embedded in polystyrene foam to insulate it from direct heat and the sealed housing keeps wind away from the LNB itself. The torch body carries a self-contained 12V NiCd pack to power the LNB and a bias tee to supply the DC so there is just a BNC socket to the outside world at 618MHz. The result: a grab-and-go receiving system for 10GHz. **Photo 2** shows GOAPI on the Purbeck Hills holding this unit while receiving GJ3TKH/P from Jersey at a distance of 150km.

USING OLD RIGS. Paul Phillips, G4KZY came up with an idea that may be worth pursuing – and certainly worth thinking about next time you are searching around the rally and boot sale stands. While we were discussing the pros and cons of home construction, he made the somewhat pertinent point that while electronics components are easy to come by, cheap and straightforward to use, the rest of the hardware often needed for amateur construction projects isn't. Items like chassis, dials, knobs and things are getting harder to source and more expensive. His idea is to make use of the old surplus and scrapped amateur (or CB) rigs that are out there, often being sold for next to nothing. For a homebrew radio project just use the housing; many of the front panel controls needed for your purposes can also be reused.

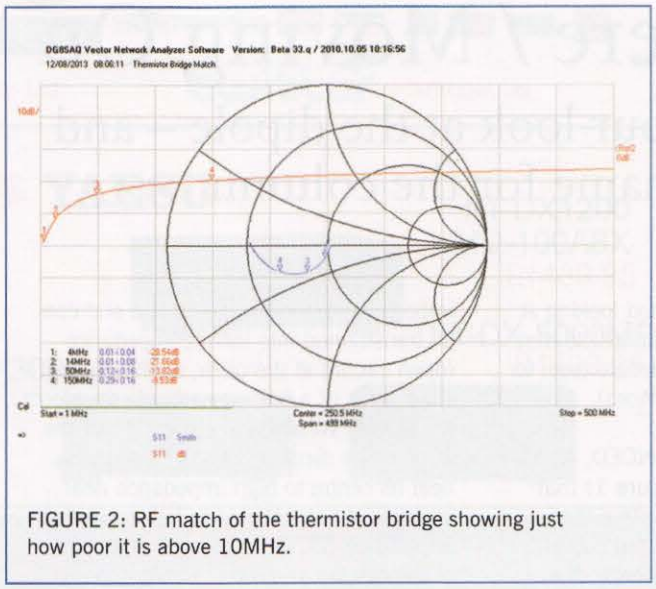

FIGURE 2: RF match of the thermistor bridge showing just how poor it is above 10MHz.

Then there are the bits inside them that may be worth reusing. IF strips (for example at 10.7 or 9MHz) can be tedious to build, whereas just about every older amateur SSB receiver has a useable IF and audio stage that can be cut out and reused with a new front end. Concentrate homebrewing on the bits that matter and are fun to do, just reuse bits and assemblies that are less interesting to do.

TRANSVERTER DRIVER. The July/August 2013 edition of *QEX* carries a design for a transverter controller for UHF/ microwaves. While the controller itself is standard, author Hamish Kellock, OH2GAQ includes a useful facility that lifts this project out of the ordinary. Normally, interfacing an external transceiver with a transverter requires a switched high power attenuator to reduce the Tx power, with the possibility of overload / damage if things aren't adjusted properly. It's just *messy*. Instead, he uses a normal external receiver with all the Rx processing and capabilities we usually expect and need for operating, but not the external Tx. Instead, the transverter controller includes a self-contained tuneable SSB source generating 28 – 30MHz that can be synchronised with an external receiver. An optional bi-directional 144MHz converter allows for transverters that require this higher drive frequency.

An SSB generator based around a conventional 9MHz filter design is used to generate the IF. This is upconverted to the 28 – 30MHz range using a DDS based local oscillator. A microcontroller decodes the CAT or Icom C-IV signals generated by the receiver and sets the DDS accordingly. So the internal SSB generator seamlessly tracks the receiver, giving full transceive capability. What the *QEX* article does not mention is that the external receiver could equally well be a wideband SDR, like the SDR-IQ or Perseus, giving the advantages of wideband monitoring. All that will be needed for tracking is that the SDR controller software outputs the frequency it is receiving in a format that the DDS controller can intercept and set the frequency accordingly. Many output the data on a COM or USB port.

I suggest going one stage further. Instead of the filter type SSB generator with its expensive 9MHz crystal filter, why not a direct phasing type generator using DSP, then image cancelling direct upconversion to 28 – 30MHz? Generating I/Q data from an audio baseband input is a straightforward task for a low cost DSP chip like the DSPic family from Microchip. It ought to be possible using a VOGAD chip, a DSPic and possibly a dual digital to analogue converter or codec. Or, of course, just cut out the SSB generator section of that old scrap transceiver...

COMPONENTS AND DATASHEETS. Drew Pintus wrote in to mention his website [2] with details of 70 million electronic components, each with its PDF datasheet. He says, "... we're working on scaling the site up to 350 million parts and should be up to about 180 million this summer. My site has inventory and pricing from many of the top distributors. It also features a part number search that I believe is very efficient. Please take a look and don't hesitate to contact me via e-mail if you have any questions."

PHOTO 2: GOAPI With his Octagon 10GHz LNB mounted in its Grab-N-Go housing.

WEBSEARCH

[1] VHF Communications: www.vhfcomm.co.uk

[2] Components and datasheets: www.datasheets360.com

Start Here / Moving On

Continuing our look at the dipole – and a change of name for the column

RECAP. Last month we started looking at the basics of the dipole, in an article that provoked some interesting debate (see, for example, this month's Last Word).

BALANCED AND UNBALANCED. A dipole is a self-resonant aerial (**Figure 1**) that is usually fed at its centre with either a balanced feeder or with coaxial cable. In the latter case, in the absence of a balanced-to-unbalanced transformation device (balun), there is likely to be RF on the outside of the coax feeder, which may therefore be transferred to the inside of the shack. The reasons for this are discussed later. RF entering the shack this way can result in problems of interference with other equipment and/or feedback into the microphone.

The RF current varies along the arms of a half wave dipole from a maximum at its centre (where the radiation resistance is defined) to zero at its ends, following a roughly sinusoidal form. In a similar manner, the voltage along the arms also follows a roughly sinusoidal form but displaced by 90° such that it has a minimum at the centre of a half wave dipole (where the current is a maximum), and a maximum it its ends. This is depicted in **Figure 2**, where the distance of the 'graph lines' from the dipole represents the magnitude of the voltage and current. The effective impedance at any point along a half wave dipole thus varies from a relatively low value at its centre, equal to the radiation resistance, to a very high value at its ends in a roughly 'tangential' manner.

IMPEDANCE OF A DIPOLE. Just as in the case of quarter wave transformers in transmission lines theory, where zero impedance (short circuit) at one end can be transformed into infinite impedance (open circuit) at the other, so the quarter wave arms of a half wave dipole transform the ratio of voltage and current along the arms of the dipole from low impedance near its centre to high impedance near its ends. When coupled to free space (of impedance 377Ω), a break in the centre of the dipole (where you would connect the feeder) shows an impedance of about 72Ω (depending to a small extent on the conductor thickness and proximity effects). The impedance at the ends of the dipole is many thousands of ohms.

One way of looking at the 'Q' of any component is as the ratio of the storage field to what may be described as the 'working field' and in the simple dipole this is about 10. If the aerial were another sort of transducer (for example an electric motor) and not a radiator, it would be considered to have a rather poor power factor. However, the storage fields inherent in resonance ensure that energy not radiated on the first pass of the current is radiated subsequently.

WHERE DOES THE WAVE COME FROM AND WHERE DOES IT GO? Fundamentally, the radiated wave comes from the acceleration (or deceleration) of charge, and therefore the whole length of the dipole does not radiate equally strongly. Because the alternating current in the wire varies along the length of the wire with a half sine wave distribution, so also does the magnetic field, and so also does the radiated electric field that is the result of the changing magnetic field. Each of the radiated fields thus has the same distribution as the current, ie most of the radiation comes from near the centre of the dipole.

WHAT'S IN A NAME?

Start Here began under a different authorship and has since started to cover a broader range of subjects and levels, making the original title less appropriate. So, from this month, Start Here is changing its name to Moving On. Whatever your level of experience, we're sure that you'll find something new and interesting here.

The E-M wave generated by the alternating current in the wire expands outwards from the wire, carrying energy equal to the mathematical product of the strength of the radiated E and H fields. However, each radiated field decays inversely with the distance from the wire so that their product decays inversely as the square of the distance from the wire. The radiation field that surrounds the wire is not uniformly strong in all directions. It is strongest in directions at right angles to the current flow in the wire and falls in intensity to zero on the axis of the wire, ie the wire exhibits directivity in its radiation pattern, the energy being concentrated in some directions at the expense of others. The power measured in the direction of maximum power (in the plane at right angles to the axis of the wire), divided by the power that would have been received at the same distance if the power had been spread uniformly in all directions (as from an 'isotropic radiator) is known as the 'gain' of the dipole over an isotropic radiator. It is about 1.6 times or 2.15dB. We will look at aerial gain in more detail in a later article.

Next month we'll start looking at dipoles that are multiples of half wavelengths long and what happens when you feed them other than at the centre.

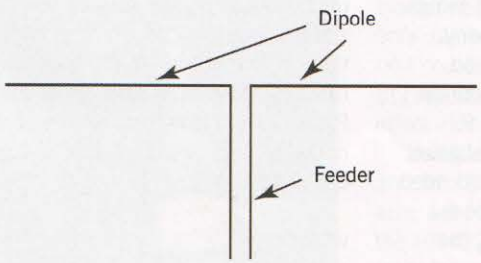

FIGURE 1: A centre fed dipole

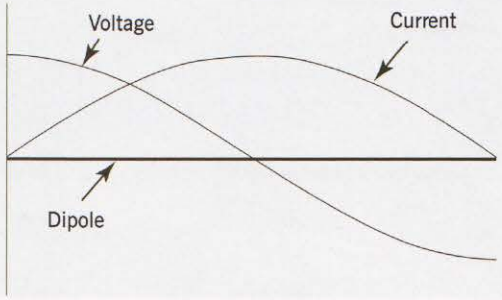

FIGURE 2: Voltage and current distribution on a half wave dipole.

Sport Radio

The new season of the Super League starts and an invitation to set a record in CQ WW SSB

YOUR RSGB THE BEST CONTESTS

LET BATTLE COMMENCE. The new season of Super League events start this month and runs until next February. Although it has only been running for three seasons, the League has really fired up the interest of some groups. Last season the series was won by Bristol CG, who beat the Camb Hams by the very narrowest of margins (see **Table 1**). The Camb Hams – who won the 2011-12 series – could have held off the challenge from Bristol if one of their members had made literally one more QSO in the final event of the series. The margin was very nearly as close between Trowbridge and Spalding, the teams who were placed 3rd and 4th.

In the individual events, Bristol won the 2012 6m AFS, by an even more convincing margin than they did in 2011. They also won the 160m Club Calls Contest, but that's likely to be in part attributable to the fact that the 2011 winning team (De Montfort) didn't take part. The Camb Hams also moved up a place, to take the second spot. Trowbridge, who invariably do well in VHF/UHF events because they're keen on vehicle-based portable operation, won 2m AFS. Three of their A-team members were portable. The Camb Hams, who are also no strangers to portable operation, fielded two full teams and came second. Two of their A-team members were portable. In the first 80m event, CW AFS, the Three A's won for the eighth year in a row, but Lichfield (who came 2nd last year) didn't enter, which opened up the field. Bristol moved up to 2nd place and De Montfort came 3rd. Six days later a less than overwhelming effort by Bristol saw them knocked back to 4th place in SSB AFS. The team from Cray Valley won convincingly, with the Camb Hams coming 2nd and De Montfort 3rd. The final event – 70cm AFS – is an event traditionally dominated by the Trowbridge and Spalding clubs. And it was again this time, with the Camb Hams coming 3rd. As I wrote in this column earlier in the year there was a nail-biting finish to the series, with Bristol just hanging on to the lead they had after the fifth contest. They will be awarded the brand new RSGB AFS Super League Trophy (**Photo 1**) at the RSGB Convention.

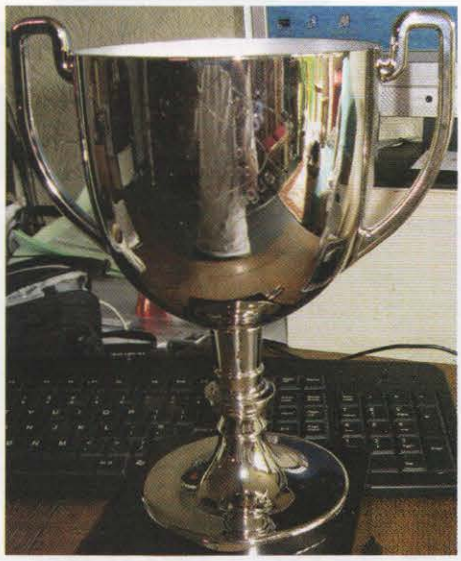

PHOTO1: The new RSGB AFS Super League Trophy.

Groups who are not able to (or interested in) entering the Super League series as a whole will be pleased to know that each of the six events in it run as they did before, so there's everything still to play for in the individual contests. And RSGB members who are not members of clubs can still compete for individual stop spots.

TIP FOR NEWCOMERS. One of the important aspects of contesting is the rapid and accurate exchange of information. Unless you exchange all the required information, you have not made a complete contact.

These days virtually all of the top contesters in the world use some form of real-time computer-based logging. This provides many benefits, such as instant dupe checking, flagging of wanted multipliers (on a per band basis if necessary), calculation of QSO rate, claimed score and the ability to rapidly produce the log for submission to the contest sponsor. QSO information can be rapidly entered into the computer, but only if it is sent to you in the 'correct' order.

The vast majority of logging programs assume that the QSO information will be entered in a certain order. The usual order of the information is callsign, signal report, serial number and then contest specific information (such as CQWW zone, IOTA reference, locator, post code, operator name, year first licensed, etc). If the information is sent in an unconventional order, the operator copying the information will need extra keystrokes to jump between the data entry fields and errors may result (for example the operator may enter the serial number in the signal report field). If the information is presented in the conventional order, the operator will only have to press the tab/enter/space key to advance to the next data entry field. This is less prone to errors and helps to record the information faster – and hence increase the QSO rate for everyone.

SET A RECORD. It cannot be often that someone says you could set a new record in a worldwide contest by having one QSO, but that's exactly what Ron Stone, GW3YDX wrote to me to say. Initially he told me, "One rarely sees any UK stations do well in the CQ WW contests. I think the trick is to look at previous results and enter sections where you do have a chance. I have done fairly well in the QRP section of the WW 160 CW (world #2 in 2008) but was very pleased to set a new CQ160WW CW world record for a Low Power Assisted entry in 2011 and it was also a new world record in that class, using my contest call GW5R... Some G records would be quite easy to beat, if people thought about what to do long before the contests". Here are some of Ron's suggestions for record CQ WW SSB Low Power Assisted scores that could be easily broken:

Band	Current record holder	Points	QSOs
10m	G4FJK	49,883	281
15m	MOKCM	60,208	321
20m	MONDZ	25,840	214
40m	G6UYG	6,240	91

Setting a record in some categories would be much easier than 'quite easy', because they have never been entered (so there are no record high scores to beat). Consequently, if anyone were to submit a Low Power Assisted entry for 80m or 160m they could become a record holder *with one QSO*. The situation is different for other

TABLE 1: The top five teams in the 2013-2013 Super League series.

