

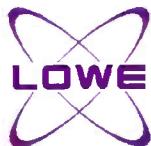
Ham Radio TODAY



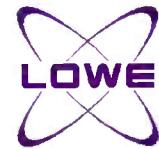
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Every equipment reviewer that has had the opportunity to try the NRD 545 to date has been amazed at the performance that JRC engineers have managed to cram into this small box.



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What Chris Lorek, G4HCL says about the NRD-545*

"sometimes has a dream, and it came true when he tried the NRD-545 in his shack"

"I believe the NRD-545 to be the very best HF receiver I've ever had the pleasure of using in my amateur shack"

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"exceptionally good filter responses"

****Ham Radio Today Review**, April 1998**

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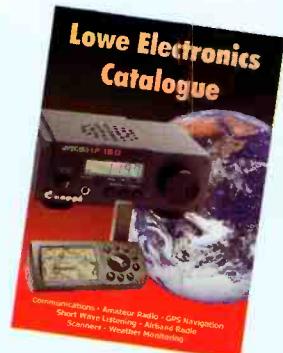
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WIN FREE TICKETS FOR THE ROYAL INTERNATIONAL AIR TATTOO
Five pairs of tickets are up for grabs in Ham Radio Today's competition which will be of particular interest to airband and scanner enthusiasts

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Ham Radio TODAY

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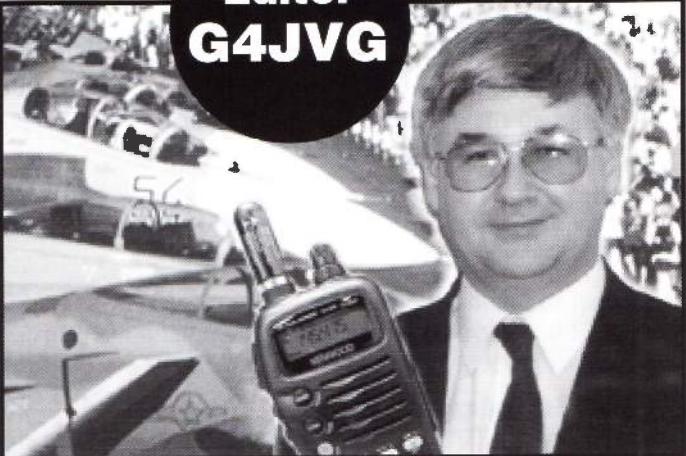
In last month's editorial, I talked about the necessity of utilising to the full the bands which we are privileged to use.

One way activity could be increased is by greater participation in some of the operating events which take place on the bands throughout the year. The summer months are the VHF and UHF contest 'season', which starts with the 50MHz Trophy on 6 / 7 June. Two 'Backpacker' events are also held this month: the first 50MHz Backpackers on 7 June and the second 144MHz Backpackers contest on the 21st. The Backpackers contests are great if you want to combine a day out in the country with a few hours of operating - and yet still be competitive. If you would like a copy of the rules, please let me know.

vhf nfd

The biggest operating event of the VHF season is VHF National Field Day (NFD), which takes place at the beginning of July. This sort of contest is not always

**Editor
G4JVG**



you don't have the necessary wherewithal to organise the event yourself or with a couple of friends, go along to your local radio club and see what they're doing. Most radio clubs put on some sort of station for VHF NFD, from barbecues with a bit of radio operating at one end of the scale to highly competitive multi-station, multi-beam, high-power entries at the other end.

GS etc prefixes are becoming increasingly popular for club events such as Jamboree on the Air and special event stations. Some members of clubs have so enjoyed activating special event stations that they have formed groups especially for this purpose. One of the most active of these is the Scarborough Special Events Group, GX0000, which this month celebrates its 10th

Support your local club this summer

Ham Radio Today Editorial by Steve Telenius-Lowe, G4JVG

popular with all Radio Amateurs, possibly because of the highly competitive nature of some of its participants, but - if people do think this way - they are missing the point. It has often been said that it is not the winning but the taking part which is important, and this is never more true than with Amateur Radio contests.

VHF National Field Day is an excellent example: what could be more perfect than spending a summer's day on a local hilltop, with superb views in all directions, and operating Amateur Radio as well? Add to this the thought that, with your very next contact, you might be called by an HB9 or an EA1 station (perhaps more likely during VHF NFD than at any other time) and you're in for an exciting day's operation. Surely it doesn't matter that you're not going to win the contest: if you're having an enjoyable day operating Amateur Radio it's got to be a good thing.

To try to get you more enthused, Peter Bowyer, G4MJS, has written an article for *Ham Radio Today* called *Getting Ready for VHF Field Day*, which is on pages 18 / 19. If reading the article does enthuse you, but

Many clubs are short of operators for such events and would welcome your participation.

join a club!

We list the contact details of nearly 100 of the most active clubs in the country in our 'Month at the Clubs' feature (see pages 51 - 54 this month). If you can't find a club near you, around five hundred *more* are listed in the *RSGB Yearbook* and the full listing is kept up to date at www.rsgb.org/memb/clubs/aff-socs.htm. If you still can't find a club locally, why not start one up yourself? There could be a lot of other people out there moaning the fact there is no local club for them, and who would enthusiastically join you to form a new group. There's some useful information at www.rsgb.org/memb/affiliat.htm and whether or not you're a member of the RSGB, the Amateur Radio Department there (e-mail: AR.Dept@rsgb.org.uk or tel: 01707 659015) can supply you with a sample club constitution, club affiliation details and even an application form for a club callsign to get you going.

Club station callsigns with GX,

anniversary. Their activity, and that of similar groups, is not only great fun for the participants themselves, but also has the benefit of showcasing Amateur Radio to the general public.

Regular readers of *Ham Radio Today* will know that there was a reader's survey in the April edition of the magazine. The full analysis will take some time, but it appears that well over half the respondents are *not* members of a local radio club. Too many clubs only hold 'natter nights', without a proper programme of events. The survey shows that there should be plenty of scope for *active* clubs to recruit more members. But they'll only do this by organising visiting speakers and exciting events, such as National Field Day operations, by putting on special event stations or going on club expeditions.

