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# Ham Radio T O D A Y

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**EDITORIAL**

**Editor**  
Shella Lorek, G8IYA

**Consultant Technical Editor**  
Eur Ing. Chris Lorek B.Sc.(Hons)  
C.Eng. M.I.E.E. G4HCL, AA0RX

**Editorial Assistant**  
Lynn Bugden

**PRODUCTION**

**Designer**  
Jeff Hamblin

**Production Executive**  
Marie Quilter

**Production Administrator**  
Theresa Davis

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**SALES**

**Group Advertisement Manager**  
Diane Farnham

**Advertisement Manager**  
Andrew Forder

**MANAGEMENT**

**Divisional Director**  
John Bridges

**Business Manager**  
Stuart Cooke

**Circulation Manager**  
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# RADIO

## NO MORE LICENCE FEE FOR THE UNDER 21'S

In a welcome move in their effort to continue to encourage young people into the hobby of ham radio, the Radiocommunications Agency have announced that, commencing the 1st July this year, all ham radio licences will be issued and renewed completely free of charge to those under the age of 21 years. This applies to all licences, Novice and Full, although the Novice licence has of course already been free to young applicants courtesy of the RA. Any new licence applications registered on 1st July 1997 or later will be issued free of charge, and existing licensees won't be charged if their licence expiry date falls on or after 1st July, although licence holders will still need to annually confirm they would like their licence to remain valid.

## 50MHz REPEATERS LICENSED

In April this year, a number of 6m repeaters were licensed by the Radiocommunications Agency, some of which are already operational. Here's a list of those which has progressed through the RA's 'vetting';

Repeater	Channel	Location	Area
GB3AE	R50-1	Tenby	West Wales
GB3AM	R50-13	Amersham	Bucks
GB3EF	R50-1	Martlesham	East Anglia
GB3FX	R50-10	Farnham	Surrey
GB3HX	R50-9	Huddersfield	West Yorkshire
GB3UM	R50-3	Markfield	Leicestershire
GB3PD	R50-14	Portsmouth	Hampshire
GB3PX	R50-7	Barkway	Herts.
GB3RR	R50-11	Nottingham	East Midlands
GB3SX	R50-8	Stoke	Staffs
GB3UK	R50-6	Winter Hill	Lancashire
GB3VX	R50-12	Shaftesbury	Dorset

A provisional channel allocation table is shown below, these 'non-standard' frequencies being allocated to meet local requirements in the UK, and do not currently follow the agreed IARU frequencies. We're told these frequencies are subject to review, and may be altered in the future;

Channel	Input Freq	Output Freq
R50-1	51.220 MHz	50.720 MHz
R50-3	51.240 MHz	50.740 MHz
R50-5	51.260 MHz	50.760 MHz
R50-6	51.270 MHz	50.770 MHz
R50-7	51.280 MHz	50.780 MHz
R50-8	51.290 MHz	50.790 MHz
R50-9	51.300 MHz	50.800 MHz
R50-10	51.310 MHz	50.810 MHz
R50-11	51.320 MHz	50.820 MHz
R50-12	51.330 MHz	50.830 MHz
R50-13	51.340 MHz	50.840 MHz
R50-14	51.350 MHz	50.850 MHz
R50-15	51.360 MHz	50.860 MHz
R50-16	51.370 MHz	50.870 MHz
R50-17	51.380 MHz	50.880 MHz

Our thanks go to the RSGB's Repeater Management Committee for the above information.

# TODAY

## GB3AM 6M REPEATER GOES 'ON AIR'

We're told that Iain Philipps GORDI spent close on five years achieving the necessary sanctions and authorization to provide the UK with FM repeater operation on the 6 metre band. His hard work and determination reached a climax when at 16:00hrs on Wednesday the 1st of May the repeater was switched on by Iain from his home located at Coles Hill, 2km south of Amersham in Buckinghamshire. Martin Lynch G4HKS conducted the system's very first QSO with Robin GOVJI, quickly followed by Iain. Martin Lynch kindly donated the first three years rental of the site and provided a continuous duty cycle six metre power amplifier especially manufactured for GB3AM by Microwave Modules.

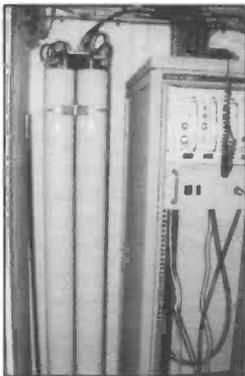
GB3AM is one of many new six metre repeaters operating in the U.K. with several more shortly following. The operating frequency is 50.840MHz receive and 51.340MHz transmit with a CTCSS tone of 77Hz.



The GB3AM 6m repeater aerial is located on a well-sited communications tower located at 165m above sea level



The GB3AM team headed by Iain Philipps GORDI. Left-right; Robin Clay GOVJI, Steve Peddy GOWEI, Iain Philipps GORDI and visiting Peter Hicks G4KCX (GB3AM photos courtesy of Martin Lynch & Son)



Here's a view of the massive cavities required for duplex operation on 6m metres including the Tait repeater

## RSGB SCOTTISH CONVENTION

The Scottish Convention has now been re-designated the RSGB Scottish Convention! It had previously been decided to cancel the Scottish Convention this year due to renovation work being carried out at the usual venue. Now, thanks to work by the RSGB Zonal Council Member for Scotland Tom Menzies GM1GEG, the Convention will be held at the Royal Highland Exhibition Hall at Ingliston in Edinburgh on the 21st September. Tom requests that all interested parties, including potential exhibitors, to contact him on 0131 445 3928 at any time.

## AMATEUR 'BED FUND'



Paul GORUR

So what's it all about? Our regular columnist Paul Simpson GORUR tells us that, having been disabled for 13 years since an accident whilst playing with his children then aged 18 months and 30 months respectively, he cannot get the funding he needs to obtain a Craftmatic Automated Bed.

In view of his position he must replace the bed and bedding every couple of years as normal beds are not intended to support such sustained use. He receives no support for this either, as his local authority (unlike another, if he lived 3 miles across town) cannot supply such a bed. So, 'The Bed Fund' account has been opened. In order to seek funds Paul has undertaken the UK distributorship of Amsoft's current CD 'World of HamRadio' 1997, as well as accepting a position as a columnist for Ham Radio Today. All fees obtained will go towards the fund.

How can you help? You can support his efforts by purchasing the Amsoft Ham Radio Software CD, cheque's or postal orders should be made payable to 'The Bed Fund'. Paul would also be grateful for any amateur or computer equipment he could resell, or if you like, donations can also be made directly to his home address; Paul Simpson GORUR, 231 Caxton Street, Sunnyhill, Derby. DE23 7RB Tel. 01332 737850

## AMATEUR RADIO DEMONSTRATION AND EXHIBITION

The Bury St Edmunds ARS tell us they will again be putting on an Amateur Radio demonstration and exhibition, supported by the National Trust, at Ickworth House, Bury St Edmunds, on 9/10th August. We're told the National Trust have offered them the use of their Lecture Theatre to set up a working demonstration of modern amateur radio, and exhibit many items of radio history. The public are, of course, welcome to visit, they would also welcome any amateurs both local and distant on the day. For further details contact David GOXEG, Tel. 01284 701034, or Peter GOHEV, Tel. 01284 787234

## NATIONAL RAYNET PRESENTATION AT BT TOWER

A presentation on The Radio Amateurs' Emergency Network (RAYNET) capabilities, was made to a packed audience of strategic User Services at the BT Tower in London, on Wednesday 26th March. The attendees included representatives from the Cabinet Office, Home Office, Scottish Office, Radiocommunications Agency, Environment Agency, Emergency Planning College and Railtrack. Also in attendance were RAYNET's more usual User Services together with the Radio and Emergency Press. Ian Kyle the President of the Radio Society of Great Britain attended on behalf of the Society's Council.

During his presentation, the Network's National Chairman, Ron Cowan GM4SRL, said that it was unusual to see so many people with emergency planning key roles gathered together in a place other than the Emergency Planning College. It was good to see so many of RAYNET's potential users gathered to hear of the developments made to the Network during the last five years.

Following the presentation, British Telecom hosted a reception in the revolving suite at the top of the BT Tower, from where the guests could look out over London while enjoying the excellent hospitality. The Tower, for security reasons, is now closed to the general public, and the Network is indebted to British Telecom for allowing it to be used as the venue of RAYNET's public 'launch'.

The RAYNET presentation is now available for national use, and the Network Zonal Coordinators will be pleased to make the presentation themselves, or to arrange for the Chairman or other Committee of Management member to do so at a mutually convenient time and location.



Pictured at the RAYNET presentation at the BT Tower (L-R), David Hicks G6IFA (ZC10), Dave Seabrook G6HPY (ZC4), Madeley Smith G8KVU (ZC9) and Ian Jackson RAYNET Secretary.



Frostbite '96, Cheshire RAYNET member Chris Scrivens G3TPY at 'lunch?'.

## GB2YD - YORKSHIRE DAY 1997

The Scarborough Special Events Group tell us they will be on the air as GB2YD from 1st-3rd August, as part of the annual county-wide 'Yorkshire Day' celebrations. The main HF station will be active around 3725kHz, plus activity on CVV and 2m. Their full colour QSL card will be No. 16 in the Group's series of souvenir cards and will feature Robin Hood's Bay in North Yorkshire.

They tell us all contacts will be acknowledged via the Bureau and listener reports are most welcome. Anyone requiring a direct QSL can apply via the club callsign G0000.

## WACRAL LAUNCH NEW LOGO

The World Association of Christian Radio Amateurs and Listeners has announced the adoption of a new style of logo. After nearly forty years of service, the 'clasped hands of fellowship' badge has been replaced with the well established diamond, so familiar to all amateurs and showing the Christian symbol of the fish.



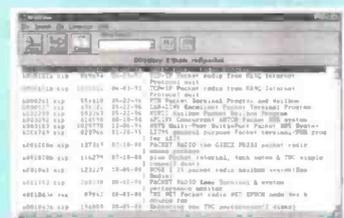
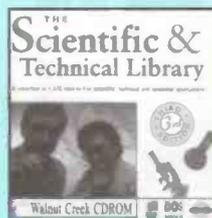
The following information is based upon submissions by suppliers, and is not necessarily endorsed by Ham Radio Today. We cannot be responsible for false or misleading claims by suppliers. Where indicated however, full and unbiased reviews of products are planned for a forthcoming issue of Ham Radio Today.

# TRADE TOPICS

## SCIENTIFIC AND TECHNICAL CD-ROM

The new Scientific and Technical CD-ROM is a library of hard to find scientific, technical and specialist working programs which are shareware, freeware or public domain. The 639Mb contains 1,476 applications, which we're told is the largest selection to be found anywhere on the market. Included are sections on chemistry and biology, computer-aided manufacturing and structural analysis, PCB layout, CAD and CAM tools, maths and statistics, programming languages, and of course sections on electronic engineering and ham radio software. The Cd comes with HTML indices to make topic searching easy, plus viewer programs for both DOS and Windows.

It's priced at £21.00 and is available from PDSL by mail order at Winscombe House, Beacon Road, Crowborough, East Sussex TN6 1UL, or by credit card order to Tel. 01892 663298 (please mention Ham Radio Today when enquiring).



Find that program easily on the Scientific and Technical CD-ROM

## NEW RADIO DATABASE RECEIVER FROM FAIRHAVEN

Fairhaven Electronics Ltd., are pleased to announce their new RD500 Radio Database Receiver. They say the RD500 is a new kind of high specification receiver, and has storage capacity to hold station names and information on every signal that it encounters. Now it is possible to have a receiver which not only holds your own station selections in memory, but has a complete knowledge of its spectrum. Thousands of station records can be stored and sorted through, just type in a few letters or a complete description and the receiver finds the stations of interest for you.

The RD500 is a HF receiver (which has the ability to upgrade to VHF and UHF in the future), covering 40kHz to 40MHz, with LSB, USB, AM, CW, Synchronous AM and NBFM modes. Tuning in 5Hz steps in SSB, CW and AMS modes, 100Hz in AM mode. It has 14,200 memories with the standard 512K of RAM, or 57,000 with the maximum 2Mb of RAM (although a 4Mb sub board is planned giving over 114,000 records), each with 20 characters of text,

frequency, mode and auxiliary setup screen per entry. An alphanumeric character display shows frequency to 10Hz, tuning or S meter, record text and menus.

The receiver's memory can be partitioned to provide an area for digital sound recording (although the memory figures are halved when partitioned), this means that a news flash or rare DX can be recorded, or in contest working, important details need not be lost. It can also be a great help if you are learning Morse or a new language, and can even record from another receiver.

The RD500 database receiver is priced at £799, a full review is planned for a future edition of Ham Radio Today, watch this space! In the meantime, further details can be obtained from: Fairhaven Electronics Ltd., 47 Dale Rd., Spondon, Derby DE21 7DG, Tel. 01332 670707, Email: [sales@fair-radio.demon.co.uk](mailto:sales@fair-radio.demon.co.uk) Internet: <http://www.fair-radio.demon.co.uk> (please mention Ham Radio Today when enquiring).



## RADIO RECEIVER TRAINER

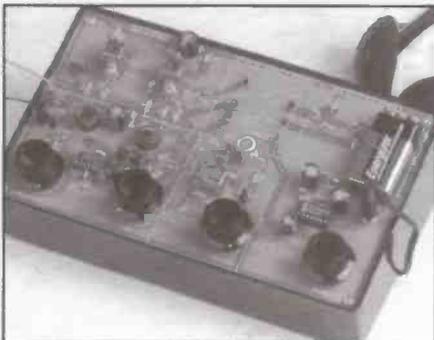
Pyramid Electronics has launched a new Radio Receiver Trainer. This training unit fills the gap in the market between radio kits and off the shelf units providing an easy path for enthusiasts to design and build their own equipment. Pyramid say kits generally have very little technical information and are little more than a soldering exercise, while operating off the shelf equipment provides no technical knowledge of the design.

The Radio Receiver Trainer is a general coverage receiver (500kHz - 110MHz), but it is built in blocks allowing the experimenter to substitute alternate designs easily. These blocks can be connected together to form Direct Conversion and Superhet receivers. Detection of AM, SSB, CW and FM signals are provided for. A comprehensive training manual is provided with complete circuit diagrams and theory. Alternate proven designs are also included to assist in the new design process. Pyramid Electronics tell us they also provide full technical support on the Trainer and that advice and assistance will also be gladly given on new designs.

The Trainer consists of a high quality PCB with clear silk screening and quality electronic components. It is available as a complete unit or in kit form. The complete unit, consisting of Trainer, headphones and manual, is priced at £129.00 plus £5.00 UK P/P (£8 EC, £12 rest of world) and VAT where applicable. The kit, which consists of Trainer (less case) and manual, is priced at £89.00 plus P/P and VAT.

Pyramid Electronics have kindly donated a Receiver Trainer unit as a free competition prize in Ham Radio Today this month, see elsewhere in this issue for details. A review of the Trainer is also planned for a future edition of Ham Radio Today. In the meantime further details can be obtained from Pyramid Electronics, 204 Ferndale Road, Brixton, London SW9

8AG, Tel. 0171 738 4044, see their advert elsewhere in this issue (please mention Ham Radio Today when enquiring).



## AMSOFT 'WORLD OF HAM RADIO' 1997 CD

Paul Simpson GORUR has been appointed as UK distributor for the Amsoft CD, which is now available in the UK at £20.00 inclusive of 1st class recorded delivery. We're told that it's an excellent new CD, compiled genuinely this year with up to date ham radio software. Orders accompanied by a PO are dispatched the same day, allow 7 days for cheques to clear (payable to "The Bed Fund" please). Dealers ring 01332 737850. Paul Simpson GORUR, 231 Caxton Street, Sunnyhill, Derby DE23 7RB.



## TOUGH NEW HANDHELD FROM KENWOOD

Kenwood have launched their new TH-235E VHF FM handheld transceiver, which they tell us is aimed at the 'rugged' user market. It covers the 2m band 'out of the box' with 60 memory channels, automatic repeater offset and programmable squelch, together with CTCSS encode and full DTMF selective signalling fitted as standard. CTCSS decode can be added with the optional TSU-8, and we're told that for export use where type-approval is not required it can be dealer-expanded to cover 136-174MHz. The built-in keypad is laid out in DTMF format, but gives direct frequency entry as normal. Priced at £199.95, you can get further details from all Kenwood amateur radio dealers, see adverts in this month's Ham Radio Today (please mention Ham Radio Today when enquiring).

# FREE COMPETITION

## Ham Radio Today magazine Radio Receiver Trainer Competition Entry

Send your entry to: Ham Radio Today, Trainer Competition, Nexus Specialist Publications, Nexus House, Boundary Way, Hemel Hempstead, Herts. HP2 7ST

If you don't wish to cut this coupon from your copy of Ham Radio Today magazine, just send us the original corner flash from this page together with either a photocopy of the coupon, or a piece of paper with the details similarly laid out, with your entry. Entries must be received by Friday 1st August 1997. The draw will be independently drawn, and will take place on Monday 4th August. The winner will be the sender of the first correct entry drawn, and will be notified immediately by phone (if Tel. number is provided) or by post that day. Ham Radio Today magazine reserves the right to publish the name of the winner in a subsequent issue of the magazine.

Competition questions - please circle the correct answer (or cross out the incorrect answers) in each case;

- Q1) Which frequency range does the trainer cover;
- a) 0-30MHz
  - b) 30-100MHz
  - c) 500kHz-110MHz
- Q2) What price does the kit-based trainer sell for?
- a) £89.00
  - b) £149.00
  - c) £199.00
- Q3) Pyramid Electronics are based in;
- a) Aberdeen
  - b) Brixton
  - c) Preston
- Q4) The Ham Radio Today 24hr Editorial Voicebank and Fax-Back information line is on;
- a) 01442 66551
  - b) 01703 263429
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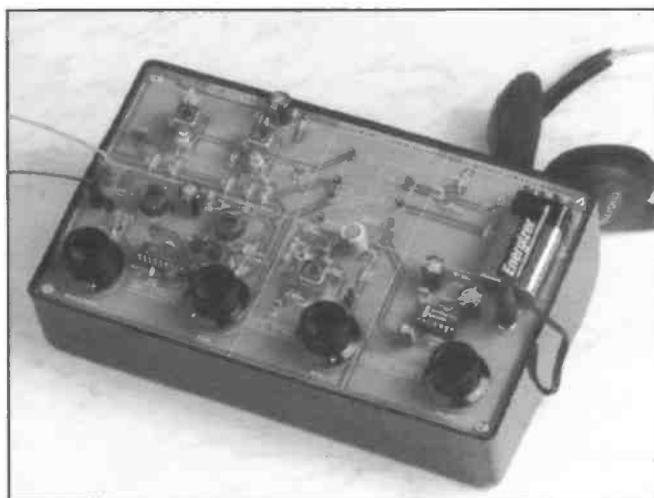
Place a mark in this box  if you do not wish to receive information from other companies besides the publishers or Pyramid Electronics

Here's your chance to win a Radio Receiver Trainer in this month's free Ham Radio Today magazine competition!

**T**his month, you've the chance to win a free Radio Receiver Trainer, kindly donated by Pyramid Electronics. The trainer contains all the building blocks required to build radio receivers together with a comprehensive training manual. These blocks can be simply connected to form AM, FM, SW, superhet and direct conversion receivers. A BFO (Beat Frequency Oscillator) is included to allow reception of SSB and CW. The trainer can receive frequencies from 500kHz to 110MHz using the coils provided or adding a plug-in user coil.

The trainer consists of a high quality PCB with clear silk screening and quality electronic components. It is available as a complete unit or in kit form.

You can win a ready built-up version of the trainer by correctly answering these simple questions based on some of the features of the trainer. If you don't find the answers here, take a look at this month's 'Radio Today' and other sections such as 'Contact Information' of this month's issue of the magazine for more clues! You can obtain further information on the trainer from the manufacturers, Pyramid Electronics Ltd., 204 Ferndale Road, Brixton, London SW9 8AG, Tel. 0171 738 4044, Fax. 0171 274 7997. We've a review of the trainer planned for next month's issue.



# CQ FROM G8IYA

## EDITORIAL

Are you brave enough, or maybe foolish enough, to delve inside your rig?

**S**ome years ago, the 'typical' amateur's shack would include a workbench area, equipped with soldering iron, a 'junk box' of components and a few items of test equipment such as a multimeter and power/SWR meter, maybe even a surplus type oscilloscope bought as a bargain at a rally. Is this the case now? Our power and SWR metering is built into our rigs, and would you delve inside your latest oriental HF multimode black box with a soldering iron? A while ago, we wouldn't think twice about 'going inside' and attempting a usually simple repair should our equipment develop a fault. It seems that a prerequisite now is a large magnifying glass and a lot of experience!

But not all sets are like this, and those which were 'state of the art' around 10 years or so ago are still much in use, often being a 'first choice' from the secondhand market for a beginner to the hobby. Yes, these do develop faults, especially with age, and sometimes the perceived cost of obtaining a commercial repair can reflect highly on the original value of the set. An 'expert friend' can help here, and I'm pleased to say the series on this very topic in Ham Radio Today magazine, written by Harry Leeming G3LLL, is proving to be very popular. Harry has had a wealth of experience in servicing amateur radio equipment. He was one of the foremost suppliers of Yaesu equipment in the 1970's, and produced a number of very useful add-ons to the FT-101, including the famed G3LLL speech processor and his balanced mixer modification. I even remember back in the days of B. H. Morris and the Trio JR599 receiver when Harry had bought a 'job lot' of these, and made many SWLs happy by supplying them (one to a young G8IYA).

Harry shores his wide experience of 'common faults' in amateur rigs



with us, in a very readable style, in his occasional series of "All in a Day's Work" in the magazine. Over the past months he's also given us some very useful 'insider's tips', for example in how to avoid earth loop problems when we connect accessories. Maybe we could even have a minor revival of getting the soldering iron out! Have you any thoughts on this subject? If so then do drop me a line, maybe as a 'Readers Letter' for publication so we can get some discussion going.

### QSP73

Sharp-eyed readers may have seen in last month's issue, that the Ham Radio Today Editorial Email address has changed. Even if you're not interested in Email at the moment, you may very well be interested in the 'background' to why such an address was chosen, see the next two paragraphs! The new address is [editor@qsp73.demon.co.uk](mailto:editor@qsp73.demon.co.uk) and we soon hope to have an updated web site, at; [www.qsp73.demon.co.uk](http://www.qsp73.demon.co.uk) which will replace our existing (and rather out-of-date!) site with a newer streamlined version allowing faster retrieval of information.

Here's a little 'background' to the choice of the name. I wanted an address that would reflect the nature of relaying ham radio related information. "CQ" or "QST" were

considered, however these wouldn't have been appropriate in the worldwide ham radio magazine publishing field, as they were titles of American amateur journals and could cause confusion. "QSP" (i.e. "will you relay..."; and "yes I will relay..." was subsequently chosen, to be followed by the international greeting of "73". The UK's largest Internet Service Provider, Demon Internet, is being used.

There was another, very significant, reason for choosing such historically-used abbreviations. Methods of communication are ever-advancing, from the days of landline telegraph operators, through to radio, satellites, and coming right back again to landline connection via the Internet. Digital compression also constantly squeezes more information into a given bandwidth. I thought it would be very appropriate for today's, and tomorrow's, Internet-based communications, which is of course all about interconnected nodes relaying information until it reaches the destination, to reflect on our origins. Whatever progress is made with such advancing communication, including multimedia use, at least the messages to and from the Editorial team will carry appropriate historic reminders of early Morse use, abbreviations (Q codes - the earliest form of digital compression), traditional relay

methods (QSP, a manual relay), and lifelong international greetings of goodwill.

### PMR CONTROLLER

Home construction projects need not be yet another low power HF CW transmitter or a shack accessory. In this month's issue you'll see an easy-to-build digital controller for a synthesized ex-PMR rig. This uses just three ICs on a single PCB, it even gives you keypad control and digital LCD readout, using readily-available components. If you don't wish to etch and drill your own PCB, there's one ready-made available, together with ready-programmed PICs. Using a surplus PMR rig can be an economic entry to VHF/UHF amateur radio, and with the move to 12.5kHz channel spacing (as virtually all ex-PMR rigs are) the end result could outperform even the best amateur 'black box'. I hope you find the project useful.

### 6M REPEATERS

It had to happen, didn't it? After European 6m repeater channels had all been agreed this year, the UK needed to use different channels due to local requirements. As well as one repeater group, who told us they'd had their expensive cavity filters manufactured and set up on the agreed channels and then had to change 'at the last minute', the change also caught out many amateurs whose UK-made 6m transceivers couldn't access some of the new UK repeater channels! I've also received comments on this regarding our handy 70cm and 6m 'channel card'. These are correct as being the internationally agreed and published frequencies for European countries to use. However you'll see a full list of the current UK 6m repeater frequencies in this month's 'Radio Today'. But watch out, they may change!

**Sheila Lorek G8IYA**

# MULTICOMM 2000



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# REALISTIC PRO-2014 REVIEWED

Ham Radio Today's Consultant Technical Editor takes a look at an economic self-contained base scanner

**T**he PRO-2014 is the very latest base scanner to be released by Realistic. It's a compact and smart-looking unit, something that wouldn't look out of place in the average lounge. Measuring 52mm (H) x 210mm (W) x 175mm (D) in a smart dark-grey plastic case, it comes ready to go with a settop whip, internal speaker, and a plug-in mains power supply, and it's priced at just £149.99.

## COVERAGE

The PRO-2014 covers 68-88MHz in 5kHz steps, 137-174MHz again in 5kHz steps, and 380-512MHz in 12.5kHz steps, with a reception mode of narrowband FM. 50 memory channels let you store your favourite frequencies, and the set can scan through these at 25 memories per second.

## SEARCH BANKS

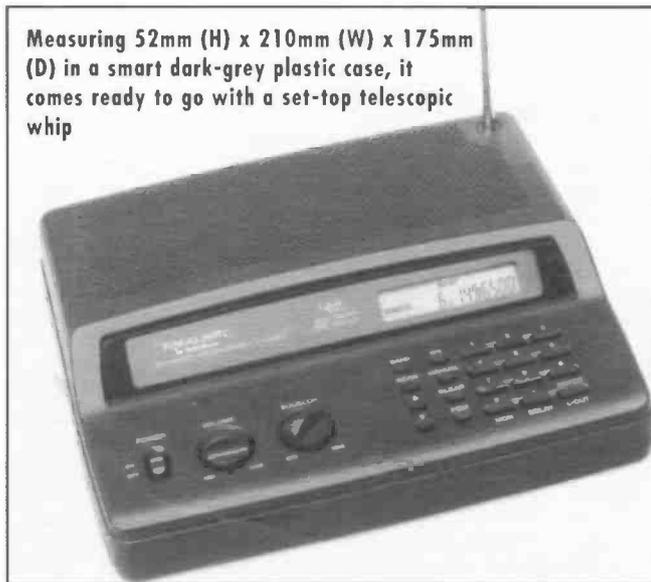
Ten pre-stored search banks are available on the set, which let you find new active frequencies to listen to. These banks cover;

- b0; 68-75MHz
- b1; 75-82MHz
- b2; 82-88MHz
- b3; 137-144MHz
- b4; 144-148MHz
- b5; 148-174MHz
- b6; 380-420MHz
- b7; 420-450MHz
- b8; 450-470MHz
- b9; 470-512MHz

Selecting which of these banks to search through needs just a simple button push, but note these banks are fixed and can't be changed. You can, however, also manually search



The PRO-2014 is the very latest base scanner to be released by Realistic.



Measuring 52mm (H) x 210mm (W) x 175mm (D) in a smart dark-grey plastic case, it comes ready to go with a set-top telescopic whip

up or down from a manually entered frequency, for greater flexibility.

In each case, the receiver searches at 50 frequency increments per second, halting as soon as the receiver squelch raises, and resuming when the signal disappears. Storing

an active frequency into a memory channel is again very easy, the receiver automatically telling you if that same frequency has already been previously stored into a different memory channel.

Besides the 50 available

memory channels, there's also a quick-access 'monitor' channel, which lets you temporarily store a frequency for monitoring, for example prior to deciding whether to store it into a dedicated memory channel or not.

## OPERATION

For home use, the receiver can be powered from the AC mains using the supplied plug-in wall power supply, although it can also be powered from 12V DC using an optional DC lead. The supplied set-top telescopic aerial screws into the case of the set, and the length of this can be manually adjusted to suit the particular band you're primarily interested in. An external aerial can also be plugged in, although the connector for this is a 'car radio' type coax socket, so you'll typically need to use a suitable adapter here.