	1st	2nd	3rd	4th	5th
6m AFS	Bristol	Spalding	Camb Hams	Bolton	Trowbridge
160m Club Calls	Bristol	Camb Hams	Wythall	Horsham	Newbury
2m AFS	Trowbridge	Camb Hams	Bristol	Spalding	Chesham
80m CW AFS	Three A's	Bristol	De Montfort	Camb Hams	Newbury
80m SSB AFS	Cray Valley	Camb Hams	De Montfort	Bristol	Three A's
70cm AFS	Trowbridge	Spalding	Camb Hams	Bristol	Chesham
Overall Points (% of max)	Bristol 5802 (96.7%)	Camb Hams 5779 (96.3%)	Trowbridge 5204 (86.7%)	Spalding 5172 (86.2%)	Newbury 4050 (67.5%)

RSGB HF EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange
Oct 6	21/28MHz *	0700-1900	CW/SSB	21/28	RS(T) + SN + District
Oct 9	80m Club Sprint	1900-2000	CW	3.5	SN + name
Oct 24	80m Club Sprint	1900-2000	SSB	3.5	SN + name

RSGB VHF EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange
Oct 1	144MHz UKAC	1900-2130	All	144	RS(T) + SN + Locator
Oct 5	1.2/2.3GHz Trophy +	1400-2200	All	1.2/2.3G	RS(T) + SN + Locator
Oct 5-6	432MHz-248GHz	1400-1400	All	432-248G	RS(T) + SN + Locator
Oct 8	432MHz UKAC	1900-2130	All	432	RS(T) + SN + Locator
Oct 15	1.3GHz UKAC	1900-2130	All	1.3G	RS(T) + SN + Locator
Oct 20	50MHz AFS §	0900-1200	All	50	RS(T) + SN + Locator
Oct 22	50MHz UKAC	1900-2130	All	50	RS(T) + SN + Locator
Oct 22	SHF UKAC	1900-2130	All	2.3-10G	RS(T) + SN + Locator
Oct 29	70MHz UKAC	2000-2230	All	70	RS(T) + SN + Locator

BEST OF THE REST EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange/info
Oct 5-6	Oceania DX SSB	0800-0800	SSB	1.8-28	RS + SN
Oct 5-6	WAB HF	1200-1200	All	14-28	RS(T) + SN + WAB area
Oct 5-6	IARU 432MHz-248GHz	1400-1400	All	432-248G	RS(T) + SN + Locator
Oct 5	EU Sprint SSB	1600-2000	SSB	3.5-14	Both callsigns + SN + name
Oct 6	UKuG Low Band	0800-1400	All	1.3/2.3/3.4G	RS(T) + SN + Locator
Oct 12-13	Oceania DX CW	0800-0800	CW	1.8-28	RST + SN
Oct 12	EU Sprint CW	1600-2000	CW	3.5-14	Both callsigns + SN + name
Oct 26-27	CQWW DX SSB	0000-2359	SSB	1.8-28	RST + Zone (UK=14)

* HF Championship event; + VHF Championship event. For all the latest RSGB contest information and results, visit www.rsgbcc.org.

DXCC entities in the UK, so to find out whether you could easily break an existing CQ WW SSB record or set a new one with one QSO, check the records page at www.cqww.com/records/records_ph_europe.htm.

The CQ WW SSB contest takes place this month and to give the final words of this item to Ron; "it *is* possible to do well from the UK on the international stage, given some careful selection of the entry section".

THIS MONTH'S EVENTS. The first event of the month is the 21/28MHz Contest on Sunday 6th. In 2012 there were 165 entries, which was down from close to 200 entries in 2011 but still well above the levels seen during many years previous (when propagation was awful and the event nearly became a thing of the past). In his report last year, the adjudicator mentioned that propagation was 'hit and miss'. Hopefully the ionosphere will cooperate this year. Then we have the 80m Club Sprints. This is the third month of the four-month series, with the CW session on Wednesday 9th and the SSB session on Thursday 24th.

Moving up the frequency spectrum, the 2m UKAC is on Tuesday 1st. The weekend of 5-6th is a busy one of UHF and microwave enthusiasts, with the 1.2 and 2.3GHz Trophy Contests taking place for 8 hours on Saturday 5th. Starting at exactly the same time, but running for 24 hours, the 432MHz-248GHz Contest is where the serious microwavers get their kicks. Those who enter either of these contests will have their logs automatically forwarded for entry into the IARU event (see below), unless they specify otherwise. Then it's back to the UKACs, with 432MHz on Tuesday 8th and 23cm on Tuesday 15th. The 50MHz AFS Contest on Sunday 20th will be the first skirmish in the battle for the 2013-14 Super League. This event might only last for three hours, but now that it is part of the Super League series a number of serious entries from several teams can be expected. If you're not part of a team, there's still the opportunity to win as an individual, because the team aspect is in addition to the individual challenge. After that it's back to the UKACs, with 6m and microwave on Tuesday 22nd, and – because it's a 5-Tuesday month – 4m on Tuesday 29th.

PHOTO 2: Didn't he do well! G3XDY with the trophies he was awarded for multiple successes in the 2011 IARU Region 1 UHF Contest.

There are some very different non-RSGB contests on the first weekend of the month. The first to start (at 0800 on Saturday 5th) is the SSB leg of this year's Oceania DX Contest. There are sections for single-op and multi-op stations, with the points for QSOs different on each band (to encourage LF activity in particular). Work Oceania – that's VK, ZL and Pacific islands – only. At midday the Worked All Britain HF Contest begins. The bands for this event are 20/15/10m and please bear in mind that QSOs within the UK don't count for points. The IARU 432MHz-248GHz Contest kicks off at 14:00. An IARU entry will be made for you by the RSGB Contest Committee if you enter one or both of the RSGB UHF/microwave events that take place this weekend, unless you specify otherwise. Taken at the 2012 Friedrichshafen exhibition, **Photo 2** shows John Quarmby, G3XDY with the 1.3GHz single operator, overall winner of the single operator section and winner of the 5.7GHz single operator trophies he won in 2011. Finally, the first autumn EU Sprint takes place for four hours, starting at 16:00. Although the results of the Sprints have not been uploaded to their website for some years, they are available at http://rk3awl.ru/eusprint/. Another in the series of Low Band events organised by the UK Microwave Group takes place for six hours on Sunday 6th. On the following weekend the CW legs of the Oceania DX Contest and the EU Sprint Contest take place. The final event of the month is the whopper – the 48-hour long CQ Worldwide SSB. If there's any propagation at all, expect the SSB portions of all the contesting HF bands to be packed on the 26th and 27th.

Beginners &

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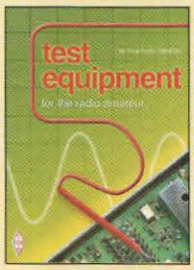

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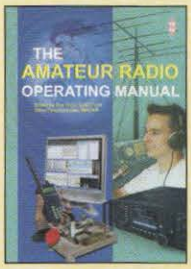

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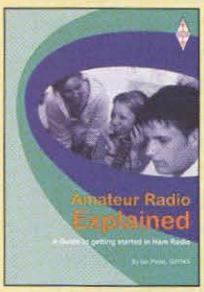

A Guide to Getting Started in Ham Radio

By Ian Poole, G3YWX

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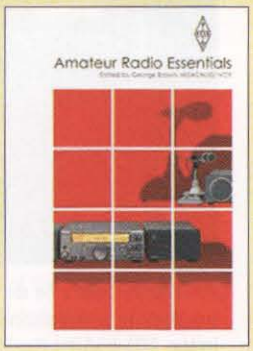

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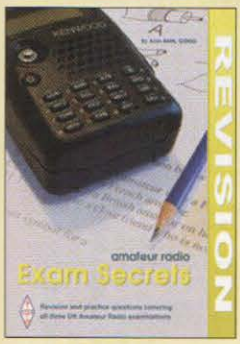

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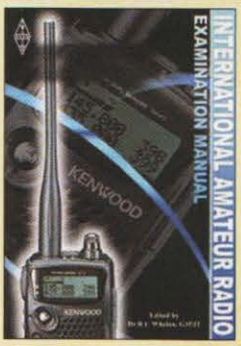

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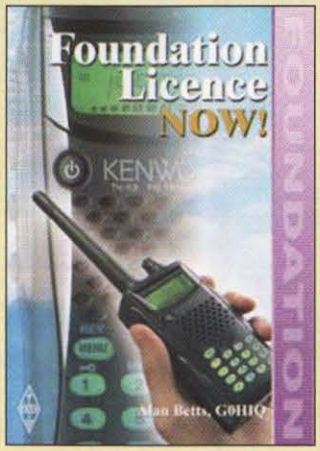

By Alan Betts, G0HIQ

If you want to obtain an Amateur Radio Foundation Licence this book is for you. This is the latest edition of the Radio Society of Great Britain (RSGB) book that contains all that is required to obtain a Foundation licence. Even if you just want to know about Amateur Radio this book provides insight into the technical basics, receivers, transmitters and antennas. How and where to operate with your new licence are covered along with safety considerations and electromagnetic compatibility. Written in an easy to use and understand style.

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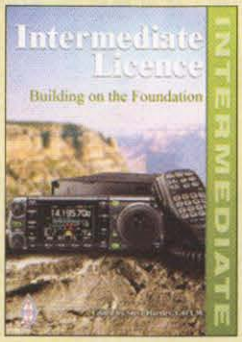

Edited by Steve Hartley, G0FUW

This brand new 5th edition of the *Intermediate Licence - Building on the Foundation* book has been fully updated and revised for the new Intermediate syllabus. Drawing on the success of the previous editions this book delivers all the syllabus changes in the ideal companion book for those working to pass the Amateur Radio Intermediate Licence exam. This book is written in an easy to understand style and broken down into manageable half-hour worksheets. Safety tips are covered and there is lots of helpful advice. You will even find two revision sections in the form of exam type questions, to test the knowledge learned. *Intermediate Licence - Building on the Foundation* is the standard workbook for the Intermediate Licence and as such contains all the information required during Intermediate Licence courses. If you are studying for the Intermediate Licence this is simply the book you need.

Size 297x210mm, 80 pages, ISBN 9781 9050 8650 4

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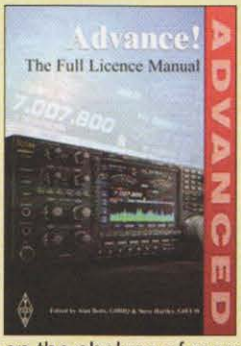
Advance - The Full Licence Manual



By Alan Betts, G0HIQ & Steve Hartley, G0FUW

Advance! the Full Licence Manual completes the natural progression from *Intermediate Licence - Building on the Foundation* and *Foundation Licence Now! Advance! the Full Licence Manual* contains all of the information required to move to the final stage of amateur radio licensing. Based on the best-selling *Radio Amateurs Examination Manual*, it has been updated to match the Full licence syllabus. Broken down into logical sections and presented in an accessible style, this book contains everything necessary for home study. This book is also the ideal companion to a formal training course. The book provides a useful reference source and so will also find a home on the shelves of many amateurs who have passed the examination. *Advance! the Full Licence Manual* is a "must have" for everyone progressing to the Full licence and is the best route to success in the examination.

Size 210x297 mm, 104 pages, ISBN 9781 8723 0995 7

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RadCom

HF F-Layer Propagation Predictions for October 2013

Compiled by Gwyn Williams, G4FKH

	3.5MHz	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe								
Moscow	88.....7778	886...258878	..76567888..	..7788888...	...99999....	...89997....	...6888.....	....77.....
*** Asia								
Yakutsk	.....43.	4.....26775	..53.4676475	..3676.....	...67.....	.....	.....	.....
Tokyo	.....332.	.....47776.	.....23...	.....	....5.....	.....	.....	.....
Singapore	.....222.	88776	.....266...	.....56....	.....576....	.....564....	.....55.....	.....
Hyderabad	.....	5444	46533	.....355...	.....55....	.....5.....	.....4.....	.....
Tel Aviv	99.....8899	988....59999	..6....586..	...633677...	...88889....	...68876....	....777.....	.....
*** Oceania								
Wellington	.....	.....56...	...355556...	....655.4...	.....3.....	.....	.....	.....
Well (ZL) (LP)	.....	.....	.....	.....	.....	.....	.....	.....
Perth	.....	.....2532.	.....47763.	.....665...	.....	.....	.....	.....
Sydney	.....	.....5876..	.....48875..	.....7875...	.....4.....	.....	.....	.....
Melbourne (LP)	.....	..59.....	.5698.....	5..983.....4	...88....4..	.....	.....	.....
Honolulu	.....	...4.....	...754.4....	...3...4....	.....4...	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.....4...	.....	.....	.....	.....
W. Samoa	.....	...63.....	...77776....	...4787.....	....687.4...	....476.....	.....6.....	.....
*** Africa								
Mauritius	2.....222	7.....7777	6.....78766	.....884..	.....5....	.....4....	.....	.....
Johanesburg	.....	43.....254	76.....7877	.....586..	.....77...	.....476...	.....46....	.....5....
Ibadan	.1.....	675.....1456	777.....5777	5.74....6753	...7534676..	...766677...	...777777...	...67777....
Nairobi	2.....11	77.....7777	55.....5455	.....365..	.....56...	...4..466...	...66667....	...56676....
Canary Isles	676.....666	7875....5878	8887...47888	4..77567785.	...7989989..	....779967..	.....88....	.....78....
*** S. America								
Buenos Aires	.....	3222.....3	6438.....65	...8.....2..	...6.....	...34.....	.....	.....
Rio de Janeiro	.....	433.....23	7557.....775	...7.....7..	...53...45..	....5...5...	....4.....	.....
Lima	.....	32.3.....1	64.6.....54	.....	.....	.....	.....	.....
Caracas	.....	4331.....3	85372.....87	...37....64.	....765567..	.....7777...	.....7777...	.....766....
*** N. America								
Guatemala	.....	32.4.....	6..82.....25	...4.....	.....43.....	.....4.....	.....	.....
New Orleans	333.....	6665.....6	7..6.....36	.....4...3..	.....	.....	.....4.....	.....
Washington	455.....2	7777.....37	74..5.....77	.....4..473.	.....5.454..	.....5555...	.....56....	.....
Quebec	676.....35	7536.....476	...62...374.	....654676..	.....4445...	.....55.....	.....6.....	.....
Anchorage	..3.....	4663.....	4.3...444465	.....66..	.....75..	.....	.....	.....
Vancouver	.....	233.....	.....	.....	.....6...	.....4...	.....	.....
San Francisco	.....	2..2.....	.....	.....	.....	.....	.....	.....
San Fran (LP)	.....	.....	.....	.....	.....7....	.....7....	.....7....	.....6....