And this goes back to where we started: the increased activity generated by such events can only be good for Amateur Radio. It doesn't really matter whether we operate on Field Days, DXpeditions, or on special event stations, providing we get on the air and keep the bands active. See you on the air!

is good home

John Nixon, MOADS, who won the *Ham Radio Today* Icom IC-746 HF / VHF transceiver in our March competition, first became interested in Amateur Radio when he was about 12, but remained an SWL for many years. John's interest in the hobby increased after he took early retirement and found he had more time on his hands. In 1993 he took the Novice RAE and became 2E1CIC, working around 25 countries all over Europe on 50MHz during his first year on the air.

The following year John took the full RAE and received the callsign G7SMA. He enjoyed 144MHz, his best DX being EA9 (Spanish North Africa), whilst using 25W SSB to an indoor beam. However, John found activity on the VHF bands lacking during the winter months, so enrolled in a Morse course and eventually gained his present callsign, MOADS, in 1996. John's wife, Andrea, has since taken over his Novice callsign.

The IC-746 has obviously gone to a good home, for John and Andrea are active on all bands from HF to 144MHz - and the Icom rig covers all these bands! John is a remote SysOp for the GB7MRU BBS and is a member of AMSAT-UK and the Remote Imaging Group (RIG), with a particular interest in receiving weathersat pictures from the NOAA and MET satellites. John listens at least a little

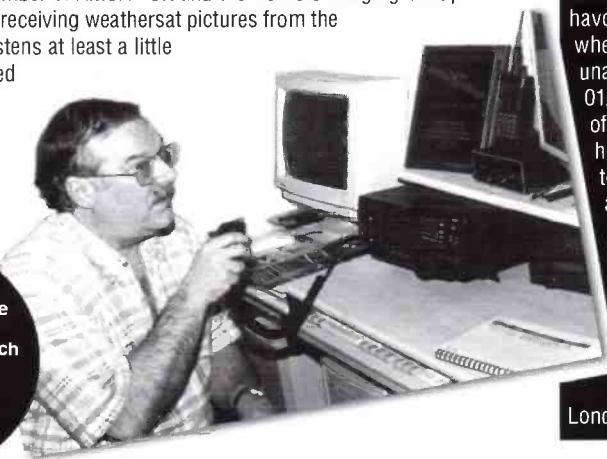
every day and on HF he has worked

65 countries, which he says
he's sure will improve now
he has the IC-746!

Congratulations again to
John, and we at *Ham
Radio Today* hope
he and

Andrea have
many years
of enjoy-
able oper-
ating with
the IC-746.

**John Nixon,
MOADS, with the
Icom IC-746
transceiver which
he won in the
*Ham Radio
Today* March
competition.**

**radio today radio today**
latest news on ham radio today**50 years of computing**

21 June 1948 saw the birth of the first stored-program electronic digital computer, at the University of Manchester. The ability to store and run any program put in by a user set this machine apart from all the special-purpose computing machines that had gone before, and made it a 'universal machine' - the first computer as we know them today. Information about the world's first stored-program computer can be found at <http://www.computer50.org/#mark1>

To commemorate this landmark, a large number of activities are taking place in Manchester this month, including the commissioning of an exact replica of the Manchester Mark 1, public lectures, and eleven scientific conferences to held at the University of Manchester. Up to date information about all events can be found at <http://www.computer50.org/index.html>

To carry the celebrations out into the world-wide community, a special event station, GB50MKI, will go on the air from 7 June 1998 until the end of the month. GB50MKI will transmit on all shortwave bands, using SSB, CW, FM, and focusing in particular on data modes. Via a BBS operating on VHF, information about local events as well as technical information regarding the Manchester Mark 1 computer will be accessible 24 hours a day.

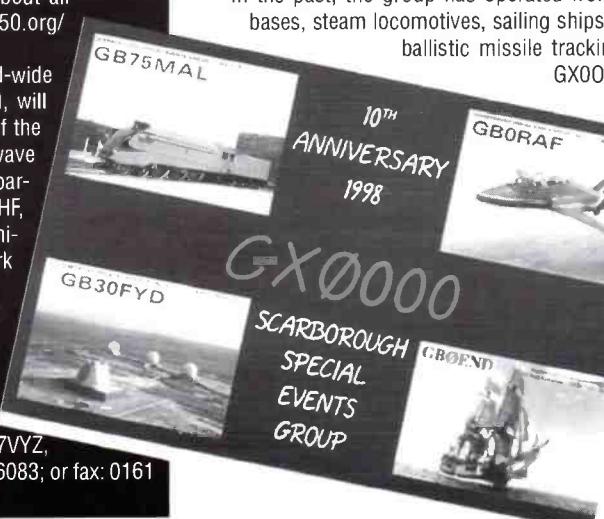
The transmission schedule of GB50MKI will be published in advance on the world wide web: see the GB50MKI web site at <http://www.gb50mki.org/> or contact Publicity Officers Simon Kahn, G0STU, e-mail: simon.kahn@ic.ac.uk or Michael Lancastle, G7VYZ, e-mail: M.Lancastle@mcc.ac.uk; tel: 0161 275 6083; or fax: 0161 275 6040.

10th birthday for scarborough group

The Scarborough Special Events Group celebrates its 10th anniversary on the weekend of **13 / 14 June**, when its station, GX0000, will be on the air. The group consists of amateurs ranging in age from teenager to senior citizen, and callsigns ranging from G3s to 2E1s and M0s. They all have enthusiasm, innovation, experience and a love of excitement in common - they'd rather get out amongst the general public to demonstrate the fun side of our hobby than just sit in their own shacks. This is Amateur Radio as it should be, on the threshold of the new millennium.

In the past, the group has operated from warships, military bases, steam locomotives, sailing ships, castles, and even a ballistic missile tracking station. Look for GX0000 on 13 / 14 June,

mainly around 3725kHz on SSB. Other stations will be active on CW, 2m and RTTY. A full colour anniversary QSL (pictured) is available, and listeners are especially invited to send in reception reports.

**wab agm**

The Worked All Britain awards group AGM will be held at the new venue of the Gothic Hall, Elvaston Castle, on **14 June** at 2.00pm.

millennium bug

Most *Ham Radio Today* readers will be aware of the 'millennium bug' and the potential havoc that could be caused when some computers are unable to recognise the date 01/01/00. Now the Institution of Electrical Engineers (IEE) has provided guidance intended for manufacturers and business users which may also be of interest to readers. It's available on the Internet at www.iee.org.uk/2000risk or for further details contact the Public Affairs Dept of the IEE, Savoy Place, London WC2R 0BL.

morokulien - where?