## LISTENING

For local listening at my location, I found the settop aerial worked fine. After I'd programmed my usual 'favourite' frequencies in, the PRO-2014 gave me plenty of local activity to listen to.

In 'search' mode I found I had to continually keep my finger on the 'up' arrow button, as, to be expected, the set did keep halting on unwanted blank carriers. I'd have preferred here for the receiver to have had an option to alternatively pause for a few seconds each time the squelch raised, and then resume searching automatically. I also found the fixed 5kHz steps on VHF to be a little limiting, as all services in the UK use either 12.5kHz or 25kHz steps throughout the set's reception range,

Inside the set showing the internal speaker, top right.



An external aerial can be plugged in, although the connector for this is a 'car radio' type coax socket

thus 12.5kHz steps on VHF would have been preferable. However, in practice the receiver's IF bandwidth was wide enough to pass the '2.5kHz off-frequency' signals I found without undue distortion.

There was plenty of available audio for round-the-house listening from the set's internal speaker (note there's no facility for plugging in an external speaker), and the keypad, being horizontal, was intuitively easy to use for home use.

### LAB TESTS

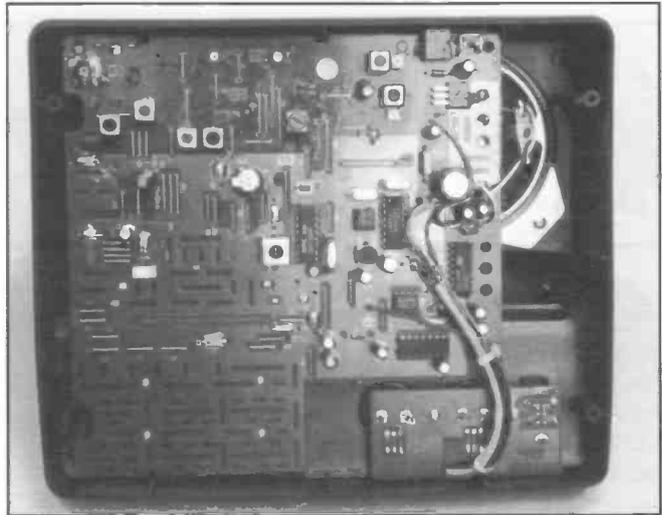
Overall, I found the measured results reflected those I'd expect from a typical Realistic scanner of this type. In other words, nothing superb but instead a reasonable 'no nonsense' performance. The 1st image rejection however, where signals at twice the 1st intermediate frequency (in this

case 21.4MHz) are also received, was, again, typically rather poor. To be fair however, the supplied user manual does warn of this limitation.

### CONCLUSIONS

Realistic's PRO-2014 would make a useful, low-cost, 'first' base scanner for use in the home to keep in touch with local narrowband FM activity. It's smart styling would nicely suit the average family lounge (or even kitchen), giving something 'different' to listen to rather than broadcast stations. 'Serious' scanner enthusiasts would find it's facilities limiting, although other, naturally more expensive scanners, will of course fill this need.

Our thanks go to Link Electronics in Peterborough, Tel. 01733 345731, for the loan of the scanner for review. Please mention Ham Radio Today.



#### Sensitivity;

Input signal level in  $\mu\text{V}$  pd required to give 12dB SINAD;

Freq.	Level
68MHz	0.66
78MHz	0.38
88MHz	0.45
137MHz	0.63
145MHz	0.65
165MHz	0.67
174MHz	0.72
400MHz	0.47
435MHz	0.37
450MHz	0.38
470MHz	0.39
500MHz	0.37
512MHz	0.41

#### Squelch Sensitivity;

Level of signal required to raise receiver squelch

Threshold;	0.55 $\mu\text{V}$ pd (8dB SINAD)
Maximum;	1.80 $\mu\text{V}$ pd (22dB SINAD)

#### Blocking;

Measured as increase over 12dB SINAD level of interfering signal modulated with 400Hz at 1.5kHz deviation to cause 6dB degradation in 12dB SINAD on-channel signal;

+100kHz;	66.3dB
+1MHz;	91.7dB
+10MHz;	94.2dB

#### Image/IF Rejection;

Difference in level between unwanted and wanted signal levels, each giving 12dB SINAD on-channel 145MHz FM signals;

	145MHz	435MHz
1st Image;	24.2dB	8.5dB
2nd Image;	71.4dB	66.9dB

## LABORATORY RESULTS:

All measurements taken at 145MHz, NFM, unless stated.

#### Adjacent Channel Selectivity;

Measured as increase in level of interfering signal, modulated with 400Hz at 1.5kHz deviation, above 12dB SINAD ref. level to cause 6dB degradation in 12dB on-channel signal;

+12.5kHz;	9.9dB
-12.5kHz;	7.4dB
+25kHz;	63.0dB
-25kHz;	62.8dB

#### Intermodulation Rejection;

Measured as increase over 12dB SINAD level of two interfering signals giving identical 12dB SINAD on-channel 3rd order intermodulation product;

25/50kHz spacing;	56.5dB
50/100kHz spacing;	56.8dB
100/200kHz spacing;	60.4dB



# Scanner World

## Handheld

## Realistic Scanners

Name	Ch.	Frequency Range	Price
Pro 26	200	25-1300MHz	<b>£219.99</b>
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Pro 28	30	29-54, 137-174, 380-512MHz	<b>£89.99</b>
Pro 29	60	68-88, 108-174, 806-824, 849-869, 894-960MHz	<b>£189.99</b>
Pro 60	200	30-512, 760-1000MHz	<b>£179.99</b>
Pro 62	200	68-88, 118-174, 380-512, 806-824, 849-869, 894-960MHz	<b>£169.99</b>
Pro 63	100	68-88, 108-174, 380-512, 806-960MHz	<b>£139.99</b>
Pro 70	50	68-88, 137-174, 380-512MHz	<b>£99.99</b>

## Base

Name	Ch.	Frequency Range	Price
Pro 2014	50	68-88, 137-174, 380-512MHz	<b>£139.99</b>
Pro 2026	100	68-88, 108-174, 406-512, 806-824, 851-869, 896-1126MHz	<b>£239.99</b>
Pro 2042	1000	25-520, 760-1300MHz	<b>£299.99</b>
Pro 2045	200	68-88, 108-174, 216-380, 406-512, 806-1100MHz (gaps)	<b>£249.99</b>
DX 394	160	1.73 to 30MHz AM/SSB/CW (Shortwave receiver)	<b>£199.99</b>

## Handheld

## Other Scanners

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CommteI COM104	20ch 68-88,137-174,380-512MHz	£74.99
CommteI COM212	30ch 68-88,137-174,406-512MHz	£79.99
CommteI COM206	50ch 68-88,108-174,380-512MHz	£114.99
CommteI COM213	100ch 68-88,108-174,406-512,806-956	£149.99
CommteI COM207	200ch 68-88,108-174,380-512,806-960	£179.99
CommteI COM216	400ch 25-1300MHz	£269.99
Yupiteru MVT7100	1000ch 100KHz-1650MHz	£299.99
AOR AR8000	1000ch 500KHz-1900MHz	£339.99

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CommteI COM101	20ch 68-88,137-174,380-512MHz	£99.99
CommteI COM217	50ch 68-88,108-174,406-512,806-956	£199.99
CommteI COM215	200ch 68-88,108-174,216-512,806-956	£249.99
CommteI COM205	400ch 25-512,806-1300MHz	£329.99
AOR AR3000A	400ch 100KHz-2036MHz	£789.99
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Uniden 9000XLT	Bearcat 500ch 25-1300MHz	£319.99

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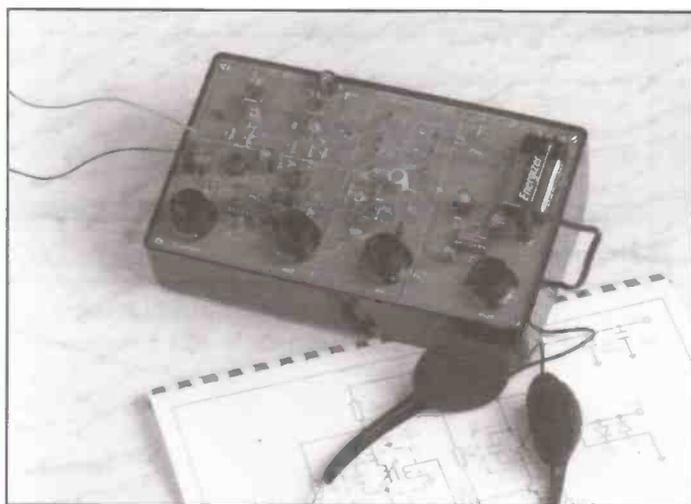
### Ordering Information

We accept payment by all major credit/debit cards as well as cash and cheques. When paying by cheque please allow 3-7 days for it to clear. Three day courier delivery for any scanner to mainland UK is £6. Many accessories are available. Please call if you have any query regarding scanners. Prices are correct at time of going to press (21/5/97) E&OE.



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# ON TEST - REALISTIC PRO-29

Chris Lorek G4HCL takes a look at Realistic's latest handheld aimed at the newcomer

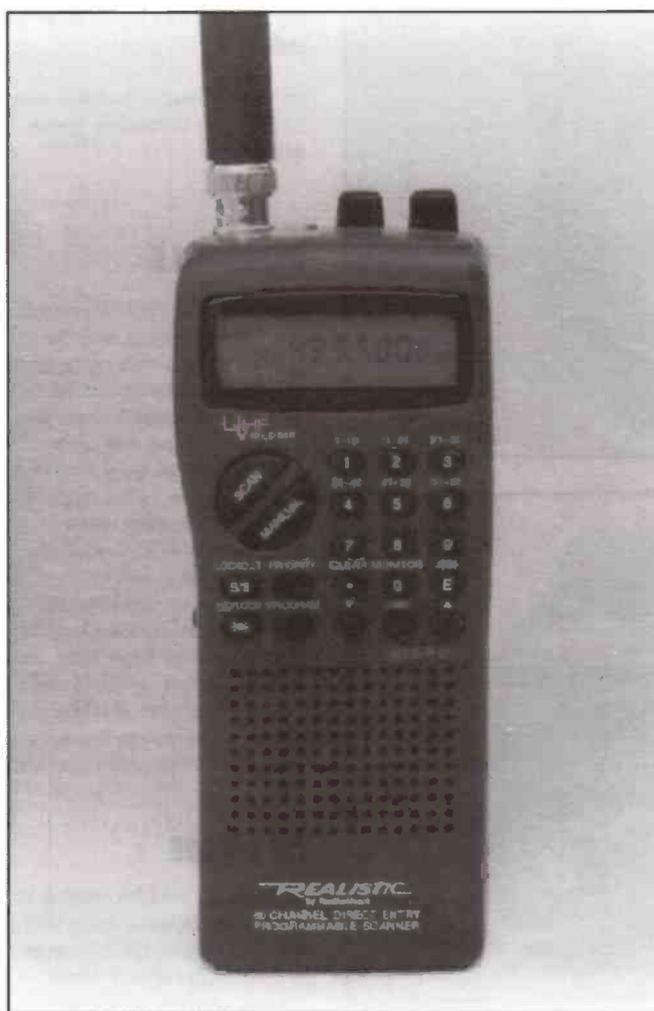
If you're in the market for your 'first' handheld scanner, then right now there's quite a wide choice. The very latest offering from Realistic is certainly included in this choice, offering a number of 'bells and whistles' to tempt you.

The PRO-29 handheld scanner covers the civil airband range of 108-137MHz on AM, together with FM on 68-88MHz, 137-174MHz, 406-512MHz and 806-965MHz. It has 60 memory channels for storing your favourite frequencies, arranged into six banks of ten channels each, and can scan these at 1.5 channels per second.

## PROGRAMMABLE SEARCH

A 'limit search' is available on the set, where you can enter a lower and upper frequency for the scanner to search across, in order to find new active frequencies. When the scanner has halted on a signal, i.e., when the squelch raises, you can press the 'monitor' button to store the frequency into one of the six 'monitor' memories available. You can then, later if you wish, transfer a frequency stored in a monitor memory to a permanent memory channel for subsequent scanning.

Another handy facility is the ability to enter up to 30 'search skip' frequencies which the scanner will then ignore on subsequent searches, to prevent it 'locking up' on unwanted signals. If you find such a signal during a search, a quick press of the 'Lockout/S/S' button instantly



The PRO-29 handheld scanner receiver

enters this into the 'Search Skip' bank.

A 'Priority' scan facility is also available, where the receiver will briefly scan a memory channel you've previously designated every two seconds for activity, locking onto it when a signal appears.

## PHYSICAL FEATURES

The receiver measures 156mm x 62mm x 43mm, and is powered by four AA sized batteries which fit into the bottom of the case. You can use either dry cells or nicads here, and an internal charging circuit lets you charge nicads from

an external DC supply or an AC adapter through the side-mounted 'charger' jack. Alternatively, if you're using dry cells, to help preserve the internal batteries when you're using the receiver at home or in your car you can use the adjacent side-mounted DC connector to power the set from an external 9V DC supply.

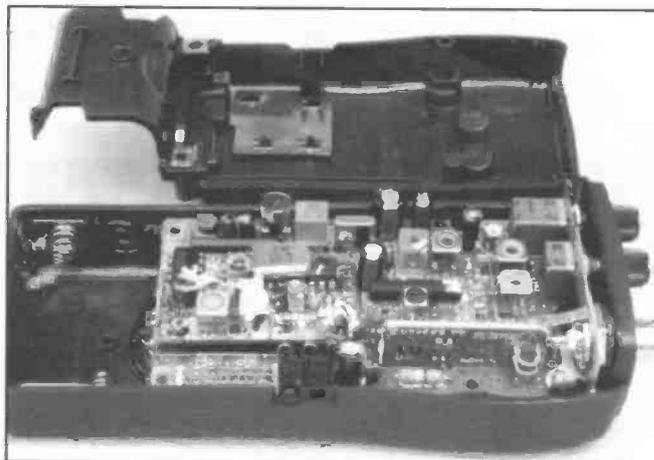
The set comes supplied with a flexible set-top helical aerial, this using a BNC aerial connector which also lets you easily connect an external aerial to the receiver if you wish. A plastic screw-on belt clip is also supplied as a carrying aid, and a 3.5mm jack socket is fitted to the top panel, which lets you plug in an optional earphone for private listening or an external amplified speaker for a greater audio level.

## ON THE AIR

After fitting a set of charged nicads, a quick 'listen around' showed the receiver to receive local signals very nicely using just the set-top whip. Plugging in my rooftop VHF/UHF collinear brought in signals from far and wide, and although I found it wasn't as sensitive as, say, a purpose-designed amateur 2m or 70cm handheld, I was pleased to find it didn't suffer from too many unwanted 'blocking' effects from strong signals in neighbouring bands. I did however find the IF bandwidth a little on the wide side for 12.5kHz channel spacing as used in the UK, with strong signals on adjacent channels occasionally breaking through.

I found the PRO-29 intuitively very easy to use. I certainly

The PRO-29 receiver measures 156mm x 62mm x 43mm



An internal charging circuit lets you charge nicads from an external DC supply or an AC adapter through the side-mounted 'charger' jack.

on VHF as used in the UK in order for the set to successfully ignore that channel.

### PORTABLE

I often used the PRO-29 portable when out and about, with the receiver clipped onto my belt and an earphone connected. The set made a very handy 'companion' on shopping trips, and whilst walking between the shelves of my local superstore, or the shops in the nearby shopping centre complex, the PRO-29 gave me some 'alternative entertainment' to listen to! The keylock function helped prevent accident keypad presses, and the large 'scan' and 'manual' buttons, which I found I used the most often of all the buttons, were easy to locate by 'feel' alone whilst walking around.

### AT HOME

I successfully used the receiver for many hours at home, using both the set-top helical and connected to my rooftop collinear. Here, listening carefully, I did find a number of 'images', i.e., where the set received signals at twice the IF away from the tuned frequency, especially on UHF. Although the bandwidth was a little wide for FM, I found this was fine for AM reception, and although this mode was limited to the civil airband range it provided me with many hours of pleasant listening.

### LAB TESTS

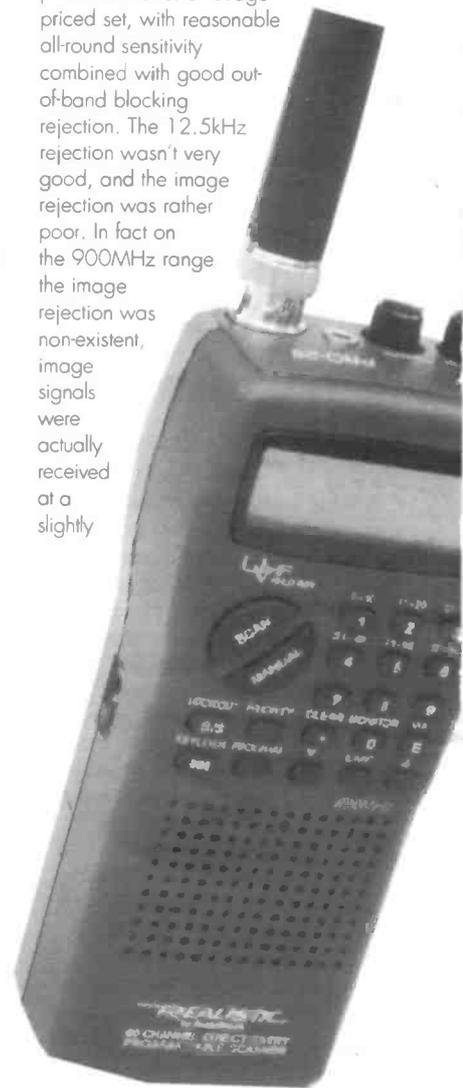
The measured results show the PRO-29 to have a reasonable performance for a 'budget' priced set, with reasonable all-round sensitivity combined with good out-of-band blocking rejection. The 12.5kHz rejection wasn't very good, and the image rejection was rather poor. In fact on the 900MHz range the image rejection was non-existent, image signals were actually received at a slightly



A 3.5mm jack socket is fitted to the top panel, which lets you plug in an optional earphone for private listening or an external amplified speaker for a greater audio level.

appreciated the 'search pass' channels, which are quite a useful feature on a 'budget' scanner. The set uses fixed step sizes of 5kHz on VHF NFM (with 12.5kHz steps

on UHF), and a minor 'niggle' was that I often had to program two adjacent 5kHz step frequencies into the 'pass' memories on 12.5kHz channels



greater strength than the wanted signal, reflecting the results I found on air.

## CONCLUSIONS

The PRO-29 is destined to be a widely available handheld scanner, as such it's bound to be a popular choice with newcomers to scanning. I found the set easy to use, with a wide coverage, the 'search pass' facility being

particularly useful, although being designed primarily for a non-UK market the 5kHz channels steps on VHF FM tended to be a little limiting. In use it provided me with plenty of interesting listening, and if used with a good frequency handbook I'm sure it'll be a good seller.

*My thanks go to Link Electronics in Peterborough (Tel. 01733 345731) for the loan of the set for review. Please mention Ham Radio Today when enquiring.*



The receiver is powered by four AA sized batteries which fit into the bottom of the case.

### Sensitivity;

Input signal level in  $\mu\text{V}$  pd required to give 12dB SINAD;

Freq.	Level
68MHz	0.75
78MHz	0.42
88MHz	0.38
108MHz	0.47 (AM)
120MHz	0.50 (AM)
136MHz	0.47 (AM)
137MHz	0.31
145MHz	0.33
165MHz	0.40
174MHz	0.45
406MHz	0.56
425MHz	0.55
435MHz	0.48
450MHz	0.57
470MHz	0.45
806MHz	0.64
850MHz	0.36
900MHz	0.32
950MHz	0.39
956MHz	0.54

### Squelch Sensitivity;

Level of signal required to raise receiver squelch

Threshold;	0.34 $\mu\text{V}$ pd (14dB SINAD)
Maximum;	0.65 $\mu\text{V}$ pd (24dB SINAD)

### Adjacent Channel Selectivity;

Measured as increase in level of interfering signal, modulated with 400Hz at 1.5kHz deviation, above 12dB SINAD ref. level to cause 6dB degradation in 12dB on-channel signal;

+12.5kHz;	5.0dB
-12.5kHz;	19.5dB
+25kHz;	61.2dB
-25kHz;	64.7dB

## LABORATORY RESULTS:

All measurements taken at 14.5MHz, NFM, unless stated.

### Blocking;

Measured as increase over 12dB SINAD level of interfering signal modulated with 400Hz at 1.5kHz deviation to cause 6dB degradation in 12dB SINAD on-channel signal;

+100kHz;	70.7dB
+1MHz;	86.0dB
+10MHz;	94.4dB

### Intermodulation Rejection;

Measured as increase over 12dB SINAD level of two interfering signals giving identical 12dB SINAD on-channel 3rd order intermodulation product;

25/50kHz spacing;	54.0dB
50/100kHz spacing;	61.7dB
100/200kHz spacing;	60.4dB

### Image/IF Rejection;

Difference in level between unwanted and wanted signal levels, each giving 12dB SINAD on-channel 14.5MHz FM signals;

	145MHz	435MHz	935MHz
1st Image;	18.2dB	7.9dB	-0.9dB
2nd Image;	70.9dB	82.8dB	>100dB

### Maximum Audio Output;

Measured at speaker/earphone socket, 1kHz audio at the onset of clipping (10% distortion), 8 ohm resistive load;

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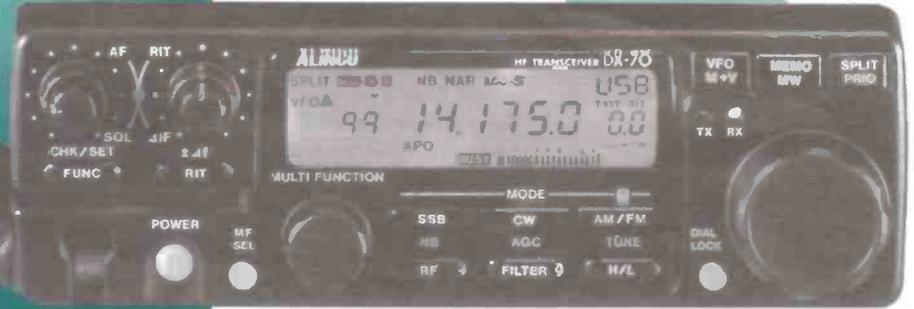
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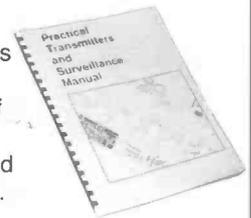
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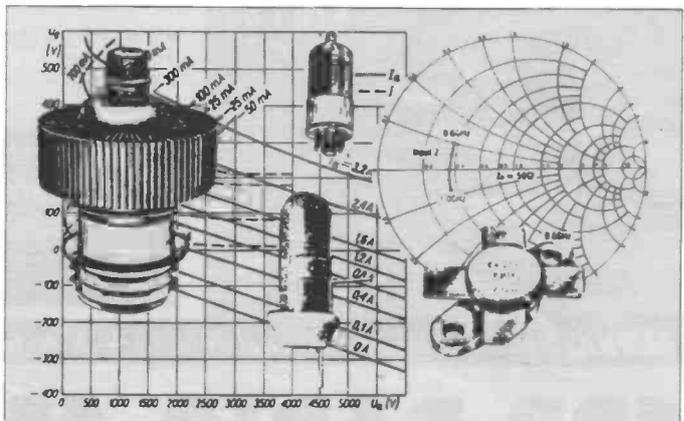
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# SCANNERS

## Bill Robertson relates cautionary tales of a 70cm transceiver and airband scanning

**F**ollowing my brief review of the MPT1327 trunking decoder a couple of issues ago, I've received a number of queries asking for further information, which as I promised I've passed onto the manufacturers by Email. It's currently looking popular!

Following my test on the prototype, I'm told production units are now available priced as \$320 (Australian), i.e., around £160, plus p/p. It's available direct from Talkback Systems Australia, PO Box 8054, Northland Centre, Victoria 3072, Australia, they take Visa/Mastercard, and they can also supply further details if you require. You can Email them at [mpt1327@bsa.com.au](mailto:mpt1327@bsa.com.au) and their www site with information is <http://www.tbsa.com.au/trunk.html>

### SCANNER PREAMPS

I often receive enquiries on getting the most out of a scanner, especially questions such as "which is the best aerial" which I've covered in the past, but also whether a preamp will help. For example, Stuart Hodgson recently asked "Is there anything out there that is able to boost signal strength (without getting a new aerial!) to a scanner?". The sort of thing Stuart is looking for is a unit between his external aerial and the scanner, asking "is there a black box type thingy that will boost all the signals coming into the aerial?". I thought a brief discussion of some of the various preamp types may be useful.

### OPERATION

A preamp operates, quite simply, by amplifying the signals present at its input port and transferring the amplified signals at the output port. If you think this sounds over-

simplistic, you're probably right! However besides amplifying the signal, all preamps, without exception, also introduce some noise - so besides the actual amount of signal gain offered the relative amount of noise is also important. You'll usually find this is given in the form of a 'noise figure', which is typically around 1-2dB for a low-noise preamp such as a GAsFET type.

Your scanner receiver's front end circuitry will also have a noise figure, and this may indeed be similar to that of the preamplifier. In this case, if you connect the preamp output directly to your scanner's set-top aerial connector, the only gain you'll get is a signal level gain, and not an increase in sensitivity. This is because the signal-to-noise ratio on weak signals will be exactly the same! This presumes 'ideal' conditions, i.e., where there are no other problems caused by strong signal handling limitations. In practice, what you'll invariably find is that the dynamic range of your overall receiver system gets worse, in other words you'll get more problems from images and other unwanted strong signals which aren't actually present on the tuned frequency, disrupting what you're trying to listen to!

### IT'S NOT ALL BAD

But there are many situations where a preamp is useful, particularly when you're using an outdoor aerial and you want the very best from your system. The coax cable feeding your outdoor aerial does of course introduce loss, and at the higher UHF frequencies this is typically several dB, usually depending on the quality and thickness of coax you're using. This loss of course reduces the overall sensitivity of your receiving system, it's just like adding an attenuator between

your scanner aerial and the scanner itself. I'll spare the complicated maths, but by placing the preamplifier at the aerial position itself, your overall noise figure will approach that of the preamp itself, let's say in this case it's 2dB. If however you had 8dB of feeder loss at a given frequency, with a preamp noise figure of 2dB and you placed the preamp at the scanner end, the overall noise figure would effectively be 2dB plus 8dB, i.e., 10dB, and you won't gain very much. So if you use a wideband preamplifier and your scanner is already very sensitive, then try to position the preamplifier at the aerial end of the coax, not at the scanner end.

### TUNED AMPLIFIERS

A useful variation to a preamplifier is that of a tuned or band-limited preamp. If, for example, you're primarily interested in civil airband on VHF, then a dedicated preamp covering this band, having filters built in to reject out-of-band signals, can be very worthwhile in both boosting the wanted signals and rejecting unwanted signals such as images and out-of-band pager transmissions. Garex Electronics in Exeter have a range of such preamps at reasonable prices. For wider band use, you'll find something like the 'Jim' bandswitched preamp can be useful. This can be set to either wide band or two narrower band ranges, as well as having the facility of a variable gain control to guard against overload.