Key: Each number in the table represents the expected circuit reliability, eg '1' represents reliability between 1 and 19% of days, '2' between 20 and 30% of days, etc. No signal is expected when a '.' is shown. **Black** is shown when the signal strength is expected to be low to very low, **blue** when it is expected to be fair and **red** when it is expected to be strong. The RSGB Propagation Studies Committee provides propagation predictions on the internet at **www.rsgb.org.uk/propagation/index.php**. An input power of 100W and a dipole aerial has been used in the preparation of these predictions; therefore a better equipped station should expect better results. The predicted smoothed sunspot numbers for October, November and December are respectively (SIDC classical method – Waldmeier's standard) 57, 56 & 55 and (combined method) 77, 78 & 79. The provisional mean sunspot number for August was 66.0. The daily maximum / minimum numbers were 105 on 21 August and 31 on 26 August.

Please send news reports to radcom@rsgb.org.uk. To get future events listed here and put on GB2RS, e-mail details of your meetings as early as possible to GB2RS@RSGB.org.uk and we'll do the rest. We need to know your club name, RSGB Region number, contact name & phone number, date of meeting and detail of meeting. Example: South Bristol ARS, Region 11, Len, G4RZY, 01275 834 282,29 October, On the Air. It's that simple. Please note that we don't normally print 'closed', 'TBA' or 'every Tuesday' type submissions. The deadline for the November 2013 *RadCom* is 25 September and for the December 2013 edition it's 25 October. For GB2RS, the deadline is 10am on the Thursday for the week of broadcast. If you need to amend your club details, please visit www.rsgb.org/clubupdates.

INTERNATIONAL

PAFOS RADIO CLUB, CYPRUS
Richard, 5B4AJG, 00357 97857891, 5B4AJG@cyprusliving.org

NATIONAL

Civil Service Amateur Radio Society weekly net every Tuesday, 8pm, 3.763MHz

REGION 1: SCOTLAND SOUTH & WESTERN ISLES

REGIONAL MANAGER: JASON, O'NEILL, GM7VSB, RM1@RSGB.ORG.UK

Ayr ARG
Ralph Riddiough, GM4SQO, 01292 285 281, aargsecretary@sky.com
2, 30 Club night
16 Talk on renewable energy by John Stewart, GE Power and Water and Ralph Riddiough, Brechin Tindal Oatts Solicitors

Cockenzie & Port Seton ARC
Bob, GM4UYZ, 01875 811 723, www.cpsarc.com
4 Normal club night
18 Video/DVD night
26 CQWW SSB Contest

Kilmarnock & Loudoun ARC
Graham, MM3GDC, mm3gdc@btinternet.com
8, 22 Club night, 7.30pm

Lothians RS
Alan J Masson, GM3PSP, 0131 623 4580
16 Surplus equipment sale at St Fillan's Church
30 Astronomical tour round the solar system, Ian, GM3VEI

Stirling District ARS
John McGowan, gm0fsv@gm6nx.com
3, 10, 17, 24, 31 Club meeting
6, 13, 20, 27 10.30am till late afternoon for construction, training, projects & operating

Scouts and Guides from eighteen countries took part in the recent International Jamboree at Auchengillan Outdoor Centre in Stirlingshire. During the week-long event Peter, MM1CIR, a member of the **Kingdom Amateur Radio Society**, and Malcolm, GM3TAL of the **GMDX Group** together with **Greenock and District Scouts and Guides Amateur Radio Club** members, Bob, MM1AWV, Eunice, MM3UVL, Stephanie, MM3YGE, George, GM8YUI and Kai, MM1AUF and Marcel, PA1JPS from the Netherlands combined to provide a very successful range of amateur radio related activities.

The team set up two radio stations, HF and VHF/UHF, with a Force 12 Beam antenna kindly loaned by the GMDX Group, an Alpha Delta DX CC multi band dipole, a six metre home-brew beam and a 2m/70cm collinear. The radios used were a Yaesu FT-840 driving an Acom 1000 linear amplifier providing 400 watts output on HF and a Kenwood TM-V71 for use on 2m and 70cm.

The young people were able to send a greetings message to a number of stations including Jamboree stations in both Germany and Sweden. They were also introduced to Morse code that they then used in a 'Wide Game' that involved navigating through the campsite, finding and decoding clues to a secret Morse code message.

A new activity for this Jamboree, provided by PA1JPS, involved using specially built RF receivers to locate 'Talking Trees' within the campsite. This proved to be a big hit with the young people who could not believe trees actually spoke (using a hidden transmitter).

During the course of the event the radio station was visited by a number of scouting dignitaries including the Chief Commissioner of Scouts for Scotland, Graham Haddock and Wayne Bulpitt the Chief Commissioner of Scouts for the UK.

For many of the young people the radio activities were said to be the highlight of the camp and proved so popular, particularly with the Ukrainian contingent, that they visited the station on numerous occasions. One of their participants was so enthusiastic he became an honorary member of the team and helped with the electronic logging duties!

The radio team were (back row), GM8YUI, GM3TAL, PA1JPS, MM1CIR and MM1AWV, (front row) MM1AUF, MM3UVL and MM3YGE.

REGION 2: SCOTLAND NORTH & NORTHERN ISLES

REGIONAL MANAGER: DENNY MORRISON, GM1BAN, RM2@RSGB.ORG.UK

REGION 3: NORTH WEST

REGIONAL MANAGER: KATH WILSON, M1CNY, RM3@RSGB.ORG.UK

Bolton Wireless Club
boltonwireless@gmail.com
7 Club meeting
21 The story of Jodrell Bank, Prof Ian Morison

South Manchester R&CC
Ron, G3SVW, 01619 693 999
3 Whites M1 Armoured Car, Lance
10 ATUs, Ron, G3SVW
17 Steam radio, Robin, G3RJQ
24 Planning, Ian, M0BXR
28 Technical forum
31 Bletchley Park, Bill, G4NOL

Stockport RS
Nigel Roscoe, 07973 312 699, info@g8srs.co.uk
1 Foundation/new licensee evening

Thornton Cleveleys ARS
John E Rodway, G4FRK, 01253 862 810
7 AGM
14 Incoming Chairman's address
21 EME video
28 Converters & transverters, G8KBH

Following a rent increase at their last venue, **Newton-le-Willows Amateur Radio Club** is pleased to announce they have found a new venue. The club will now meet on Sunday evenings from 6.30pm at Newton le Willows Amateur Radio Club, Warrington Sea Cadets (TS Obdurate), Old River Road, Wilderspool Causeway, Warrington WA4 6ZD. Contact Chris Forber on 07453 776255 or e-mail enquiries@nlwarc.co.uk for more details.

REGION 4: NORTH EAST

REGIONAL MANAGER: HAROLD SCRIVENS, GOUGE, RM4@RSGB.ORG.UK

Denby Dale RC
Richard, M0RBG, 07976 220 126, m0rbg@talktalk.net
2 Surplus auction sale
5 & 6 HF phone contest from Cartworth Moor (1200-1200)
9, 25 Night on the air, 7.30pm, 145.575MHz±
16 AGM, 8pm, Pie Hall
19 JOTA weekend from Bradley Wood Scout Camp
30 Real ale night, 8pm, Star Inn, Lockwood

Hornsea ARC
Gordon MacNaught, G3WOV, 01377 240 573, gmacnaughtwov@yahoo.co.uk
2 Slim Jim construction, G0DMP
9 CW Sprint and rally preparation

13 HARC Rally at Floral Hall
16 Digital amateur radio, G0VRM
23 The G7FEK antenna, G3WOV
30 Talk by Rick, M0CZR

Sheffield ARC
Peter Day, G3PHO,
sarc@g3pho.org.uk

7 The GX3RCM communications module story so far, M1ERS, M0TWS, G0NEY and G3PHO
14 Annual presentation evening
21 Quiz night
28 Practical evening

REGION 5: WEST MIDLANDS

REGIONAL MANAGER: VAUGHAN RAVENSCROFT, M0VRR, RM5@RSGB.ORG.UK

Aldridge & Barr Beacon ARC
Albert, G0KFS,
01922 614 169
7 Natter night
21 Surplus equipment sale

Central Radio Amateur Circle
Martin Hallard, G1TYV,
07906 905 071,
radio-circle@live.co.uk
10 Night on the air, 8pm
12 & 13 RSGB Convention
19 Plug & play day, Barr Beacon, 10:30
21-25 G100RSGB on the air
27 Group trip to Llandudno Radio Rally

Cheltenham ARA
Derek Thom, G3NKS,
01242 241 099,
secretary@caranet.co.uk
15 Lunch at Cross Hands, Brockworth
17 Three short talks

Coventry ARS
John, G8SEQ, 07958 777 363
4 Charity tribute night to Brian Eastick
7, 14, 21, 28 Club net on 145.375MHz
11 AGM
18 Video night
25 Radio workshop
28-30 Hosting GB100RGB

Dudley and District ARS
Carl Roberts, M0ZCR,
m0zcr@live.co.uk
1 VHF 2m UKAC night on the air
2, 9, 16, 23, 30 Advanced course
8, 22 On the air & natter night
15 SHF 23cm UKAC night on the air
29 Committee meeting

Gloucester AR&ES
Anne, 2E1GKY,
01242 699 595, daytime,
www.g4aym.org.uk
7 DF hunt
14 Preparation for G100RSGB
15 Gloucester Cathedral Special RSGB G100RSGB
21 Operating new equipment in shack
28 Informal evening

Midland ARS
Norman, G8BHE,
07808 078 003
2 Open meeting, shack on the air and training classes
9 Committee meeting
16 AGM
23 New committee, open meeting and training classes
30 Planning social calendar, ragchew and training classes

Rugby ATS
Steve, G8LYB,
01788 578 940,
stephen@tompsett.net
5, 12 Equipment and antenna testing at the new clubhouse
19 Official opening of the new Clubhouse – everyone welcome
26 Valves and classical electronics, Mike, G8CTJ

Salop ARS
www.salop-ars.org.uk
3 Natter night / committee meeting
10 Shack night
17 Pre-AGM meeting
24 AGM
31 Natter night

South Birmingham RS
Mick Cleary, G7RRP,
07595 696 359,
g7rrp@btinternet.com
1, 8, 15, 22, 29 Coffee morning 11am to 1pm, all welcome
3, 10, 17, 24, 31 Training classes, Dave, G8OWL
4, 18, 25 Shack work and ragchew
7 Open meeting
21 Sorting rally stock
27 North Wales Rally, Conway
28 Committee meeting

Stratford Upon Avon DRS
G0CHO, 01608 664 488,
cousbey@theiet.org
14 Fracking – energy from shale, Piet, M0PHV
28 Informal / practical evening in shack

Sutton Coldfield ARS
Robert Bird,
spirit.guide@hotmail.co.uk
7, 21, 28 2m net, 145.250MHz, 7.30pm
14 Club meeting and OTA
15 4m net, 70.475MHz, 7.30pm

Telford & DARS
Mike, G3JKX, 01952 299 677,
mjstreetg3jkx@blueyonder.co.uk
2 Committee meeting, GX3ZME OTA
9 10 minute topics
16 G100RSGB operations
23 Projects & G100RSGB preparations
26-26 G100RSGB on WARC bands & V/UHF
30 Table top sale

Wythall Radio Club
Chris, G0EYO, 07710 412 819
1 Free 'n' Easy/144MHz UKAC Contest
4, 11, 18, 25 Shack social
6, 13, 20, 27 Club net on 145.225MHz, 8pm
7, 14, 19, 21, 28 Advanced course
8 Morse class, committee meeting
11-13 RSGB National Convention
11-12 Wythall Beer Festival
15 AGM
20 RSGB 50MHz Affiliated Societies Contest
22 Morse class, free 'n' easy
24 RSGB 80m Club Sprint Contest
28 Curry Night at the Monsoon
29 Morse class, talk on preparing for operating G100RSGB
31 Operating G100RSGB from the club

Sutton Coldfield Amateur Radio Society recently enjoyed a talk on antenna analysers, how to understand their use of and hands-on practice from Mike, M0AZE. Over the summer the club will have attended the Middleton village fete and British Waterways on the Air.

At a recent meeting of the **North Staffs RAYNET Group**, five members were presented with Long Service Awards. The photo shows (back row L-R) Dave, G8YQA 20 years; Chris, G0RDK 25 years and Dave, G7BPG 25 years (front row L-R) Margaret, RAY01995, 15 years and Shelagh, G1UYT 25 years. Other members honoured but unable to be at the meeting are Michael, G4HZG, 35 years. Christopher, G4NFL, 25 years and Mary, G4UMG, 20 years. The group covers a variety of events around the Staffordshire Moorlands, Yorkshire, Derbyshire and Cumbria.

One Sunday each August, the residents of Wythall and its surrounding areas across the South of Birmingham come together to celebrate with a village carnival. This year, **Wythall Radio Club** was somewhat more heavily involved in this event. While some of the regulars helped out with car parking and marshalling, another group of members put on an interactive stall to advertise the club, the RSGB and amateur radio as a hobby.

With three demonstration stations on all bands from 10 to 40m (as well as 2 metres) and 'hands-on' exhibits, such as Morse Keys and oscillators, homebrew radios and computers, there was a lot for the public to engage with. Not surprisingly, much interest was shown and many leaflets handed out. Wythall Radio Club is hoping to see that followed up with some new Foundation students in 2014!

Members of **Glos RAYNET** have been busy in recent months in undertaking safety cover of the one day Scout Malvern Challenge and

overnight Sun Run on Cleeve Hill above Cheltenham. Mobile and checkpoint staff oversaw some 3000 scouts translate through the course with no significant incidents. This was then followed up by the BHF Cotswold cycle ride on a 40 mile course with a thousand participants, again passing off safely and with no casualties on the notorious descent of Stanway Hill.

Planning then turned to the backup communications for the local authority that is put in place at the Royal International Air Tattoo based at RAF Fairford each year. Long hours and scorching heat in the setup during the week meant all signals and relay stations worked well, with the team enjoying a ringside seat of the displays whilst based at the Emergency Control Centre.

A routine safety cover event for an Endurance GB long distance horse ride on the hills above Gloucester following on from the high octane of Fairford, turned into a serious incident when a young rider fell and suffered multiple fractures of her arm. Members coordinated the on course medical services to the incident and transported the paramedic in a 4x4 for access. The organisers were extremely pleased at the swift actions taken and praised the efforts of all attending; post surgery, the young lady is now recovering.

Details of the Group can be found at www.glosraynet.org.uk.

Gloucester Amateur Radio & Electronic Society had several successful candidates in the recent Advanced exam. The photo shows (L-R) Andy, M0IAJ, Darren, M0HLI, Rob, H0JJA and Tom, M6CZD. Congratulations to all.

On 19 and 20 October, **Rugby Amateur Transmitting Society** is celebrating the official opening of its new clubhouse at The 12th Rugby Scout Headquarters, Boughton-Leigh Community Junior School, Wetherell Way, Brownsover, Rugby CV21 1LT by operating in JOTA with the 12th Rugby Scout Group, over the weekend. There will be a BBQ on the Saturday afternoon.