Did the article on operating abroad in last month's *Ham Radio Today* give you itchy feet? If so, you may want to take advantage of an invitation to visit Morokulien in July.

Morokulien is a small 'free state' located on the Swedish - Norwegian border, near the town of Charlottenberg (the border actually passes through the centre of the granite peace monument in the photo). It was founded in 1914 to celebrate 100 years of peace between the two countries.

Morokulien has its own Amateur Radio club station, with two unique prefixes: SJ9WL and LG5LG, which is located in a log cabin available for rent. The club, ARIM (Amateur Radio In Morokulien), is celebrating its 30th anniversary with an open house and field day over the weekend of **3 - 5 July** and with celebrations going on the whole week. For further information about staying at Morokulien, contact LA7TIA, tel: 00 47 628 26920; e-mail: la7tia@nordi.no or see the web site www.east.no/priv/la7tia/arim



Please note that the date of the second RSGB 144MHz Backpackers Contest has been changed to **21 June**. The event takes place between 0900 and 1300UTC.

'Backpackers' series of contests are great fun - they provide a way of competing seriously in a VHF / UHF contest (there are 50, 144 and 432MHz Backpacker events throughout the summer months) using the simplest of equipment.

The basic idea is to be able to carry your complete station, transceiver, power source and antenna, to your chosen operating location (eg local hilltop site), literally by backpack. There are 3W and 10W sections and you only competing against other 'Backpackers'. It's a great way to combine some Amateur Radio operation with a day out in the country.

summer backpacking

g3ynr rip

Ernie Nash, G3YNR, from Chesterfield, died on 27 April. Known as 'Buster' since his service in the Royal Air Force, he was a keen Amateur Radio enthusiast for many years. His dry wit and wry humour will be sadly missed.

radio today radio today

latest news on ham radio today

freecd-rom!

Regular readers of *Ham Radio Today* will still be working their way through the hundreds of Amateur Radio programs on our free CD-ROM which we gave away with the March issue of the magazine. We promised you more free software then, and next month's magazine will contain another free CD-ROM containing literally hundreds of Amateur Radio programs. The 'theme' of the July *Ham Radio Today* CD-ROM is multimode data reception and transmission. The disk will allow you to transmit and receive all datamodes by using a simple interface. There'll be programs allowing you to emulate fax, SSTV, AmTOR, CW and RTTY using your PC's sound card.

The March issue was almost a sell-out, so be sure you get your copy of the July issue by placing an order with your newsagent now - or by taking out a subscription (see page 24 for details). For those who missed out on the March issue, a *small* number is still available - complete with the free CD-ROM! - as a back issue (see page 58 for details of how to order) - but hurry: there aren't many left! The theme of the March CD-ROM was 'equipment and operating'.

stolen kit

Robin Dellbridge, G0PMG, reports that the following VHF handheld PMR radios were stolen from St John Ambulance, Kidderminster, on 9 April:

Five Motorola GP300, serial numbers: 174 ITY8781, IUL5798, IUL5784, ITJ8857, IUA5863. Five SMC 517 L10 (PMR version of FT23), serial numbers 8G050306, 8 G 050298, 8 F 030204, 8 F 040464, 8 J 080317. All included chargers, cases and speaker microphones. Any information to Kidderminster Police, tel: 0345 444888.

sayonara taizo-san!

UK Radio Amateurs bid farewell to Taizo Arakawa, GWORTA / JA3AER, and his wife Yoko, who recently returned to Japan after seven years in this country. Taizo worked as a general manager for Sharp (UK) in Wrexham and was very active on the air during his time here, activating many IOTA island groups around the UK and abroad. He wrote a monthly column about operating in Europe in the huge Japanese *CQ Ham Radio* magazine. Taizo and Yoko were a familiar sight at exhibitions, rallies and conventions throughout the country and made numerous Amateur Radio friends here. We wish Taizo well on his impending retirement in Japan.



new dxcc entities?

Several expeditions were active in April from what look likely be new DXCC entities. Under new DXCC rules which came into effect on 1 April, a number of islands became eligible for DXCC status for the first time. H40AA and H40AB were the callsigns of two expeditions active from different islands in the Temotu Province of the Solomon Islands, which are expected to become new entities.

Meanwhile, the French Clipperton DX Club has filed a petition with ARRL for separate DXCC status for the Marquesas Islands and the Austral Islands, which currently count as French Polynesia (FO).

For more details on all of these, see *HF Happenings* on pages 46 / 47. The results of the petitions are unknown as we go to press.

Dave Mann, G0HXN (left), was presented with a 'Plaque of Merit' by the CDXC (Chiltern DX Club) Chair-

G3NUG, at the club's annual dinner recently. A similar plaque

**was also
awarded to Mike
Potter G4PFF**

Potter, G4PFF.
Dave and Mike

Both served for around seven years on the club's committee.

tee, during which time the club's

membership has more than trebled.

**For details about
CDXC - the UK
DX Foundation -
send an SASE
to QANUC**

to G3NUG.



prestigious prize for surrey firm

Surrey Satellite Technology Ltd (SSTL), based at the Surrey Space Centre at Guildford, have won the Queen's Award for Technological Achievement. This is in recognition of their national standing as a centre of excellence in research, development and application of small satellites. Prof Martin Sweeting, G3YJO, CEO of Surrey Space Centre, said: "The Award demonstrates the high levels of achievement and national acclaim which Surrey is held within the space industry."

Since being formed in 1985, SSTL have designed, built and launched 12 micro satellites, including Oscars 9, 11 and 22.

going to zs?

We said in last month's article *Beginner's Guide to Operating Abroad* (May 1998 *Ham Radio Today* page 11) that "South Africa and the USA have also expressed an interest in joining [the CEPT licence]". We've just received word via the South African Radio League magazine, *Radio ZS*, which says that: "SATRA, the South African Telecommunications Regulatory Authority, has received confirmation from the European Radio Communication Office that South Africa has been accepted as a signatory to, and participant in, the CEPT common amateur radio licence."

So, if you're off to South Africa - take your rig with you and get on the air!

going baltic
is planning a trip to
with the Lithuanian
. There will be an op-
a special callsign from
tions. For further de-
on tel: 0161 793 5922.