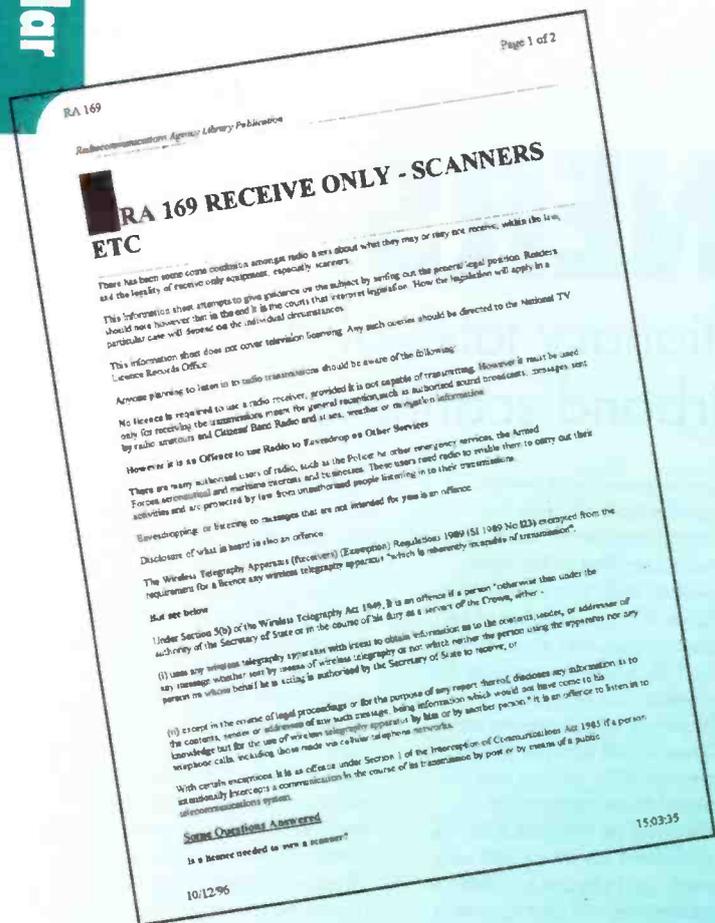
### CAUTIONARY TALES

It seems there are still a number of listeners who believe they can listen to whatever they want, which really isn't the case. I do

end each column with brief details of the RA's information sheet on this, you can also get it from their web site. A 2E1 Novice licensee in the south of England recently had his 70cm handheld seized by the police and has been summonsed to appear in court facing the charge "with intent to obtain information which you were not authorised by the Secretary of State to receive you used wireless telegraphy apparatus namely a Rexon RL-402 UHF transceiver contrary to section 5(8) of the Wireless Telegraphy Act 1949". I'm told that the transceiver wasn't even switched on when it was seized, but then again there's probably another side to the story. But either way a licensed amateur really should know better. A further reported case is that of a reader's son who was using his scanner, and that his father told the police that they both used it to listen to aircraft at his local airport. The father was then formally interviewed on tape at the police station because listening to airband without permission was also an offence. Oh dear! In my personal view, 'little Billy' who saves his pocket money and innocently buys an airband radio on display in the high street shop window, complete with its included book on airband listening, suddenly becoming a criminal *must* mean there is something *must* wrong with the law. But when someone gets 'pulled' in the street for admitting he listens to airband really is, in my view, totally over the top. You've been warned!

### VHF AIRBAND BREAKTHROUGH

Sometimes you can't help listening to airband! In a message on the 'net, Tony Hawes says that he regularly receives breakthrough



The RA's "Receive Only, Scanners etc". information explains what you can and can't listen to.

from VHF airband signals whilst he is listening to Band II broadcast FM stations on his Sony receiver. When he listens to *Classic FM* on 100.90 MHz FM he regularly gets aircraft breakthrough from aircraft passing overhead calling Blackbushe (five miles away from him) on 122.3 MHz AM. Now, 122.30 MHz minus twice the 10.7MHz IF (Intermediate Frequency) of his radio, i.e., 21.4MHz gives the 'image' frequency of 100.90 MHz which causes the breakthrough.

Tony also says that, when listening to Melody Radio on 105.40 MHz, he also regularly gets aircraft breakthrough from aircraft calling Gatwick Approach on 126.875 MHz. 126.875 minus 21.4 MHz is 105.475 MHz which is near enough to cause breakthrough.

## CONFIDENTIAL FREQUENCY LIST

I recently received a copy of the latest Ferrell's "Confidential Frequency List". It's a spiral bound A5 publication, containing a massive 450 pages worth of

listings of HF stations operating over 1.6MHz to 30MHz. As well as the main station list, which is given in frequency order with details of modes, identification, station name and type of transmission, the list also contains a number of useful maps, an abbreviation list, information on maritime services including NAVTEX and GMDSS channels, plus ICAO HF area frequencies. If you prefer a 'hard copy' book rather than a CD-ROM for your information, this one's certainly worth looking at. It's published by PW publishing Ltd., ISBN 1 874110 10 7, and you'll find it available in bookshops and specialist radio dealers.

## DATA INTERFACE PROBLEMS

Vincent Stephenson says that he recently paid a visit to SRP Trading in Birmingham and bought an aerial amplifier. Whilst he was there, he had a 'mad rush of blood' and also purchased an "SSTV modem thingy", which came with JVFAX and HamComm software. Right now he's totally

confused, as the instructions talk of 'COM ports' on his PC, yet Vincent says that the unit has a parallel port connector on it, and asks what he should do.

This unit is typically one of the single op-amp receiver interfaces, similar to the circuit used for the PCB attached to the cover of the November 1996 issue of Ham Radio Today and the construction project in that issue, except that the unit uses a 25 way 'D-type' connector to connect to the computer. Vincent says that his PC uses a 9 pin D type connector for the COM port, the only 25 way D type being a parallel connector for the printer port. PCs do use a 25 way D type connector for the printer port, but you'll find this is a female connector on the PC, whereas the RS-232 ports are male connectors on the PC, often with a 9 way male for COM1 and a 25 way male for COM2 fitted. If you've only 9-way COM port connectors fitted, a simple answer is to use one of the 9-way to 25-way RS-232 adapters available from your local computer store. Alternatively if you're wiring up the unit or adapter yourself, Table 1 shows the cross-connection lines required between

the two, which I hope helps.

Bill Robertson is always pleased to hear from readers, and will answer queries through this column. You can write to him c/o the Ham Radio Today Editor, either by post or fax, or directly by Email to [scanman@qsp73.demon.co.uk](mailto:scanman@qsp73.demon.co.uk)

Readers should note that, depending upon your country's regulations, reception of some services may not be allowed unless you have appropriate permission. The RA's "Receive-Only, Scanners" Information Sheet provides more information for UK listeners, you can obtain this free of charge from the Radiocommunications Agency.

### 9-25 way RS-232 connections

Funct.	9 way	25 way
TXD	Pin 3	Pin 2
DTR	Pin 4	Pin 20
GND	Pin 5	Pin 7
DSR	Pin 6	Pin 6
RTS	Pin 7	Pin 4

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# The Project Magazine for Electronics Constructors

In ETI Magazine  
Vol.26 No.7  
on sale  
20th June



### Switch Tuned AF Generator

Robert Penfold's design for an audio frequency signal generator covering a range of 10Hz to 100kHz, has switch controlled tuning rather than the continuous type. No calibration is needed once the unit is finished - you just switch on and dial up.

### 'Eprommer' Eprom Programmer

Keith Wardill's new Eprom Programmer connects to a computer serial port, and will program and read most Eproms now available, up to 64kB.

### Catching The Universal Serial Bus

The Universal Serial Bus SB is a new single-interface protocol for PC computer peripherals giving unlimited expansion capability at transfer rates of more than 1Mb per second. Robin Abbott reports.

### Peak Reading VU Meter

Tony Sercombe's peak-reading VU meter is designed to have faster response and greater linearity than many moving-coil VU meters, to give better peak reading against short overloads.

### Spiced Circuits - More about frequency

Using SpiceAge simulator and an experimental filter circuit, Owen Bishop examined frequency response, square waves and Fourier analysis.

### Speed Control in DC Motors - Part one

David Ponting's gift reel-to-reel high-quality tape recorder was absolutely free - all he had to do to put it in working order was create a constant-speed capstan motor drive suitable for both sides of the Atlantic. So began the experiments to find the best control circuit.

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# PMR RADIO CONTROLLER KIT

Bob Howlett G6RHB describes a comprehensive PMR radio controller kit based on the PIC16C58 microcontroller chip

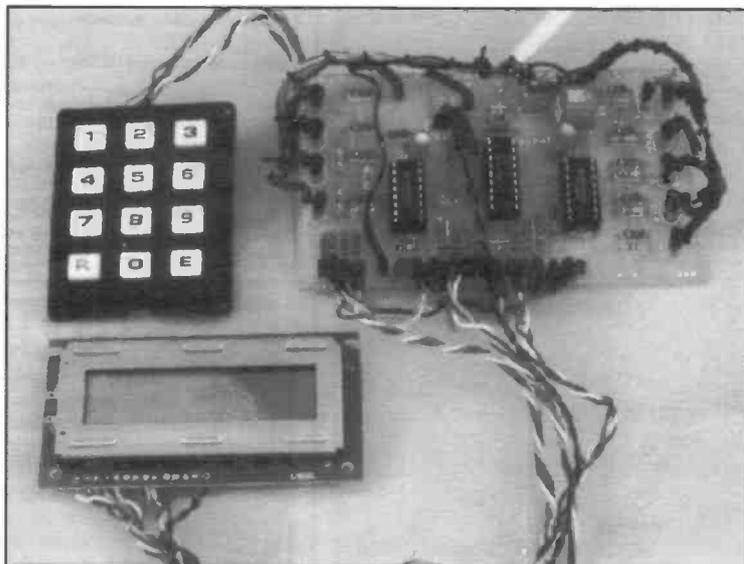
**T**his circuit has been developed in answer to the problem of controlling synthesised PMR radios without having to relate a list of frequencies to a list of extraneous thumb switch numbers. In addition a synthesiser having 8 input lines is generally capable of 256 channels, whereas thumbwheel switches only provide 100 channels.

A setup mode allows selection of 2m, 70cm, 12.5 or 25kHz spacing and type of keypad used. An LCD display provides status information such as current frequency, whether or not repeater shift is invoked and TX/RX.

The PMR's original keypad, or any multiplex type of keypad is used to provide direct frequency entry, along with other control functions. Finally there is an automatic transmit lock to prevent accidental radiation in out of band frequencies, and a battery backup to retain initial operating setup, last used frequency, etc.

## PRINCIPLE OF OPERATION

The frequency synthesiser used in radios requires an 8 bit binary input 'word or byte' to select the operating frequency; if no input is applied, ie. 00000000<sub>2</sub>, then the operating frequency will be the synthesiser base frequency, in our case either 144.0 or 432.0MHz. If the radio has 12.5kHz spacing, then an input word of 00000001<sub>2</sub> will give an operating frequency of



The PMR Controller kit has a keypad allowing selection of band and channel spacing. Plus a LCD display to provide status information

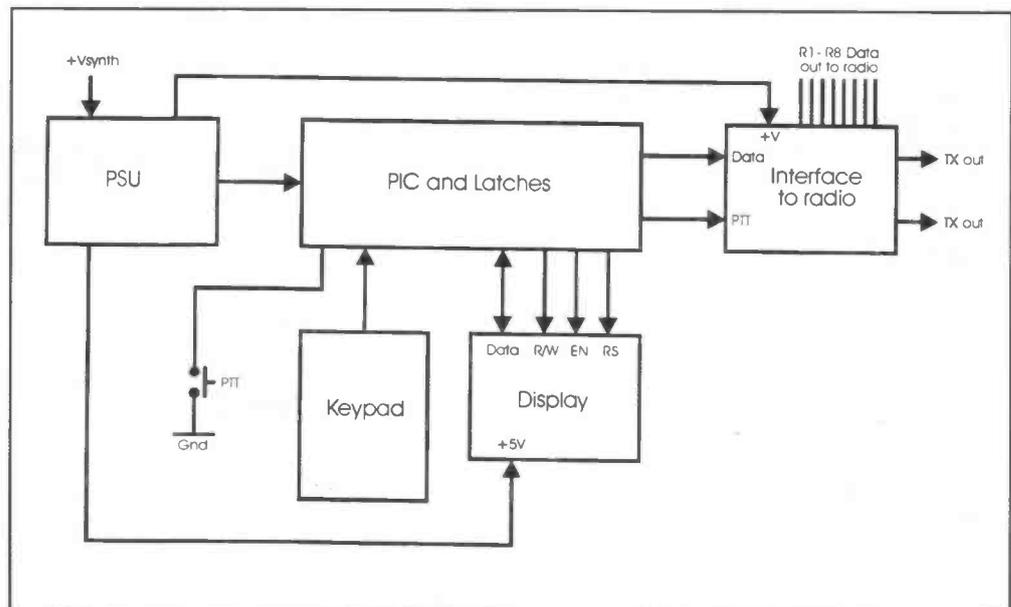


Fig.1: PMR Controller block diagram. The circuit consists of 5 basic blocks.



R30-R35, R37 and R38 are the associated load and current limiting resistors for the 8 amplifiers. R3, R4, R11 and R12 are pull-down resistors for the unused display lines. TR7 is a DC amplifier which provides a complimentary TX o/p, i.e. /TX (not TX). R36 is the load resistor for this amplifier, R26 and R29 are it's bias resistors. D3 is a 5.1V Zener diode; this protects the PIC from the potentially damaging  $V_{synth}$  which is applied via R26 to the RA3 input (output in this case). TR6 is the TX out amplifier which is fed via current limiting resistor R27 and uses the radio's PTT line as it's load, i.e. it pulls the normally high PTT line low for TX.

**Display:** The LCD display used is the Hitachi LM016L; this is a two line, 16 character per line display with all the decoding built in. It is fed with ASCII from the PIC via bits 0-3 of the 'data bus' and used in 4 bit 2 instruction mode.

**The keypad:** There are generally two types of 12 key multiplex keypads in use, and these are either arranged as 4 rows of 3 keys, or 3 rows of 4 keys. Either type may be used.

## CONSTRUCTION

For those who wish to make their own PCB, the PCB track and silkscreen layouts are given in the accompanying diagrams (Figs 3 and 4), although owing to the small size and spacing of some of the tracks, it is advisable to buy the PCB or have it made by a professional PCB manufacturer.

Start by fitting sockets for the chips, followed by all the resistors and capacitors, paying attention to the polarity of the two electrolytics. Veropins can be fitted next to all the external connection points; this makes for easy connection, and protects the PCB as only one soldering operation is performed on the tracks during the life of the unit. The discrete semiconductors are fitted next; ensure that D1 and D3 are the correct value and the right way round - a mistake here will irreparably damage the PIC.

Next fit the battery, again make sure it is the correct way round. Now connect the keypad according to the diagram (see Fig. 5); note the two types of keypad and be sure to identify the

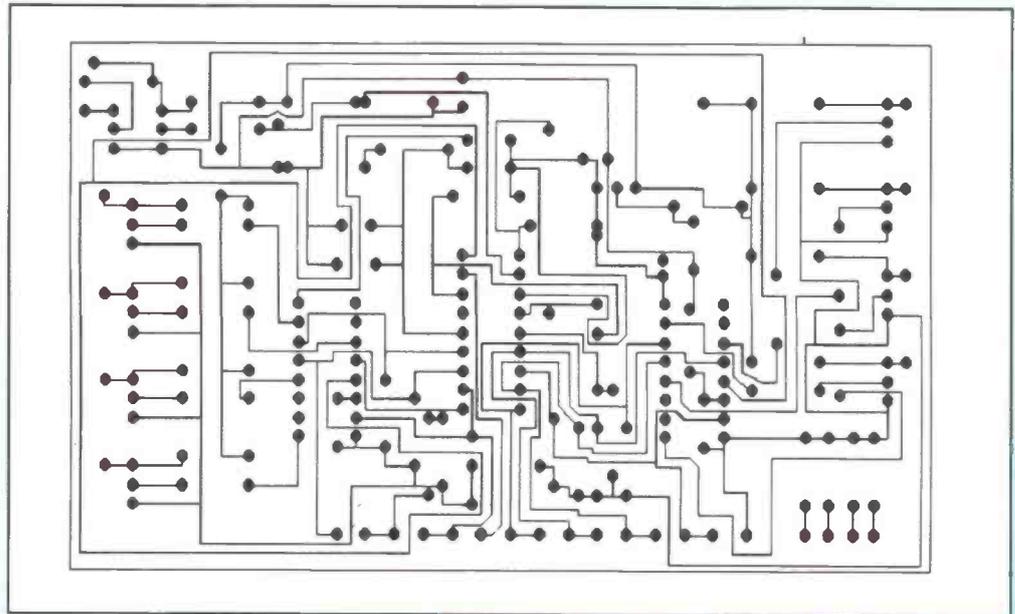


Fig.3: PCB foil pattern (full size)

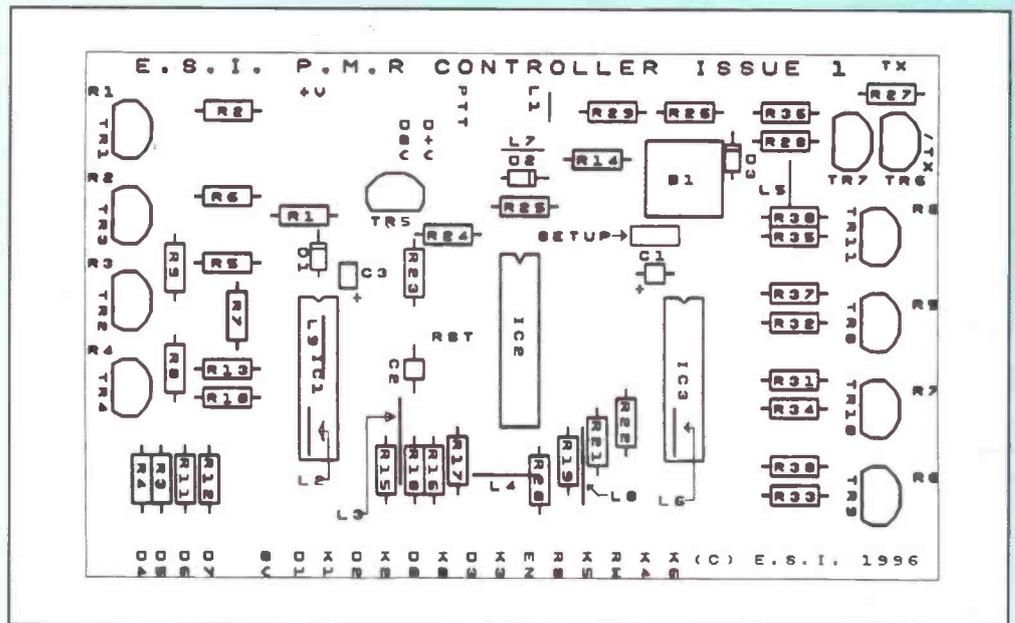
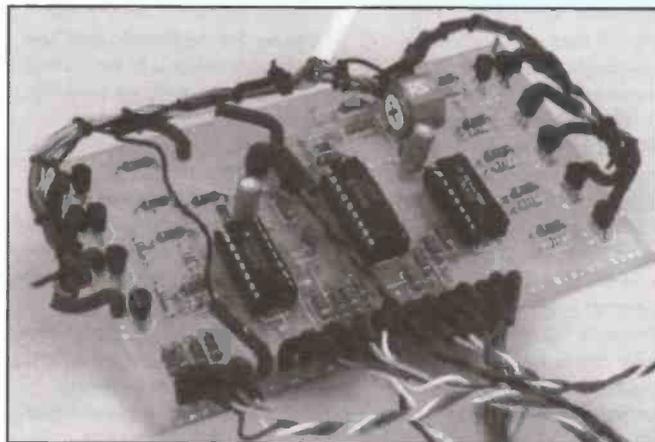


Fig.4: Component layout



one you plan to use - it is important to wire this correctly. The display can be connected next (see table). It is advisable not to connect the +5V to the display until the PCB has been tested, see later.

The display is ESD sensitive and must be handled accordingly. Referring to the keypad connection diagram, connect the keypad to the PCB, K0 on the keypad connects to K0 on the PCB, K1 to K1 etc. Both types of keypads are shown as matrices, where the lines cross represents the connection made when the key is pressed. The button marked 'R' is the repeater shift button and the one marked 'E' is the enter button

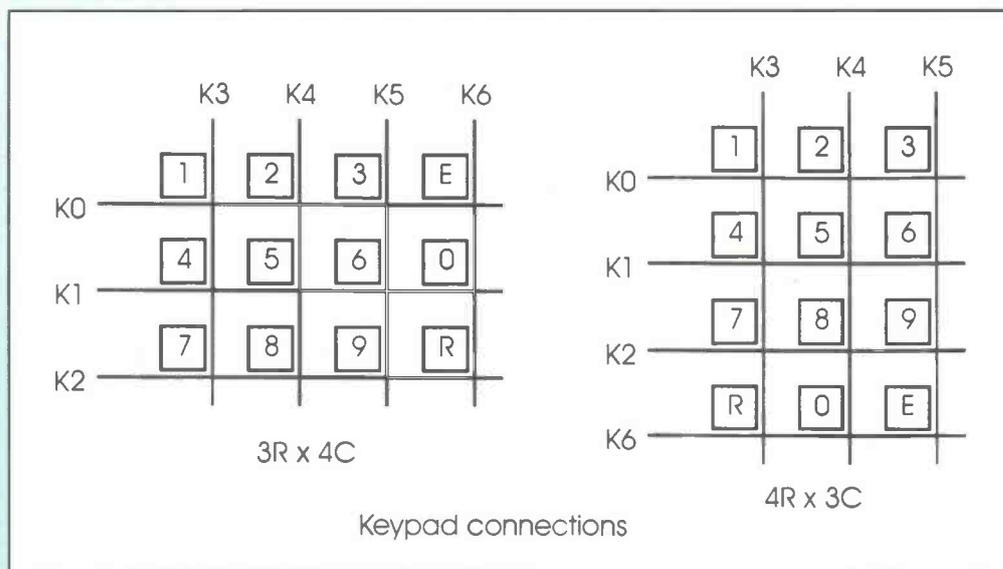


Fig.5: Keypad connections

## TESTING

Now that the unit has been built it can be tested before connecting it to the radio. Apply a DC voltage of about 8 or 9 volts between the +V connection point and 0V and measure the current - it should be about 15mA; if excessive current is observed switch off and check for shorts. Measure the voltage on pin 16 of IC1, this should be 5V, as should the voltage on pin 2 of IC2. If all is well power down and fit the three IC's; these are static sensitive and the usual ESD precautions should be used.

The +5V to the display is now connected, and the unit powered. The display should come to life and display the message 'ESI PMR CONTROLLER'; if it does not, momentarily short the two pins marked 'setup' together, followed by shorting the reset pin briefly to 0V. In some cases it will be found that the unit will not work if the battery is completely discharged. If you have difficulty, leave the unit powered for 10 minutes or so to allow the battery to come up, then repeat the reset procedure. If all is well the display will next show the setup screen after a short delay.

Select 12.5kHz by pressing 1 on the keypad. The display will now ask for 2m or 70cm, select 2m by pressing 1. Finally select the correct type of keypad when prompted. The display should now show 144.0000MHz and RX. Using a Logic Probe supplied from +V, test the R1 to R8 outputs; these should all be 'Lo'. Next test the /TX output - this should be 'Hi'.

Key in 147.1875 and press

enter (the decimal point is entered automatically). The display should change to reflect this. Now used the Logic Probe again check R1 to R8 - this time they should all be 'Hi'. Next key in 144.0000, press enter and short the PTT input to 0V; the display should show TX and /TX output should be 'Lo'. Remember that if the displayed frequency is out of band the /TX will not respond to the PTT input, neither will the display. Finally press the RPT key - the display should now show RPT in the bottom left corner; if you now short the PTT input to 0V the displayed frequency should read lower by 600kHz while the PTT is 'Lo'. This completes the testing and the unit can now be fitted to your PMR radio.

## CONNECTION TO PMR RADIO

The prototype unit was used with Storno 5000 series radios. Remove the PROM board and connect the controller. The synthesiser connections for these radios are shown in Fig.6. Pin 1 on the synthesiser plug is +Vsynth, pin 2 is bit 0 (LSB) and pins 3 through to 9 correspond to bits 1 to 7. Pin 14 is PTT.

For other types of radio, first identify the synthesiser connections (the ones your Prom is connected to). If you don't know which pins correspond to which bits, select a known frequency with the thumbwheels and measure the

synthesiser connections with the Logic Probe, i.e. 145.500MHz will be 01111000 for a 12.5kHz radio, and 00111100 for a 25kHz radio. The leftmost bit, i.e. MSB, is B8 and the rightmost bit, i.e. LSB, is B1. These correspond to R1 (LSB) through R8 (MSB) connections on the controller PCB.

Using this method it is possible to identify bits 1 to 8 of the synthesiser input. Measure the

voltage on these pins whilst they are 'Hi' - as mentioned earlier it is usually about 8 to 9V but may differ between makes. Whatever the voltage is you will probably find that it is the same as the supply voltage on the radio's synthesiser board - this is the supply you should use to power the controller. If no convenient place is found to tap off this supply you should try to find a supply as

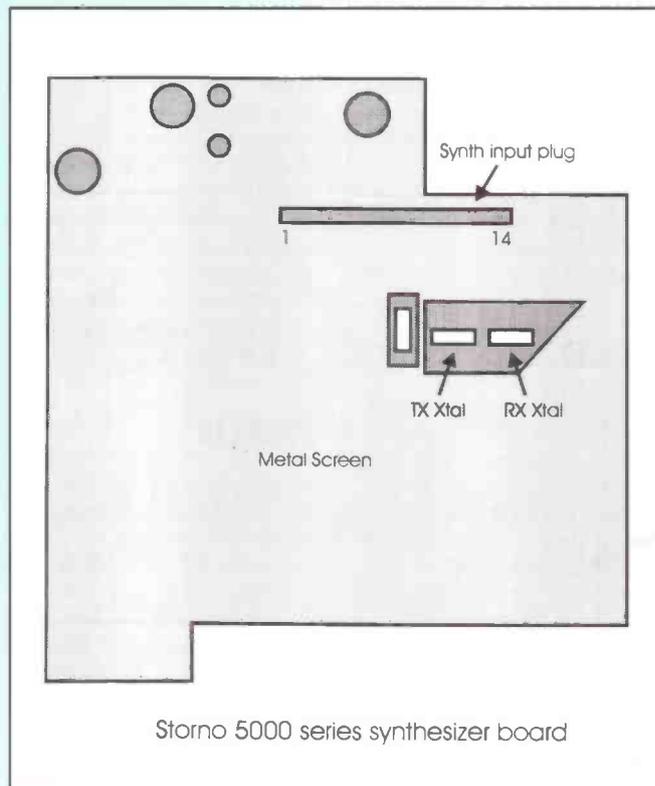


Fig.6: Storno 5000 synthesiser board connections

close to this as possible, since this is the voltage that the synthesiser expects to 'see'.

Finally locate the radio's PTT input - this is usually normally 'Hi', active 'Lo', ie. short to 0V for TX; if this is so connect this to TX out on the controller board. Should it be the opposite way round connect it to /TX out on the controller board. Connect the PTT pin on the controller to the PTT on your microphone (this is active 'Lo'). This completes the connections and the unit can now be built into the PMR case and put into service. It is a good idea if a frequency counter is available, to check that the radio does actually transmit on the frequency shown on the display, just to be on the safe side.

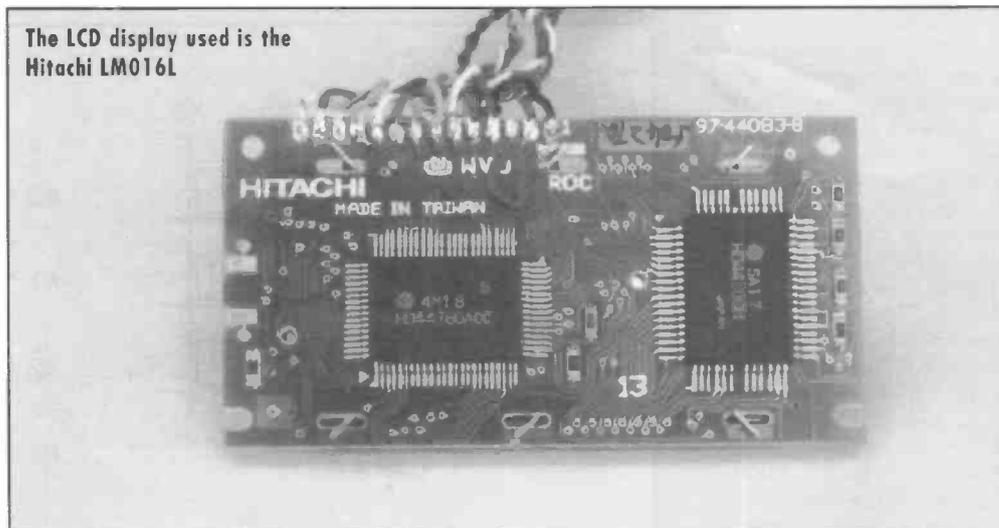
The use of a Logic Probe mentioned above is recommended if one is available; a multimeter can be used to check these levels, but a Logic Probe will confirm that signals are within the limits of 'Lo' or 'Hi'. With a multimeter you will have to decide whether this is in fact the case, since a 'Lo' is not exactly 0V and a 'Hi' is not exactly +V.