REGION 6: NORTH WALES

REGIONAL MANAGER: MARK HARPER, MW1MDH, RM6@RSGB.ORG.UK

North Wales Radio Society
Liz Cabban, lizcabban@vodafoneemail.co.uk
3 General meeting
10 Technical topic
17 Llandudno & Colwyn Bay Tramway, John Davies
24 Final rally planning meeting
31 Rally post mortem

Powys ARC
Dave, GW4NQJ, 07870 827 887, www.parc.care4free.net
3 Sounds of the spectrum, Terry, GW0EZY

Wrexham ARS
Frank Bailey, M1EYH, fcbailey20@btinternet.com
1 The Blackburn story
15 Guest speaker

Recently, 12 Cadets from **2364 Sqn (Welshpool) RAF Air Cadets** gained their Foundation licences – Cadets Kieron Evans, Aaron Evans, Ricky Jones, Chris Matthews, Rhys Glover, Joe Baker, Jack Shanahan, Chris Doree, Liam Lane-Wells, CWO James Philips, Flt Sgt Gil and Cpl Harley Duffy. This counts as 1 of the 6 Radio Modules that go towards the prestigious Radio Communicator Badge, which there are only 4 in our Wing (Mid & North Wales),

all of which are from this Sqn at the moment with more to follow shortly. Cadets operate under their own callsigns or the Sqn Club call of MW0HJM, usually QRP on the Clansman PRC 320 and vertical whips. They also operate on 5MHz with their military callsign with great results around Europe. The staff would like to congratulate everyone on their success and continual hard work with thanks also going the RSGB for the Membership of the Society for the Cadets.

REGION 7: SOUTH WALES

REGIONAL MANAGER: JIMMY SNEDDON, MW0EQL, RM7@RSGB.ORG.UK

Aberystwyth & DARS
Ray, GW7AGG, 01970 611 853, ray@clocktower.go-plus.net
10 AGM

Llanelli ARS
Craig, MW0MXT, 01269 845 773, craig@mw0mxt.co.uk
7 GC0EZQ on the air
14 Club raffle & social evening
21 DVD night
28 Junk sale and social evening

Marches ARS
Club secretary, marchesars@hotmail.co.uk, www.marchesradiosociety.org
10 Natter night, finish build of 2m 70cm antenna, OTA
24 Talk by Peter Torry on receiver basics and their operation

REGION 8: NORTHERN IRELAND

REGIONAL MANAGER: PHILIP HOSEY, MI0MSO, RM8@RSGB.ORG.UK

West Tyrone ARC
Philip, MI0MSO, 07793 386 795, mi0mso@yahoo.co.uk
5 Annual conference

West Tyrone Amateur Radio Club will be holding their annual conference on Saturday 5 October. The venue is the Technology Education Centre, 2 Spillars Place, Omagh BT78 1FA. For more details go to www.wtarc.org.

REGION 9: LONDON & THAMES VALLEY

REGIONAL MANAGER: LARRY SMITH, G4OXY, RM9@RSGB.ORG.UK

Crystal Palace R&EC
Bob, G3OOU, 01737 552 170, g3oou@aol.com
4 Short talks on constructing a computer, contesting and computer logging

Edgware & DRS Mike, G4RNW, 02089 500 658, michael.stewart5@ntlworld.com
10 Antenna chat, John, G4GYS
24 Really useful gadgets, Steve, G0PQB

Harwell ARS Malcolm, G8NRP, 01235 524 844, info@g3pia.org.uk
8 Part 2 of 40 years of Technology in the BBC, Tony, G0OVA
22 Shack Activity Night

Newbury & DARS
Rob, G4LMW, 01635 862 737, g4lmw@btconnect.com
23 Intro to DXing, Don, G3XTT

Reading & DARC
Pete, G8FRC, 01189 695 697
10 A third look at the BBC, Tony, G0OVA
12, 19 Foundation course & exam
24 Junk sale

Shefford & DARS
John Burnett, 2E0OAK, 07860 804 793
3 Planning for CQWW
10 Restoring old TVs, Paul Schimmel
17 Autumn junk sale
24 Club project, Richard, G3NII
26 CQWW Contest at Barry's field
31 Tracking bird migration, RSPB

Southgate ARC
Mr K Mendum, G8RPA, g8rpa@arrl.net
9 Planning meeting for 2014

There were bargains on offer at **Verulam ARC's** Bring and Buy held in August. Members had the opportunity to recycle their items,

while sales of donated equipment from a SK's family went to Club funds. The Club's treasurer, Norman G8ATO (left in picture), was clearly pleased as the level of funds increased.

REGION 10: SOUTH & SOUTH EAST

REGIONAL MANAGER: MICHAEL SENIOR, G4EFO, RM10@RSGB.ORG.UK

Basingstoke ARC
Tim, G3PJD, 07754 132 859
21 AGM
Brede Steam ARS
Steve, 01424 720 815, M0NUC@aol.com
1, 5, 8, 15, 22, 29 At the shack
Bromley & DARS
Andy, G4WGZ, 01689 878 089
15 FUNcube Pro+ SDR dongle
26 Intermediate course
Crawley ARC
John, G3VLH, 01342 714 402
23 History of airborne surveillance radar by Prof Simon Watts, G3XXH
Dorking & DRS
Garth, G3NPC, 01737 359 472, www.ddrs.org.uk
22 *Ham Radio Deluxe*, Chris, M5LRO
Fort Purbrook ARC
Neil Hoare, M0NEH, 02392 378 559
2, 9, 16, 23, 30 70cm net on 433.575MHz, 8pm
3, 10, 17, 24, 31 2m net on 145.550MHz, 7pm
3, 13, 27, 30 40m net, 9pm, meet initially 8.55pm on 145.500MHz
7, 14, 21, 28 2m SSB net, 144.350MHz, 7pm
25 Natter night at the Fort
Horndean & DARC
Stuart, G0FYX, 02392 472 846, www.hdarc.co.uk
3 Natter night/social evening
17 AGM
19 Jamboree on the air (JOTA) activity
Horsham ARC Alister, G3ZBU, 01932 242 243, www.harc.org.uk
3 Junk sale
17 Social at the Queen's Head, West Chiltington
Itchen Valley ARC
Quintin Gee, M1ENU, 023 8078 7799
11 Current status of Microsats, Jim, G3WGM of AMSAT-UK
25 High altitude balloon experiments, Phil, M0DNY
Southdown ARS
John, G3DQY, 01424 424 319
2 Operating at Hailsham shack
7 The Enigma machine from the German perspective, G0EYE
Surrey Radio Contact Club
John, G3MCX, 020 8688 3322, john.g3mcx@btinternet.com
7 Autumn surplus equipment sale
21 Informal chat, move-it-on, fix-it
Sutton & Cheam RS
John, G0BWV, 020 8644 9945, info@scrs.org.uk
17 Antenna Circus (revisited), Terry, G4CDY
Swindon & DARC
Kevin, G6FOP, www.sdarc.net
3 Activity night
10 Gulls, guns & Guglielmo – a few hours on Flat Holm, Jonathan, M0ZGB
17, 31 Activity night
24 2011 Rockall DXpedition DVD
Wimbledon & DARS
Andrew Maish G4ADM, 02083 353 434
11 Talk by Jim, G4WYJ
25 AGM
Worthing & DARC John, G8FMJ, 01273 593 232
2 Surplus equipment sale
6 Monthly breakfast meeting at the Goring café
9 Discussion evening + 80m CW Sprint contest
13 AGM
23 In search of the Schumann Resonance, radio around 8Hz, Jonathan, G1EXG
24 80m SSB Sprint contest
30 GX3WOR on the air

Waterside New Forest Radio Club took part in Lighthouses on the Air activities this year by setting up GB0BMB in the beautiful grounds of Lepe House, on the New Forest coast. The lighthouse in question is known as the Beaulieu River Millennium Beacon and it was built by the community of Beaulieu in the year 2000.

The requisite tent and aerial were set up on the preceding Friday afternoon by Gordon, G1ZEC, Tony, G6MNL, Robin, G0OSG and Rod, G6LVJ in a grassed area surrounded by beautiful ornamental trees. During the weekend, the equipment used was Tony's FT-747 transceiver and a transistorised linear amplifier producing 200+ watts, feeding into a G5RV wire aerial oriented roughly north–south. The station was operated by Tony, Robin, Rod and Mel, G0FOH. A total of 227 successful contacts were made with other amateur radio stations in the UK, Ireland and Europe, several of whom were themselves running lighthouse or lightship stations. They operated exclusively on the 40m band, and the station proved to be very popular throughout the weekend, working up to a climax on Sunday afternoon, when they were besieged by radio amateurs seeking to make contact, producing what Tony described as a "wall of sound"! Their operators worked as fast as politeness and the necessary exchange of information permitted, but when at the end of the afternoon they were forced by their agreed arrangements to shut the station down, there was unfortunately still a large number of amateur stations seeking contact. Those radio amateurs who were successful will be receiving QSL cards with a picture of the Millennium Beacon reproduced from a watercolour by local artist Gervase A Gregory, as confirmation. All taking part found the exercise very enjoyable.

Once again **Brede Steam Amateur Radio Society** took part in Lighthouses on the Air and put UK0059 (New) and UK0060 (Old) lighthouses on the air. The club set up their 3 element tribander, covering 10, 15 and 20 metres, on top of their trailer/mast, and a full size G5RV was attached as well to cover other bands. This was all set up on the Friday at Dungeness lifeboat station. The RNLI at Dungeness allow the club to set up their equipment in the office at the back and the trailer/mast on the hard standing. The crew are very welcoming and have accommodated the club for the past 5 years.

A few contacts were made on the Friday just to make sure all the equipment was working in readiness for the event. On the Saturday the day started well and they finished with 150 contacts logged. Unfortunately, the bands were not in their favour and nor was the wind and the mast had to be lowered as the strain on it was too great, lifting the back steady wheel off the ground.

On the Sunday again the sun shone and the wind was still very strong so the mast was not erected to its fullest height. Contacts were few and far between, but the members of the club persisted and finely a total of 270 contacts were made overall. The total number of lighthouses/ships was 59. Total countries contacted were 42 including one oil rig in Singapore – the operator was on lookout for ships at the time.

The club wish to thank all the people who contacted the station during the weekend and hope to see you all next year. BSARS members would like to thank the RNLI at Dungeness for their hospitality again and look forward to next year's event.

REGION 11: SOUTH WEST & CHANNEL ISLANDS

REGIONAL MANAGER: PAM HELLIWELL, G7SME, RM11@RSGB.ORG.UK

Appledore & DARC
Brian Jewell, M0BRB, 01237 473 251
Zepp Net Monday, Tuesday and Thursday from 1600, 145.450MHz. Wednesday net via GB3DN, 1600 local time. HF net on Friday at 1600 local time, 7.185MHz ± QRM
Bristol RSGB Group
Robin, G3TKF, 01225 420 442
28 The Raspberry Pi and other controllers, Pete, G4HQX
Cornish RAC

Steve, G7VOH, 01209 844 939
2 Committee evening
3 Main club meeting
17 Workshop evening

Exmouth Amateur Radio Club
Mike G1GZG, 01395 274 172
2 Computers part 4 – introduction to programming
16 Making your own PCBs & practicing soldering SMDs

Mid Somerset ARC
Nick, 2E0FGQ, 01749 346 320, nick.bennett@midsarc.org.uk
8 Club night
22 Social gathering at The King's Arms, Shepton Mallet

Plymouth Radio Club
Robert Goodall, 01752 777 888, robert.2e0itn@gmail.com
5 Weekend events, WAB HF Phone plus Ociania DX Contest at Cadover, Dartmoor
8 Easy operation of club equipment, Chis, M0ZCP

Poole Radio Society
Bill Coombes, G4ERV, secretary@g4prs.org.uk
4, 18, 25 Activity night
6 Operating in Hamworthy Park
11 A year spent chasing exotic DX on 4m Sporadic-E, Charles, G4JQX
19-20 JOTA with the Scouts

Riviera ARC
Alan Wyatt, G2DXU, rivieraarc@gmail.com
1 AGM
4, 11, 18, 25 2m net on 145.525 8pm
8, 15, 22, 29 Club meeting, MXORIV OTA

South Bristol ARC
Andrew Jenner, G7KNA, 07838 695 471
3 Calendar 2014 with Andy, G7KNA
10 Committee meeting
17 Roll up J-Pole antenna workshop, Henryk, M0HTB
24 Open house and on the air
31 Start of the Christmas raffle

Torbay ARS Dave, G6FSP, g6fsp@tars.org.uk
4, 11, 18, 25 Natter night

Yeovil ARC Rodney Edwards, M0RGE, 01935 825 791, rodney.edwards@uwclub.net
3 Mini talks
17 Secret Life of Television DVD
31 On the air

During a break from his RSGB presidential duties, Bob Whelan G3PJT and his wife, Rosemary booked in to the National Trust Marconi Wireless Cottage on the Lizard peninsula in Cornwall. He was delighted to find an amateur station GB2LD in the adjacent museum and, of course, operated from there. He could not resist the spark transmitter but ensured that no aerial was attached!

His visit also coincided with the annual BBQ at **Poldhu Amateur Radio Club** and was shown over the Wireless Field by David Barlow, G3PLE and then paid homage at the Marconi Monument before touring the Marconi Centre with its three radio rooms and callsign GN2GM. He then joined Poldhu members at the BBQ.

Plymouth Radio Club has had five candidates complete their Intermediate licence course. They can be seen here together with instructors Chris, M5CJW and Bob, G7NHB, both of the Plymouth Training Team.

Peter, G8XTE was presented with a framed Lifetime Membership certificate in recognition for his contribution to the **Plymouth Radio Club**. Peter has been a member for well over 24 years, during this period he's spent many hours not only repairing and maintaining the clubs radio equipment, but helping and advising members with their technical problems.

Peter is seen being presented with his framed Lifetime Membership certificate by the Chairperson of the Plymouth Radio Club, Sheila, 2E0YSH.