A group of Radio Amateurs is planning a trip to Lithuania to coincide with the Lithuanian Hamfest at the end of July. There will be an opportunity to operate using a special callsign from some contest-winning stations. For further details contact John, GONPI, on tel: 0161 793 5922.

radio today **radio today**
latest news on ham radio today

new sussex atv repeater

The East Sussex Amateur Television (ESATV) group switched on GB3VX, a microwave television repeater, on 8 April. Members of ESATV spent four years preparing equipment and documentation for a licence to transmit ATV signals from the repeater, located near Eastbourne. Anyone with a satellite receiver, a small antenna and a few DIY skills can receive the transmissions on their own television.

Coverage is expected to include Hastings to the east, Newhaven to the west, Heathfield to the north, and northern France to the south. Video output is on 1.310GHz with a 6MHz sound carrier sending the repeater ID GB3VX in Morse code. A test card will be transmitted 24 hours a day when the repeater is not in use.

The UK's Repeater Management Committee ATV Co-ordinator, Graham Shirville, G3VZV, said, "I am delighted that GB3VX has been given the go-ahead by the Radiocommunications Agency. There are currently five new ATV repeaters in the pipeline for the 23 and 3cm bands. Once these have been licensed, there will be more than 25 ATV repeaters in the UK".

The ESATV group is wholly funded by membership and donations. They welcome new members to become involved and to assist with this and future projects. For more information, please write to the ESATV Group, 152 Hawks Road, Hailsham, East Sussex BN27 1NA; e-mail esatv@toolbox.co.uk or go to the web site at www.toolbox.co.uk/esatv/

bcbc gets results

A recent survey carried out by BCBC - the British Citizens' Band Confederation - indicated that a significant number of their members subscribe to, or regularly buy, *Ham Radio Today*. This tends to confirms the belief that many CB operators have other radio interests as well, often including Amateur Radio listening.

BCBC is working closely with the Radiocommunications Agency's Radio Investigation Service (RIS) to address the problem of CB channel abuse. A set of reporting forms has been produced in agreement with RIS and this has already produced results: there have already been 16 prosecutions, with a 100% conviction rate.

For further details about BCBC membership, write to PO Box 5826, Basildon, Essex SS16 5FO

The BCBC's
newsletter,
Info-Mat

trade topics

Possibly the smallest **dualbander** in the world, the **Alinco DJ-C5E**

DJ-C5E is a tiny **handheld**, the size of a credit card. Weighing just 80g and so slim that it will hide in a shirt pocket, its 300mW output on 2m and 70cm is sufficient to work through repeaters miles away. There's an internal 500mAh lithium ion battery that can be recharged in two hours hundreds of times, without the annoying 'memory effect' commonly found with nicads. The Alinco DJ-C5E costs just £189.95 and is available from Nevada, 189 London Road, North End, Portsmouth, Hants PO2 9AE; tel: 01705 662145; fax: 01705 690626.

alinco dualband handheld



mainline electronics

Mainline Electronics, which specialises in distributing radio components to the communications industry and Amateur Radio marketplace, has recently expanded their premises and taken on more personnel. They now stock over 14,000 items. There is no minimum order amount and for all orders of over £20 (ex VAT) the postage is free. For further details write or call Mainline Electronics, PO Box 235, Leicester LE2 9SH; tel: 0116 277 7648 or 0116 278 0891; fax: 0116 247 7551.

latest cushion vertical

Cushcraft's range of **HF and VHF verticals** (the R5, R7 and R7000 on HF and the 'Ringo Ranger' series for VHF) are well known as good and reliable performers. Now Cushcraft have just released a new model which covers **HF and VHF bands**. It's the **R6000**, a 19ft (5.8m) 'slim-line' design, which covers 14, 18, 21, 24, 28 and 50MHz. The R6000 is a half-wave vertical, therefore only requiring a minimum of radials, and no traps are used on 6, 10 and 15 metres for maximum efficiency and power handling. Talking of power, the R6000 is designed for the US market so can take 1500W.

The Cushcraft R6000 costs £299 and is available through Nevada, 189 London Road, North End, Portsmouth, Hants PO2 9AE; tel: 01705 662145; fax: 01705 690626.

trade topics trade topics

the following information is based upon submissions by suppliers
we cannot be responsible for false or misleading information

antennas galore

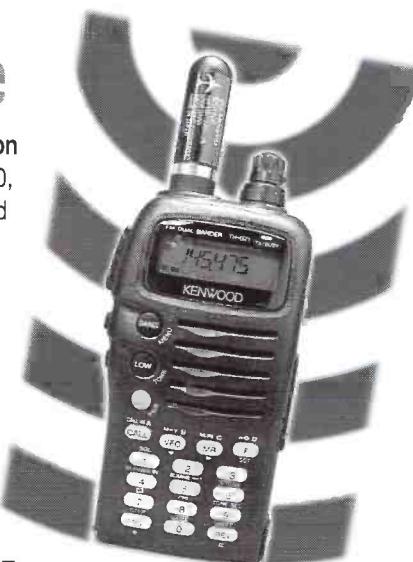
Waters & Stanton PLC are importing the new **Watson W-627 triple-band mobile antenna**. Covering the 50, 145 and 432MHz bands, it measures 1.5m long and has a power rating of 100 watts on 6m and 2m, and 50 watts on 70cm. It has a fold-over base which is fitted with a PL-259 connection. The retail price is £34.95 inc VAT.

And the **Watson W-77LS** is a 'low-profile' **dualband mobile antenna** for 2m and 70cm. Just 430mm long, the antenna has unity gain on 2m and 2.5dbi gain on 70cm. It too is fitted with a PL-259 base connector and the W-77LS costs just £14.95 inc VAT.

The new **Diamond SRH-805 'miniature antenna'** from Japan is now available. It offers transmit and receive coverage on the 144, 430 and 1296MHz bands, plus reception on the airbands and the 150MHz band. It is fitted with an SMA connector, now popular with modern compact dualband handhelds.

Pictured above on the Kenwood TH-G71, it measures just 45mm long and costs £19.95.

Waters & Stanton PLC, 22 Main Road, Hockley, Essex SS5 4QS; tel: 01702 206835; fax: 01702 205843.



Amlog is a logging program designed for computer users who wish to replace their paper logbook. Whilst having many features, it is still easy to use. Version 4 of Amlog has recently been released by Zentek. It comes on two 3.5in floppies and the full version costs £24.00. If you want to try it out first, a 'demo' version is available for just £1, and if you already have an earlier version, you can upgrade to Version 4 for £8.