## IN USE

The controller is very user friendly. After the initial setup has been performed the display will show frequency, TX or RX, and if repeater shift is selected 'RPT' will be shown in the bottom left corner. To change frequency simply key in the required frequency, if an error is made the display will automatically return to the last frequency used. If the whole frequency is keyed in, ie. 145.5000 (the point is entered automatically) then there is no need to press enter, but if only part of the frequency is to be changed, ie. 144.2500 changed to 145.2500 then just enter the first three digits and press enter, ie. 145enter.

Pressing the 'R' key toggles

The LCD display used is the Hitachi LM016L



repeater shift on and off. When the radio is switched off the controller will retain it's settings for about 1 year. Every time the radio is switched on, the controller displays the message 'ESI PMR CONTROLLER' for about eight seconds then displays the current frequency. If the repeater shift is on and the frequency is such that a 600kHz shift would put it outside the range of the synthesiser, then when the PTT is pressed no shift will take place.

## FINALLY

A pre-programmed and tested PIC16C58A chip, plus ready-made PCB, as used in this article, are available from GWM Radio in Worthing. The PIC chip is priced at £20.00 and the PCB at £9.99. (see their advert elsewhere in this issue for contact details).

The displays are available from Maplin Electronics and Farnell. The battery from RS Components Stock No. 593-552

Any further queries regarding this project should be addressed to the author, Bob Howlett, 319 Kingston Road, Ewell, Surrey KT19 0BP, enclosing an SAE if a reply is required.

## PARTS LIST:

**Resistors;** All 0.25W Carbon, or 0.6W Metal film

R1-R6, R11-R13, R15-R26, R30, R31, R36-R38 4.7k

R7-R10, R27, R28, R32-R35 1k

R14 1.5k  
R29 10k

**Capacitors;**

C1, C3 100µF 16V electrolytic  
C2 22pF disc ceramic

**Semiconductors;**

TR1-TR11 BC548 or equivalent  
D1 BXY79C5V6  
D2 1N4148  
D3 BXY79C5V1  
IC1, IC3 4042 Cmos  
IC2 PIC16C58A (see text)

Display Hitachi LM016L  
Battery 3.6V 11mAh. PCB mounting

**Miscellaneous;**

Two 16 pin DIL sockets  
One 18 pin DIL socket  
Thirteen Veropins  
PCB  
12-key matrix type keypad

### Display to PCB connections

<b>Display</b>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>PCB</b>	0v	+5v	+5v	RS	R/W	E	D4	D5	D6	D7	D0	D1	D2	D3



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MAKE & MODEL NUMBER	DESCRIPTION	PRICE
<b>HF TRANSCEIVERS</b>		
<b>STAR BUYS</b>		
ICOM IC-726	HF & 6m transceiver (100w, 10w)	£569
ICOM IC-726	HF base station (very good condition)	£548
TRIO 18-940SAT	HF Base Station trio built in ATU	£1190
KENWOOD TS-450SAT	HF base station with internal ATU	£1190
KENWOOD TS-850SAT	HF base station with internal ATU	£1049
KENWOOD TS-570	HF base station	£1099
YAESU FT-990	HF base station	£1105
<b>VHF/UHF TRANSCEIVERS</b>		
<b>MOBILE/BASE STATION</b>		
AKD 6001	8m mobile transceiver	£149
ICOM IC-2350	2m/70cms mobile	£379
KENWOOD TR-751A	2m 25w multimode	£469
KENWOOD TR-751E	2m 25w multimode	£429
KENWOOD TM-251E x2	2m 30w FM mobile with 70cms RX	£299
KENWOOD TM-733	2m 70cms mobile	£399
YAESU FT-4700	2m/70cms mobile	£299
YAESU FT-2200	2m 50w FM mobile	£239
YAESU FT-290MK2	2m portable multimode	£299
<b>VHF/UHF TRANSCEIVERS</b>		
<b>HANDHELDS/PORTABLE</b>		
ADI AT-200	2m handheld (dry cell case battery)	£89
ADI Sender 450	70cms handheld (dry cell case battery)	£125
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ALINCO DU-180 x2	2m handheld	£109
ALINCO DU-191	2m handheld	£110
ALINCO DU-190	2m handheld	£109
ALINCO DU-680 x 4	2m/70cm Handheld	£219
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ALINCO DU-S1E	2m handheld	£99
ICOM IC-20XE	2m handheld	£139
ICOM IC-2E	2m handheld	£89
ICOM IC-A22E	Airband transceiver As new	£299
ICOM IC-29E x 2	2m handheld	£99
ICOM IC-T42E	70cms handheld	£189
ICOM IC-P4E	70cms handheld	£169
ICOM IC-T21E	2m handheld	£139
ICOM IC-W2E	2m/70cms handheld	£219
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ICOM IC-W31E x2	2m/70cms handheld	£249
ICOM IC-2S	2m handheld	£109
KENWOOD TH-48E	70cms handheld	£269
KENWOOD TH-78E x2	2m/70cms handheld	£259
KENWOOD TH-79E x2	2m/70cms handheld	£339
KENWOOD TH-21	2m handheld	£50
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YAESU FT-26	2m handheld	£109
YAESU FT-29R	2m handheld	£109
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YAESU FL-1010	Add on amplifier for FT 690R II 10w amp	£69
YAESU FL-707	13m from HF transverter (awaiting manual)	£69
YAESU FRV7700	VHF add on for FRG-7700 (115-150MHz)	£69
YAESU FRT-7700x2	VHF add on for FRG-1100 (140-170MHz)	£59
YAESU FRT-7700x2	Add on antenna tuner for FRG-7700	£59
YAESU FF301	20amp PSU matches IT-301	£69
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# LETTERS

## LETTER OF THE MONTH

### DEAR HRT,

This is my first attempt to not only write a letter on my secondhand PC 486, but to try and fax it from the PC as well. Having just returned to Ham Radio Today after several months (I've been a reader since you started production), things are just about the same. I refer mainly to the 'letters' page, or the 'moans and groans' dept.

I am 73 years of age and have been in the Scout movement 63 years so far. I'm still in the Scout Fellowship, running the Humberside Scout ARS and being their Amateur Radio Adviser.

I completed my 14th, and most likely my last, parachute jump on the 16th June '96, and as usual carried my 70cm and 2m transceivers on my chest/arms, plus a Morse key on my rig and a spare on my thigh (just for the record, CW/FM both bands, location RAF Topcliffe, Nr. Thirsk). Most importantly, other than the £1500 sponsored cash raised, the first parachute mobile QSO between myself and a Novice, Frank 2E1BKW, who is also a Scouter with many years service. From 8000ft AGL, 1W FM, 5/9 both ways, this was

Frank's first QSO, after having been trying several months. Shame on the amateurs who will not reply to Novices.

Last but not least, having had six Novices in my Novice class last year, I lost a few to the Internet, so now I am going to learn how to surf the Net!

*Editorial comment;*

*Both Chris and I hope that we're also as active and interested in the hobby as you are in the years to come Roy!*

*Amateur radio is changing, it's great to see that there are some amateurs who are responding to the changes, rather than the 'doom and gloom' merchants! We hope the articles in Ham Radio Today, particularly the 'forward thinking' columns like Net Communication, Computer Contacts, Satellite Rendezvous and Data Connection go at least some way towards this goal. Let us know how you get on Roy, maybe your next letter will be an Email to editor@qsp73.demon.co.uk!*

## BUDGET HAM RADIO

### Dear HRT,

Please may I have a small amount of space in your magazine to let me have my say on Ham Radio.

I have just started a course in Ham Radio and it's great. I have heard so much about Ham Radio, so I thought, yes this is for me. I thought you had to be really clever, but you don't!! You learn so much about radios. If you're young like me and interested in radios, find out about a Ham Radio course near you, you won't be disappointed.

Lastly, please could you include a 'budget' section in your free readers ads for young Hams to buy radios, as we're all on a low budget.

David J. Simmons

*Editorial comment;*

*We've certainly thought about a 'budget section in the past, like 'everything under £100 / £50 / whatever' although many amateurs also offer both low cost and higher-priced articles for sale within the same advert. We've recently commenced the 'Trade-In Market' which, from initial comments, has proved to be popular with readers and advertisers alike. This tends to deal almost exclusively with secondhand receivers and transceivers rather than surplus aerials, towers etc, so maybe a 'budget' section here wouldn't go amiss?*

*Ham radio is a great hobby, and we're sure we join with many others in welcoming you to the unique international fraternity David.*

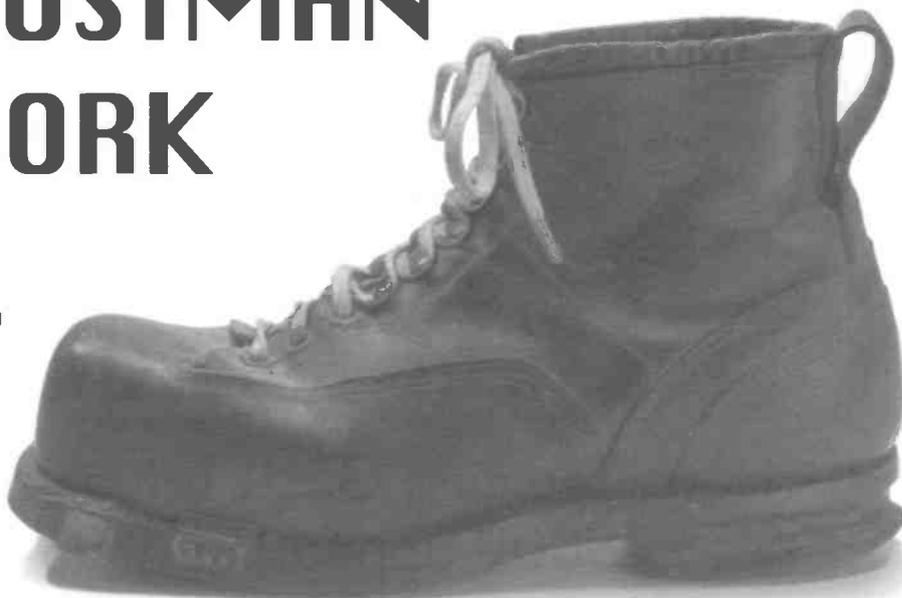
## £10 FOR LETTER OF THE MONTH

Do you have something constructive to say on the state of Amateur Radio today? Perhaps you'd like to put your viewpoint to the readers, get some discussion going, or give an answer to one of the issues raised? We'll pay £10 for the best letter we publish each month (paid during the month following the publication month). So write in with your views, to; Letters Column, Ham Radio Today, Nexus, Nexus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST,

or fax your letter direct to the Editor's desk on 01703 263429, or Email to [letters@qsp73.demon.co.uk](mailto:letters@qsp73.demon.co.uk) Please keep your letters short, we reserve the right to shorten them if needed for publication. Letters must be original and not have been sent to any other magazines, and must include name and address plus callsign if held. **Reader's views published here are not necessarily those of the magazine.**

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# ALL IN A DAY'S WORK

## Harry Leeming G3LLL brings a worrying tale of 2500V appearing at an aerial socket

**J**ohn made a mistake and transmitted on his FT-101ZD when he didn't have his aerial connected. He realized what he'd done as soon as he heard a sparking noise from inside the rig, but he was too late. Something had arced over, and even when he tried later on a dummy load, there was still the sound of sparking as soon as he wound the power up.

Being a sensible person he didn't make things worse by continuing to try to transmit, but dismantled the rig and tried it out in a darkened room. He could see that the sparking was coming from the rotary ring on the PA switch, the rig was close on 20 years old, how could he get a replacement?

John arrived at my establishment with his rig, looking rather sick, just hoping that I might be able to supply him. He was rather surprised to be told that I couldn't supply a switch, but he probably didn't need one. I then explained how by reorganizing the switch wiring he could overcome his difficulties.

Fig. 1 shows the wiring to the PA switch on the FT-101ZD. Note that for some reason the highest RF voltage is applied to the rotary ring of S2B, this being the point on the switch where

the insulation is least. Provided that the switch has not been burnt by continuous use in a faulty condition, it is quite easy to remove the voltage and restore correct operation by rewiring. Fig. 2 shows how this is done.

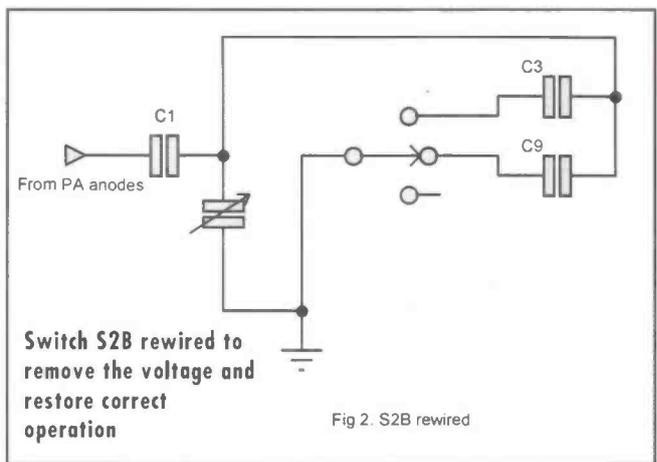
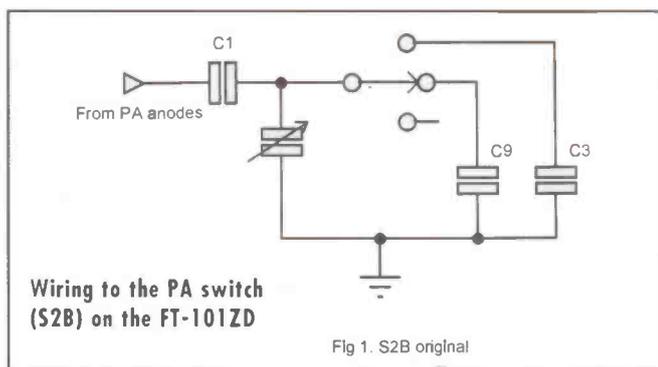
Rewiring in this way is very much easier than replacing the switch, and avoids the almost impossible task of trying to locate one. I've rescued quite a number of people over the years with this simple dodge, and I hope it will help many more to keep an excellent rig going. Parts are not always available for the older rigs, but it doesn't pay to give up too easily.

### ONE UP ON SAINT PETER!

A friend who is a Catholic priest has just been in and purchased a 6 metre halo!

### LOW DRIVE ON CW

George rang me up from the south coast, as he'd heard that I had a few narrow CW filters for the FT-101ZD,



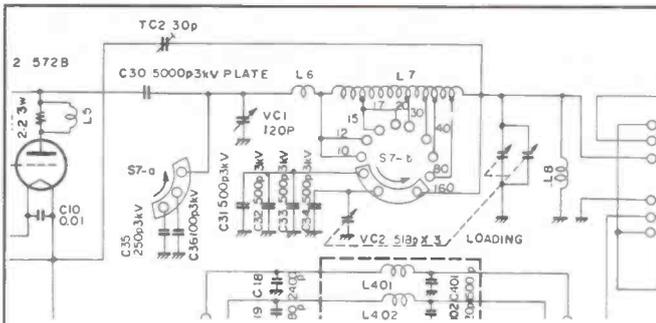
**George bought a CW filter for his FT-101ZD, he complained that he could not get enough drive on CW transmit when the filter was switched into circuit.**

and managed to purchase the last one I had. A few days later he was back on the phone, complaining that he couldn't get enough drive on CWV transmit when the filter was switched into circuit.

This is quite a common trouble when fitting CW filters to the FT-101ZD, FT-707, or FT-902. All these rigs transmit through the CW filter, hence drive is down, if the CW carrier oscillator is not set precisely in the centre of the passband of the filter. The carrier oscillator no doubt was set

correctly when the rigs were new, but many have drifted off over the years. The cure, as George was informed, is very simple.

First, set the rig up transmitting at low power into a dummy load in CW mode. Next, carefully trim the CW carrier crystal (this will be found by the side of the USB and LSB trimmers) for maximum output. Do not exceed about 20 watts for more than a few seconds, but turn the drive down as necessary as the output increases, so as not to damage the rig.



**Yaesu FL2100Z linear circuit. Examination showed that C30 had been replaced with the incorrect type, and that it had caused a dead short. This connected the 2500V line directly to the aerial socket, and L8 obliged by blowing the fuse. Disconnecting L8 would have enabled the linear to operate with 2.5kV on the aerial socket when connected to a dipole, a prospect that doesn't bear thinking of!**

## LIVING DANGEROUSLY

'Kilowatt Bill' appeared with an RF choke in his hand. He explained that this must be faulty as his FL2100 linear had been blowing fuses. Acting on a friend's advice he had tried disconnecting things one at a time, and had found that removing this choke cured the fuse blowing. "Just to be on the safe side" he told me, he would like a replacement.

I gulped and asked him if he had any idea what the choke was for, and he replied that he hadn't. My reply was that I hoped that he was well insured, as if he had plugged the PL259 plug in or out with the rig switched on, or grabbed hold of the aerial or feeder connections, he would have stood an excellent chance of killing himself.

The choke Bill had removed was the safety choke connected directly across the aerial socket. The circuit shown (Fig.3) is of the Yaesu FL2100Z, but a similar arrangement is used by almost all reputable makers of rigs and linears which have high voltages, and a PI output stage. C30 is a high voltage high quality capacitor which does not normally break down. But just in case it does, the choke L8 is connected directly across the feed to the aerial socket.

In Bill's case examination showed that, at sometime in the past, C30 had been replaced. The replacement was not of the correct type, and that it gone dead short. This connected the 2500V line directly to the aerial socket, and L8 obliged by blowing the fuse. Disconnecting L8 would have enabled the linear to operate

with 2.5kV on the aerial socket when connected to a dipole, a prospect that doesn't bear thinking of.

Bill was politely advised, that before trying to service high power equipment he should learn a little theory, and that perhaps an RAE course and reading the RSGB and ARRL handbooks, would be a good idea. Meanwhile I suggested that he sold the linear to someone better qualified to use it.

## LOW OUTPUT ON AN FT-480

A voice on the phone asked if he could send his FT-480 multimode to me for repair. Phone calls like this are common, and regrettably all get the same reply. I'm sorry but I operate a one man business and simply haven't the time to do everyone's repairs, plus loads of packing and unpacking. Unless I have sold the equipment myself, I therefore restrict my repair efforts to those who can bring in equipment personally. To try and sound helpful however, I asked Sid what his trouble was.

Sid told me that he'd had the rig for a few weeks, having bought it secondhand. At first all seemed OK, but now that he had got it properly installed, the output had dropped to just under 5 watts, whereas it should have been 10-12watts.

This problem is quite common with the FT-480, and I have had many in with complaints of low output. For some odd reason this model is extremely sensitive to aerial

lead length, even if the SWR is too low to measure. I find that when feeding an aerial, or even a dummy load, the power will vary enormously if different lengths of patch lead are used. Sid was told to try a few different lengths of patch lead, and he later rang back to say that this had cured his trouble.

## UNFASTENING SCREWS

Weighing in at not much over 57kg, it amuses me to find people with twice my muscle power who just don't seem to be able to undo screws. They puff and blow, and end up wrecking the screw heads. When trying to unfasten a tight screw, the first requirement is a screwdriver that fits the head correctly. The next is the correct method of approach. If a screw is stubborn don't just use brute force, but press on the screw with all your weight and then jerk it suddenly. You will find the press hard and jerk approach, often gets results when steady force gets you nowhere.

## PILOT LAMPS

I frequently get requests for wire ended lamps for meters and general display on the older equipment. There is such a multiplicity of lamps however, that I just can't remember which is which! To add to this, suppliers seem to charge an arm and a leg for exact replacements. I find that by far the best approach with regard to wire-in lamps is to carry a stock of 8V video recorder lamps. These will replace most lamps running from an 8V supply,

and only need a series resistor of about 27 ohms to run from a 12V rail.

## HOW TO BLOW A TRANSVERTER

Charles came across a 20 year old Europa 2 metre transverter at a junk sale, took it home, plugged it in to his FT-101 and it worked fine. A few weeks later he was operating on a local 10 metre net when someone broke in and said "have a listen on 2 metres, it's wide open". Charles quickly plugged in his transverter, and there right on frequency was a Spanish station just finishing a CQ call. Quick as a flash Charles was back to him, but then disaster struck and his receiver went dead. The day after he called in to see me with it. Had I any suggestions as to why the transverter had suddenly failed?

Quite a few transverters have 'bit the dust' due to their owners making the same mistake as Charles. The receive output of a transverter usually goes to the aerial socket of the transceiver, hence some method has to be found to stop the main PA stage operating when the transverter is in use.

With most transverters intended for use with the FT-101 series, this is achieved by plugging the transverter into the 11 pin accessory socket on the rear of the rig. Removing the original 11 pin plug to do this cuts off the supply to the PA valve heaters, thus stopping the rig transmitting and squinting 100W up the rear end of the transverter's receiver. The catch is that PA valve heaters take about a minute to cool. So if the transverter is plugged in too quickly, the PA valves are still active, and as in Charles's case the transverter is seriously damaged.



**Sid recently bought a second hand FT-480, he said that after he'd fully installed it, the output had dropped to just under 5W, whereas it should have been 10-12W**

# SOFTWARE OFFER

The very latest amateur radio software, exclusively for Ham Radio Today readers

Once again this month we've searched out a superb collection of the very latest software for both Windows and DOS for you. Each selection is exclusive to Ham Radio Today readers, and is offered on a cost-only basis as a 'thank you' for buying the magazine.

**RadioRaft** is a multi-mode

**Windows 95 SSTV V1.03** is a superb Windows-based program for SSTV (Slow Scan TV) reception and transmission using the sound card in your PC as the interface - no external modems needed. A variety of SSTV formats are supported, including Robot 36 mode for contesting, and a 'quick restart' provides manual receive from

any mode. **Geoclock V7.5** is the latest version of the popular 'sunlight clock' for Windows, which displays the current sun and moon positions, and the parts of the earth in sunlight and twilight, on high quality maps. Sun rise, sun set, and local times around the world can also be displayed. The current sun position is shown, and the parts of the earth in sunlight and twilight are highlighted, with local sunrise/set and times around the world. 'Screen Saver' and 'Wallpaper' modes are included, together with an interactive annotation and customization feature which hasn't been available on earlier versions

**GORUR Programs;** In this month's issue you'll see the first of a new series on PCs and software by Paul GORUR. Paul is well known as a 'helping hand' to many amateurs in amateur radio software matters, and has put together a large number of self-running DOS-based 'help' programs. We're very pleased to include a selection of Paul's freeware programs on this month's disk. These include;

- JV71DOC;** Using JVFX V7.1
- RURHC31;** Using HamComm V3.1

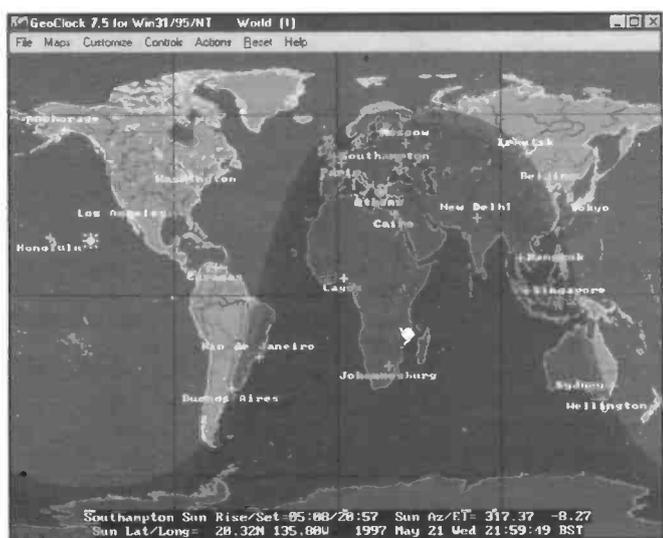
- RURBP;** Full amateur radio band plans, HF, VHF and UHF
- RURCLUS;** Using the DX Cluster
- RURLOC;** How to work out your locator
- RURQSL;** World QSL Bureau Listing

**All the above programs are contained on a single disk, as this month's collection.** They are all fully functional freeware or shareware programs for amateur radio use, and are not 'demo' programs. Each program comes with full on-disk documentation, and each month's collection is provided with easy on-disk installation routines and an information sheet.

## FROM THIS MONTH'S COLUMNS;

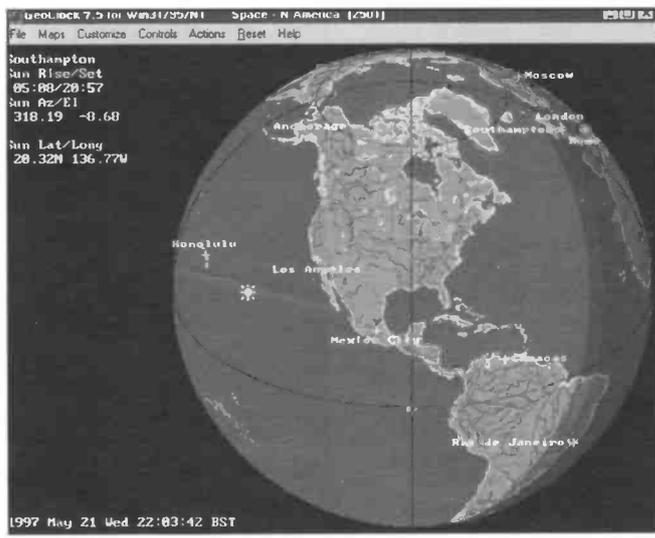
**WinPack V6.2S upgrade and 'extras'** is a collection of the latest 'upgrade to the V6.2 upgrade' for WinPack version 6 (see this month's Data Connection column). As well as including UPDT620S.EXE which contains an update to the SPEECH.EXE file included in the original V6.2 update, extra programs for V6.2 include VIEWED.EXE, ACK.EXE and BACKUP.EXE, together with the latest WinPack V2.1 program update to WinPack V6.2. If that's not enough, there's also the WinPack author's packet CW reader for WinPack, which originally started off as an April 'spoofer' but has caught on, plus as many of the latest add-on 'plugins' as can be fitted onto the single 1.44Mb disk! If a further WinPack update or program release is produced prior to this issue being published, the very latest update or program release will instead be supplied to you on the disk.

Please note this WinPack update disk is a separate disk to this month's



Several map displays are available with GeoClock V7.5

radio data decoder which runs in DOS. It supports either the simple one IC HamComm interface or an external modem. It's an extremely versatile decoder, and can handle 9 ARQ modes, 10 FEC modes, CW, packet, RTTY and so on, with automatic decoding of any mode at any speed. A frequency meter and baud meter included. Modes are: BAUDOT, ASCII, SITOR-A/B, ARQ-E, ARQ-M2/4, PACKET, ARQ-E3, RUM-FEC, FEC-A, SI-ARQ, SVED-ARQ, ARQ-6/90 and 98, CIS11, SPREAD11/21/51, CW, AUTOSPEC, SIFEC, ARQ-N, and HNG-FEC.