REGION 12: EAST & EAST ANGLIA

REGIONAL MANAGER: MARK SANDERSON, M0IEO, RM12@RSGB.ORG.UK

Bittern DX Group
Linda, G0AJJ, 01692 218 562, secretary@bittern-dxers.org.uk
31 Club meeting with venue change, check with G0AJJ

Braintree & DARS
John, M5AJB, 01787 460 947
7 JOTA planning
21 Aircraft scanning for under £5, Richard, 2E0XRS

Cambridge & DARC
David, M0ZEB, 01353 778 093
11 Number systems, binary made simple
25 PIC-a-STAR SDR Project, Bob, G3PJT

Chelmsford ARS
Martyn, G1EFL, 01245 469 008, www.g0mwt.org.uk
1, 8, 15, 22, 29 Club net, 7.30pm
11 AGM, 7.30pm, Great Baddow Parish Hall

Coalhouse Fort ARS
Tony Reynard G7HJT, 07976 553 345
25-26 GB1CHF on the air (11-5pm) for Halloween

Colchester Radio Amateurs
Jeff, G7TAT, 07899 894 435, g7tat@live.co.uk
17 Film archives by Vic, 2E0CHX

East Kent RS
Karl Davies, M1DFM, 01227 710 120, karl.davies@talk21.com
7 AGM and Construction contest
21 Practical astronomy observation evening

Felixstowe & DARS
Paul, G4YQC, pjw@btinternet.com
1 Supper at Saigon Restaurant, Felixstowe

Felixstowe & DARS
Paul, G4YQC, pjw@btinternet.com
13 Vintage Vehicle Day special event station
26-27 Foundation course weekend event (subject to numbers)
28 Radio astronomy, Paul, G4YQC

Harwich ARIG
Kevan, 2E0WMG, 07766 543 784 kevan2e0wmg@live.co.uk
9 GS3PYE/P in the Scottish Isles, Steve, M1ACB

Havering & DARC
John, M0UKD, 07890 222 111, john@m0ukd.com
2 4th business meeting (Q3 review)
9 Informal evening
16 Rudiments of contesting, Dave, G4BUO
23 Informal evening
30 UK Activity Contest, Dave, M0TAZ

Norfolk ARC
Chris Danby, G0DWV, 01603 898 678, cmdanby@btinternet.com
2 DXing from a suitcase, Paul, G3SEM
9 Tropospheric propagation, Jim, G3YLA
16 Table top sale
23 Does amateur radio damage your health? Ralph, 2E0RHT
30 Informal meeting, Bright Sparks, club shack open, workshop available, beginners workshop

South Essex ARS
Dave, G4UVJ, 01268 697 978, g4uvj@btinternet.com
8 Talk by Justin, G0KSC of InnovAntennas

West Kent ARS
Keith G4JED, info@wkars.org.uk
14 Getting started with Morse and its practicalities, Dave, G4OTV

From 30 July until 4 August, the G100RSGB call was at the Radio Museum at the Muckleburgh Military Collection at Weybourne on the Norfolk Coast - this is the HQ of the **North Norfolk Amateur Radio Group**. The museum was open to the public throughout and we had lots of visitors watching the three stations in operation. One of the stations was the historic G6HL rig that was operated on 40m SSB throughout the six days. The History Wall was seen by lots of visitors. The photos show Lorna, 2E0YAO operating the G6HL rig with Tracey, 2E0YAO logging for her and Joan Heathershaw, G4CHH – the former lady president – looking down on both of them from the history wall.

The **Martello Tower Group** is activating Herm Island again in October. Herm is part of the EU-114 IOTA group and the group will be on the Island from 4 to 9 October with operation on all bands from 80m to 10m (including the WARC bands) using SSB and data. This year they are taking an extra person, will be on Herm for one day longer than in 2012 and will have three stations on air simultaneously. The DXpedition is again being sponsored by Kenwood UK who are loaning a TS-590S. All QSOs will be uploaded to Logbook of the World and ClubLog. QSL direct or bureau via G6NHU. For further details please see qrz.com or the group website www.martellotowergroup.com/gp0pkt.

In August **Medway Amateur Receiving and Transmitting Society** had their annual two week Field Event. Tents and aerials were erected and radio gear is set up for an operating extravaganza at a scout field outside a village not too far from Sittingbourne. On arrival they found the grass was brown and the ground rock hard due to there being no rain during the preceding weeks. This required the pegs to be driven into the soil with the aid of large hammers. A toilet and shower block was available (to keep them free from grit) together with mains electricity so all the tents had power for lighting, computers and power supplies. The kitchen tent could also run a fridge and cooker making it all very civilized.

Members are encouraged to bring their own gear and stay for the two weeks, a day or just a few hours as their time permits. A wide variety of transceivers, both commercial and homebrew, appeared. All bands and modes seemed to be covered from HF through to microwave. The VHF lads had a go at the 432MHz contest one evening and most stations joined in fun contacting the many operators on the lighthouse weekend.

For several clear nights the sight of the Perseid meteor shower was amazing with a streak approximately every minute. As the event went well everyone is now looking forward to putting G5MW/P on the air for another DX bash in a field next year.

REGION 13: EAST MIDLANDS

REGIONAL MANAGER: STEVE BODEN, G4XCK, RM13@RSGB.ORG.UK

Derby & DARS
Richard Buckby, radio@dadars.org.uk
1 Junk sale
8 Committee meeting
15 The Patriot project – building a steam locomotive from scratch, John Hastings-Thomson
22 The basics of aerials & feeders
29 On the Air

Hucknall Rolls Royce ARC
Dave Wilde, G1YAI, treasurer@hrrarc.com
4, 5, 11, 18 Club meeting and members' forum
5 RSGB Centenary Special events station

Leicester RS
Alex, G8FCQ, 07531 201 640, www.g3lrs.co.uk
13 & 14 G100RSGB Centenary Station
15 GB100L LRS Centenary Station
21 Quiz night and buffet

Lincoln Short-Wave Club
Pam Rose, G4STO, 01427 788 356, pamelagrose@tiscali.co.uk
1 144MHz UK AC, Shack, 8pm
2 Hamfest tidy up at shack+ natter night at BSA Club
3 Repeater net, 145.725MHz, 8pm
5, 12, 19, 26 Saturday surgery & mentoring, shack, 9am
5-6 WAB HF Phone Contest noon-noon GMT
8 432MHz UK AC, shack, 8pm
9 Hamfest debrief, BSA Club 8.15pm
10, 17, 24 Club net, 145.375MHz, 8pm
15 1.3GHz UK AC, shack, 8pm
16 Shack activities, 7.30pm; natter night, BSA Club, 8pm
21 Committee meeting, shack, 7.30pm
22 50MHz UK AC, shack, 8pm
23 Formal meeting, BSA Club, 8.15pm
25-27 CQ WW contest, shack
29 70MHz UK AC, shack
30 How to prepare a *PowerPoint* presentation, Ian, G4XFC

South Kesteven Amateur Radio Society Nigel, M0CVO, 01476 402 550
2, 16, 30 Informal evening

Spalding & DARS
Graham Boor G8NWC, 0775 4619 701, secretary@sdars.org.uk, www.sdars.org.uk
18 Construction contest

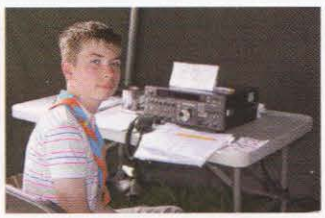
Welland Valley ARS
Peter D Rivers, G4XEX, 01858 432 105, g4xex@fsmail.net
7 Club net, 145.275MHz FM
21 Construction evening: 1 transistor radio

Members of **the Spalding & District Amateur Radio Society** recently enjoyed an interesting talk and presentation by Rob, M0VFC on his very successful solo DXpedition to ZD9UW Tristan da Cunha. Many of the members are now considering spending some time on the HF bands, as the club is mainly V/UHF orientated. A big thanks to Rob for sharing his enthusiasm for the hobby with the club.

South Kesteven ARS would like to congratulate Mark Orbell, their newest member, on passing his Foundation licence and receiving the call M6OBL.

Sadly, it is with much regret that following the passing of one of their members – John Lawson, G8JID, the club is no longer going to be visiting the Snowdonia Mountains and/or operating as MW0SKR this year in September. Sorry to all who were looking forward to maybe working some new SOTA references. Hopefully next year they should be doing something more.

Members of **Lincoln Short Wave Club** were invited to put on an amateur radio station at Poacher International 2013 – GB5LPI: Poacher was attended by several thousand Scouts and Guides from around the world. During the course of the week members of the club explained amateur radio to about 300 Scouts and Guides who then passed greetings messages to other amateurs. Many of these also became short wave listeners for several hours and logged the necessary number of stations heard to gain their Communications Badge. The photo shows Jack taking a break from SWLing; he intends to do his Foundation course in the near future.



South Normanton Alfreton and District Amateur Radio Club acted as an exam centre for the last Advanced exam session. George and Matthew Bunting (father and son) are regulars at the club having sat their Foundation and Intermediate previously.

For Sale

WANT A DATA INTERFACE ? You need an ISOTERM, Various models for your needs. PSK, WSJT, WSPR, CW, RTTY you name it WE can supply it ! See www.g3liv.co.uk

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FIBREGLASS TUBE High strength tube, square box, rod, and other sections all from stock in 6m lengths. Engineered Compositions, Chester. Tel: 01244 676000 e. barbara@engineered-composites.co.uk www.engineered-composites.co.uk

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10M AND 7M TELESCOPIC ANTENNA POLES from £22.50 inc p&p. Voucher code "SOTApoles" gives you 10% off! Valid until end of month. www.sotabeams.co.uk

VORTEX ANTENNA SYSTEMS UK Manufacturer and hardware supplier. Delta Loops, Yagis, Monoband and Multiband, OWA Arrays, Bespoke Designs. Antenna parts and mounting solutions. 6082-T6 Metric Tubing, Stainless U-Bolts and much more. www.vortexantennas.co.uk or 07943 871893

REMOTE TUNE G4TPH MAGLOOPS now available. Installations such as in the loft are now possible. There are 2 remote tune models, the ML40 covering 40m - 15m and the ML20 covering 20m -10m. Full details and online ordering at www.g4tph.com

SIGMA EURO-COMM LTD HF Vertical, Wire, G5RV & Mobile Antennas, VHF Base Station Antennas Mounting Poles, Magnetic Mounts Tel 0121 766 8146 stores.ebay.co.uk/sigmaeurocommltd

"WESTERN HF 10" 67ft wire dipole 160-6m, full details lookup m0bzi at: www.qrz.com buy direct: m0bzi@hotmail.co.uk or 07748331458 reviews at: http://g0kya.blogspot.com/2010_08_01_archive.html or http://www.eham.net/reviews/detail/9424

Computer Software

PROGRAMMING SOFTWARE FOR YAESU RADIOS Http://www.g4hfq.co.uk bob.freeth@g4hfq.co.uk (01425) 618092

Miscellaneous

CALL IN ON THE UK 'GOOD NEWS' CHRISTIAN NETS! Every Sunday morning at 8am local on 3747kHz, 2pm on 3747 or 7147KHz (propagation) and 144.205 SSB at 3pm sharing Christian fellowship. Go to www.wacral.org for more information or contact G3XNX at 51 Alma Road, Brixham, South Devon, TQ5 8QR, Tel: 01803 854504 or derekg3xnx@talktalk.net

PAFOS, CYPRUS. Pafos, 2 bed villa. Simple HF station 300m ASL. www.domsvilla.co.uk

Equipment

REPAIRS to all amateur and vintage RX/TX cost effective service phone or call in for details. Kent Rigs, 52, Salisbury Road, CHATHAM, Kent, ME4 5NN, 07903 023437

RELIABLE REPAIRS for all amateur and vintage equipment. Professional service, reasonable rates. Call: 01807 580376 E: radiorepairs@btconnect.com

Wanted

UNWANTED VALVE AMPLIFIERS, working or not. Known makes only (Kenwood, Yaesu, Drake, Linear Amp, etc), not homebrew. Also 3-500Z/ZG valves. Cash paid. Contact Peter G3ZRS on 01482 862323 or g3zrs@hotmail.co.uk

NEW PRODUCTS/INVENTIONS for Amateur radio or wider markets required. We arrange manufacture, branding, sales. Contact G4abt@yahoo.com

VINTAGE RADIO & VALVES WANTED - national cash settlement for silent key, shack clearouts 07552678725, vintageradio@btinternet.com

Classified advertisements 58p per word (VAT inc.) with a minimum of 14 words £8.12. All classified advertisements must be prepaid. Please write clearly. No responsibility accepted for errors. Latest date for acceptance is 1st of the month prior to publication
Payment to: RSGB, 3 Abbey Court, Priory Business Park, Bedford, MK44 3WH

Business Cards

Adertisers Index

FREE MEMBERS' ADS

Charges are waived for Members' Ads submitted by e-mail to memads@rsgb.org.uk. One ad per Member per month; other important terms & conditions apply (see grey box on page 90).

Due to an e-mail system malfunction **all Members Ad requests sent between about 2 July and 18 July have been lost**. If your Members Ad was sent before 31 July and is not in this edition, please re-send it to MemAds@rsgb.org.uk. It will be acknowledged automatically; you should receive a personalised reply some time later when the ad is processed for inclusion in the next magazine. We apologise for any inconvenience this malfunction may have caused.

FOR SALE

4 BEDROOM HOUSE in the Orkney Islands with rotary dipole (10, 15, 20m), vertical for 17 and 12 and bazooka for 40 all installed. Unique opportunity to own a property and operate from EU009. See www.orkneypropertycentre.co.uk/filelibrary/schedules/bayview%20stronsay.pdf. MM3LQK, 01857 616 220 Orkney Islands

BUTTERNUT HF6V VERTICAL much DX worked with this aerial, £175. 2m quad (Cubex) 4 element, all fibreglass construction, only ever used indoors, £40. Cash on collection for both items. Bill Watson, G4EHT, 07754 082 404, bill.g4eht@yahoo.co.uk (Lichfield).

CANON CANOSCAN LiDO 80. Supports Windows XP, 2000, ME, 98, Mac OS 9.1, 9.2. Perfect condition. Free to good home if you collect. G3GIB, 01953 885 243 (Norfolk).

CLANSMAN XCVR RT320 in GWO, no mods, all fins intact and panel FB condx, £150. Stuart, G3YPS 07803 601 176 atko99@tiscali.co.uk (Lincolnshire).

CLASSIC TEST GEAR

Uni AVOmeter & Taylor V-Volt. 10Mohm – now retired from repairing 'em! Guaranteed cal'd - offers/details. Andy, G3PKW, 01514 899 620, Andy3PKW@Gmail.com (Liverpool).

FLdx-500 SSB Tx, 240W input. 3.5 to 30.1MHz. With 2 spare 6sj6 valves and instruction manual, cosmetically very good, £95. Ex services oscillator test set No 2, 20-80MHz AM/FM 240VAC / 12VDC, cosmetically very good, £65. M0BGA, 01637 875 848, rcry100@yahoo.com (Cornwall).

GR EQUIPMENT.

874-LBA Slotted Line (50cm travel) in manufacturer's wooden case, good condition. Oscillators 1209-B (250-960MHz) and 1218-B (900-2000MHz), 1216-A RX/PSU, handbooks, good physical condition, electrical operation unknown. Transmission-Tee, mixer, modulator, adjustable stubs and lines, etc, £80, collect (25kg). Trevor, G3UYD, 02380 252 309, trevorclarke@ntlworld.com (Southampton).

HONDA PORTABLE GENERATOR model EG500, only about 20hrs running total from new, £250. Paul, G3FYF, 01364 631 319 (Newton Abbot).

IC-7700, £3500 ONO for this fantastic transceiver with HM20 desk mic, packaging, manuals and accessories. T-Link for second receiver. Excellent condition and 100% OK light use for two years. Selling surplus equipment. Roger, G4PUM, 01270 520 012 (Nantwich).

ICOM IC-2400 dual band 2m/70cm FM xcvr with box, microphone & handbook, £220 ONO. Microwave Modules 4 metre transverter, 10m IF, £110 ONO. Prefer buyer collects but will post at cost. Jim, G0ONS, jimchinnery@hotmail.com (Northampton).