Zentek, 132 Gladstone St, Darlington, Co Durham DL3 6LE; tel: 01325 482344; fax: 01325 255009; Internet: www.midnet.com/midnet/zentek/

logging Software



professional type power / swr meters

A new Daiwa power and SWR meter is now available. The CN-801H covers 1.8 - 200MHz and reads power in three ranges: 20, 200 and 2000W FSD. It has a very large cross-needle scale, measuring 10.5 x 10cm, which allows the user to read forward power, reverse power and SWR directly. The Daiwa CN-801H costs £109.95.

Nevada, 189 London Road, North End, Portsmouth, Hants PO2 9AE; tel: 01705 662145; fax: 01705 690626.

hf and 6m amplifier

Yaesu released their 'Quadra System' VL-1000, a fully solid-state linear amplifier covering the 1.8 to 50MHz bands, just in time for the London Show. It's a 1kW output device, using eight MRF-150 mosfets. The VP-1000 48V 48A switching power supply is included with the unit.

Band data information can be transferred between the transceiver and VL-1000, allowing automatic amplifier band change when you QSY on the transceiver (a band data cable for the Yaesu FT-1000MP, FT-1000D and FT-920 is supplied). With no tune-up necessary and the VL-1000's built-in automatic ATU (capable of handling 1.2kW) - which works on all bands including 6m - almost instantaneous QSY from band to band at full power is possible.

The VL-1000 has two input jacks, allowing permanent connection of an HF transceiver and a separate 6m transceiver, and four output jacks, allowing automatic selection of up to four different antennas.

Yaesu UK Ltd, Unit 2, Maple Grove Business Centre, Lawrence Road, Hounslow, Middlesex TW4 6DR; tel: 0181 814 2001.

hf and 6m amplifier

trade topics

liers, and is not necessarily endorsed by ham radio today.
r misleading claims by suppliers.

aircraft tracking software

The new version of **AirNav** - the world's most popular **aircraft tracking software** - has recently been released. In the first two weeks after the release, **AirNav** orders had increased by 500%. This is almost a new program, not just a new version.

AirNav version 2.00 represents the most recent technology applied to aircraft tracking. It is used in more than 25 different countries in five continents. The software makes the task of tracking aircraft flying in any part of the globe much easier.

Version 2.00 includes: multi-window tracking, vertical tracking, all heard database, up to 1000 flights simultaneously, up to 50 waypoint / flight, accurate estimation of times and waypoints, new user interface, 32,000 waypoint database, seven different map creation methods, airspace related data drawing, new database interface, terminal and flight management modes, weather database and drawing.

The **AirNav** Internet homepage has 10 version 2.00 screen shots of real traffic from all over the world.

As with version 1, version 2.00 upgrades will be freely available for version 2.00 registered users. The price for v1.xx registered users will be US\$60.

To find out more, or to order, visit the **AirNav** homepage at: <http://www.geocities.com/SiliconValley/Lakes/9420>

aircraft tracking software

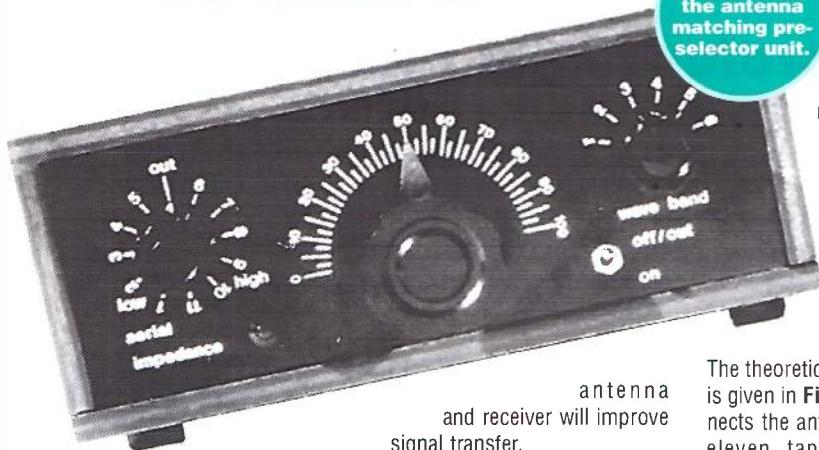
nicad battery chargers

A new range of **switch-mode nicad rapid battery chargers** has been introduced by **Arlec Power**. There are three units available, the CB146, 147 and 167, capable of charging packs of 4 - 7 or 6 - 7 cells from 1.2 to 5A, at 10.5V. The units operate from 230V AC or 12V DC supplies and incorporate automatic switching from fast charge to trickle charge.

Arlec Power UK Ltd, Kingsway House, 2 - 8 Laporte Way, Luton, Beds LU4 8RJ; tel: 01582 544520; fax: 01582 544521.



Front view of
the antenna
matching pre-
selector unit.



antenna
and receiver will improve
signal transfer.

The fixed-tuned filters used ahead of the receiver mixer pass a fairly wide segment of the RF spectrum. Interposing a variably-tuned stage between receiver and antenna will peak the response of the system, thereby increasing the relative strength of the wanted signal and also reducing susceptibility to cross-modulation and blocking problems.

These two features are combined in the unit which is described here. Although simple

measures raise signal levels where it matters most, at the input to the receiver - and the upward swing of the S-meter needle can be dramatic.

the circuit

The theoretical circuit of the unit is given in Fig 1. Switch S1 connects the antenna to any one of eleven tappings on tuning inductor L1 in order to secure a better impedance match. Switch S2 connects appropriate sections of the inductor across tuning capacitor C2 to give the required frequency coverage.

The tuned circuit, which has a very high impedance at resonance, has to be matched to the low impedance receiver input. Connection via a coupling winding or tapping would impose an excessive amount of damping and reduce the effective 'Q' of the tuned circuit and the signal volt-

visual indication that the unit is switched on. Despite the selection of a low current device, the indicator consumes twice as much power as the transistor, and constructors preoccupied with battery life may wish to delete it.

components

Plastic overflow pipe for the coil former can be purchased at most DIY stores, and small reels of enamelled copper wire are sold by Cirkit and Maplin. Low current LEDs are listed in the Maplin catalogue. The remaining components are widely available, but some comment on the tuning capacitor may prove helpful.