# QRP CORNER

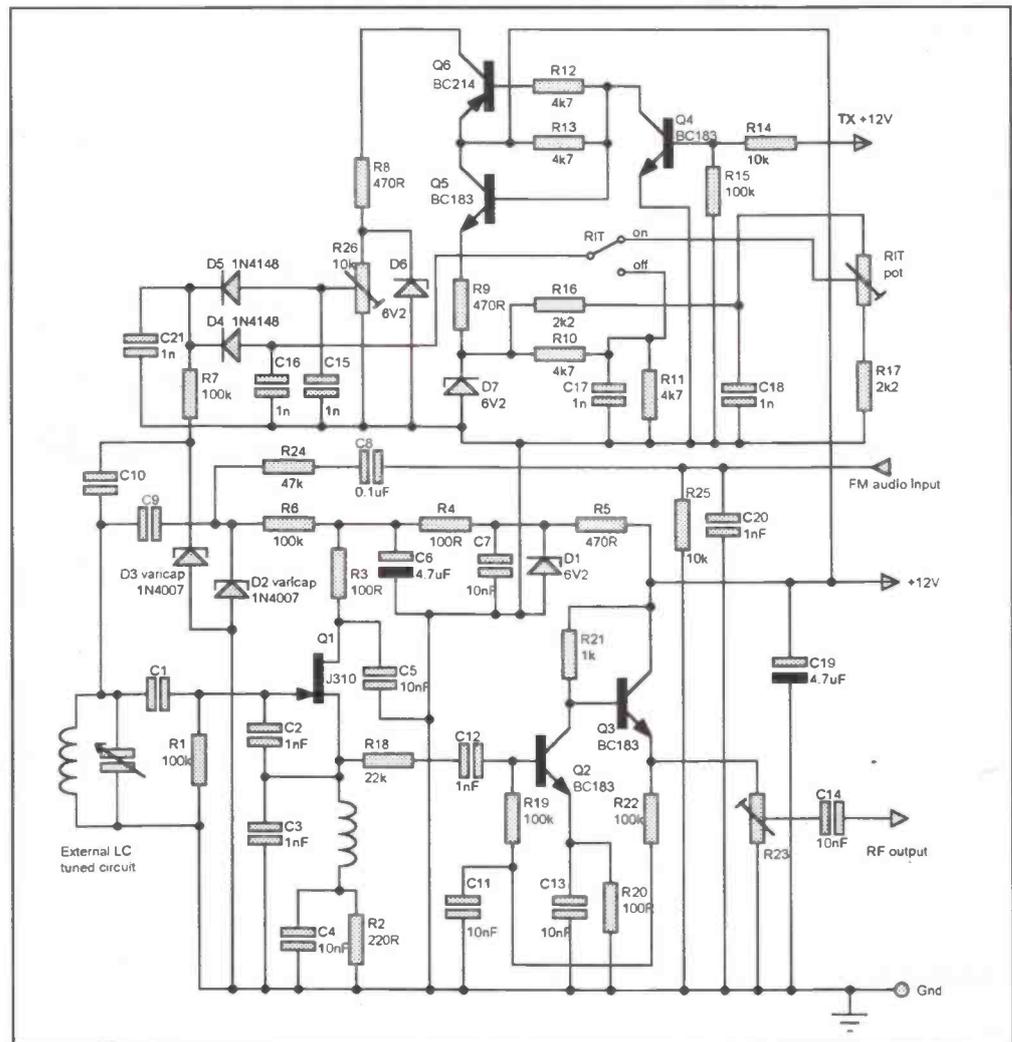
## Dick Pascoe G0BPS describes an easy-to-build VFO for your homebrew rig

The huge pile of gear in my shack shows that it's time for my annual trip to Dayton. This is claimed to be the biggest rally in the world but I have also heard this claim challenged. I love this show, five very large halls and a huge flea market beckons the first time visitor. Last year George G3RJV and I were joined by Graham G3MFJ and Tony G4VWIF, who both walked around the first day with their jaws hanging open. They were both so overcome, their once in a lifetime trip is now a twice in a lifetime revisit! (and recently muttering of next year too).

Having said all this I go, not only for the rally but for the great QRP gathering that is associated with the show. The rally covers three days, opening at 12.00am on the Friday and closing at 2.00pm on the Sunday. UK rally traders would find this show hard. On Saturday and Sunday the doors open to the public at 8.00am and closes at 6.00pm, a long day. The flea market opens to the public at 6.00am.

On the Thursday prior to the event we have the start of the 'QRP Four Days in May' event which kicks off with a complete day of QRP lectures by selected speakers. Each person has just half an hour. To show that the Americans can get going quickly, this event starts at 7.00am with coffee and registration and the first speaker at 7.30am. I think I might miss these first few and gather my strength for the remaining few evenings.

Eighteen hour days are not my idea of fun but our 'country cousins' seem to revel in them. Every evening during 'Dayton' there is a QRP event of one type or another. The annual QRP Banquet with guest speaker is a sell-out. This year we will have



This particular VFO circuit (designed by G3R00), is a basic oscillator using a J310 in a Colpitts circuit with large swamping capacitors

Martin F Jue (of MFJ) talking about his company. The raffle is drawn and finally the announcement of those, if any, who have been elected to the QRP Amateur Radio Club International (ARCI) 'Hall of Fame'. There are only six members so far in all the years that the award has been going.

Two of the six are Brits; George's G3RJV and GM3OXX.

The 'QRP Vendors night' is where each of the established US QRP manufacturers show off their wares. George and I show off lots of the club goodies and of course a few of my kits. Another late night.

The 'show and tell' is a delight of rigs on show with a competition sponsored by the northern California NorCal QRP Club. This

evening is broken by the arrival of several huge pizzas, which vanish in seconds before our very eyes. Boy, you have to be quick here. There is no bar as such but a collection ensures the arrival of a few cases of questionable American beer. I found most to be almost tasteless, but when its hot outside who cares!

I shall give more information

and details on this show after I return. I'll then be getting ready and packing to drive off again with G3RJV to Friedrichshafen, to man the G-QRP club stand there. I hear that Peter from JAB and Sheldon from Hands Electronics will also be joining us on the stand. No doubt I shall bump into Mark Francis from Waters and Stanton there too.

## VFOS AND STABILITY

I had a phone call during the week, from a customer chatting about his inability to make a VFO with good stability. There are many circuits for VFOs available in the books and stability is always a problem. The choice of components helps, with the use of tight tolerances on capacitors selected. There is no point in using ceramic disc capacitors in frequency determining applications. Much better to use high tolerance ones such as

NPO types.

There is also mechanical stability to be taken into account. I was taught by an expert, Ian G3ROO, who has designed many circuits including the VFO shown here. I always use beeswax, dripped onto the board to ensure mechanical stability of components.

Remember that tolerance characteristics can add to give awful drift in some cases.

This particular VFO is a basic oscillator using a J310 in a Colpits circuit with large swamping capacitors (C2 and C3). The output of the oscillator is fed to a wide band amplifier comprising Q2 and Q3, which takes the level up to about 4V peak to peak. It also has an FM modulator and RIT (Receiver Incremental Tuning). The RIT pot may be any value about 10k.

The coil former used in this application is a 6.3mm diameter type, the coil is tightly wound and more beeswax dripped onto the wire to keep it in place. For a 5 - 5.5MHz VFO I suggest 22 turns

of 26SWG wire on this former. A 100pF variable capacitor should give a swing to cover the full 500kHz.

If the exact frequency is not obtained first time by this mixture of 'C and L', then move the coil windings slightly, open the coil turns gently until the correct frequency is obtained. More beeswax to keep it there. Use a hair dryer to melt the wax for adjustment.

I also recommend that any VFO should be encased in its own metal box. I've used diecast boxes and very slightly bent the lids.

This ensured that when tightened down, there was true mechanical and electrical stability in the case. I also highly recommend shielded leads for any connections made.

Many homebrew radios tend to use this 5 - 5.5MHz VFO as it is easy to build. I have happily made them on top band and on 40m but I would never recommend a free running VFO above 10MHz. The stability falls off too much, as does reliability.

## HIGHER BANDS

Lateral thinking is required, if perhaps we need a VFO on 21MHz, I would suggest mixing a 16MHz crystal, easily obtainable with the VFO. With this system we will get two resultant frequencies.

$16 + 5 = 21\text{MHz}$  and  $16 \cdot 5 = 11\text{MHz}$ . By using the 500kHz swing of the VFO, we can obtain full coverage of the 21MHz amateur band.

We could get more bands of course by changing the value of the inductor in the VFO. By winding another coil for the band required and switching between them to change the band. Even leaving the inductor alone and switching in other crystals. An 9MHz crystal will give you 14 - 14.5MHz and of course 3.5 - 4 MHz so careful filtering will be required.

That's it for this month, news and views to me via the Editor, packet to GB7RMS, Email to [Dick@kanga.demon.co.uk](mailto:Dick@kanga.demon.co.uk) or snail mail to Seaview, Crete Road East, Folkestone CT18 7EG

# The Low Cost Controller That's Easy To Use

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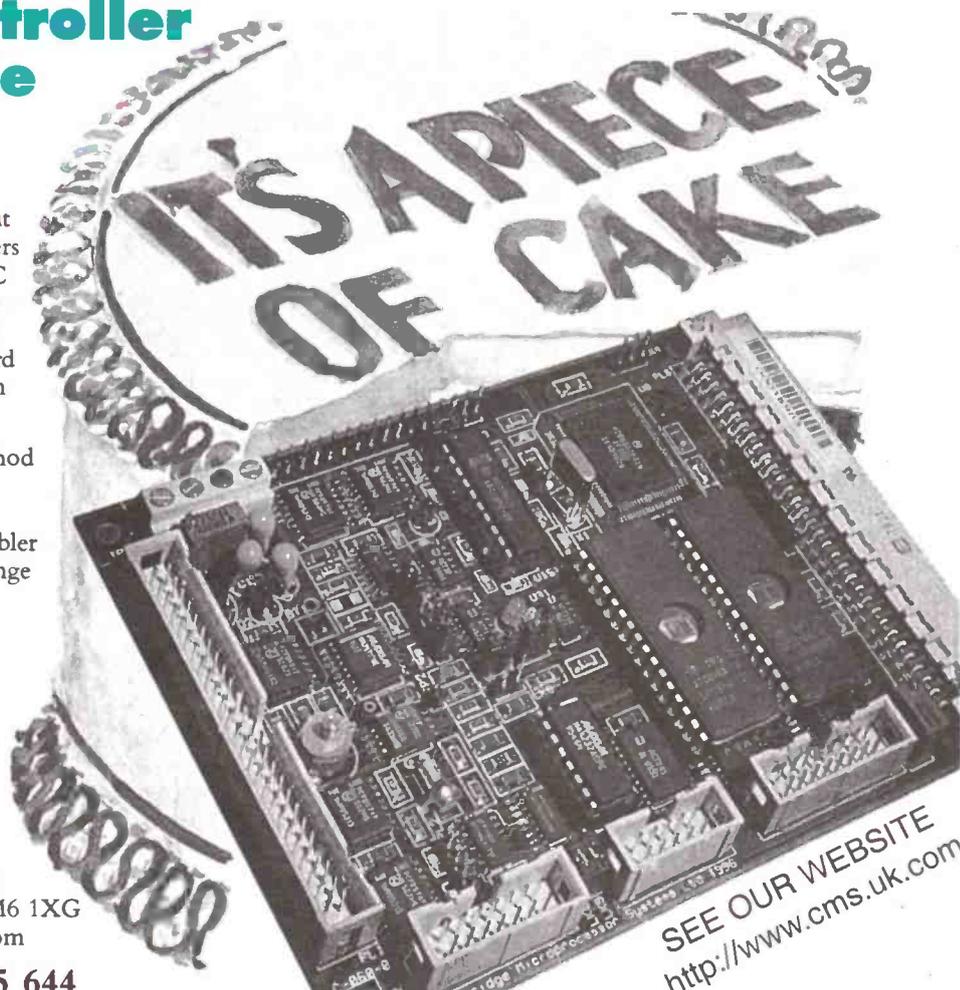
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# COMPUTER WORKSHOP

Paul Simpson GORUR starts off his new regular computer workshop column with a review of the WAB4WIN logging software

I've been involved with amateur radio for six years, and have now discovered a new interest in *Worked All Britain* (WAB), one which I had not considered before. This is thanks to my reviewing the WAB4WIN V1.04 logging program by Alan Carpenter GV3RQT.

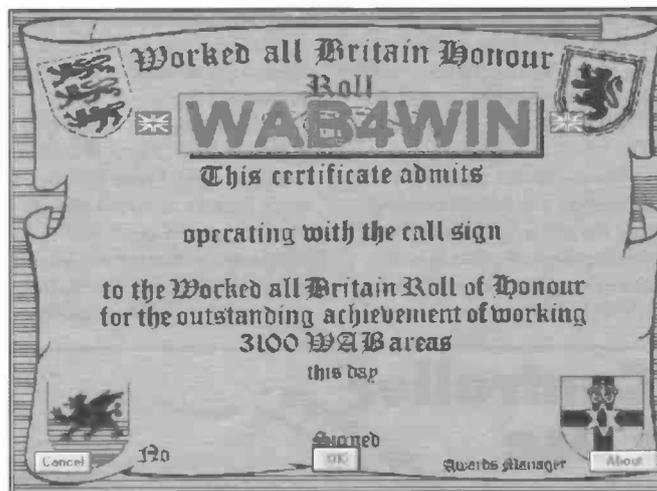
I had not really thought much about WAB, devised by John Morris G3ABG in 1969, and didn't really know that much about it. Simply put, the British Isles and N.Ireland are divided into 100km squares (Large Squares), then subdivided into 10km squares (Areas), in much the same way as the NGR (National Grid Reference).

All squares are then collectable for differing awards. There are a number of awards for towns, districts, counties, islands etc, and for differing modes and bands. A book with its individual number is purchased for a one time fee of £10 inclusive of post, and QSO's are logged for each award sought. Once sufficient QSO's have been logged, awards can be claimed.

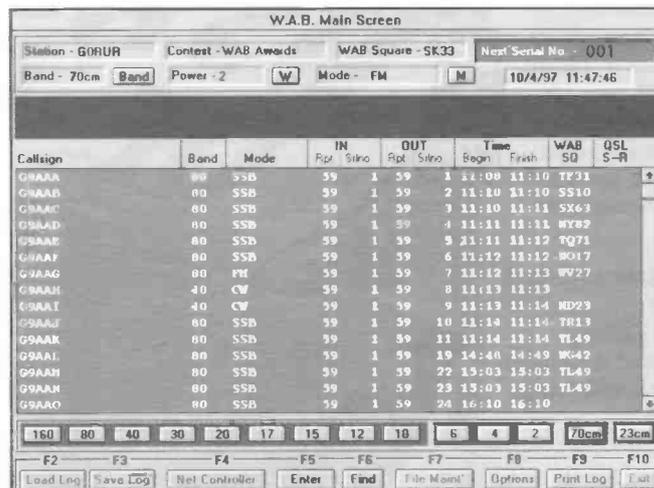
*(For further details on the WAB book, awards and newsletter, write to: WAB Membership Secretary, Brian Morris G4KSQ, 22 Burdell Ave, Sandhills Estate, Headington, Oxford OX3 8ED - Ed)*

## WAB4WIN

WAB4WIN is a Windows based program which will run in all versions. There is some preparation required if you are using Windows V3.11, in that you need to manually add an additional command line, using an ASCII editor, to the AUTOEXEC.BAT on your PC. In the case of either Windows V3.11 or



The Worked All Britain organisation offers handsome awards



## The main logging screen

Windows 95 the above alteration is not required.

WAB4WIN requires being run on a 386 16MHz and VGA minimum with 3-4Mb of hard disk storage space. It should be pointed out that the program is neither Public Domain or Shareware.

## INSTALLING THE PROGRAM

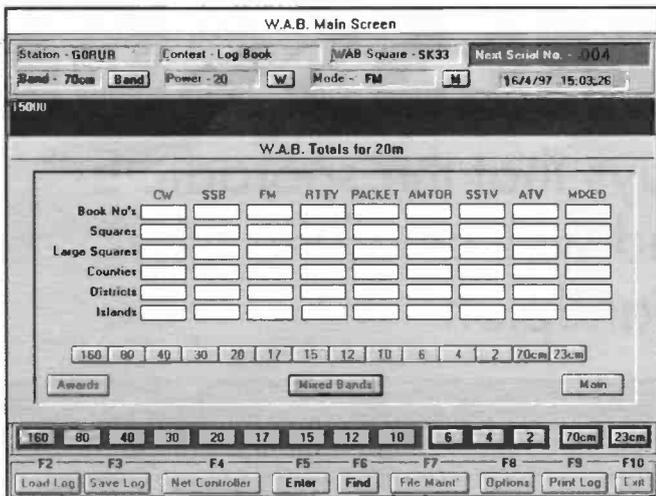
Start Windows, click on File, then on Run. A requester box will open, type A:\Setup.exe to start the installation. There are three disks to

install and an important thing to remember. Do not change the default directory from C:\WAB4WIN. I am not sure why the option is offered, when the documents make a point of asking that the main drive and directory are not changed.

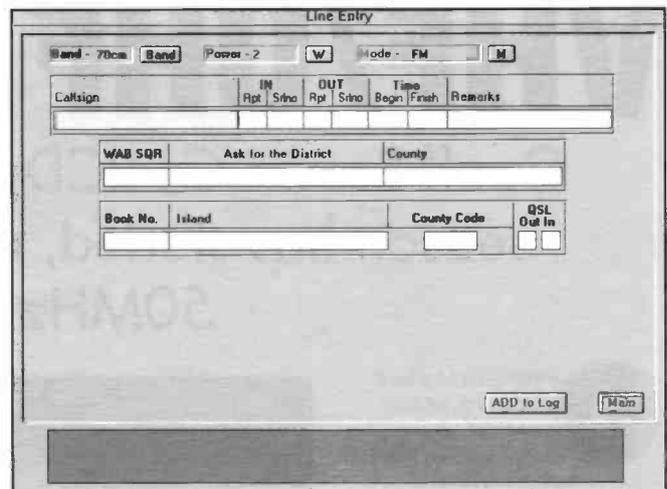
After installing WAB4WIN it would be a good idea to run the WRITE program in the Accessories group to view the program documents - WABMAN.WRI - as there is no online help in this version, before running the program.

Every time you start WAB4WIN you will get an options screen which you will use quite often. Enter your Callsign and WAB (Mine is SK33). The next two boxes are fixed choice boxes. Lastly enter the QSO number you want the next entry to be. Be careful not to make any mistakes here as you will have to re-install the program if you do.

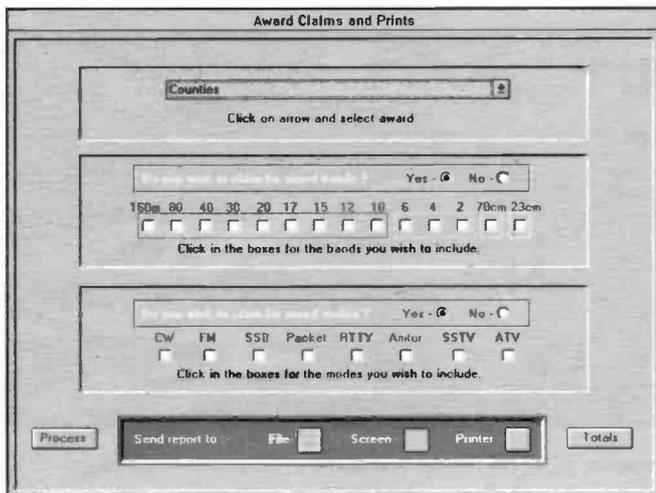
After the opening screen, clicking OK will load the main program. It is very well laid out and easy to use with options for Band, Power, and Mode. The next QSO number is displayed in the top right corner. This can only be changed by popping up the options window and changing it there, clicking OK you will see it has been updated. The main body of the screen has an area which displays your book numbers, below is a list of entries that have been entered as an example, but need to be deleted before you start using the program. The best way I found was to use the 'Save Log' option and when asked for a name it is important that the name you choose begins with LOG... I used LOGRUR.MDB. The program will ask you if you want to delete the current log and start your



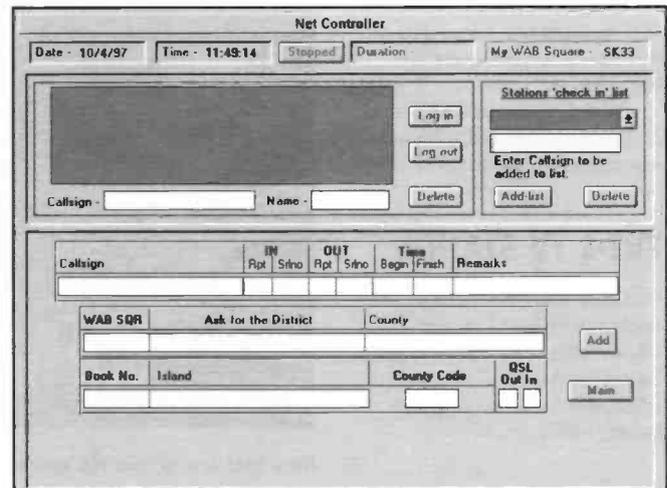
WAB totals



Individual entry screen



Award claims made easy



Net Controllers will find this useful also

new log empty, in this case just answer yes. Don't forget to make sure you set the next QSO number to 001 on the Option screen.

Under the main viewing area there are buttons for each band. If selected, you can check your totals for each award covered by WAB. On the same screen you can elect to check what awards you are currently eligible for. At the bottom of the main screen there are the remaining options for Log (Load) or (Save), Net Controller, Enter, Find, File Maintenance, Options, Print, and Quit. A lot of work has been done to reduce the screen flashing when scrolling data already entered.

The logging Area includes an option to clear the current entry, and the PWR, MODE, BAND, and Date can be altered. The PWR, MODE, and BAND is also in sync

with the Main Screen.

The Maintenance section covers all the different WAB sections such as Towns, Counties, Books etc. Each allow you to enter new information and update the records already entered by Alan. There is also a section for controlling a Net split into three parts which includes a number of options. A timer, Check-in List, and Log Entry Area. Don't forget to start the clock running when using this section.

### CONCLUSION

I have covered all the main area's of the programs operation, and already mentioned a few things that require taking note of during installation. I programmed an Island Award to check the program

would report it correctly, which it did. I did find a few bugs, which after contacting Alan, turned out to require only minor fixes. The general feel and operation of the program is very good and although I always prefer online help (to be included next issue) the program is easy to follow and use. The help document file is not large and VWRITE can be run in the background should you need to refer to the manual, or print it. I feel the program is excellent value for the asking price, a third of which is donated to WAB. The next issue V1.06 will implement the following suggested improvements after which, it will be a very difficult program to beat for WAB logging; 1) Removal of the option to install to a different drive. 2) Clarification of how to name your Log Files.

- 3) A clear Entry Option.
- 4) Ability to Amend Band, Power, and Mode, in the Maintenance section.
- 5) A browser section to view listings already incorporated in the program.

It is refreshing to find a programmer so willing to make adjustments the user might like. In view of this I have become an approved Beta Tester for the program. Alan was very receptive to my suggestions. You will notice that there is a jump between version 1.04 and v1.06 which is due to the work Alan has put in to implement the above improvements. WAB4WIN is priced at £15.00 and is available direct from Alan Carpenter GW3RQT, Tel. 01834 871604 (please mention Ham Radio Today magazine when enquiring - Ed).

# VHF/UHF MESSAGE

Geoff Brown GJ4ICD says that the sporadic E season has started, and welcomes the new 50MHz bandplan

**D**ennis GJ3YHU is back on 70MHz, as Alan GM4ZUK, who was always active on 70MHz during contests, has now left Jersey. Lawrence GJ3RAX is also back on the band. Dennis made 14 QSOs during the March 70MHz contest. His equipment is an FT-101 and FTV-901 transverter unit, followed by a 4X150 tube amplifier and a two element quad.

SM4HEJ reports he is now active on 50MHz from JO69QJ, this is a rare square, he uses an Icom IC-706.

## TVE-2 TV STATION

Information is that the TV station which appears in the list of European 48/49 MHz, on 48.2519 in IN52 Square (Santiago de Compostela, TVE-2), was finally switched off in January 1997.

## MAL Z23JO (G2SO)

Mal Z23JO (G2SO) sadly passed away in April. Mal, who was a great pioneer on 50MHz, had such a great sense of humour, he always used to joke that he was using his artificial tin leg as his aerial. He was the only station active on 50MHz from Zimbabwe during the last cycle, and installed the Jersey built Z21SIX beacon at his home. He will be sadly missed by all who worked him for that new one from Zimbabwe.

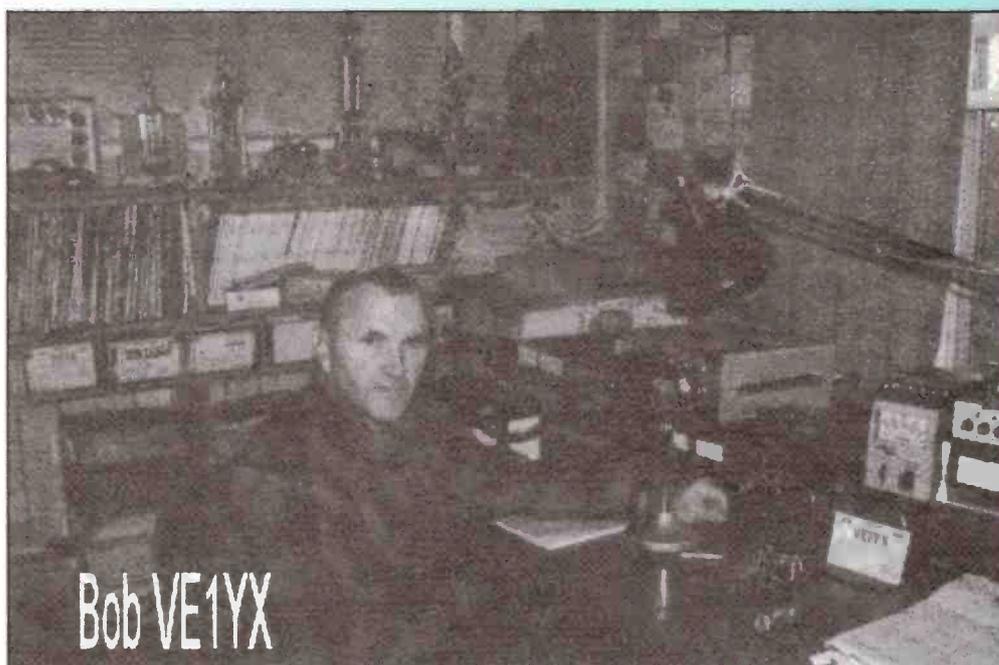
## ES REPORTS

Well the ES season has started. Late March (31st) produced a 50MHz opening from the UK to SP, OK, OM and HA between 1500z and 1730z. The event was quite widespread, with reports coming in from Somerset (Ken G4IGO) to Yorkshire (G6YIN).

March 26th saw the first 50MHz



Now that we're into the sporadic E season, UZ2FWA is one station to listen out for on VHF



Bob VE1YX, listen for him on 6m

TEP opening in 1997 within Europe, Sergio IKOFTA heard V51VHF in Namibia at 1505z on 50.018MHz. There were other openings in early April between 7Q7 (Malawi) and 4X4 (Israel), 9H (Malta) and Italy.

EH7KVW reported in late April that no licenses had been issued in Spain for 50MHz operation. This looks like the first case of 50MHz being withdrawn in a European country, unless there is a last minute reprieve!

Tim V73AT sent an Email with the following news: New cycle, new opportunity, I have moved back to the Marshall Islands and will be very active during Cycle 23. The six metre aerial at the Kwajalein Amateur Radio club has been repaired and I am active starting today (April 4th). Look forward to working you all from Kwajalein. QSL Manager is still K2CL.

Tim McLaughlin V73AT (N2PC) was heard on 50MHz in Europe during the last cycle.

The TEP continues, but not for Europe. On April 8th there was an extensive opening between Japan and Australia (VK4, VK8 areas) and signals were S9!

On the 11th Alberto LU2EGQ reported an opening to KP4 in the Caribbean, albeit, very brief.

The 13th produced TEP between VK and JA again, and on the 14th, there was a small ES opening reported between LU and PY (Argentina and Brazil), which is unusual for April.

Alberto LU2EGQ again reported a short TEP opening on 50MHz on the 17th, by hearing the YV beacon in Venezuela.

April 21st saw a high 'K' which produced an aurora, but the best conditions seemed to be in the USA. Several reports were seen on the European cluster, but no great DX was worked on either of the VHF bands.

OZ5W operated in his usual 50MHz contest on April 22nd (4th Tuesday of the month 1700z onwards), many stations were worked but only via Tropo/MS. Keep a look out for him on 50.160MHz and try your hand at meteor scatter. It really is very simple to work MS and great power is not needed, just good operating and a decent aerial system.

## OTHER NEWS

The message is at last getting through regarding the intercontinental calling frequency, 50.110MHz. According to cluster reports, Europeans are now



### Wouldn't you like an aerial system like this?

using 50.150MHz for initial calls and then moving around the band, this is at last good news.

I'm sure exceptions can be made if, say, a VK or LU appears calling on 50.110MHz, although the bandplan says not! Make the contact and QSY is the answer, but do not work your own continent on a designated international DX frequency, that is the message from the IARU R1 bandplan.

By the way, it's not just 50MHz that suffers bandplan problems, here is a cluster report of a French QSO on FM. G4RKV reports on 144.150 a French FM QSO at 0658 on the 6th April!

Those with Internet access may have noticed that several changes have taken place on the VHF/UHF section of

<http://user.itl.net/~equinox>, so much so that Jukka (OH2BUA) has highlighted the site on his DX Cluster pages. It features daily

news items that come in for the VHF/UHF and microwave bands.

IK4VYX has introduced a great piece of software, although not purely VHF/UHF information. The software is called *DX Telnet*, with this software Internet users can Telnet into various European/UK clusters and watch the VHF/UHF DX from work! It has five split screens for the usual DX information as well as Announce, DX, Talk etc. Using the software is very simple, it has its own filter system incorporated, so that all spots from 1000kHz to 30,000kHz will be excluded.