ICOM IC-718 xcvr boxed with manual. Rx 30kHz–30MHz, Tx all bands 1.8 – 29.7MHz. Output 2–100W. Total use less than 20 hours, £400. Buyer collects. Don, G3HVA, 01256 780 482 (Hampshire).

ICOM ID-31 digital transceiver, £250. ICOM ID-E92D digital transceiver, £250. ICOM RS-92 remote control software, £30. All boxed with original external and internal packaging. Colin Parish, G0VVU, 07749 359 518 (Basildon).

ICOM IC-7410 (filters fitted by ML&S), AH-4 ATU and still has 19 months warranty to run. Selling owing to ongoing illness, £1,300 (I will pay postage). Alan, Gi4LXL, 0771 9864 009, rileyprint@btinternet.com (Maghera).

ICOM LINE UP. IC-2KL solid state HF amp, IC-KLPS PSU, IC-AT500 auto ATU. All cables, manuals and original boxes. See eHam reviews for more info. All GWO, can be seen working. Sorry but no split and collection only. £1,100 ONO. G0MMI, 07572 585 549, g0mmi@btinternet.com (Bucks).

KENWOOD AT-230 ATU 1.8 – 29MHz, good condition, £100 + post. SGC 239 auto ATU, very good condition, £110 + Post. Tom Sorbie, GM3MXN, 01698 330 248, gm3mxn@blueyonder.co.uk (Lanarkshire).

KENWOOD TS-870S HF xcvr, ML&S broad banded, overhauled in 2012, c/w Yaesu YM-26 dynamic mic. Prefer inspection/collection, can bring to National Convention 12 Oct. £550 ONO. Wouxun 144/70cm HT outfit, complete, boxed, unused, £100. Geoff, G3ROG, 01962 853 450, G3ROG@IVARC.org.UK (Winchester).

KENWOOD TS-480SAT in VGC. 100W with built in auto ATU. One owner and used as a standby rig. Original box, handbook and accessories. £575 OVNO. Prefer buyer to inspect and collect but will courier to buyer at cost if necessary. John G4LRG 07775 696 568 (Bishop Auckland, Co Durham).

KENWOOD-TRIO RECEIVER R-2000, 150kHz-30MHz, AM/FM/USB/LSB/CW, manual and wiring diagram with Wharfedale Diamond III 8Ω speaker. Offers. Collection preferred. Sangean ATS-808 Receiver, FM/LW/MW/SW, operating instructions. Offers. Collection preferred. Alex, MOTOT, 01444 811 714 (Haywards Heath).

LINEAR AMPLIFIER by RM Italy type HLA-150 Plus, delivers 200W output into 50Ω 160m – 10m, as new, boxed, with manual, £140 plus post (£12.92) or collect. Syd, G3SYD, 01293 511 708 (Crawley).

MFJ-259B HF/VHF SWR ANALYSER, £170, Prefer buyer inspect and collect. Bob, M0BYJ, 0121 453 2819 (South Birmingham).

***RADCOM* 1980 TO 2011** virtually complete. Free if collected. G3CFR, john@johnjowett.plus.com (Axminster).

SCANNERS: Bearcat UBC-3500XLT as new, boxed, manual, all accessories, new NI-MH cells, data lead, £145 including UK carriage. GRE PSR-282, as new, boxed, manual, all accessories, new NI-MH cells, £45 including UK carriage. Dave, G0IXZ, 01246 864 061 g0ixz_dave@sky.com (Bolsover, North Derbyshire).

SHACK SALE, e-mail or contact me for list of HF, VHF/UHF transceivers and other items. Keith, G4GZS, 07859 917 317, keith@jpl.co.uk (Warwickshire).

SILENT KEY SALE OBO 2E0DEY. Yaesu FT-2900e 2m transceiver up to75W, Palstar PS30 power supply rated 30A and SWR meter AV40 frequency 140-525MHz. Price £110. Buyer inspects and collects. Mick, G3RYZ, 01752 766 630, (Plymouth), mick@byrnetwo.freeserve.co.uk.

STRUMECH VERSATOWER three section 60ft tower with hand winch, base plate and rotator cage (silent key sale). Excellent condition. Buyer to dismantle and collect, £350 ONO. Geoff, G0WIS, 01905 771 217 (Droitwich).

TRIDENT 6M 3-ELE BEAM top quality build, as new, £75. MOCVS, 01629 823 025, hamradi012@gmail.com (Matlock).

VERSATOWER P60 with head unit and base mount, bolted to a concrete base, all regalvanised 18 months ago, excellent condition. Also available is a Cushcraft A4S 4 element Yagi with the 40m kit, so it covers 10, 15, 20 and 40m, plus Yaesu G-1000 DXC rotator and controller. Mike, GM0PHW, 07722 929 757 (Strathclyde).

YAESU FR-50B RX, £90. Datong FL-1 Agile Filter, £40. Katsumi MK-1024 Memory keyer, £100. All in good condx. Nigel, G4KZZ. 01723 890 786, nipro@btinternet.com (Scarborough).

YAESU FT-736R, mMuTek board for 2/70/50MHz, CTCSS board fitted, with PSU cable, MH-188 mic, no box. £550. Icom IC-7400, boxed, manual PSU lead, mic, high stability crystal fitted, CR-338, mint, 7 digit SN, ready for 60m NOV, £750. Buyer collects. Mike, M0FCG, 07735 578 568, M1KEY@talktalk.net (Barnsley).

YAESU FT-897, boxed, manual, all original accessories. Very tidy. Only QRP digital use. £630 + P&P or collect. Mark Twells, M0DEV, 07522 024 761, mtwells@gmail.com (Shrewsbury).

WANTED

6502 MICROCOMPUTER 8-bit chip. Static demonstration, need not work. Godfrey, G4GLM, 020 8958 5113, cgmm2@btinternet.com (Edgware).

CHEAP SCOPE – VALVE TYPE? (Solartron? Cossor?) – Local area only, please: broken arm, can't drive! FT-243 80m/40m QRP frequency crystals. Written replies only please – A Hawkins, High Hazelwood, Loddiswell, S Devon TQ7 4DZ.

DISABLED FAN OF OLD DAYS seeks, early DX QSL cards, *Short Wave Magazines* 1955 to 1958 inclusive, memorabilia etc. Mike, 8 Windsor Road, Reydon, Southwold, Suffolk IP18 6PQ.

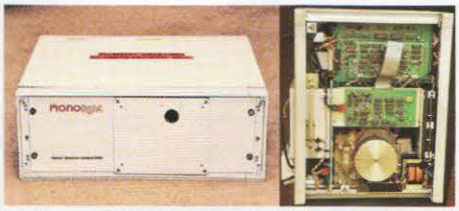
HAMMARLUND HQ-180 or similar receivers. Ray, G4OWY, 0790 9383 475 after 6pm please, g4owy6@gmail.com (Dorset).

HOPING TO PURCHASE *Short Wave Magazine* with the 'Other Man's Station' for G3YZY / G3YZX. I think it is January, April, June or July 1971. Any help or a photocopy of the article would be most appreciated. Howard Brindle, G3YZY, 02392 420 144 (Waterlooville).

MARCONI MARINE MERCURY and Electra receivers wanted to complete a replica 1950s ship's radio room. Preferably in reasonable condition with PSUs if available. Can collect or arrange collection. Norman, G4YXX, 01963 34359, g4yxx@btinternet.com (Wincanton).

MOBILE BRACKET for Yaesu FT-847. GM4ULS, 01738 620 688 (Perth).

MONOLIGHT-6601 PC CARD. Has anyone any info about this optical spectrum analyser / others of the same series? I want to resurrect one. I've the main unit, driver software, manual and accessories but no PC interface card or lead! WHY? Giles Read, G1MFG, 01234 832 714 (office hrs), giles.read@rsgb.org.uk (Bedford).



MURATA 455kHz filter, CFJ455k5 or equivalent. G3WCO, 01279 876 607, g3wco@idnet.com (Chelmsford).

NATIONAL 1-10 or 1-10A Rx abd coils. Ken, G3XSJ 01453 845 013 (Glos).

ORIGINAL DATONG RF CLIPPER board or complete unit (blue box).G4OQG, 01249 443 037 (Wiltshire).

RACAL RA1784 receiver(s) in any condition – RA1781 or parts may be considered. Rick, G8KSM, 01822 810 301 (Mary Tavy, Devon).

SANSUI TUNER UNIT TU55, domestic AM/FM (88-108MHz). Will pay all costs (P&P) plus your price (negotiable). Robert, G8TSE, 0151 639 2553 (Wirral, Cheshire).

SILENT KEY CLEAROUT or not just wanted. I collect QSL cards for historic interest; any date but preferably before 1970. Can collect or arrange collection. Tony, G4UZN, 0113 2693 892, AQuest1263@btinternet.com (Leeds).

YAESU FT-840 transceiver and any FT840 spare parts, filters etc. Also Mizuho MX series, preferably MX-6. Working condition preferred. Malcolm, GM3TAL, 01383 872 947, mh@interactscotland.co.uk (Dunfermline).

YAESU FV-200, companion VFO for FT-200 transceiver sought by an Old Timer on a nostalgia trip to complete my 1960s FT-200 station. Should preferably be in working order but must be complete and unmodified. Could arrange collection South Yorkshire area. Alan Strong, G3WXI, 0114 288 1692 (Sheffield).

HELPLINES

DOES ANYONE HAVE technical/service information on the Yaesu FV-101DM ext VFO? I have a display error between the VFO & my FT-101ZD mk3. The VFO frequency output is okay, but the frequency displayed is low, compared to what is shown on the 101. Any help would be appreciated. Alan, GW8KSF, alansal@msn.com (Wrexham, North Wales).

I AM LOOKING for the schematic and any service information for a Racal – Dana 9343M LCR Bridge. I have a copy of the user manual. Neil, G4SHJ, 01429 269 271 (Cleveland).

RALLIES & EVENTS

5 OCTOBER - WEST TYRONE ARC CONFERENCE – Technology Education Centre, 2 Spillers Place, Omagh, BT78 1FA. [www.wtarc.org].

6 OCTOBER - AUTUMN MILITARIA & ELECTRONICS & RADIO AMATEUR HANGAR SALE – Hack Green Secret Nuclear Bunker, Nantwich, Cheshire, CW5 8AL. OT 10am, civil, military and vintage radio equipment plus vehicle spares and more. Contact Lucy Siebert, 01270 623 353, coldwatr@hackgreen.co.uk. [www.hackgreen.co.uk].

RSGB **6 OCTOBER - BLACKWOOD AND DISTRICT ARS RALLY** – Coleg Gwent, Risca Rd, Cross Keys NP11 7ZA. TI V44 (S22), CP, OT 10am, £2, TS, SIG, CBS, B&B, C. Dave, GW4HBK, 01495 228 516, gw4hbk@talktalk.net. [www.gw6gw.co.uk].

RSGB **6 OCTOBER NEW DATE - 24th GREAT NORTHERN HAMFEST** – Barnsley Premier Leisure Complex, Queens Road, Barnsley S71 1AN or follow the brown Metrodome signs. GNHF in association with SYRG. OT 10.30, £3.50. DF, TS, SIG, RSGB book stall, LB, C, FAM. Ernie, G4LUE, 07984 191 873. [www.gnhf.co.uk].

SILENT KEYS

We regret to record the passing of the following Members:

Name	Date
Mr R E Hadley, G3UWK	26/6/2013
Mr R S Leighton, G4OWG	15/8/2013
Mr R A Stewart, G4PBP	15/2/2013
Mr P Turner, G6UOI	23/7/2013
Mr G F S Heaney, G7ROL	2013
Mr E V Neal, G8GP	2/5/2013
Mr J M Robson, GM3CFS	26/7/2013
Mr T A Heesom, M1XTU	7/2013
Mr E G Biggerstaff, RS21990	30/7/2013

OBITUARIES

As part of the improvements to the RSGB website, an obituaries section is being opened at www.rsgb.org/sk and we welcome obituaries from clubs or individuals when someone sadly passes away. Please send submissions by e-mail (only) to sk@rsgb.org.uk. All submissions will be moderated.

SILENT KEY ENTRIES

The Silent Keys column is separate from the obituaries section. To notify the RSGB that a Member has passed away (and their subscription should end and they should be listed in Silent Keys), please e-mail sales@rsgb.org.uk or telephone 01234 832 700 and then select option 1. We will need to know the deceased's name, callsign or RS number and, if possible, date of death.

RSGB **11-13 OCTOBER - RSGB CONVENTION** – See this issue of *RadCom* for programme information. Book online at www.rsgbevents.org. Principal sponsor Martin Lynch & Sons.

13 OCTOBER - HORNSEA AMATEUR RADIO CLUB RALLY – Floral Hall, 7 The Esplanade, Hornsea, East Yorks HU18 1NQ. OT 10.30, CP, TS, B&B, SIG, RSGB, RAFARS, LB, C, DF, WIN. Details from Rick, M0CZR, 01964 533 712, R106221@aol.com. [www.hornseaarc.co.uk].

19 OCTOBER - CARRICKFERGUS AMATEUR RADIO GROUP RADIO RALLY – Downshire Community School, Carrickfergus BT38 7DA. OT 11.30, £3, TS, B&B, CP, C, DF, SIG, RSGB, MT. Details from Tim, MI0TBL, carg@hotmail.co.uk. [www.radioclubs.net/carg].

20 OCTOBER - GALASHIELS AND DISTRICT ARS RADIO RALLY – The Volunteer Hall, St Johns Street, Galashiels, Scottish Borders TD1 3JX. OT 11.30 /11.15, £2.50. B&B, TS, C. Jim, GM7LUN, 01896 850 245, gm7lun@qsl.net.

20 OCTOBER - G QRP CLUB CONVENTION – Rishworth School, Ripponden, West Yorkshire HX6 4QA. OT 10am. [www.gqrp.com].

RSGB **27 OCTOBER NEW VENUE - NORTH WALES RALLY** – Abergele Leisure Centre. Faenol Avenue, Abergele, Conwy, LL22 7HT. 10am – 4pm, £4.50, TS, B&B, CP, DF, DIS, C, SIG. Gordon, MW0GBR, 0773 3531 766, rally@nwrs.org.uk. [www.nwrs.org.uk].

3 NOVEMBER - FOYLE & DISTRICT ARC RALLY – White Horse Hotel, 68 Clooney Road, Londonderry BT47 3PA. OT 11.30, TS, SIG, B&B, WIN, LIC, C. Tables available £5. Nigel, GI7FJY, 07514 101141, gi7fjy@hotmail.com.

This list shows all rallies and events we are aware of as of press deadline. If your rally or event is not listed, TELL US ABOUT IT! Send an e-mail to gb2rs@rsgb.org.uk and your event will appear here and on GB2RS. It's free! Guidelines for submissions: Please let us know your event details as early as possible. If you submit by e-mail (to gb2rs@rsgb.org.uk) then we suggest you set your e-mail program to request a 'read' receipt so you can be sure we've seen the details. We also recommend you check the details are correct in *RadCom* and tell us if not.