A unit with a low minimum capacitance and a maximum capacitance of at least 200pF is required to give the specified continuous coverage. Many constructors will have a suitable item in their spares box, but if a new component has to be purchased a miniature polythene dielectric 140 + 60pF capacitor retailed by

Antenna Matching

This simple, low-cost, unit designed and built by Raymond

non-resonant antenna

sented by a 'long wire'. Moreover, antennas which are a tiny fraction of a wavelength long have a very high impedance. Clearly, therefore, some means of improving the match between

and inexpensive, it enables a better match to be obtained between random lengths of wire and the receiver, and also peaks the response of the system at the reception frequency. These

age developed across it. So, instead, field effect transistor TR1 is operated as a source follower to match the unit to the receiver. Connected in this mode, the device presents an almost infinite impedance to the tuned circuit and a low impedance to the 50Ω input of the receiver. The gain is unity but the quest is for improved antenna matching to maximise signal transfer, and for greater front-end selectivity to increase the relative strength of the wanted signal.

Some means of switching the pre-selector out of circuit is desirable to enable a quick performance comparison to be made. Accordingly, the central tag on S1 is used to connect the antenna directly to the output socket, and one pole of the on / off switch, S3, isolates the source of TR1 when the supply is disconnected. A low current LED, D1, with its dropping resistor, R2, provide a

Maplin would be suitable (one of these is fitted in the prototype unit). Supplied complete with a short spindle extension, they are very inexpensive. Cirkit list a 355 + 355 + 20 + 20pF solid dielectric variable, and they can also supply a special extender for the stubby spindle. Air-spaced capacitors are also suitable, but they will probably be too large to mount on the PCB.

If the tuning capacitor has a value in excess of 250pF, the 560pF swing reducing capacitor, C1, should be fitted. If the suggested component, or some other unit with a value between 200 and 250pF, is used, C1 is not required, but remember to insert a wire link between the pads on the PCB, or C2 will not be connected into circuit.

making the coil

The coil (Fig 2) is wound on a length of 21mm OD plastic overflow pipe. Solder tags are used to anchor the ends of the winding and at the main tapping points, and the high-inductance

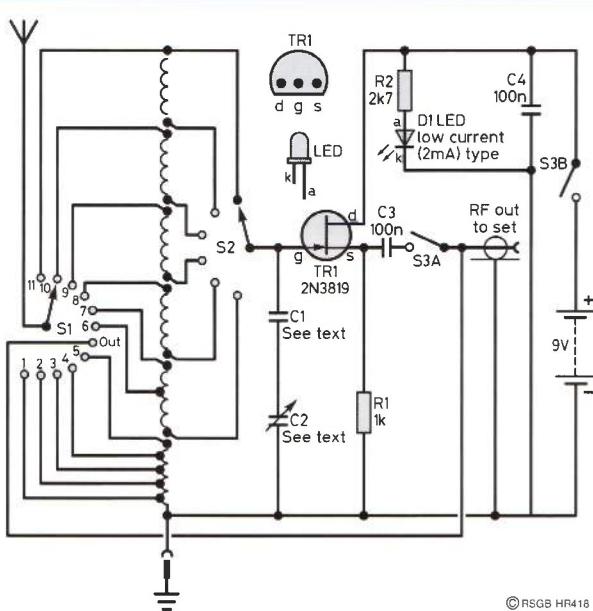


Fig 1: The circuit of the complete antenna matching pre-selector unit.

Range 1 Tuning capacitor to tag 11 1153 - 400kHz (whole winding in circuit)
 Range 2 Tuning capacitor to tag 10 500kHz - 1.4MHz
 Range 3 Tuning capacitor to tag 9 1MHz - 3MHz
 Range 4 Tuning capacitor to tag 8 2.1MHz - 5MHz
 Range 5 Tuning capacitor to tag 7 4.7MHz - 12MHz
 Range 6 Tuning capacitor to tapping 5 11.5MHz - 28MHz

Table 1: the frequency coverage obtained in the prototype unit.

sections are wound on small bobbins to reduce self capacitance and maintain a good 'Q' factor. If coverage of the long and medium waves is not required, the bobbin-wound sections can be deleted and the winding terminated at tapping point 9 (128 turns). This will limit the tuning range to between 1 and 28MHz.

The bobbins are made from thin card (postcards are ideal) glued together with a quick setting clear adhesive such as Durofix. Use a pointed modelling knife to cut out the cheeks, wrap and glue a 3mm wide strip of card around the former, then cement the cheeks in position on either side of it. When the glue has hardened, slide the completed bobbin from the former

enamel from the wire, tin it, and make good connections to the tags: this is crucial to the correct operation of the unit.

Don't worry about the wire spacing between the start and tapping point 7. Just concentrate on getting the turns on tightly and making good connections to the tags, the turns can be spaced out evenly later with the tip of a screwdriver. To produce the even, close (turns touching) windings between tags 7 and 9, hold and rotate the former with the left hand and feed the wire on and maintain tension with the right. Allow the turns to space out slightly when feeding the wire on, and keep pushing them into close contact with the thumb of the left hand as the former is rotated.

Component List.

Resistors. all 5% tolerance, 1/4W or better.

R1 1K
 R2 2K7

Capacitors.

C1 560pF, close tolerance ceramic or polystyrene (only required if the maximum value of C2 exceeds 250pF: see text).
 C2 polythene dielectric or air-spaced variable with a maximum value of at least 200pF: see text.
 C3 and C4 100nF ceramic.

Semiconductors.

TR1 2N3819
 D1 low current (2mA) LED.

Inductors.

L1 home-constructed: see text.

Switches.

S1 1 pole, 12 way, Lorlin type plastic cased rotary.
 S2 2 pole, 6 way, plastic cased rotary (one pole not used).
 S3 double pole, double throw miniature toggle.

Sundry Items.

Plastic overflow pipe, reels of 36, 24 and 20SWG enamelled copper wire, thin card, glue and solder tags for the coil (the 20SWG wire is optional: see text). PCB making materials, Vero pins and hook-up wire. Antenna and earth terminals and output socket. Battery, battery connectors and holder. LED holder. Standard plastic or aluminium box. Spindle coupler, spindle extension and panel bush. Nuts, bolts, self-tapping screws and brackets. Two small and one large control knobs.

Pre-Selector Unit

and Haigh will boost performance where short or antennas have to be used

and repeat the process. Dipping the bobbins in clear or coloured cellulose then hanging them up to dry will stiffen and seal them, but this is not essential.