The program is called DXT10ENG.zip and is 640k, it is available from the Finland FTP site. I use it all the time at work logged into GB7MDX or IK6PWJ to watch the VHF spots. If you cannot download the software then send me the following: A 1.44Mb formatted disc, a one pound coin and a return packet for the disc.

## BEACON NEWS

Bill VK6ACY reported this news to me in early April, I am advised by FR5DN that the *Reunion* beacon on 50.0215MHz, FR5SIX is no longer operational.

Also, N8PUM is on 50.068MHz and not 50.067MHz as given in many lists.

The KOGUV beacon is active full time on 50.008MHz despite reports that it is non-operational. WB2CUS on 50.077MHz in EL98 is also off-air.

It is not known what will happen to Z21SIX in Zimbabwe, now that Mal Z23JO has passed away. I did have other news that there is another Z23 station interested in 50MHz, so more news on that later.

That's all for this month, news, views, photos please to: Geoff Brown GJ4ICD, TV Shop, Belmont Rd, St Helier, Jersey. C.I. JE2 4SA, Tel/fax. 01534 877067, or via Email: [equinox@itl.net](mailto:equinox@itl.net)

### Region 1 bandplan: please use it!

50.020 to 50.080; Beacons  
 50.090; CW centre of activity  
 50.110; Inter-continental DX calling frequency (*This means do not work your own continent on 50.1 please!*)  
 50.150; SSB centre of activity  
 50.185; Crossband centre of activity  
 50.200; MS centre of activity  
 50.200; *French stations are only allowed to use 50.200 and above*

# DATA CONNECTION

Our resident data-over-radio SysOp finds RTTY and SSTV mailboxes, and hears a 'whisper' of a new low cost multimode data unit

**L**ast month, I was tearing my hair out on PC software conflicts between my packet program and fax software on the same machine. I promised I'd let you know how I went on. The short end to a long story was that the only way I could overcome the conflict was to simply re-install the Windows 95 drivers, saying "no" each time it asked me if it should keep existing drivers on the hard disk rather than overwrite them. I hope this proves useful to others, it worked for me!

## NEW 40M RTTY MAILBOX

Just having been placed on air as I write this is the new RTTY mailbox run by LU7APT. This operates on 40m on a frequency of 7.037MHz +/-, and being RTTY it should appeal to many users of the 'HamComm' program using the simple one-IC interface, maybe even coupled to your low-cost homebrew rig. No expensive TNCs needed here! The mailbox is open for general use by all, why not give it a try? For more details, you can drop a packet message to LU7APT@LU1EIG.#CSO.CAP.AR.G.SOAM

## BARTG RALLY 1997

The British Amateur Radio Teledata Group's rally '97 and DataStream '97 takes place this year on the 14th September, as usual at the Sandown Park Exhibition Centre, which is part of Sandown Park racecourse in Esher, Surrey. This



The MAXPAK rally team at this year's Drayton Manor Rally. (L-R) Digicom Editor; Ron Taylor G6LRD, Software Editor; Joe Jacobs G4VYA, Chairman; Brian Taylor G3TIN.

year, lectures are back (for 1997 at least) in the form of DataStream 97. This time, the BARTG tell me that the lecture stream will consist of: 12:30 Data Comms for Beginners by Steve Jelly G0WSJ 13:30 Advanced Data Comms by Chris Lorek G4HCL 14:30 Satellite Data Comms by AMSAT-UK

15:30 Question and Answer Session, by BARTG, DCC, G4HCL and (hopefully) others.

DataStream 97 is an integral part of BARTG 97, there are no additional tickets or charges. You might note at least one familiar callsign in the list of lecturers - yes folks I've had my arm well and

truly twisted! For more information about the event, drop a packet to Ian G4EAN @ GB7NOT. You can also obtain further details on the BARTG from Ian, or on their web site at <http://www.bartg.demon.co.uk>

## BELGIAN SSTV REPEATER ON 10M AND 70CM

A message from Danny ON4VT tells me that, after some initial problems, the ON4VRB SSTV repeater will soon be operational

in 'test' mode. It's due to operate on 433.925MHz, on 70cm, and on 10m on a possible frequency of 28.700MHz, although the latter frequency is currently 'provisional. Here's one good use for your JVFX system! The project leaders are ON1DBS, ON4CEI, ON4VT and ON6JG. Danny says that comments from amateurs around the world are invited, especially as we may soon be seeing more sporadic E openings on 10m. In the meantime, Danny continues to send 'CQ' pictures on 28.680MHz. You can get in touch with Danny via packet for more details with a message to ON4VT @ ON7RC.#BR.BEL.EU

## WINPAK UPDATE NEWS

WinPak must probably be the most-used package in the UK for Windows-based packet communication. The software author, Roger GAIDE, has recently released a further 'upgrade to the upgrade' from V6.1 to V6.2. The latest upgrade, at the time of writing, is UPDT620S.EXE which contains an update to the SPEECH.EXE file which was included in the original V6.2 update. If your V6.2 update was called UPDAT620.EXE, Roger says the file may fix some problems with the speech in WinPak.

A couple of further updates, not included in the above update, are VIEWED.EXE, ACK.EXE and BACKUP.EXE. VIEWED is an updated viewers editor for V6.2, which fixes a problem when the file type is less than three characters long. ACK is a new ack server that doesn't leave viewer flags (^, htm etc.) in the ack's or qsl'd message title. BACKUP is an alternative version of the backup server, which backs up your outgoing messages into subdirectories of Archive named according to the addressee for SPs or topic for SBs.

For the benefit of readers I've arranged for all of these new updates and files, including the latest WinPak V2.1 program update to WinPak V6.2, to be included in the latest 'WinPak V6.2 Updates and Plug-Ins' disk, available from the Ham Radio Today software offer service this month, see elsewhere in this issue for details of how to get your disk. If you requested this disk after 20th May 1997 you'll already have the updated disk version from the service.

## AMTOR SWITCHING TIMES

A bulletin from Andy G0HIX says that he's recently purchased a Yaesu FT-1000MP to replace his earlier TS850S, but he's now experiencing a problem when using AMTOR. His TNC is a Kantronics KAM Plus which is linked to the transceiver via the RTTY port using FSK keying. Andy

says that when he's linked with another station and his station is acting as the 'master', the radio works well with no problems, but when the link changes over and his TNC is sending acknowledgements, the link becomes unusable due to large numbers of errors. Closer investigation reveals that, when observing the signal/power meter on the changeover from transmit to receive, the S meter 'ramps up' to full deflection, as if the RF gain had been turned down to minimum, and then slowly drops to the expected signal level.

I've come across this problem a number of times in the past with HF rigs, and it's certainly shown up on AMTOR which does only provide for a short time slot in 'receive acks' on short HF paths, i.e., where the transmission delay between stations isn't great. It's usually caused by the receiver AGC (Automatic Gain Control) not having a fast enough recovery time after the changeover from transmit to receive. Here, the receiver AGC takes a finite time for the receiver to reach full sensitivity following a transmit/receive changeover, and I've spent many hours in the past, soldering iron in hand, in changing or even removing the AGC time-constant capacitors in earlier HF transceivers to overcome this.

A look in the FT-1000MP manual shows the advice given there is that, if using AMTOR, the AGC may need to be set to 'off'. A check with such an arrangement did in fact give fine performance on AMTOR, although the need to continually alter the manual RF gain control to cope with receive signal fluctuations doesn't really lend itself to efficient operation! Using the AGC on the 'fast' decay position could help here, although in some cases even this may not be quick enough. I personally also use the KAM with the internal update PCB to the KAM Plus, coupled to my Yaesu FT-990 on HF, and find no problems. In fact, I find the FT-990 to be the best HF transceiver I've used on HF data modes, which was one of the primary reasons for its acquisition (a Christmas present from the XYL actually!). Do any other readers have suggestions, or indeed the same experience? By next month I'll hopefully have had the chance

to try the FT-1000MP myself in this configuration, and I'll be reporting my findings then.

## NODE AND BBS NEWS

The SUNPAC packet group tell me that the packet radio network in Hampshire, Dorset, South Wiltshire, Isle of Wight and surrounding area is being improved and extended by them, with an investment of the order of £3,000 - that's some going! This money comes from donations, and memberships, these cost £5.00 per year and application forms are available on all BBSs in the SUNPAC area. Jim GOOFE (SysOp of the GB7DXD cluster, or GOOFE @ GB7BNM) is the group's membership secretary and he would welcome any enquiries from potential new members - will you be one? Here's some node news from the group;

GB7HP near Fareham; the final parts of the site clearance, for 1240MHz and 50MHz, have now been granted for this node, and work is currently under way in putting together equipment for the six planned ports, which include a 70cm user access port and 9600 baud links to GB7SW, GB7DXV, GB7HIP, and GB7VRB or GB7VR

GB7FW; The group recently received a letter from the owners of a mast, recently erected at Farleigh Wollop near Basingstoke at 200m ASL, giving permission for them to establish a node at their site. This is tentatively planned to be used for 9600baud, 16kbaud and 38k4baud 'backbone' links for the area.

GB7IW node; the commercial owner of the 23cm transceiver currently used at this multi-port node has now requested the return of the radio, which I'm told will unfortunately mean the group will be unable to avoid several weeks without the link from GB7IW to the GB7PIP/POMPEY node, which forms an essential backbone for around 1200 personal messages each month, as well as the daily 1.3Mb or so of bulletins. The moral here is to support your local packet group, for without them you may find links don't get upgraded, or at worst even disappear, with an overall 'slowing down' of our network if finances from amateurs

aren't forthcoming.

SUNPAC will be in attendance at the RNARS (HMS Collingwood) rally on Saturday June 21st (i.e. this coming weekend as this magazine appears on sale) where they will be accepting donations, new members and membership renewals. If you live in the area why not pop along, you should also see your's truly there at the Ham Radio Today stand. You'll find membership information on all the local BBSs, or drop a packet message to their Secretary John G8OQN @ GB7SUN

## MAXPAK

I was pleased to meet members from MAXPAK, the Midland packet group, at this year's Drayton Manor Rally where they had their 9600 baud demonstration equipment on their stand. MAXPAK also now have a new web site, where you read extracts and news from their latest 'DIGICOM' magazine. You'll find it at <http://www.neptunegroup.demon.co.uk/maxpak>

## NEW SISKIN DATA PRODUCT

A 'whisper' I was let in on, from the SMC-Siskin group, is that they may soon have a new low cost package for multimode data communications up their sleeve, which could possibly even be given away free of charge with the purchase of a receiver or transceiver from them! Watch this space, remember where you saw it first. If you can't wait, you can give Siskin a call on 01703 254247 for the latest information.

## CTRL-Z, END OF MESSAGE

Once again, my thanks for your many packet messages and Emails, I do reply to every one I receive. You can, as usual, always contact me by letter, fax or Email via the Ham Radio Today Editorial contact details, or direct on packet with a message to G4HCL @ GB7XJZ #48.GBR.EU or Email to [g4hcl@qsp73.demon.co.uk](mailto:g4hcl@qsp73.demon.co.uk)

# HF HAPPENINGS

Don Field G3XTT brings the latest HF news, and gives a few ideas for your bookshelf

**T**he BS7H operation from Scarborough Reef came up on the air as promised at the end of April, but closed down just a couple of days later. At the time of writing I am not sure why this was, but it was certainly disappointing. They were worked in the UK on 20 and 40 metres, but I think that may have been all. I did see them spotted on the PacketCluster on 15 and 17 metres at various times, but always by stations in Eastern or Southern Europe.

This seems to have been a fairly consistent story with recent propagation, with sunspot numbers and hence the MUF at this latitude remaining low. Of course, propagation can also work to our advantage, as was the case with a brief *Islands on the Air* operation from Matthew Island, part of New Caledonia. Signing FK5M, this station was worked from the UK on 20 metres when the rest of Europe was struggling to hear them.

The low bands have continued to be productive, with the 'season' seeming to continue for longer than usual. For example, YCLOW has been an extremely consistent signal from Indonesia on 160 metres, with almost daily reports in the UK. By the time this appears in print the 'season' will effectively be over, but let's hope he does the same again next year.

## OPERATING NEWS

PZ1BS is active again from Surinam, after being off the air for a couple of years. I have copied him (but not worked him yet!) on 20 metres RTTY.

DX News Sheet reports that TZ6W and TZ6HY have formed an amateur radio society in Mali, and will work with the government to establish club stations and to

develop amateur radio in that country.

Mats SM7PKK has become the latest in a long line of radio amateurs to join the various peacekeeping and relief efforts in central Africa (others include PA3CXC, ON6TT, HB9AMO, etc.). Mats will be based in Uganda for 6 months, but expects to travel to Zaire, Rwanda, Burundi and Tanzania. He will try to get on the air as and when possible.

Five German operators were planning to operate from the Faeroe Islands (prefix OY) from 7th to 20th June, all bands. And a large group of Hungarian amateurs were due to be on in a big way from Rhodes in the Dodecanese Islands (SV5) from 3rd to 17th June.

The new radio operator on Macquarie Island, Tom VKOTS, has more time for radio now that winter is setting in down there. He has a daily schedule with VK9NS at 0400 on 14.222MHz, and plans to be very active on CVW as well. Unlike the previous operator, who was limited to relatively inflexible commercial equipment, Tom has a modern HF transceiver with facilities for split-frequency operation, etc.

Unfortunately too late to have given you prior warning, but a big group of (mainly) Spanish amateurs announced their intention to mount a major operation from Annobon Island, Pagalu, as 3CODX in late May. I hope you managed to catch them.

Finally, HA5PP will be in Aden, Yemen for a year or so and will be making side trips to surrounding countries such as Eritrea, Somalia, Djibouti and Sudan. Where possible he will try to get on the air, though Yemen itself may present problems (see last month and below concerning 7O1A). However, Zoli was successful in securing licences in

Vietnam (3W8DX) and Laos (XV8DX) when licensing was still difficult in those countries, so let's keep our fingers crossed.

## FRESNO CONVENTION

I didn't manage to get to any of the US amateur radio conventions this year. However, I understand that, not surprisingly, the highlight for HF operators was the presentation about the VKOHI Heard Island operation. This really has to qualify as the best-organised, best-equipped, most expensive but ultimately the most successful DXpedition of all time, and will set the standard by which future expeditions will be judged. The group has to be congratulated also on the speed with which it produced a video for sale, and has got the QSL cards in the post (mine arrived at the end of April). Do make sure you get along to the RSGB HF Convention in September to see the VKOHI presentation.

Also at the Fresno DX Convention in the US, JH1AJT was lobbying hard for a rethink about 7O1A (see last month's column), while in an adjacent room Bill K5FUV of the ARRL's DXCC desk was explaining why the ARRL has decided not to accept this operation. What makes their decision particularly bizarre is that they featured it in the DXCC Yearbook as one of the top DXpeditions of 1996!

## THE HF OPERATORS BOOKSHELF

Occasionally I use this column to recommend books of interest to HF operators, but I thought this month I would come at this from a slightly

different angle, and suggest what you really ought to have on your HF bookshelf.

One of the essentials is a publication listing countries, prefixes, frequency bands, and other background information to enable you to find your way around the bands and identify stations which you hear. There are several possibilities, though the one totally comprehensive publication is the *Amateur Radio Almanac* from CQ Publications in the US, which is edited by my good friend Doug Grant K1DG and is revised annually. Sadly, I don't know of a UK source for this. Alternatively, the RSGB publish a Prefix Guide and, of course, their excellent *Amateur Radio Operating Manual* (I have to say that, as I wrote the topband section!).

The Operating Manual also covers HF propagation, though I find another CQ publication useful, the *Shortwave Propagation Handbook* by George Jacobs W3ASK. This latter covers the significance of sunspot numbers, how to interpret WWW data, and other practical aspects of propagation.

The RSGB Call Book contains a wealth of useful information on prefixes, awards, contests, the QSL bureau, and so on, in addition to the addresses of UK amateurs. *The North American and International Callbooks* have also been invaluable over the years for looking up addresses of QSL managers, but I understand are likely to be dropped in favour of a CD-ROM version in future.

Although most logging software these days handles things like great circle bearings, I find a great circle map a useful aid to have on the shack wall. Again, the RSGB carries these, or there are some computer programs which will print one out for your location.

For advice on HF operating, I

have on my bookshelf 'DX Power, Effective Techniques for Radio Amateurs' by Eugene Tilton K5RSG (Tab Publications) and 'Secrets of Ham Radio DXing' by Dave Ingram K4TWJ, also by TAB books. Sadly, I have a feeling both of these are now out of print. For low band operating, aeri-als and equipment the definitive book is 'Antennas and Techniques for Low Band DXing' by John Devoldere ON4UN, published by ARRL.

If you are into awards chasing, then the K1BV Awards Directory is the publication of choice. It is in loose-leaf format and constantly updated. Available direct from K1BV or from RSGB.

Finally, I will be shot at down by my IOTA friends if I fail to mention the 1997 IOTA Directory and Yearbook, which contains everything you need to know about the Islands on the Air

awards programme. Again, available from RSGB.

Of course, there are many other useful books on aeri-als, equipment, specialised modes and so on, but what I really wanted to do was get you started on the operating side. Hope it helps.

## QSL ROUTES

Related to the above, the Ham Radio Today Editor has just passed to me a review copy of the latest edition of 'QSL Routes', which I have mentioned in this column in years gone by. QSL Routes contains a wealth of QSL information, including QSL managers, addresses of DX stations and so on. Obviously a useful publication to have, but becoming less so now that so much of this sort of information is available on line on the Internet.

Being able, for example, to access the FCC's database of the addresses of US amateurs, which is updated on a daily basis, is much more valuable than a paper publication which is updated just once a year.

However, and perhaps in recognition of this, the publishers of QSL Routes have now introduced a version on CD-ROM which goes much further than the paper version, by including electronic images of the QSL cards of rare stations, and other useful information such as their Email addresses where known. The CD-ROM version costs \$30 (as against \$20 for the paper version) from QSL Routes, Theuberger Verlag GmbH, PO Box 73, 10122 Berlin, Germany. See also their Web page: [http://www.funkamateu.de/qsl\\_routes/index.htm](http://www.funkamateu.de/qsl_routes/index.htm)

I always encourage amateurs to respond positively to SWL cards, to encourage these folk to stay in the hobby and, hopefully, get a transmitting licence in due course. Some, of course, have no interest in the transmitting side, but continue as SWLs for years, perhaps using the QSL cards to chase awards of various sorts (most amateur radio awards such as DXCC and IOTA are also available to listeners).

It is easy to ignore SWL reports. Many only duplicate information about your signal which you already knew from the contact you were making at the time. But a card in return, perhaps with a few words of encouragement, or even advice as to how the report could be more useful, takes little effort and could have a big impact. UK amateurs have a poor reputation for answering SWL cards, which is a pity.

## SWL CARDS

If you are a licensed radio amateur you will, from time to time, receive reception reports from SWLs (Short Wave Listeners). If you are an SWL, you will almost certainly be a QSL card collector. Indeed, some countries require that you serve an 'apprenticeship' as a listener, proving this through the QSL cards you have collected, before you can gain a transmitting licence.

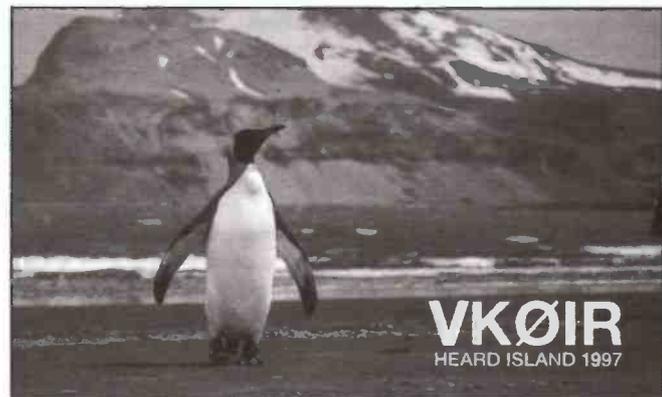
Of course, if the listener lives nearby, then in addition to the QSL you might want to invite him or her to your shack or to the local club. After all, as amateurs we at least get to speak on the air to fellow enthusiasts, but SWLing can be a very solitary occupation for much of the time.

By the time you read this, summer will be upon us with lots of opportunities to get outside and improve the aerial system, or do some portable operating. But remember also that this is the season for Sporadic E propagation, not only on VHF, but frequently on 10 and 15 metres as well. Signals can be very strong out of nearby countries such as Germany and France, and you may well be able to conduct some excellent noise-free QSOs in the FM section of the 10 metre band. If you don't have FM capability on your transceiver, a cheap way of getting on 10 metres FM is to convert one of the legal CB rigs which can often be picked up very cheaply these days. Have fun, and do send me your HF news and photos.

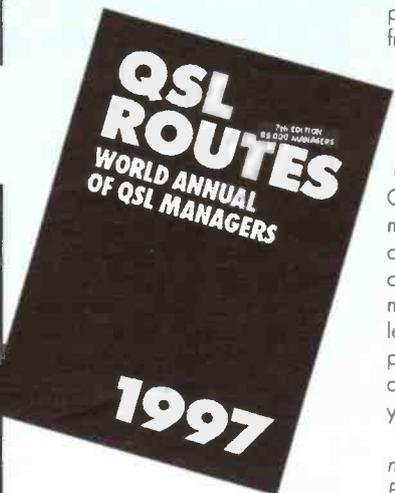
(Please send your HF related news, views and photos to Don Field, G3XTT, at: 105 Shiplake Bottom, Peppard Common, Henley on Thames, Oxon RG9 5HJ - Ed).



'QSL Routes' have now introduced a version on CD-ROM which goes much further than the paper version



The QSL Routes CD-ROM has electronic images of the QSL cards of rare stations



'QSL Routes' contains a wealth of QSL information, including QSL managers and addresses of DX stations.

# SATELLITE RENDEZVOUS

Richard Limebear G3RWL brings the latest  
AMSAT-UK news with details on  
RS-16, Phase 3D, and plenty more

**Oscar 10:** It's still operational in Mode-B. Its currently available when in view but *please do not* attempt to use it if you hear the beacon or the transponder signals FMIing as they have recently, but generally, once AO-10 hits darkness, it shuts down.

## RS-16

**RS-16** was launched as part of a compound satellite package called 'Zeya'. Since this was the first launch from this launch site, no expensive satellites were launched. RS-16, however, was an ideal candidate for the initial launch.

In addition to the RS-16 package, the Zeya spacecraft consists of an experimental navigation system, a number of experimental laser reflectors, solar panels and batteries.

RS-16 has high speed telemetry as well as Morse, but it is proving difficult to copy due to the QSB from the tumbling and toppling of the satellite. In fact, radio amateurs are doing somewhat better than officials who need the telemetry for their own readings, but who have receivers rather less sensitive than the amateurs.

RS-16 is undergoing testing now, the duration of which may take two or more months. It is believed the Mode A transponder will be switched on after testing is complete. Some spurious have been

noticed on RS-16's 70cm transmission (albeit 35dB down) but apparently they are able to reduce the injection to the beacon to get rid of them. TLM decoding information should be out pretty soon.

RS-16's orbital height is 470km, and so decay will be quite noticeable, even early in its life. Updating of kepler data will, therefore, probably be more important for this spacecraft than for most other objects we track.

G3CWW made a comparison with OSCAR-9 which had an initial height of 554km; it had a life in orbit of 9 years. When Oscar-9 got down to the altitude that RS-16 is at, it was only two years before re-entry.

A factor which affects the rate of satellite decay is sunspot activity. The more active the sun, the faster the decay; but UO-9 came down at a time of high solar activity whereas we are, at present, low on the solar cycle. (guess three years to re-entry?)

On the other side of the coin, G3IOR suggests that, being so low, and thus at a very shallow interception angle to the E and F layers, RS-16 may be very good for sub-horizon when the transponder comes on.

## MIR

**MIR** is inactive, in amateur radio terms, at present. This is supposedly a temporary measure due to several factors, not just technical problems.

The Mir complex raised its orbit by 5 km on 15 April using Progress M-34's engine. The crew continue to carry out repairs on their life support system.

## DIGITAL/MICROSATS

**KO-23** went through one of its five-monthly doldrums recently. This was caused by the eclipse status which is natural to this type of orbit, in as much as there are times when the spacecraft is permanently out of eclipse for several weeks and so it gets no chance to cool down.

Temperatures in excess of 50 degrees centigrade are not unusual in this instance. In KO-23's case the temperature increase causes the deviation of the FSK downlink transmission to increase; some amateurs have 15kHz filters in their 70cm rigs and the deviation rise takes it outside their bandwidth leading to poor reception, even though the signals themselves are strong.

**AO-27** is currently set to turn on 16 minutes after entering the sun and will stay on for 18 minutes.

## PHASE-3D

Dick Jansson reports a second-in-a-row successful load test of the Phase 3D SBS, the structure which houses the satellite as it rides the launch vehicle. This test confirmed the lateral stiffness of the SBS.

P3D will use all RHCP for its

circular aerals. Since it will be nadir pointing at all times after stabilization is achieved, sense switching should not be necessary. This assumes all goes as planned.

There is also a rumour (by sources at Kourou) that the launch may not be ready before November.

Some information has come out about telemetry (TLM) formats on P3D compared with AO-13. The whole telemetry block format is to be changed because the number of analogue channels was doubled and there are also more digital status information bytes, etc. More specific information about the new block format, telemetry allocation and formulas will be published when available.

Here is some information about the RUDAK TLM and pass-through of bus TLM. There will only be a few channels of TLM from the RUDAK module itself; probably about 10 to 20 channels of voltages, currents and temperatures from its CPU and modem boards.

These will be in ASCII text in a form very similar to the present DO-17 format. There will also be a STATUS line similar to the Microsats, which will contain information about all hardware sense points and some software data values. All RUDAK output will almost certainly be via the 9k6 hardware modulator initially.

Calibration formulas for the analog TLM will follow the Microsat pattern with coefficients provided for each channel corresponding to a, b and c in

ax^2 + bx + c. They hope to get this published prior to launch, but how much prior remains to be seen, but they intend to provide a simple freeware decoder for the RUDAK data prior to launch.

They also intend to make the bus telemetry available on the RUDAK downlink. Format is to be decided, but will probably be close to that sent on the general/engineering beacons.

At some point after we are in orbit the downlink will begin to fill up with experiment and/or file system data. At that point it will be desirable to reduce the bandwidth used by the various telemetry data messages. So further into the mission it is probable the RUDAK

TUM and STATUS will go binary and the sample periods significantly lengthened. These decisions will be made as we gain operational experience.

### UOSAT OSCAR 11

G3CWW reports the following: Recent telemetry from UO-11 shows that the increasing solar eclipses have continued to reduce the internal temperatures by a further four degrees, now about 12 degrees C below the full sunlight condition. The battery voltage continues to be rather low, in the range 13.3 to 13.8 volts.

The single WOD survey of channels 40, 50, 52, 63, (Array voltage, battery charge, battery voltage, BCR status) dated 22nd February has been transmitted during this period. A short file of this WOD is available from the WWW site (see below for URL), and will be updated when the WOD is changed, and the maximum amount of data has been received. The operating schedule is unchanged.

- ASCII status (210 seconds)
- ASCII bulletin (60 seconds)
- BINARY SEU (30 seconds)
- ASCII TUM (90 seconds)
- ASCII WOD (120 seconds)
- ASCII bulletin (60 seconds)
- BINARY ENG (30 seconds)

### SHUTTLE FLIGHT

NASA has decided to go ahead with mission STS-83R, the MSL-1 reflight, on July 1st. The same crew will fly the mission.

Meanwhile, as this is being written, preparations have continued for the launch of Atlantis on mission STS-84 to Mir this May, where Atlantis is scheduled to deliver a replacement oxygen generator to Mir.

### MEXICO OSCAR 30

W3IWI recently reported more details on the fate of MEXICO-OSCAR 30 (MO-30). Tom was able to confirm a number of unofficial reports that the satellite failed on orbit and has now been declared lost.

The satellite, which also contained a 40 MHz meteor radar, was built at the Autonomous University of Mexico by XE1TU and his students. The basic spacecraft was of the same design as the other AMSAT Microsats. The new satellite, which ultimately became MO-30,

was successfully deposited in orbit and transmitted telemetry for about one day. Unfortunately the launcher was very cold. MO-30 separated from the launcher at a temperature of about -30 deg. C because the satellite was under the launcher shroud for a couple of hours. Apparently, the crystal oscillator in the uplink receiver's 1st Local Oscillator never started oscillating, so the satellite was totally deaf. Because there was no functioning uplink, battery charging parameters suitable for the unanticipated cold temperatures could not be loaded, and the satellite ran out of power. Later attempts to revive it were unsuccessful.