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; MA Foundation Morse Assessments; LB Licensed Bar; C Catering; DF Disabled Facilities; WIN prize draw, raffle; LEC Lectures/Seminars; FAM Family attractions; CS Camp Site.

SPECIAL EVENTS STATIONS

These callsigns are valid for use from the date given, but the period of operation may vary from 1 - 28 days before or after the event date. Operating details are provided in an abbreviated form as follows: T = 160m; L = 80 or 40m;
H = HF bands (30 - 10m); V = 6 and/or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet. Details published here are kindly provided by Ofcom.

Date	Callsign	Phonetics	Location	Bands	Keeper
04/10/2013	GB1LCT	Leyland Centurion Tank	Leyland	L	G1PIE
05/10/2013	GB1BNB	Brinscal Nuclear Bunker	Holt lane	L	
09/10/2013	GB0NSG	Newton Scout Group	Newton-Le-Willows	LH27	M0ZLK
12/10/2013	GB2COS	Chester Oldfield Scouts	Cheshire	LHV2	G7BQY
16/10/2013	GB2SSB	Stafford St Bertlin's	Staffordshire	TLHV27	G7PVS
18/10/2013	GB1CSN	Costessey Sixteenth Norwich	Norwich	LH2	M0LSX
	GB2MAN	Manston	W. YORKS	TLH	M5ADA
	GB1ASG	ASTLEY SCOUT GROUP	MANCHESTER	TLHV27	G7OHA
	GB2LC	Linnet Clough	Stockport	LHV27	G4ZVA
	GB5FRR	First Roughton Rural	Norfol	TLHV27	G7VRK
	GB4LSM	Leyland St. Mary;s	Leyland	LH27	M0XRS
	GB0BSS	Bonaly Scout Station	Edinburgh	LH2	GM8OTI
	GB3WSC	Watcombe Scout Campsite	Torquay	TLH27	G4OTU
	GB5WSC	Watson Scout Centre	Middlesbrough	LH2	G3MAE
	GB4UST	Union Street Troop	Cheshire	LH27	G0CXM
	GB2RSC	Radio Scouting Chesterfield	Chesterfield	TLHV27	G0THF
	GB2WYS	West Yorkshire Scouts	Huddersfield	LH27	G0BWB
19/10/2013	GB0BAS	Birchington Air Scouts	KENT	LH2	
	GB1RES	Rotherham Explorer Scouts	Rotherham	TLJV27	M0PJA
	GB0RSC	RADIO SCOUT & CARMARTHENSHIRE	LLANELLI	LH27	GW7VJK
	GB0RDS	Rugby District Scouts	Rugby	TLHV27	G8LYB
	GB2JSA	Jersey Scout Association	Jersey	TLHV27	GJ7UIT
	GB1BSG	Belton Scout Group	Belton	LH	G0GGB
	GB4FTS	First Tiddington Scounts	Stratford- On-Avon	LH2	G0MRH
20/10/2013	GB0MKS	Milton Keynes Scouts	Milton Keynes	LH2	M0MMZ
	GB1LCT	Leyland Centurion Tank	Leyland	L	G1PIE

3 NOVEMBER - HOLSWORTHY AMATEUR RADIO RALLY – Holsworthy Community College, Victoria Hill, Holsworthy EX22 6JD. Don, g0rql@hotmail.com, QTHR.

10 NOVEMBER NEW DATE - WEST LONDON RADIO & ELECTRONICS SHOW (Kempton Rally) – Kempton Park Racecourse, Staines Road East, Sunbury on Thames, TW16 5AQ. TI, free CP, OT 9.50/10am. TS, FM, B&B, SIG, C, DF, WIN, LEC. Paul, M0CJX, 08451 650 351, info@radiofairs.co.uk. [www.radiofairs.co.uk].

16 NOVEMBER - HALTON & DISTRICT RADIO AMATEURS RALLY – The Heath Business & Technical Park, Runcorn, Cheshire WA7 4QX. OT 10am, £1. TS, B&B, C, DF, SIG, cash machine, prize draw. All proceeds after costs to charity. George Low, G0RLF, 07919 935 725 (daytime), g0rlf@talktalk.net. [www.haltonradiorally.webs.com].

24 NOVEMBER - CATS RADIO & ELECTRONICS BAZAAR – 1st Coulsdon Scout HQ, r/o Council Car Park, Lion Green Road, Coulsdon, Surrey. OT 10am, £1, B&B, C, DIS, free CP. Glenn, G4FVL, chairman@catsradio.org.

24 NOVEMBER - PLYMOUTH RADIO CLUB RALLY – Harewood House, The Ridgeway, Plympton, Plymouth PL7 2AS. CP, TI, OT 10.00, £2, TS, C. Contact pippa117@hotmail.co.uk.

30 NOVEMBER - 18th ROCHDALE & DISTRICT ARS TRADITIONAL RADIO RALLY – St Vincent's Church Hall, Cutgate, Rochdale OL12 7QL. OT 10.15, £2.50 (concessions U12 & Seniors), B&B, C. Pitches £7.50. Dave, G0PUD, 0161 285 1600, info@vintage-radio-repair.co.uk. [www.radars.me.uk].

1 DECEMBER - BISHOP AUCKLAND RADIO AMATEURS CLUB RALLY – Spennymoor Leisure Centre, Co Durham DL16 6DB. CP, TI S22 (V44), OT 10.15 /10.30, £2 (U14 free). TS, B&B, C, LB, DF, FAM. Mark, G0GFG, 01388 747 497.

7 DECEMBER - SOUTH LANCS WINTER RALLY – Bickershaw Labour Club, Bickershaw Lane, Bickershaw, Wigan WN2 5TE. OT 10am, traders 8am. Tables £9 pre-booked, entry £2.00, TI, B&B, C, DIS, CP, SIG, DF, TS, LB. Jason 01942 735 828, rally@slarc.co.uk.

2 FEBRUARY 2014 - 29th CANVEY RADIO & ELECTRONICS RALLY – 'The Paddocks', Long Road, Canvey Island, Essex SS8 0JA (southern end of A130). Free CP, OT 10.30. C, DF, TS. Vic Rogers, G6BHE, 01702 308 562, nvr@blueyonder.co.uk. [www.southessex-ars.co.uk].

16 FEBRUARY - RADIO-ACTIVE RALLY – Civic Hall, Nantwich, Cheshire CW5 5DG. OT 10.30. TS, B&B, C, WIN. Tim, 01948. 519 249, tm0sin@yahoo.com. [www.midcars.org].

23 FEBRUARY 2014 - BRATS RAINHAM RADIO RALLY – Rainham School for Girls, Derwent Way, Rainham, Gillingham, Kent ME8 0BX. TI, OT 10.00/9.30, TS, SIG, C Darley, 0798 2244 788, charlesdarley@hotmail.co.uk.

13 APRIL - SOUTH GLOUCESTERSHIRE AMATEUR RADIO RALLY – Scout Activity Centre, Woodhouse Park, Almondsbury, Bristol BS32 4LX. OT 10.00, B&B, CP, C, CBS, TI S22 (V44). Mike, M1DPB (Rally Coordinator) at southglosradiorallycoordinator@gmail.com or telephone: 07806 310 095. [southglosradiorally.org.uk]

RSGB MEMBERS' ADVERTISEMENTS

RSGB Members wishing to place an advertisement may do so free of charge by e-mail.

The following terms and conditions apply to all Members' Advertisements.

1) In order to qualify for free insertion, Members Ads must be submitted by e-mail to memads@rsgb.org.uk. Ads may still be submitted by post but must be accompanied by a payment of £5 to cover administration costs.

2) **Your advert must clearly show whether it is For Sale or Wanted and must include your name, callsign or Membership number, telephone number and postal town, in that order.**

3) The Ad may not contain more than 40 words, excluding the information in (2), and maybe edited for readability at our sole discretion. Longer ads may be accepted if there is a good reason, eg a shack clearance on behalf of a SK Member; e-mail us and ask.

4) Not more than one ad per month will be accepted from any member. 'Recurring' ads will not be accepted, but Members may re-submit the same advert each month if they wish.

5) E-mailed adverts may optionally include one photograph of the item(s) being offered. Images must be attached as a jpg file, at least 800 pixels wide and of good quality. By submitting any image you warrant that you own the copyright and that you permit the RSGB to use it in anyway. We will endeavour to publish photographs with ads as space permits but cannot guarantee to publish any particular photograph.

6) Adverts will be published at the first available opportunity but no guarantee can be given as to when a particular ad will appear.

7) The RSGB believes that it is inappropriate for Members trading in radio equipment in any way to place Members' Ads. We therefore regret we are unable to accept such ads, although we do welcome these in the 'Classified' advertising section of *RadCom*.

8) The RSGB accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange.

9) Members' Ads are accepted and published in good faith.

10) Members' Ads are accepted at the sole discretion of the Editor, whose decision is final.

WARNING

Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement.

The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the money paid.

Members' Ads also appear on the Members Only website at www.rsgb.org/membersonly/membersads.

8 JUNE 2014 - 13th JUNCTION 28 QRP RALLY – South Normanton Alfreton and District Amateur Radio Club in association with the G QRP Club. Alfreton Leisure Centre, Church Street, Alfreton, Derbyshire DE55 7BD. 10 mins from M1 J28 and the A38. TI S21, OT 10.00. TS, SIG, C, LB. Anya Lawrence, 2E0BQS, 0115 930 7322, adylawri@btinternet.com. [www.snadarc.com].

29 JUNE 2014 - WEST OF ENGLAND RADIO RALLY – Cheese & Grain, Bridge Street, Frome, Somerset BA11 1BE. CP, OT 10am-2pm, £2.50. TS, RSGB book stall, C, DIS. Shaun, G8VPG, 01225 873 098, rallymanager@westrally.org.uk. [www.westrally.org.uk].

RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

Founded in 1913 incorporated 1926. RSGB is a trading name of Radio Society of Great Britain, a limited company registered in England and Wales with company number 00216431. Member society of the International Amateur Radio Union.

Patron: HRH Prince Philip, Duke of Edinburgh, KG, KT

Membership is open to all those with an active interest in radio experimentation and communication as a hobby. Applications for membership should be made to the Subscriptions Department from which full details of Society services may also be obtained.

RSGB MEMBERSHIP

Annual rates from 1 January 2011

Full membership (by Direct Debit) (individual & club) £47.00
Family membership (by Direct Debit) £56.00

Paying other than by Direct Debit attracts a £4 premium.

Student (21-25) ..... Free
Ham Club (under 21) ..... Free

Subscriptions include VAT where applicable.
Special arrangements exist for visually impaired persons.
Details and membership application forms are available from RSGB HQ or see www.rsgb.org/join.

YOUR RSGB

This page provides names and contact details for Board Members, Regional Managers, Committee Chairmen and Honorary Officers. Members seeking advice and guidance on any aspect of Amateur Radio of the Society's work are free to contact the relevant person below. But before doing so, please do check the comprehensive FAQs on the RSGB website, www.rsgb.org/faq/ to see if your question is answered there.

For HQ staff below, both e-mail addresses and telephone details are provided, including the option to select when dialling through the RSGB switchboard (01234 832 700).

Chairmen and Honorary Officers:
These are all volunteers and give their time freely to support the Society. Members should respect the fact that many also have full time day jobs, and so e-mail is the appropriate method of communication.

General Manager:
Graham Coomber, G0NBI,
e-mail: graham.coomber@rsgb.org.uk

Honorary Treasurer (Acting):
Richard Horton, G4AOJ, e-mail: g4aoj@rsgb.org.uk

Company Secretary:
Rupert R Thorogood, G3KKT, e-mail: g3kkt@rsgb.org.uk

THE RSGB BOARD

Dr Bob Whelan, G3PJT (President), e-mail: g3pjt@rsgb.org.uk

Graham Murchie, G4FSG, (Board Chairman)
e-mail: g4fsg@rsgb.org.uk
Phillip Brooks, G4NZQ, e-mail: g4nzq @rsgb.org.uk
Stewart Bryant, G3YSX, e-mail@ g3ysx@rsgb.org.uk
Stan Lee, G4XXI, e-mail: g4xxi@rsgb.org.uk
Len Paget, GM0ONX, e-mail: gm0onx@rsgb.org.uk
Dr John Rogers, M0JAV, e-mail: m0jav@rsgb.org.uk

Note: The General Manager, Company Secretary and Acting Honorary Treasurer are not Directors, but are in attendance at Board Meetings.

REGIONAL MANAGERS

Region 1 – J O'Neill, GM7VSB, e-mail: rm1@rsgb.org.uk
Region 2 – D Morrison, GM1BAN, e-mail: rm2@rsgb.org.uk
Region 3 – K A Wilson, M1CNY, e-mail: rm3@rsgb.org.uk
Region 4 – H Scrivens, G0UGE, e-mail: rm4@rsgb.org.uk
Region 5 – V Ravenscroft, M0VRR, e-mail: rm5@rsgb.org.uk
Region 6 – M Harper, MW1MDH, e-mail: rm6@rsgb.org.uk
Region 7 – J Sneddon, MW0EQL, e-mail: rm7@rsgb.org.uk
Region 8 – P Hosey, MI0MSO,
e-mail: rm8@rsgb.org.uk
Region 9 – L Smith, G4OXY, e-mail:rm9@rsgb.org.uk
Region 10 – M Senior, G4EFO, e-mail: rm10@rsgb.org.uk
Region 11 – P Helliwell, G7SME, e-mail: rm11@rsgb.org.uk
Region 12 – M Sanderson, M0IEO, e-mail: rm12@rsgb.org.uk
Region 13 – S Boden, G4XCK, e-mail: rm13@rsgb.org.uk

SPECIALIST AREAS – CHAIRMEN & HONORARY OFFICERS

Abuse and poor operating
Amateur Radio Observation Service (AROS), Keith Bassett, G7NBU, AROS coordinator, e-mail: aros@rsgb.org.uk, www.rsgb.org/aros/

Amateur Radio Direction Finding
Bob Titterington, G3ORY, Chairman, ARDF Committee, e-mail: ardf.chairman@rsgb.org.uk, www.rsgb.org/ardf/

Contests
Ian Pawson, GOFCT, Chairman, Contests Committee, e-mail: cc.chair@rsgb.org.uk, www.rsgb.org/radiosport/

EMC
John Rogers, M0JAV, Chairman, EMC Committee, e-mail: emc.chairman@rsgb.org.uk, www.rsgb.org/emc/

General Technical Matters
Andy Talbot, G4JNT, Chairman, Technical Forum, e-mail: tech.chair@rsgb.org.uk, www.rsgb.org/technicalmatters/

General Spectrum & Regulatory Matters
John Gould, G3WKL, Chairman, Spectrum Forum, e-mail: spectrum.chairman@rsgb.org.uk www.rsgb.org/committees/spectrumforum/

GB2RS News Service Management
Gordon Adams, G3LEQ, GB2RS Manager, e-mail: gb2rs@ntlworld.com
(GB2RS news items should be sent to gb2rs@rsgb.org.uk)

HF Matters
Ian Greenshields, G4FSU, HF Manager, e-mail: hf.manager@rsgb.org.uk

Intruders to the Amateur Bands
Chris Cummings, G4BOH, e-mail: iw@rsgb.org.uk www.rsgb.org/intruders/

IOTA Activity Programme
Roger Balister, G3KMA, IOTA Manager, e-mail: iota.manager@rsgb.org.uk, www.rsgbiota.org/

Microwave Matters
Murray Niman, G6JYB, Microwave Manager, e-mail: mw.manager@rsgb.org.uk

Planning Advice
Stephen Purser, G4SHF, Chairman, Planning Advisory Committee, e-mail: pac.chairman@rsgb.org.uk, www.rsgb.org/planning/

Propagation Studies
Steve Nichols, G0KYA, Chairman, Propagation Studies Committee, e-mail: psc.chairman@rsgb.org.uk, www.rsgb.org/psc/

Repeater and Data Communications
John McCullagh, GI4BWM, Chairman, ETCC, e-mail: etcc.chairman@rsgb.org.uk, www.ukrepeater.net

RSGB Awards
John Dunnington, G3LZQ, Awards Manager (Contact HQ in the first instance on 01234 832 715), e-mail: hf.awards@rsgb.org.uk, www.rsgb.org/operating/awards/

Training & Education
Steve Hartley, G0FUW, Chairman, Training & Education Committee, e-mail: tec.chair@rsgb.org.uk, www.rsgb.org/clubsandtraining/

VHF Matters
John Regnault, G4SWX, VHF Manager
E-mail: vhf.manager@rsgb.org.uk

Details of the Society's volunteer officers can be found in the RSGB Yearbook and on the RSGB website, www.rsgb.org.