Drill the former and fit tags 1 to 9. A lump of Blue-Tack on the end of a stick will enable nuts to be fed onto the bolts close to the centre of the former. Scrape the

Slide the two bobbins which make up the sections between tags 9 and 10 on to the former, and fit tag 10. Cut a slot in one bobbin cheek for the wire entry, and a notch in the other for the wire to leave, then wind on the specified number of turns in even layers. Repeat the process for the five sections between

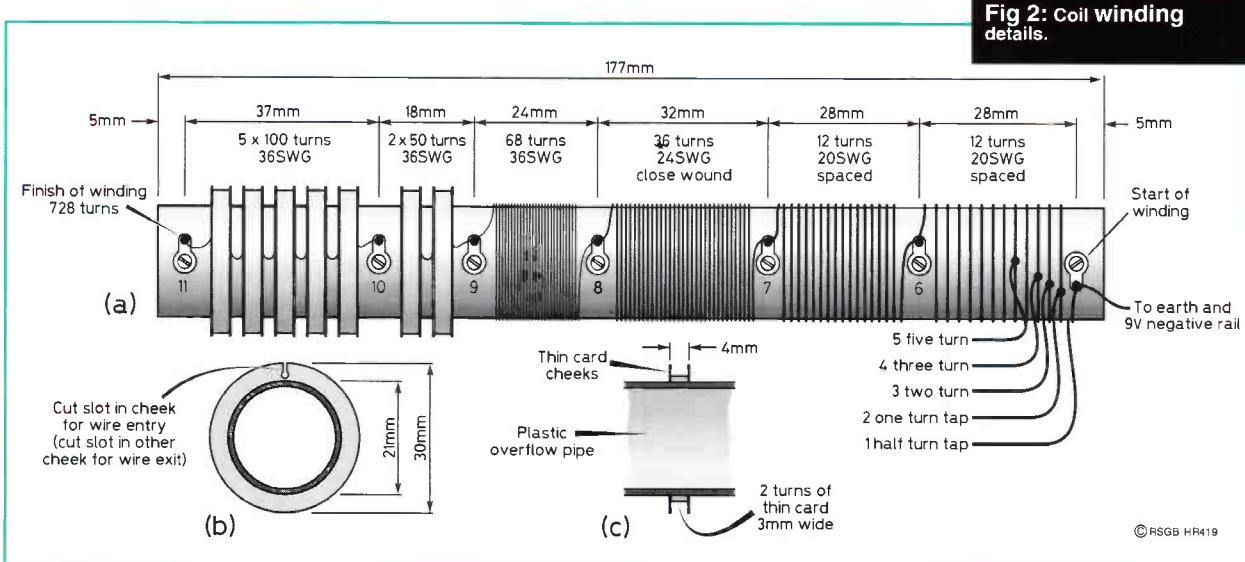
tags 10 and 11. Wrap 3mm wide strips of masking tape around the bobbins to protect the windings.

Taps 1 to 5 are made by soldering hook-up wire to the actual coil. Stagger the connection points to minimize the risk of shorting, and insert the tip of a small screwdriver to lift the wind-

ing off the former during the cleaning and soldering process.

24SWG wire can be used instead of the heavier 20SWG material for the spaced sections of the coil. Soldering the taps may be a little more tricky, but it will avoid the need to purchase another reel of wire if the specified

Fig 2: Coil winding details.



gauge is not in the spares box. A coat of thin clear cellulose can be applied to seal and secure the completed windings, if desired. Do not attempt to use any other paint or varnish for this purpose, as the performance of the coil can be affected by unsuitable materials.

construction of the unit

With the exception of D1 and R2, the resistor, capacitors and semiconductor are mounted on a small PCB. The component side of the board is illustrated in Fig 3 and the track side in Fig 4. Vero pins inserted at the lead-out points will ease the task of off-board wiring.

Provision is made on the PCB for either a Maplin or a Cirkit polythene dielectric variable capacitor. Both gangs of the Maplin unit are connected in parallel to give the required 200pF swing. With the track arrangement shown and the Cirkit component, an FM gang is connected in parallel with an AM gang to produce a 375pF capacitor. (The linking track can be cut to isolate the FM gang but then care has to be taken to orientate the capacitor correctly on the board). The lead-outs of solid dielectric units vary, and the track layout may need modifying if another type is substituted. Larger air-spaced variables will have to be mounted directly on the front panel or floor of the case and wired back to the PCB. Fixed vanes are connected to the gate of TR1 and the moving vanes to earth and the negative supply rail.

initial testing

It is a good idea to test the unit before enclosing the PCB and other items in a case. Check the

PCB for poor soldered joints and bridged tracks, and check the orientation of the transistor. If all is in order, connect up the coil (use a short length of wire terminated with a crocodile clip in place of the switch) and a fresh 9V battery. Current consumption should be around 1mA (3mA with the LED in circuit).

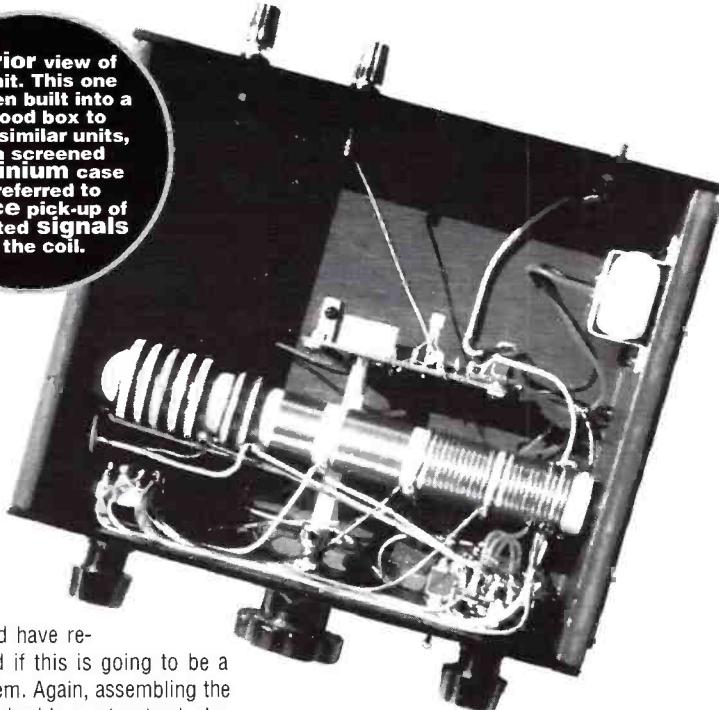
Connect the unit to the receiver with a short length of screened cable and select an S2 tapping to ensure coverage at the operating frequency. Details of the coverage obtained with the prototype unit are given in Table 1.