### LATEST KEPLERS

AMSAT-UK Keplers are put out on packet weekly, sent to KEPLER @ GBR. The latest satellite Keplers as provided to the magazine by

AMSAT-UK are also available as a service to readers by automatic fax retrieval from the 24hr Ham Radio Today fax-back line, 01703 263429 (use with a personal DTMF, i.e. 'touch-tone', phone/fax keypad - follow the voice menu). A short version (1-2 pages with all amateur satellites, and a longer version (10-15 pages) with all satellites, including weather satellites, is available on the service. Note that you no longer need to request a specific document number, just follow the voice instructions.

For further information about AMSAT-UK contact: AMSAT-UK, c/o Ron Broadbent MBE, G3AAJ, 94 Herongate Rd, London, E12 5EQ. A large SAE gets you membership information. SWL's are welcome. For those who use the WWW, AMSAT-UK has it's pages at the following URL: <http://www.mcc.ac.uk/AMSAT/>



'Oscar news', the official journal of AMSAT-UK



Royal Naval Amateur Radio Society

# ANNUAL MOBILE RALLY



In conjunction with H.M.S. Collingwood Open Day  
Sponsored by Whitbreads plc

On

**Saturday 21st June 1997**

**10.30 - 17.30**

At

**H.M.S. Collingwood, Fareham, Hants.**

(off M27 at J11 follow RAC FIELD GUN DAY signs on A32, B3385)  
(towards Lee-on-the-Solent)

**ALL THE USUAL RNARS RALLY ATTRACTIONS**  
Trade stands, Bring & Buy, RAYNET, SUNPAC, Club stands,  
Entry to the Radio & Electrical Museum  
Talk-in via PC/PH

**PLUS**

**RN Field Gun Competition**  
**Hampshire Police Motorcycle Display Team**  
**Army Free Fall Parachute Team**  
**Aerobatic Display**  
**Fairground Attractions Children's Play Area**  
**All proceeds to the King Georges Fund for Sailors**

## A GRAND DAY OUT

Further details from

Mike Matthews G3JFF - 127 Drift Road, Clanfield, Waterlooville, PO8 0PD (01705) 365503

or :- Alun Owen G4POW - 60, Brighton Avenue, Elson, Gosport, PO12 4BX - (01705) 353404

# CLUB NEWS

To include your club, or rally, in this section, make sure you send us your events details in time. We only list active clubs, i.e. those who send us their diary of planned talks/events, (due to space restrictions we can only include clubs who send us details of events and talks, not 'natter nights' for every meeting). **DATES TO BE INCLUDED IN THE ISSUE PUBLISHED ON THE 15th AUGUST MUST REACH US BY THE 4th JULY LATEST** (some clubs are being missed out because their details arrive too late) addressed to; The Editor, Ham Radio Today (Club News),

Nexus Special Interests Ltd., Nexus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST, or direct to the

Editor's desk by fax on 01703 263429

or by Email to clubnews@qsp73.demon.co.uk

**Andover ARC** meet on the first and third Tuesday of each month, 7.30pm, in the Village Hall at Wildhem (5km north of Andover). Planned club events/talks; Jul 1st - The life and times of a QEI radio operator, by Phil Williams  
Jul 15th - Digital TV in the UK, by Arthur Mason Aug 5th - Practical evening of Meteor Scatter listening  
For further details contact Terry G8ALR, Tel. 01980 629346 evenings.

**Appledore & District ARC** meet on the third Monday each month, 7.30pm, at Appledore Football Clubroom, Devon. Club CW net; 8.00pm - 8.30pm every Wednesday on 28.350MHz, 8.30pm - 9.00pm SSB. Morse speed adjusted to the slowest sender. 2m FM every Tuesday 145.475 at 8.00pm. Planned club events/talks; Jun 21st - Local geology, by D. Sheldon For further details contact Den Williams G0UMT, Tel. 01237 471802

**Bristol (South) ARC** meet every Wednesday at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol. Club diary of events/talks; Jun 29th - Longleat Rally  
Jul 2nd - Preparation for NFD  
Jul 9th - Sale of fuchsias (if ready for sale)  
Jul 16th - Magazine evening - donate or exchange  
For more information and meeting times, Tel. 01275 834282 24hr. Answerphone.

**RSGB Bristol Group** meet on the last Tuesday in the month, 7.00pm for 7.30pm, at New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. All welcome, no need to belong to RSGB. Club diary of events/talks; Jun 24th - Half yearly meeting  
Jul 22nd - Possible trip to Madley Earth Station, Hereford (please let a committee member know if interested).  
Further details can be obtained from Robin Thompson G3TKF, Tel. 01225 420442

**Bromley and District ARC** meet on the third Tuesday of each month, 7.30pm for 8.00pm at the Victory Social Club, Kechill Gardens, Hayes, Kent. Club net; Sundays 11.00am on 145.350MHz FM. Planned events/talks; Jul 15th - Most election, Andy Brooker & John Stockley  
Aug 19th - Barbecue  
Further details from Alan Messenger G0TKL, Tel. 0181 777 0420

**Bromsgrove ARC** meet on the second and fourth Tuesday of the month at Lickey End Working Men's Club,

Alcester Rd, Burcat, Bromsgrove. The club run regular Night on the air/construction evenings. Planned diary of events/talks; Jun 24th - Talk by Dave G4EIX, RSGB Zone Rep.  
Jul 8th - DF hunt (mobile)  
Further details from Barry Taylor G0TPG, Tel. 01527 542266

**Buxton ARC** meet at the Lee Wood Hotel, Buxton, at 8.00pm on the second and fourth Tuesdays each month. Club diary of events/talks; Jun 24th - Junk night  
Jul 8th - Why don't you use the key now you have the skills?  
Jul 22nd - Funny thing happened to me on the way to the radio club  
For further information contact Derek Carson G4IHO. Tel. 01298 25506, or G4IHO@GB7DAD

**Cheltenham AR Association** meet on the first Friday of the month at the Prestbury Library, The Burgoe, Prestbury, Cheltenham, at 7.30 for 8.00pm. Visitors and prospective members welcome. Club nets, Wed 9.00pm on 2m. Mon & Thurs 1960kHz at 9.00pm. Sun 1848kHz at 10.00am Planned club talks/events; Jul 4th - Demo of MFJ SWR Analyser, by G3NKS.  
For further details contact the Club Secretary, Mrs P.M. Thom G1NKS, Southern House, 9 Southern Rd, Cheltenham, Glas GL53 9AV, Tel. 01242 241099

**Mid Cheshire ARS** meet every Wednesday, 8.00pm, at Cotebrook Village Hall, North of Torporley, Cheshire on A49. The club hold regular on air/construction evenings. RAE and CW courses available. Visitors and new members welcome. Planned club events/talks; Jul 16th - Video night - beautiful canals, by Ted GORBA  
Jul 30th - Annual barbecue at club HQ  
For further details contact Ted Bannister, GORBA, Tel. 01606 592207, via GB7PMB, or Email; e.bannister@virgin.net

**Cockenzie & Port Seton ARC** meet, 7.00pm, on the first Friday each month, in the Lounge Bar, Thorntree Inn, High Street, Cockenzie (located half way between old and new harbours). The club enter many national contests each year, other planned club events/talks; Aug 15th - Junk night, Port Seton Community Centre (see rallies section)  
For further details contact; Bob Glasgow GM4LUIZ, 7 Castle Terr, Port Seton, Prestonpans, East Lothian EH32 0EE, or @GB7EDN, or Email; R.Glasgow@edi0402.wins.icl.co.uk

**Cornish RAC** meet on the first Thursday each month, 7.30pm, at Perronwell Village Hall, near Truro. Planned club events/talks; Jul 3rd - Rally preparation  
Jul 12th - Club radio rally & computer fair.  
For further details contact Robin G0MYR, Tel. 01209 820118

**Cray Valley RS** meet on the first and third Thursday of each month, 8.00pm at the Progress Hall, Admiral Seymour Road, Eltham SE9. Planned club diary; Jun 19th - Annual DF hunt  
Jul 3rd - Surplus sale  
Jul 17th - Presentation of results of members survey.  
For further details contact Tony G4WIF, Tel. 0171 739 5057 office hours only. Up-to-date information can also be obtained from the club Internet pages; <http://ourworld.compuserve.com/homepages/g4wif/index.htm>

**Dragon ARC** meet on the first and third Mondays of each month at the Four Crosses Hotel, Petroath Road, Menai Bridge, at 7.30pm for 8.00pm. Visitors and new members are welcome. The club run several special event stations throughout the year. Club diary of events/talks; Jul 7th - Amateur Radio videos  
Jul 21st - Talk by Tony Jones GW4VEQ  
Further details from the Secretary Tony Rees GW0FMQ, Tel. 01248 600963

**Dundee ARC** meet at 7.00pm every Tuesday at the College of Further Education, Graham Street, Dundee. Morse tuition is every Tuesday evening, the technical library and radio shack are also available to members. A club newsletter is published bi-monthly and a club net is on 3.640MHz at 14.00 GMT daily. Planned club diary; Jul 1st - Visit to RAF Leuchars  
Aug 12th - Visit to Radio Tay  
For further details contact Allan Martin GM7ONJ, 11 Longlee Place, Broughty Ferry, Dundee, Toyside DD5 3RP

**Felixstowe & District ARS** meet, 8.00pm, at Orwell Park School, Naacton, Ipswich. For club visits/meals etc., names must be given to Paul G4YQC at least a week in advance. Visitors welcome to attend any meeting. Planned club events/talks; Jul 5th - Special event station, Orwell Park School  
Jul 6th - Special Event Station, Languard Fort, GB2FX  
Jul 28th - On air experience for RAE students, G4YQC. For further details contact Paul Whiting G4YQC, Tel. 01394 273507 evenings

**Halifax and District ARS** meet at 7.30pm on the first Tuesday each month,

at The Tap and Spile Pub (formally Royal Oak), Clare Road, Halifax, for committee and Morse tuition. On the second and fourth Tuesdays they meet, 7.00pm, at Queens Road (note Queens Road is closed for some periods at school holidays). Planned club events/talks; Jul 15th - Ron G3OTE  
Aug 19th - Junk sale  
Further details can be obtained from Mr. D. Mass G0DIM, Beechwood Lodge, Lightcliffe, Halifax HX3 8NU, Tel. 01422 202306

**Hastings Electronics and RC** meet, 7.30pm, on the third Wednesday of each month at West Hill Community Centre, Craft Road, Hastings. The club run RAE and Novice courses and is a registered City and Guilds examination centre. Planned club events/talks; Jul 16th - Auction  
Aug 22nd - Bring your thing competition.  
For further details contact Doug Mephom, G4ERA, 8 The Close, Fairlight, E.Sussex TN35 4AQ, Tel. 01424 812350

**Hoddesdon Radio Club** meet alternate Thursdays at the Conservative Club, Rye Road, Hoddesdon from 8.00pm. SVLs and visitors very welcome. The club run Morse training classes. Club diary of talks/events; Jun 19th - Barbecue at Tolmers Scout Camp  
Jun 29th - Club station at Widford School Fete  
Jul 3rd - Back to basics - soldering, by Don G3JNJ  
Jul 17th - Natter night  
Jul 31st - Chairman's forum  
For more information contact Don G3JNJ, Tel. 0181 292 3678. Email; [gx0tsa@aol.com](mailto:gx0tsa@aol.com) Internet WWWV; <http://members.aol.com/gx0tsn>

**Horndean and District ARC** meet on the first and fourth Tuesday of each month, 7.30pm, at Lovedean Village Hall, Lovedean Lane, Lovedean, Hants. The first Tuesday is usually a 'Natter Night'. Visitors welcome. Club nets are Sundays 1.955MHz 09.00hrs CW, 09.30hrs SSB, and Wednesdays 145.350MHz at 19.30hrs. Planned Club events/talks; Jun 24th - Slow scan TV, how to get stroled, by Tom G4CMG and Bill G7PVZ  
Jul 22nd - American supper  
Further details can be obtained from Stuart Swain, Tel. 01705 472846

**Isle of Man ARS** meet on Mondays, 8.30pm, at The Royal Naval Association, Regent Street, Douglas. The 1st Monday of the month is supplemented with a 30-60 mins talk of general interest to members, held at the TGWU building in Fort Street, Douglas. On Thursdays they have an informal get

together, 9.00pm, in The Manx Legion, Douglas Street Peel. Planned club events/talks;

Jul 14th - James Martin of the Isle of Man Astronomical Society, talking on those aspects of astronomy that affect radio (sun activity, meteors, aurora, etc.), 8pm, TGWU Building. For further information contact Club Secretary Vince Wilson MDOADD, 129 Ballabrooie Drive, Douglas IM1 4HH, Tel. 624889

**Ichen Valley ARC** meet on the second and fourth Fridays each month, at the Scout Hut, Bickfield Lane, Chandler's Ford, Hants (just up the road from SMC), 7.30pm for 8.00pm. Planned club events/talks; Jun 28/29th - Special event station GB2CFG, at Cranbury Park, celebrating 25 years of Guiding in Chandler's Ford. Further details from Sheila GOVNI, Tel. 01703 813827

**Keighley ARS** meet at the Cricket Club, Ingrow, near Keighley, every Thursday at 8.00pm. Many club meetings are 'natter nights' and 'nights on the air'. Other events/talks include; Jun 26th - HF propagation, G3SDY Jul 10th - Fox hunt Jul 31st - Fibre optics in communication, G4RCH. Further details from Jack Birse, G4ZVD, 178 Long Lee Lane, Keighly, W.Yorks BD21 4TT. Tel. 01535 212985

**Leicester RS** meet every Monday, 7.30pm, at The Chantry, Gilroes Cottage, Groby Road, Leicester. The HF and VHF shack are available at each meeting, and have regular HF/VHF nights on the air combined with a general natter evenings. The club also run RAE, NRAE and Morse courses. Planned club events/talks; Jun 23rd - Pizzas & Italy; Eat the food, contact the country! Jul 21st - Night on the air. For further details contact Stan Hay G3HYH, Tel. 0116 239 4367

**Liverpool and District ARS** meet at 8pm every Tuesday evening at The Churchill Club, Church Rd., Wavertree, Liverpool. They run RAE, Novice RAE and Morse courses every Tuesday evening beginning at 7.30pm and have regular 'on air' evenings. Planned club events/talks; Jun 24th - Surplus sale Jul 1st - GRP night Jul 15th - Mobile operating, G3XSN Jul 22nd - Video night Jul 29th - Surplus sale. For further details contact Ian Mant G4WVX, Tel. 0151 722 1178.

**Loughborough and District ARC** meet every Tuesday (term time), 7.45pm, at Hindleys Community College, Shepshed, Leicestershire. The club have an 'On the air' evening on the first Tuesday each month. Planned club events/talks; Jun 24th - Vintage radio night, bring your old gear Jul 5/6th - VHF Field Day from Moscov Lane



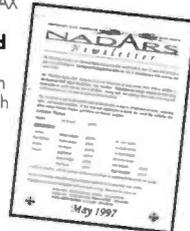
'QSP' newsletter of the Isle of Man ARS

Jul 8th - DF (Band to be decided) Jul 22nd - Car Rally, bring the family Jul 29th - Golf competition. For further details contact Ian G8SNF, Tel. 01509 218259

**Malvern Hills ARC** meet on the second Tuesday each month, at the Red Lion, Malvern, Worcester. Planned club events/talks; Jul 8th - RSGB video and natter night Aug 12th - 2m foxhunt. For further details contact Dave Hobro, G4IDF, Tel. 01905 351568 evenings & weekends, or Email: [DHobro@aol.com](mailto:DHobro@aol.com)

**Midlands AX25 Packet Radio Users Group (MAXPAK)**, meet on the first Monday each month (when this is a Bank Holiday, the meetings are on the second Monday), 8.00pm, at the Perton Community Centre, Perton, near Wolverhampton. Non-members and visitors welcome (non-members 50p per evening to help cover costs). Planned events/talks; Jul 7th - TSTHOST, talk and demo Aug 4th - Natter night. For further information contact Club Secretary Edward Loach G4ZXS, Tel. 01902 741877 (evenings), or via packet G4ZXS@GB7MAX

**Newbury and District ARS** meet on the fourth Wednesday each month at the Bucklebury Memorial Hall, Bucklebury near Thatcham, at 7.15pm. Planned club events/talks; Jun 25th - Visit by Dave Chislett, G4XDU, RIO Jul 5/6th - VHF NFD, Walbury Hill Jul 23rd - Nicads, by Chris G3MWB. For further details contact the club secretary, Tel. 01635 863310



Newsletter of the Newbury & District ARS

**Salisbury Amateur Radio Society** meet on the second and fourth Tuesday each month, 8.00pm, at The Scout Hut, St. Mark's Ave, Salisbury, Wilts. Prospective members and visitors are welcome. RAE tuition available. A club net is held 6.30pm daily, additionally, 20.00pm on Fridays, on S16 [V32] 145.400MHz. Planned club activities;

Jun 24th - Rig clinic - get that equipment checked! Plus 12.5kHz versus 25kHz channel spacing, by Frank G8PCB. Jun 29th - Club trip to Longleat Rally Jul 8th - How to use the club HF rig - correct preliminaries & operation Jul 22nd - Club barbecue at the QTH of Rex G1SSZ. For further details contact Jamie G7VAA, Tel. 01722 334935 during office hours.

**Salop Amateur Radio Society** meet at The Telesports Club, Abbey Foregate, Shrewsbury every Thursday. They presently run a Novice course on Tuesday evenings (details from Tony MQAMP @ GB7PMB) and have regular on air/natter nights. Planned club diary of events/talks; Jul 5/6th - VHF NFD, the Annual SARS Camp with a little radio thrown in! Jul 17th - 2m Fox Hunt Jul 31st - Summer social. For further details contact Ian G7SBD, 56 Roselyn, Harlescott, Shrewsbury SY1

41P, or @ GB7PMB. Internet: <http://www.clemalv.demon.co.uk/>

**Shefford and District ARS** meet every Thursday, 8.00pm, at the Church Hall, Amphill Road, Shefford, Beds. CVW practice from 7.30pm. All newcomers are welcome. Planned club events/talks; Jun 24th - Gliding at Little Grandsden Jun 26th - Visit to Little Barford Power Station, meet at 7.00pm at the power station. Jul 3rd - Final planning and equipment check for NFD. Jul 5/6th - VHF/UHF Field Day Contest. Jul 10th - Planning for MDFH plus barbecue (last meeting before summer holidays).

Jul 17th - Mobile DF hunt. Jul 24th - Barbecue evening, Somerfields Farm (A600). Further details contact Derek Clarkson G4JLP, Tel. 01462 851722

**Silverthorn RC** meet every Friday, 7.30pm, at the Adult Education and Community Centre, Friday Hill House, Simmons Lane, Chingford, London E4 6JH. A warm welcome is given to everyone. They offer Morse tuition and tests, and have a fully equipped shack with packet radio facilities for members to use, plus regular 'on air' and social evenings. Planned club diary of events/talks; Jul 25-28th - Club camp. For further details contact Andrew Mowbray, GOLWS/G1NPT, at above address, or from Dave G0KHC, Tel. 0181 505 1871, or packet to G1NPT @ GB7TUT. A programme of club events can be obtained by using REQFIL on file C:\CLUBS\SILVERTH\CLUBINFO.TXT from GB7TUT

**West Somerset ARC** meet on the first Tuesday each month, 7.30pm, in Room GB7, Gibbs Block, West Somerset Community College, Minehead, Somerset. RAE and Morse instruction available. All visitors are welcome. Planned club events/talks; Jul 1st - Video evening. Aug 5th - Telephone utility, guest speaker. For further details contact Alan. C. Elliott, MOACJ, Tel. 01643 707207

**Southgate ARC** meet on the second and fourth Thursdays of each month at the Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. Meetings are held each 2nd and 4th Thursdays of the month, between 19.30 and 22.00. The club also runs Novice licence courses and have regular 'on air nights'. Planned club diary of events/talks; Jul 10th - Scott McCintash urban alternatives. Aug 14th - Barbeque & DF hunt set up and test. For further details contact Dave Michael GOASA, Tel. 0181 482 6795, Fax. 0181 807 5366, Email: [msm4dave@netcomuk.co.uk](mailto:msm4dave@netcomuk.co.uk)

**Stourbridge and District ARS** meet on the first and third Mondays each month (except bank holidays), at the Robin Woods Centre, Scotts Road, Stourbridge. The first Monday is usually an 'on air and natter night'. Visitors always welcome. Planned club events/talks; Jul 7th - Portable evening at the Sheepwalks, Kinver. August - No meetings. Further details from Gordon Bryant G0TZV, Tel. 01384 395206

**Stratford upon Avon & District RS** meet on the second and fourth Mondays, at the Home Guard Club, Main Road, Tiddington, Stratford upon Avon, at 7.30pm. The club also run an RAE course (write to Mr. J. Harris, 57 Evesham Road, Stratford upon Avon CV31 2PB, enclosing an SAE, or Tel. 01789 295257 for details). Club events/talks include; Jun 23rd - Tecknow evening. Jul 14th - Summer social. Jul 28th - Construction competition. Further details from Club Secretary Jeff Porter G4OHJ, Tel. 01789 773286

**Sutton and Cheam RS** meet on the first Thursday (natter night) and third Thursday (formal meeting) each month, 7.30pm for 8.00pm at the Sutton United Football Club, The Borough Sports Ground, Gander Green Lane, Sutton, Surrey. Club 'natter free' 70.3875MHz, Club nets; 20.30 Mon starting on 145.500MHz then QSY Tue at 10.30 on 3.760MHz. Club events/talks; Jun 19th - Junk-sale. Jul 3rd - Natter night. Jul 5/6th - VHF National Field Day. Jul 17th - Deviation night. For further details, Tel. 0181 644 9945



Newsletter of the Sutton & Cheam ARS

**Torbay ARS** meet every Friday at the ECC Social Club, Highweek, Newton Abbot at 7.30pm. They have informal meetings most Fridays with a talk/event once a month, details as follows; Jun 20th - Scotland - the pictures, by G4VFG. Jul 5/6th - VHF NFD from Mardon Down. Jul 18th - 1240 perambulation of Dartmoor, Maidon Down. Jul 19/20th - VHF/UHF low power contest, Maidon Down. Jul 26th - Apple Pie Fair from Mardon Down. Further details from Peter G4VTO, Tel. 01803 864528 (day works No.)



'TARS Talk' newsletter of the Torbay ARS

**Trowbridge and District ARC** meet at Southwick Village Hall, Southwick, Trowbridge, Wiltshire for a main meeting every first Wednesday of the month, and a natter night every third Wednesday (except October). The club also run an RAE course (for details contact Chris G0HFX Tel. 01225 764874 evenings). Visitors welcome, fee 50p. Planned club events/talks; Jun 29th - Longleat Rally talk-in. Jul 2nd - Treasure hunt, or similar. For further information contact Ian GOGRI, Tel. 01225 864698 evenings and weekends.

**Verulam ARC** meet, 7.30 for 8.00pm, on the second and fourth Tuesdays each month (except December), at the RAF Association Headquarters, New Kent Road (off Marlborough Road), St Albans. On the second Tuesday they have an informal/activity evening and on the fourth Tuesday the main meeting. Visitors welcome at all meetings. Planned events/talks; Jun 24th - New problems in fire safety,

### Stn G4AOV

Jul 22nd - Barbecue and radio station  
For further details available from Ian Farsyth, GOPAU, Tel. 01923 222284

**Mid-Warwickshire ARS** meet on the second and fourth Tuesdays each month, 8.00pm, at 61 Emscote Road, Warwick. Planned club events/talks; Jul 24th - Lightening, by Ken G7RYO  
Jul 8th - Fox hunt  
Jul 22nd - The history of microwave links, by Harry Hyamson For further details contact G8HRL, Tel. 01926 424465

**Wimbledon and District ARS** meet on the second and last Friday each month, at St Andrew's Church Hall, Herbert Road, Wimbledon SW19. Planned club events/talks; Jul 11th - Aerial Erection Techniques, by G4VWY For further details contact J. Gale G4VWY, Tel. 01737 356745

**Wincanton ARC** meet on the first and third Mondays (except bank holidays - then second and fourth) in the Community Lounge, King Arthur's Community School, Wincanton, Somerset BA9 9BX at 7.30pm. Planned club events/talks; Jul 7th - Club talk  
Jul 21st - Open evening  
For further details contact Tim Stejar G6RGT, Tel. 01963 31388

**Wirral ARS** meet, 8.00pm, at The Club Room, Ivy Farm, Arrowe Park Road, Wirral L49 5LW. There are 'activity nights' every Monday, plus every first, second and fourth Wednesday evenings. 'Natter nights' are every Tuesday and Morse tuition every Thursday evenings. Planned club events/talks; Jul 17th - Surplus equipment sale  
For further details contact John Phillips G3PXX, 18 Rockfarm Drive, Little Neston, South Wirral L64 4DZ, Tel. 0151 336 4452

**Wirral and District ARC** meet at 8.00pm, at the Irby Cricket Club, Mill Hill Road, Irby, Wirral, every second and fourth Wednesday each month, and have regular D&W evenings every first and third Wednesdays at various other locations. Planned club events/talks; Jun 25th - Eileen Medley  
Jul 9th - Treasure hunt, 7.30 at the club  
Jul 23rd - Barbecue - Hesselwood Beach  
For further details contact Phil G0JSB, Tel. 0151 677 1947, or SP G0JSB @ GB7OAR

## NATIONAL AND INTERNATIONAL

**British Amateur Radio Teledata Group (BARTG)** have a quarterly magazine, 'Datazone', and hold a rally and HF RTTY contest each year. For more details about the group contact Membership Secretary Bill McGill, G0DXB, 14 Farquhar Road, Maltby, Rotherham, S.Yorks S66 7PD, Tel. 01709 814010 (Tues, Thurs & Fri, 7pm to 9pm. Sat/Sun before 9pm), or via GB7WRG  
Internet:  
<http://www.bartg.demon.co.uk>

**British Amateur Television Club**, are particularly active with Amateur Television (ATV) - the transmission and reception of vision. They produce a quarterly magazine entitled 'CQ-TV' and have regular get-togethers at their rally stands, and hold their own rally each year. For details of BATC membership

write to; Dave Lawton, 'Grenehurst', Pinewood Road, High Wycombe, Bucks HP12 4DD.



The G-QRP Club have regular get-togethers at their rally stands

**G-QRP Club** publish a quarterly journal, 'SPRAT', devoted to low power communication, and hold regular get-togethers at their rally stands throughout the country. For membership details, contact their Secretary, Rev. G. Dobbs, St. Aiden's Vicarage, 498 Manchester Road, Rochdale. Lancs. OL11 3HE. Tel. 01706 31812.

**International Short Wave League** who as well as running an International QSL bureau for amateurs and SVLs, have a monthly magazine and regular get-togethers at their rally stands plus several on-air nets on HF and VHF. For more details send an A4 sized SAE to; ISWL HQ, 3 Bromyard Drive, Chellaston, Derby DE73 1PF.  
Internet:  
<http://www.aber.ac.uk/~srj5/iswl.html>

**The Irish Radio Transmitters Society** publish regular newsletters giving details of local activities and the yearly IRTS Callbook, they also have a video library. For further details contact Dave Moore EI4BZ, 12 Castle Ave, Carrigrohilly, Co. Cork. Tel. (Eire) 021 883555, or by Email: [jryan@iol.ie](mailto:jryan@iol.ie)

**Radio Amateurs' Emergency Network (RAYNET)** can be contacted at Hunters Moon, Newton le Willows, Bedale, N. Yorks DL8 1SX. 24hr national emergency contact line: 0141 621 2121. The RAYNET Training Team produce a quarterly newsletter for people interested in the National Training Scheme, and can be contacted at P.O. Box 2, Chinnor, Oxon OX9 4JY.

**The Radio Amateur Invalid and Blind Club** are a registered charity who raise money for radio/computer equipment, and audio cassette courses for home study, for blind, deaf and disabled amateurs. Information from the Chairman Margery Hey, Tel. 01953 454920. The club attend rallies throughout the year, and collect surplus equipment for resale. If you have equipment to donate, contact Ian 2E1EGV, Tel. 01274 723951. The Northern Ireland Club collect unwanted tokens or vouchers (e.g. petrol etc.), these can be sent free of charge to: The Charities Appeal Officer, RAIBC NI, Freepost BE 1789, Belfast BT15 3BR.