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PLAY YOUR PART IN YOUR RSGB

Have Your Say
Let us know how we're doing! Through "Have Your Say" you can let us know your views and you will receive a reply from the General Manager or a Board Member.
Write to haveyoursay@rsgb.org.uk or go to www.rsgb.org/haveyoursay/

Consultations
From time to time you will find we are consulting the membership on aspects of Society policy. You can find current consultations at www.rsgb.org/consultations/

National Radio Centre
Don't forget to tell your friends about the National Radio Centre at Bletchley Park. Full details can be found at www.nationalradiocentre.com

Licensing & Special Event Stations
Licensing and Notices of Variation (NoVs) for special event stations are handled by Ofcom, 0207 981 3131, www.ofcom.org.uk

FAQs
The RSGB has compiled the questions most frequently asked by Members at www.rsgb.org/faq/

Band plan
The latest version of the band plan is always available on the website at www.rsgb.org/committees/spectrumforum/band-plans.php

Good Operating Practice
The RSGB fully supports the code of conduct and encourages all amateurs to read the advice. www.rsgb.org/tutors/pdf/good_operating_practices.pdf & www.rsgb.org/operating/ethics/docs/ethics_and_operating.pdf

RSGB Tech
The purpose of this service is to be the first port of call for technical queries on amateur radio matters. It is open to all radio amateurs. http://groups.yahoo.com/group/rsgbtech/

RSGB Shop
All RSGB goods - books, filters, clothing - can be purchased online at www.rsgbshop.org/

Club Finder
Use the website to find your nearest radio club and check out the facilities they have to offer.
www.rsgb.org/clubsandtraining/

WEBSITE

Main website: www.rsgb.org
Members Pages
Log in using your callsign in lower case as the user name and your membership number, without the leading zeros (see your *RadCom* address label) as the password.
If you need to update your membership details, please visit www.rsgb.org/myaccount/.

THREADING CABLES DOWN HOSEPIPES

David, G0VIE

It is a good idea to use a hosepipe to protect a coaxial cable if it is to be laid in the ground, the problem is how best to thread it through. If you try to push the cable through you will be lucky to get it to penetrate more than 2 metres because of the friction. Commercial companies use compressed air to blow wires through but this is too dangerous for amateurs. The North Cheshire Radio Club has therefore perfected a simple method using fishing line and a cylinder vacuum cleaner or an upright model with a detachable tube. The following procedure has been used to pass an RG58u cable through 25 metres of 12.5mm diameter garden hose without any difficulty.

1: Lay the hose in a straight line and measure out the same length of light weight fishing line (5lb breaking strain) plus an extra 20cm and mark it off with a piece of tape before re-spooling.
2: Press a kitchen funnel into one end of the hosepipe. Roll up a duster into a sausage and drape it around the inside of the funnel to form a doughnut shaped gasket. Press the vacuum cleaner tube onto the duster and switch it on; the suction will then hold it in place.
3: Feed the fishing line in through the other end of the hose, you may need to ease it back and forth to get the line to enter the funnel at the far end. Stop when you reach the marker tape.
4: Use the line to pull through a stronger one (35lb breaking strain) and use that to pull through garden twine.
5: Attach the coaxial cable to the twine using sticky tape and pull it through the hose – job done!

START HERE; THE DIPOLE

Peter Martinez, G3PLX

I think many readers, newcomers and old-timers alike, will have difficulties with the Start Here article on the subject of the dipole in the September *RadCom*. Maybe this letter will help.

The first section describes clearly how an electromagnetic wave arises from the interactions between varying electric and magnetic fields but the following section, entitled 'Launching the Wave', may not be easy to follow.

This section starts by introducing the concept of stored magnetic energy arising from the current along the dipole. Tantalisingly it leaves this to be 'explained later' but never does so. Then follows an account of the motions of electrons in the wire, the purpose of which is not immediately clear. I think the author is trying to describe here the concept of energy stored in the electric field. It would surely have been sufficient at this point just to describe the concept of stored electrostatic energy arising from the voltage between the two halves of the dipole – the 'dual' of the magnetic equivalent already introduced. I see no need to bring electrons into the discussion – dipoles were described and used long before electrons were proposed.

Readers are probably confused at this point because neither of these 'stored energy' topics have anything to do with launching waves. Energy storage is just a side-effect of passing current through wires and applying voltage between conductors. We only need to discuss it because we would like to recycle the energy rather than waste it. We do this in the half wave dipole by using its resonance property, the energy oscillating between the magnetic form and the electric form at the natural frequency of the dipole.

I don't think the article makes this clear, nor does it explain why a half wave dipole exhibits resonance.

Having digressed to solve the energy recycling problem, we can now go back to launching the wave. Maxwell takes the oscillating electric field that we have set up between the two halves of the dipole and gives us the radiating component of the magnetic field. Maxwell also takes our oscillating magnetic field and gives us the radiating component of the electric field. The electric and magnetic fields we see in the vicinity of the dipole are partially ours (the near fields) and partly Maxwell's (the far fields). It's worth noting that a short dipole only has an electric near field, with the energy in it recycled in a loading coil rather than in a magnetic near field. It is even possible to have antennas with no near fields (Beverages, rhombics etc).

ALL IS NOT LOST

Ray J Howes, G4OWY

Congratulations. All is not lost then? There, on the front cover of the September issue of *RadCom*, is featured a large photograph of a young person. Hooray! And not only that, it shouts the virtues of the 'RSGB Centenary' simple datamode receiver for 20m.

Also, the article penned by John Welsh, G0NVZ is a step (but not a leap) in the right direction. And with all due respect to this author, it might have been a good idea to also mention that electron theory is exactly that, a theory (a theory that'll probably be overturned one fine day). It's called a theory because it has never been satisfactorily proven one way or the other.

There are lots of inconsistent inconsistencies when it comes to 'electron theory'. Besides, even the biggest brains on the planet still can't explain why friction causes static electricity. Or why opposite charges attract each other – and like charges repel. And nor can they really explain why when some objects are charged with static electricity, they attract other objects. Nobody knows, yet.

So, I'm sure most young people would like to know about that too. The quaint idea of 'EH fields' is another story though. And another theory.

G2NV HELPFULNESS

Mike Brown, G3UDP

Reading G8ZMN's letter reminded me of the help G2NV gave when I first got my licence. I was living in Lake on the Isle of Wight then and G2NV used to conduct the Sunday morning Top Band net. He was always very helpful to us beginners and I remember him with fondness. I hope Kendra keeps trying too.

ANTENNA LAUNCHER CAUTION

Bob Clinton, G0BUX

One of the challenges we face when planning a portable HF operation is how to string an antenna in the trees. Various solutions have been applied including catapults and bows and arrows. When I was in the USA last year I was impressed by another method – a compressed air launcher, sometimes called a spud gun. As our group here in the UK was planning outside events this year I was detailed to obtain one of these. I did some web research, found a model that appeared suitable, placed an order and contentedly sat back to await delivery. My reverie was rudely interrupted by an e-mail from one of our group who suggested that, here in the UK, such a device might be considered an air weapon. (I was particularly chagrined because I once was the holder of a UK firearms certificate and should have thought of this myself).

I exchanged messages with the supplier in the USA who could offer no advice because there are no restrictions on air weapons over there, so my next step was to consult the firearms officer at the county constabulary. He was both helpful and interested (he had never heard of using such a device to launch radio antennas). The intended use of the device had no bearing on the situation – the same regulations apply whether one is launching guy ropes or shooting squirrels in the back garden. The critical parameter is the muzzle energy of the device. Below a specified level there is no restriction, above this level it is classified as an air weapon and can only be used by the holder of a firearms certificate under closely controlled conditions.

Muzzle energy is a function of the weight of the projectile and its exit velocity. Although the velocity of the projectile is very low – you can watch it in flight – the projectile itself is relatively heavy and thus the muzzle energy can easily exceed the threshold. The firearms officer's advice was

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to have delivery of the launcher directed to a registered firearms dealer who would perform initial tests and then send the launcher to the firearms officer who would pass final judgement. I pondered this for a few days before deciding that there were other ways to hang guy ropes and it was not worth the trouble to get the spud gun approved (or, more probably, not).

The message is: don't throw away your bow & arrow/catapult just yet. We are accustomed to observing the radio regulations but don't fall afoul of the firearms law.

WORKED ALL COUNTIES

R A Parrott, G3HAL

Letters in the August and September issues stirred memories of a Worked All British Counties award from *Short Wave Magazine* earlier than those mentioned. A search of the G3HAL archive produced evidence to this. It was awarded for evidence of contacts on 160 meters when the maximum permitted power input to the final stage of the transmitter on that band was ten watts. I don't recall it being CW only but, with those low powers, it may well have been.

A model for a new award?

Tony Skaife, G4XIV

Further to last month's letter by David Brooks, G4IAR concerning the WAB 'Counties' award, WAB is popular with many radio amateurs but there are bound to be those who do not know their WAB square. To work it out,

1: Go to www.streetmap.co.uk
2: Enter your postcode and then when the map opens, click the link saying "click here to convert coordinates" (you'll find it in small print below the map).
3: A window with various co-ordinates will appear.
4: Look for the one named "LR"

A typical LR number is TQ290796: take the letters plus the 1st and 4th numbers to find the square – in this case, TQ27.

AMATEUR RADIO ON RADIO 4

Clive Ousbey, G0CHO

There was a positive mention of amateur radio on a recent BBC Radio 4 programme. The 6 August edition of Word of Mouth had a piece about miscommunication. Towards the end in a section about communication during crisis, an interviewee was talking about helping at large events such as sponsored walks and how good radio amateurs were at accurately passing information.

The programme can be listened to at www.bbc.co.uk/programmes/b037tnxm; I'd say it was probably in the last ten minutes maybe even closer to the end.

FEEDBACK ON NEW STARTERS NEWSLETTER

John, M/KK4OYJ, 9H3RJ

I thought I would share this report as an encouragement to those involved in this new endeavour.

As a new licensee I enjoy experimenting with antennas and I was pleased to receive the New Starters Newsletter with the design for 'A simple and cheap vertical antenna for 28MHz'. I was operating as 9H3RJ on Gozo island for 3 weeks in July and was prompted to build it as it seemed ideal for the location – not to mention that the TV installer had left me a perfect piece of RG-59 (75Ω). What's to lose?

I finished the aerial in about 20 minutes and soon had it lashed to a fishing pole on the roof. I tested with the SWR meter on my rig and trimmed it (in the end a little too much) but nevertheless it performed more than adequately.

7July was my birthday and I chose to get on the radio early. I called CQ on 28.520MHz at 0742 and had an immediate response from DL6CD – over the next 3 hours I worked 217 stations from JA to CR and also into Africa (http://tinyurl.com/rc-oct13-LW-1 or https://www.google.com/maps/ms?msid=200777654237 62439413.0004e39e260618798a7b0 &msa=0&ll=31.653381,24.960938&s pn=150.944315,68.203125)

So thank you for a birthday pileup to remember, a great learning experience and a simple antenna I can take anywhere!

HELPING HANDS

Trevor Peck, M6TDF

I had been interested in amateur radio for a long time but thought I could never afford to get instruction, etc. That is until I came to Mablethorpe and someone mentioned the Eagle Radio Group who met every 2nd Tuesday at the Boatshed.

I went along in February and was made to feel at home, I was asked at the end if I was interested and said yes. The next thing I was introduced to Malcolm, G3ZUI who invited me to his home where over 10 weeks or so I was ready for my Foundation licence exam, which I passed.

Since then Malcolm, G3ZUI and Geoff, 2E0PGI have help in more ways than I could ever expect. I would like to thank them for their help and ongoing assistance plus the other members of the Eagle Radio Group for help, advice and welcoming me into the fold.

NOV FOR V CALLS

David Perry, G(V)4YVM

Well, the month is over and I have to stop using my GV callsign. I've had an absolute blast with it; it has added real spice to every QSO. I never worked or heard another GV though; but I've thoroughly enjoyed bashing mine out (and listening to most people make a right hash of it first time!). Thanks RSGB! What's next?

Watch out for secondary locators for Scotland's Homecoming and the Commonwealth Games in 2014 – Ed.

PROMOTION SUCCESSFUL!

Victor Brand, G3JNB

I am astounded by the lack of comprehension among a minority of Members with respect to the Society's recent recruitment drive offering a 'discounted' year's Membership.

According to a vocal few, attractive introductory offers by any major organisation (National Trust, AA, BT, Sky etc) appear to be acceptable, even desirable, but not for our historic Society!

"We must recruit new blood to our hobby" ... "we need more licensees to join..." etc have been the cries for decades. After years of trying, it appears that the RSGB is dammed if it does and dammed if it doesn't! And to compound this crass ignorance and wilful disregard for normal business practice, what do we then hear? *"I am going to resign!* How does that help?

To those who will hear, I strongly suggest the reading of the excellent article on the RSGB by John Gould, G3WKL in the September edition, followed by a period of quiet reflection. Then, hopefully, some reconsideration of your position as a most fortunate licensee, free of charge and with a plethora of operating privileges (compared with 50 years ago) that are owed almost entirely to our united front and constant activity by the Society in the face of generations of commercial interests competing for our bands.

This afternoon, the Society HQ actually phoned to confim that, my having joined on 5 July 1953, sixty years ago to the day of our Centenary celebrations, a letter was on the way confirming my continuing membership. I am proud of the RSGB and, despite many setbacks, of its accomplishments over the past 100 years.