**Radio Amateur Relief Expeditions (RARE)** is a registered charity made up of Radio Amateurs and friends who take aid to Eastern Europe and organise summer camps for young people to learn about Amateur Radio, English language and life in the UK. New members required to support this work both at home and by taking part in expeditions. Please contact The Secretary, RARE, 1 Allfield Cottages, Conover, Shrewsbury SY5 7AP, Tel. 01741 873815. Fax. 01743 874729. Packet: [G0FHM@GB7PMB](mailto:G0FHM@GB7PMB). Email: [rare@demon.demon.co.uk](mailto:rare@demon.demon.co.uk)

**Radiocommunications Agency** are the licensing authority for all UK radio amateurs. They have a large number of free publications, including the booklet 'How to Become a Radio Amateur', and their 'Novice Licence Information' sheet, and can offer advice on many aspects of licensing. They're currently in alternative temporary offices: New Kings Beam House, 22 Upper Ground, London SE1 9SA). Direct Amateur Radio line; Tel. 0171 211 0160. General enquiries; Tel. 0171 211 0211, answerphone service; Tel. 0171 211 0591

**Radio Society of Great Britain (RSGB)** are the National Society who have been representing UK radio amateurs and short wave listeners for many years. They are based at Lambda House, Cranbourne Road, Potters Bar, Herts EN6 3JE. Tel. 011207 659015. Internet: <http://www.rs.gb.org>

**United Kingdom Radio Society (UKRS)** are a newly formed National Society (see 'Radio Today' Sept '96). They can be contacted at Box 100, Meadow Street, Northwich, Cheshire, CV8 1FA. Tel. 01606 783270, or 0115 925 6597. Via Packet [RADSOC@GB7OAR](mailto:RADSOC@GB7OAR) (please send as an 'SP' message), Email: [admin@ukrs.org](mailto:admin@ukrs.org) Internet: <http://www.ukrs.org>

**Subscription Services Ltd.**, handle the issuing of amateur licenses in the UK, on behalf of the Radiocommunications Agency. They can help regarding enquiries concerning individual licenses (rather than general licensing matters which the RA handle, see above). Contact details; The Radio Licensing Centre, SSL, P. O. Box 884, Bristol BS99 5LF. Tel. (manned 8.30am - 10.00pm, Mon-Sat inclusive) 0117 925 8333.

## RALLIES

*If you're travelling a long distance to attend rallies, we recommend you contact the organisers of the events first, to check if there has been any changes since this magazine went to press. If the magazine is informed of any changes, the information will immediately be available on the 24hr Ham Radio Today Voicebank and Fax-back line, Tel. 01703 263429. Rally organisers - if you have any good quality photos of your rallies to include in this feature we would be pleased to receive them.*

### JUNE 27TH TO 29TH

**Ham Radio '97** Friedrichshafen, Germany, Europe's largest gathering of over 20,000 ham radio enthusiasts, by the shores of the Bodensee (Lake Constance) at the Messe Friedrichshafen. Wide and varied selection of interests, immense trade presence with 280 exhibitors from 40 countries, large flea market, on-site camping and caravan facilities. For further venue/rally details Tel. +49 7541 7080, Fax. +49 7541 75290. Accommodation/tourist information; Tel. +49 7541 21229 (Emie, G4LUE, is organising a coach trip

and/or accommodation for this event, Tel. 01226 716339, or 0836 748958 for details).

### JUNE 29TH

**Longleat Amateur Radio Rally.**  
For further details  
Tel. 0117 9402950

### JULY 6TH

**The York Radio Rally**, will be held in the new Knavesmire Building, York Racecourse, York. Doors open 10.30am. Admission £1.50. Children accompanied by adult free. Ample free parking. Featuring amateur radio, electronics and computers, Morse tests and repeater groups. Refreshments and licensed bar. Talk-in on S22. For further details contact Pat Trask G0DRF, Tel. 01904 628036

### JULY 13TH

**Three Counties Radio & Computer Rally.** The rally has moved from Matvern, to the Perdiswell Leisure Centre, Bilford Road, Worcester (near to junction 6 of M5). Featuring amateur radio, computer and electronic component traders, bring & buy, Morse tests (please book on arrival and remember two passport photos will be required), restaurant and licensed bar. Free car parking. Doors open 10.30am - 5.00pm. Admission £1.50. The Leisure centre is situated very close to the city centre of Worcester. For further details contact Eddie G4PGZ, Tel/Fax. 01905 773181 (sociable hours please, Eddie says he is now 74 and needs his beauty sleep!).

**The 17th Sussex Amateur Radio & Computer Fair** will take place at the Brighton Race Course. We're told this is one of the biggest rallies in the south of England, featuring well over 100 trade stands, covering Amateur & CB Radio, Computers, Electronics, etc., with bring & buy, and free on site parking. Refreshments and bars available, plus picnic area with views over South Downs. Doors open 10.30am - 4.00pm. Admission £2.00. For further details Tel. 01323 485704

### JULY 20TH

**1997 McMichael Rally & Car Boot Sale.** The Haymill Community Centre, 112 Burnham Lane, Slough. Doors open 10.00am, featuring computer and amateur radio traders, large outdoor car boot sale (£10 per pitch on the day, no advanced bookings), Morse tests on demand and free parking. Refreshments will be available, with talk-in on 2m. There will also be many local clubs and other radio groups in attendance. Admission £1.50. For further details contact Dave G3SET, Tel. 01628 486554. Trade bookings, Tel. 01734 874870

### JULY 27TH

**Colchester Radio & Computer Rally** with hobbies and leisure fair, St. Helena School, Colchester. Doors open

10am. Family event. For further details contact Frank G3FJJ, Tel. 01206 851189

**Scarborough ARS Radio, Electronics & Computer Rally,** The Spa, South Foreshore. Featuring the usual traders, radio, electronics, components, computer hardware and software. Doors open at 11am. Morse tests available on demand, but please remember the fee and two passport sized photos. For further details contact Ross Neilson, Tel. 01377 257074 after 6pm.

**AUGUST 10TH**  
**Flight Refuelling ARS Hamfest 97,** Flight Refuelling Sports Ground, Merley, Wimborne, Dorset. Featuring the usual mix of traders, bring & buy, craft exhibitors, car boot sale and field events. Overnight camping facilities available for Saturday the 9th. Talk-in on S22, event running between 10.00am to 5.00pm. For further details contact Richard Hogan G4VCQ, Tel. 01202 691021

**AUGUST 15TH**  
**Cockenzie & Port Seton ARC** Annual Junk Night, Cockenzie & Port Seton Community Centre, South Seton Park, Port Seton, E. Lothian. Bring along your own junk and sell it yourself. Tables will be provided on a first come first served basis (no charge for the table). Refreshments available, disabled visitor access. Admission £1.00. All money raised is donated to the British Heart Foundation. For further details contact Bob Glasgow GM4UYZ, Tel. 01875 811723

**AUGUST 17TH**  
**Cardiff Amateur Radio & Computer Rally,** the Star Sports and Recreation Centre, Splott, Cardiff. Doors open from 10.30am to 3.00pm. Further details available from Stuart Robinson, GW0VMT, Tel. 01222 613070

**8th Great Eastern Computer & Radio Rally,** by Kings Lynn Amateur Radio Club at a new venue, Wallington Hall, between Kings Lynn and Downham Market, Norfolk. Features spacious indoor area with major exhibitors, outdoor car boot area (unlimited space available), Bring and Buy, free parking, talk-in on S22 and SU22, refreshments available, easy access for disabled. Opens 10.00am (9.45am for disabled visitors). For bookings or more info call Ian, G0BMS on 01553 765614 or packet @ GB7VNM or email ian@g0bms.demon.co.uk.

**AUGUST 24TH**  
**Galashiels & District ARS** Open Day & Rally will be held at the Volunteer Hall, St John's Street, Galashiels featuring traders, bring & buy, raffle, plus bring & sell feature. Refreshments available. Doors open 11.00am - 4pm. Talk-in on S22. For further details Tel. 01896 850245, or 01896 755943 evenings only.

**AUGUST 25TH**

**The Huntingdonshire Annual Bank Holiday Amateur Radio Rally** will be held at Ernulf Community School, St. Neats, Cambridgeshire (near Tesco supermarket on A428). Doors open 10.00am. Admission £1.00. Hot and cold refreshments available. Talk-in on S22. Featuring hall plus car boot sale on hardstanding area. For further details Tel. 01480 431333 (9.00am - 9.00pm).

**AUGUST 31ST**  
**The Telford Rally** is 20 years old this year, and will be held as usual at the Telford International Centre, just off the M54 (signposted) in the town centre area. Featuring major dealers and flea market in two purpose built exhibition halls. We're told disabled visitors are well catered for. For further details contact Tony MOAMP, Tel. 01743 235619, or via GB7PMB

**SEPTEMBER 6TH**  
**The 3rd Northampton Radio Rally & Car Boot Sale,** takes place in the heart of the Shires Shopping Village Showground on the A5, 2 miles north of Weedon. The organisers say, "bring the family, as they can spend the day in the olde worlde shopping village". Refreshments and toilets are on-site, car parking 50p. Car boot plot prices are: Cars: £7.00 pre-booked or £9.00 on the day. Vans: £9.00 pre-booked or £11.00 on the day. For further details contact Steve MOARZ, or Paul GOHWVC, Tel. 01604 32478

**SEPTEMBER 7TH**  
**Bristol Radio & Computer Rally,** Brunel Centre, Temple Meads Station, Bristol. Featuring 100+ tables (table hire at £15.00 each), large Bring & Buy, under £30.00 Bring & Buy. Refreshments available. Doors open 10.30am to 4.00pm (disabled access from 10.15am), admission £1.00. For further details contact Muriel Baker G4YZR, 62 Court Farm Road, Whitchurch, Bristol BS14 0EG, Tel. 01275 834282 (24hr answerphone).

**The Lincoln Hamfest** will be held at the Lincolnshire Showground four miles north of Lincoln on the A15. Featuring trade stands, bring & buy, Morse tests (bring two passport sized photos), refreshments, bar and ample free parking. Overnight caravan parking available for Saturday 6th. Talk-in on S22 and SU22. For further details contact John or Sue on 01522 525760

**SEPTEMBER 14TH**  
**BARTG Annual Rally,** Sandown Park Racecourse, Esher, Surrey. This rally is organised by the British Amateur Radio Teledata Group and is of general interest to all amateurs with most aspects catered for, but naturally there is an emphasis on Data Communications. Were told there is one major difference this year: 'DataStream 97'. This is a series of

lectures covering various aspects of data communications in amateur radio. For general enquiries contact Ian Brothwell, Tel. 0115 926 2360. Internet: <http://www.bartg.demon.co.uk>

**SEPTEMBER 21ST**  
**Peterborough Radio & Electronics Society East of England Rally,** will be held at the Peterborough Showground, with easy access from A1, A605, A47. Featuring trade stands, radio car boot sale and other local attractions. Acres of free parking, catering and bar etc. Doors open 10.30am (10.00am for disabled visitors). Admission £1.50. Talk-in on S22 via G3DQW. For further details contact Vince G8NGZ, Tel. 01733 331211, or g8ngz@compuserve.com

**RSGB Scottish Convention,** the Royal Highland Exhibition Hall, Ingliston, Edinburgh. For further details contact Tom Menzies, GM1GEQ, Tel. 0131 445 3928

**SEPTEMBER 28TH**  
**Harlow & District ARS** Amateur Radio, Electronics & Computer Rally the Sports Centre, Harlow. Featuring bring & buy stall, Morse tests on demand (bring two passport sized photos and usual fee), free car parking, licensed bar and refreshments available. Doors open 10.30am (10.00am for disabled visitors). Talk-in on S22 and SU22 by G6UT. For further details contact Mike on 01279 303786, Fax. 01279 865092, or len on 01279 832700, Fax. 01279 864973, or Email: [len.backstone@virgin.net](mailto:len.backstone@virgin.net)

**OCTOBER 17TH/18TH**  
**The Leicester Amateur Radio Show,** will take place as usual at the Granby Halls, Aylestone Road, Leicester (off junction 21 of the M1). Featuring large trade presence in two exhibition halls. Refreshments available from the cafeteria and bar. For further details contact Frank Elliot G4PDZ, 40 Treasure Close, Glenfield, Leicester LE3 8LT, Tel. 0116 2871086

**NOVEMBER 8TH**  
**AMS '97 Computer & Electronics Show,** Bingley Hall, Staffordshire Showground, Weston Rd, Stafford (A518 Stafford - Uttoxeter Rd). Featuring many trade stands covering radio, computing and electronics, plus large bring & buy. Doors open 10.00am to 4.00pm. For further details please contact Sharward Promotions, Tel. 01473 741533

**NOVEMBER 9TH**  
**MARS -Birmingham Radio & Computer Rally,** takes place at Stockland Green Leisure Centre, Erdington, Birmingham. Featuring trade stands, free hampers draw, local clubs, special interests exhibits and large free

car park. Doors open from 10.00am to 4.00pm. Admission £1.00. For further details contact Peter Hayler, Tel. 0121 443 1189 (Trade bookings Tel. 0121 422 9787)

**NOVEMBER 15TH/16TH**  
**London Amateur Radio & Computer Christmas Rally,** Lee Valley Leisure Centre, Picketts Lock Lane, Edmonton, London N9. Doors open 10.00am to 5.00pm each day (9.30am for disabled visitors). For further details please contact RadioSport Ltd., Tel. 01923 893929, Fax. 01923 678770, Internet: <http://radiosport.co.uk>

**NOVEMBER 23RD**  
**Bridgend & District ARC Radio & Computer Rally,** For further details contact Maurice GW0JZN, Tel. 01656 864579

**DECEMBER 7TH**  
**Northern Amateur Radio Mobile Rally.** This year is the 40th anniversary of the rally, which has taken place annually since the late fifties. The rally returns to its familiar venue of the Flower Show Hall, on the Great Yorkshire Showground, Harrogate. Featuring traders, large Bring & Buy and car parking on the Showground (special parking near to hall for disabled visitors). Drinks and refreshments available. Doors open 10.30am. For further details contact Gerald Brady, Tel. 01765 640229, or via packet G1LXP@GB7CYM, or Email: [woody@tangan.demon.co.uk](mailto:woody@tangan.demon.co.uk)

**DECEMBER 14TH**  
**Verulam ARC Annual Rally,** Watford Leisure Centre, Horseshoe Lane, Garston, Watford. Located off the A405 near junction 6 of the M1, and junction 21A of the M25. Featuring trade stands, bring & buy, grand raffle, cafc, licensed bar and free parking. Morse tests will be available. For further details, Tel. 01923 262180, or 01923 265572 (Trade bookings).

**FEBRUARY 1ST 1998**  
**The 13th South Essex Amateur Radio Rally,** The Paddocks, Long Road, Canvey Island, Essex (The Paddocks is situated at the end of the A130). The organisers say this is one of the biggest and best rallies in Essex. Doors open 10.30am, featuring amateur radio, computer and electronic component exhibitors, bring & buy, RSGB Morse tests on demand (two passport photos required), home made refreshments, free parking with space outside the main door for disabled visitors. Admission £1.00. For further details contact David G4UVJ, Tel. 01268 697978

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**Icom 720A** HF transceiver, general coverage, SSB/CW, AM/FM, 100W, needs power lead, £350 no offers. Icom 251E 2m all mode base/mobile rig, with base mic, MuTek front end, excellent condition, £450. Steve (Nottingham), Tel. 01623 552799

**Ten Tec** Corsair II MOD561, MIC700C, VFO263, PSU960, ATU229B, filters fitted 2.4kHz, 1.8kHz, 250Hz, VGC, £825 avno. GOMMD (Kent), Tel. 01474 350576

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**Yaesu FT-76** and FT-415 handheld transceivers, 70cm and 2m respectively, both immaculate condition and boxed, £125 each, or £240 the pair. S. Reed (Chandler's Ford, Hants), Tel. 01703 268682

**Icom T42E** 70cm handheld, speaker/mic, case, nicad and manual, boxed as new, offers. Wanted: MX295, unconverted and in whole state, i.e. not

cannibalised, sensible price paid. Terry G4OXD (Herts), Tel. 01462 435248 after 6.00pm.

**Sony SW55** synthesised receiver, LW, MW, SW, FM stereo, 150kHz to 29.999MHz, AM/SSB, mains adaptor, SW aerial, manual, carry case and original packing, absolutely mint, £200 including p/p and insurance. Peter G3ZTZ (Camberley), Tel. 01276 25430

**Yaesu FT-221R** 2m base multimode, 12V DC or 240V AC, AM, FM, USB, LSB, CW, 15W, GWO, instructions, mic and all leads. Mint condition, must sell, £230 ono. Gary G7VAU (Cheshire), Tel. 01928 567707

**Collins KWM2**, 312B-5 VFO, 30L1 linear plus accessories, one lot £1,000 ono. Yaesu FT-101B, VGWO, £250 ono. Hygain TH7DX aerial, £350. 60ft tower + elec winch, £350. CDE HAM-M rotator, £85. All aerial items job lot, £550. IC-280E 2m/10W/FM transceiver plus accessories, £150 ono. Chris G0HFX (Trowbridge), Tel. 01225 764874

**AOI 200** handheld, no manual, transmit low, £100 cash. ES 200 LCO handheld transceiver, new, boxed, £75 cash. 7 amp marine power supply, £45 cash. J. Thomas (Herts), Tel. 0181 386 0345

**Yupiteru VT-225** air band receiver, charger and car lead, still boxed, with fast charger and rechargeable batteries, £200. David Wilson (Durham), Tel. 0191 378 0327

**Pye PFX** ex-PMR handheld converted to 70cm. All repeaters plus many simplex channels, 1.5W out, with nicad and aerial, £100. Eproms to convert your own to 70cm or 4m, £15 inc P/P. G4XIV (York), Tel. 01904 330502

**Sony professional** B/W video system. Camera AVC3250 / AVF3250, 17in mon PMV2000E, 1 in R to R recorder CV2100ACE, various used tapes, £100 ono. Textronix 50ohm dual beam scope, £30. FDK 700EX, 25W FM mobile, £80. Peter G3UXH (Kent), Tel. 01634 250562

**Dymar Lynx**, 15W, 100 channels, 2m, toneburst and Dymar power supply, £45. Maxon CGX4020, 25W, 4 channels, 70cm, 1 channel 433.250MHz, boxed with manuals, £30. Mike G7NBE (Leics), Tel. 01530 414473

**FT-101ZD**, WARC, £300. FV-901DM VFO, £30. FT-901R transverter plus 70cm, £200. FT290R Mk2, £270. Tokyo MX240 transverter, £175. FRG-7000, £100. FRV-7700 converter, £45. FRT-7700 ATU, £45. Datong FL3, £35. All excellent condition, mostly boxed, manuals, one owner. G2AQJ (Salisbury), Tel. 01722 325929

**Sony Classic** CRF 320 receiver, 32 band, digital, SW, FM, LW, MW, with service manual, VGWO, £350. Mr. Rigby (Morecambe), Tel. 01524 833506

**Yaesu FT-767GX**, fully loaded, HF, 6m, 2m, 70cm, VGC, MD1 mic speaker unit, Cushcraft AP8 HF aerial, Diamond V2000 tribander aerial, manuals, original packing, recently serviced by Yaesu, £1,350 ono. S. Kempner (SW area, near Heathrow), Tel. 0181 941 7824

**Icom 751A** receiver, PS15 P/supply, £550 + P/P. SRW L/Boomer, KW linear amp, 160-10m inc. WARC, £290 + p/p. Netset PRO-2032 scanner, 200 channels, £75. Radio Shack mobile speaker, £15. Bencher paddle black iambic, £25. G3KMQ (Bude), Tel. 01288 352214

**Yaesu FT-2700RH** dual band FM mobile transceiver, with CTCSS, mobile bracket, mic, manual, very good cond., £150. Kenwood MC-50 desk mic, as new, £40. Howes CTV30 ATU, built, cased, QRP, very little used, £30. G. Gregor (Bath), Tel. 0973 857595

**Kenwood R1000** comms receiver with SP100 extension speaker, £250 cash. G. Dore, 24 Clysbaron Court, Bramhall Park Road, Bramhall, Cheshire SK7 3NP, Tel. 0161 485 2647

**Ten Tec** Paragon transceiver, all filters fitted, 232 computer board and matching speaker, power supply, excellent condition with manuals, £550 ono. AEA MBA Morse, Baudot, ASCII reader with instructions, £50. Diawa AF606K all mode active filter, boxed with manuals, £60. C. Bell (Durham), Tel. 0191 526 9141

**Two PF85's**, UHF, 25kHz, as new with aerials, lapel mics, one single charger, one battery, £55 the lot. Also one HT800 VHF, 25kHz, with good battery, £25. Wanted: CTCSS boards for Storno CQM5000. J. Craig (Tyne and Wear), Tel. 0374 283434

**3 element** 10m yagi, TEN-3 by Cushcraft, 8ft boom, £35 ono. Kevin G7SVF (Isle of Wight), Tel. 01983 296924

**Yaesu FT-101ZD**, VGC, £300. Yaesu FT-77, £195. Yaesu FT-201, £125. Panasonic WJ-AVE5 video mixer, £375. Sony video editor, £100. Camlink Vision 400 video enhancer, £75. Colin GOVDL (Essex), Tel. 01375 384179

**Simpson frequency** counter, 10Hz-60MHz, £50. SWR/PVWR meter, 10W/100W, £12. Seesure audio generator, 15Hz/200kHz (Maplins £54.99), £35. SWR/PWR meter model 110, RF power range

0/10 and 0/100W, frequency range 1.5MHz/144MHz, £12. All items plus postage. Ken (NW London), Tel. 0181 455 8831 anytime.

**Trio JR310**, R210 receivers, £50. Datong VLF converter (CE version), Datong UC1 converter, 0-30MHz to 144MHz or 28MHz, and 144MHz to 28MHz, offers. Tony (Worcester), Tel. 01905 641759

**WANTED**

**Gearbox suitable** for power winch for tower. Ron GOGHX (Dorset), Tel. 01202 880194

**Ferrite rod** aerials, must be half inch in diameter, no more or less, must be six inches long or more. Contact Peter Tankard (Sheffield), Tel. 0114 2343030 9.30am to 9.00pm seven days a week.

**WS 62** meter, R216 headphones, B2 receiver knobs, jack covers BC348 receiver, MCRI coil ranges 2, 3, 4, AE knob, J switch knob, screw terminals for CR100, ATU for Collins TCS-12. If you can help please contact Andrew

(Warwick), Tel. 01926 400876

**AEA Isoloop**, or MFJ 1788, or MFJ 1786 magnetic loops. Also Yaesu FTV250B (2m) and FTV650B (6m) transverters. P. Milsom (Bristol), Tel. 01454 887461

**Matching speaker** for HRO receiver, also source for 'Black crackle paint'. Willing to pay good price + p/p. Contact Peter G4VUN, Tel. 01287 63437 9.00am to 5.00pm

**Beginners 2m** or 70cm handheld transceiver for student on a budget, around £40. David Simmons, 19 Harvey Crescent, Stanway, Colchester, Essex CO3 5QW (sorry no telephone number)

**ATU wanted**, plus help required for MS sufferer. I have acquired a TS-140S and am looking for an ATU for the 140S which will help me to get my signal spot on. Sorry don't have much money, on DLA Mobility Allowance. Contact Robert Earl, 24 Lewis Road, St. Leonard on Sea, E.Sussex TN38 9EJ, thank you.

**Back issues** of Ham Radio Today wanted, details, price to

Dave (Tyne and Wear), Tel. 0191 581 7186

**Weather fax** decoding software required. C. Lee (Lancs), Tel. 01204 529530

**Motorola GP300**, P210, M110, GM300 radios and 6-way charger, conditioners required in dead or alive condition, WHY? Phil G4ZOW (Bletchley), Tel. 01908 646593, or 0468 167000

**SP-230 and VFO-230**. T. Hall (Liverpool), Tel. 0151 733 4051

**EXCHANGE**

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**Kenwood R1000** HF receiver, VGC. Sony video camera etc., plus WS62, VGC. Swap all for Kenwood R5000. Also looking to buy FRV7700 type F with 150-

160MHz. John (Clacks), Tel. 01259 752937

**Racal MA1720** HF TX driver with MA1004 feeder matching unit, both in V.Good unmodified condition. Exchange for professional digital receiver, Racal, Redifon, Eddystone etc. Dave Jones (Carms), Tel. 01554 775790, or 0850 039059  
Email: daiungoed@aol.com

**Storno UHF 6000**, swap for VHF or low band version, any condition. Dave (London), Tel. 0171 424 0439 evenings and weekends.

**Exchange Yaesu FT-747GX** with FM board and Kenwood AT-120 ATU, for 486 computer with SVGA monitor, pref. mini tower, or sell for £375 ovno. Dave (Tyneside), Tel. 01207 543776 evenings or weekends.

**Radio controlled** model aircraft equipment, 6 channel, chargers, engines, three model planes, etc., will split. For 2m 70cm radio, or aerials, rotators, etc. Keen new amateur. Kevin M1BHX (Devon), Tel. 01404 47314 after 8.00pm.

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# Ham Radio T O D A Y

## CONTACT INFORMATION

**Editorial Information and automatic fax-back line;** Tel. 01703 263429 (use with a DTMF, i.e. 'touch-tone', phone or fax - follow the voice menu)

**Fax (Editorial desk);** 01703 263429

(same as voicebank) for information messages only, i.e. news items for Club News, Radio Today, etc. Readers queries please see below.

**Email (Editorial only);** editor@qsp73.demon.co.uk

Please don't Email queries unconnected with Editorial content to this Email address

**Postal address** Editor, Ham Radio Today, Nexus Specialist Interests, Nexus House, Boundary Way, Hemel Hempstead, Herts, HP2 7ST.

**Editorial Web site;** <http://www.qsp73.demon.co.uk>

### Regular Contributors;

**Computer Contacts;** Paul Simpson G0RUR, Email; rur@innotts.co.uk Post; via Editor

**Data Connection;** Chris Lorek G4HCL, Email; g4hcl@qsp73.demon.co.uk Packet: G4HCL@GBXJZ.#48.GBR.EU Post; via Editor

**HF Happenings;** Don Field G3XTT, Email; g3xtt@compuserve.com Post; 105 Shiplake Bottom, Peppard Common, Henley on Thames, Oxon RG9 5HJ

**Net Communication;** Jeremy Boot G4NJH, Email; asperges@innotts.co.uk Post; via Editor

**QRP Corner;** Dick Pascoe G0BPS, Packet: G0BPS@GB7RMS

Email; dick@kanga.demon.co.uk Post; Seaview House, Crete Road East, Folkestone CT18 7EG.

**Satellite Rendezvous;** Richard Limebear G3RVWL, Email; g3rwl@amsat.org Post; via Editor

**Scanners;** Bill Robertson, Email; scanman@qsp73.demon.co.uk Post; via Editor

**VHF/UHF Message;** Geoff Brown GJ4ICD, Email; equinox@itl.net Post; TV Shop, Belmont Rd, St Helier, Jersey. Channel Islands, Tel/Fax 01534 877067

### Reader's Editorial Queries

Our 24 hour Editorial information line, Tel. 01703 263429, usually gives an immediate verbal, and optionally automatically faxed, answer to most general Editorial queries, including lists of 'what article appeared in which issue', 'software offer' information, plus the latest updates to articles and other magazine-related information. A 'Guide to using the Voicebank' (one A4 sheet) is available for an SAE to the Editor. You can also leave us fax and voice information messages on this line (i.e. news items, club news etc.). We cannot fax personal replies. All written queries must be accompanied by an SAE for reply, and will be dealt with as time allows. For general amateur radio queries, contact the appropriate organisations (details in 'Club News' each month) or relevant dealers for equipment information

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### Article Photocopies

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### Ham Radio Today Binders

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## HAM RADIO TODAY PUBLICATION DATES

With the change to publishing Ham Radio Today every four weeks rather than each calendar month, I'm sure many readers are starting to become baffled at the actual date each magazine issue will appear. We hope this brief list of publication dates is useful.

Volume 15 Issue No.8	18th July '97
Volume 15 Issue No.9	15th August '97
Volume 15 Issue No.10	12th September '97
Volume 15 Issue No.11	10th October '97
Volume 15 Issue No.12	7th November '97
Volume 15 Issue No.13	5th December '97
Volume 16 Issue No.1	2nd January '98

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