With the capacitor connected to the appropriate tapping and the antenna connected to the same point (or tapped down closer to the earthy end of the coil) it should be possible to peak the signal by adjusting C2.

casing the components

Because of its comparatively large diameter, there is some direct signal pick-up by the coil. Constructors who wish to avoid this should choose an aluminium case. A receiver's digital display and memory circuits can radiate RF noise (its internal signal processing systems are reasonably immune because of screening), and the initial bench test

Interior view of the unit. This one has been built into a plywood box to match similar units, but a screened aluminium case is preferred to reduce pick-up of unwanted signals by the coil.



should have revealed if this is going to be a problem. Again, assembling the parts inside a standard aluminium box or chassis is the answer. Purchase one that is 75mm deep and locate the coil as centrally as possible in order to maintain its good 'Q' factor within the metal enclosure.

Use angle brackets to mount the PCB off the case floor and extend the tuning capacitor spindle through the front panel; a bush can be salvaged from an old potentiometer. Rotary and toggle switches are mounted directly on the panel, and the terminals and output socket at the rear.

The photographs show the

operation

Set S2 and S3 to the off / out position, and tune in a station on the receiver. Set S2 to the appropriate band and set S1 to the same tapping or a tapping closer to earth. Switch on the unit and adjust C2 until the signal peaks.

Rotate S1 to select different antenna tappings, adjusting C2 to maintain the peak. A combination of settings should be found which produces a sharp peak in the response of the system, and this is generally accompanied by an S-meter reading which is higher than the one obtained with the unit out of circuit.

When very short antennas are in use, best results will usually be obtained with S1 and S2 switched to the same tapping, ie with the antenna connected to the gate of TR1. Because of the better matching, the improvement in performance on medium and long waves in particular can be dramatic.

Tapping the antenna closer to the earthy end of the coil will usually give better results when longer wires are connected.

If conditions are difficult, try connecting the antenna closer to earth in order to reduce damping and increase the selectivity of the unit's tuned circuit. The inferior impedance match will reduce the input to the receiver, but there can be a significant improvement in the all-important signal-to-noise ratio.

Connecting an earth can have a very marked effect on antenna impedance, and the antenna tapping will probably have to be shifted closer to the earthy end of the coil in order to maintain a good match.

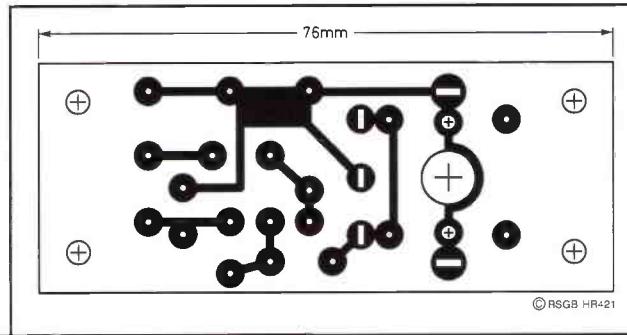


Fig 4: Track side of the PCB.

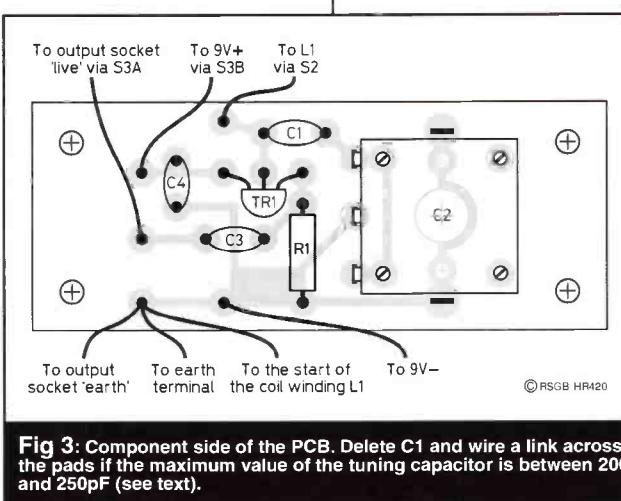


Fig 3: Component side of the PCB. Delete C1 and wire a link across the pads if the maximum value of the tuning capacitor is between 200 and 250pF (see text).

prototype enclosure which was constructed from plywood to match other units. This is more time consuming than using a standard box and probably more expensive if the materials are not to hand.

Wiring between switches and coil should be short and direct, and reasonably heavy single strand hook-up wire should be used to ensure rigidity. Connections between the output socket, S3A and the PCB should be screened.

RAF Fairford, Gloucestershire, 25 / 26 July

airband and scanner enthusiasts take note!

The Royal International Air Tattoo (RIAT 98) is a spectacular day out for all the family. The stars of the show are the celebrity pilots from more than 30 nations, who'll entertain you with their incredible aerobatic routines. You'll see aircraft through the ages, from rare WWI bi-planes to the futuristic Eurofighter 2000, and from Concorde to the legendary Red Arrows.

This year, there's a show of 'spy planes' from around the world. Many of these aircraft remain shrouded in secrecy, but RIAT 98 will give you a fascinating insight into the 'cloak-and-dagger' world of aircraft surveillance.

There'll be a 50th anniversary tribute to the Berlin Airlift, when the Western powers defied Joseph Stalin's blockade of Berlin to fly in 2.3 million tons of supplies to the city's starving citizens. RIAT 98 will take you back to the days of the DC3 and Lancaster, and to the bravery of the pilots who flew 195,000 return trips along the Berlin air corridor.

The RAF itself is celebrating its 80th anniversary at the Tattoo with a spectacular finale. Tiger Moths will fly a figure '80' formation, followed by vintage and modern aircraft in stacked flypasts. An exclusive will be a special 80th anniversary display by the world famous RAF Red Arrows aerobatic team.

To bring the Grand Finale to a close, 30 or more hot air balloons will lift off into the evening sky as RAF musicians invite you to sing a 'happy birthday' to the world's oldest air force. A two-hour 80th anniversary concert will follow.

Gates open at 6.30am on both days and the flying programme begins at 10.00am. There are more than 500 exhibits and attractions including virtual reality rides, jazz bands and plenty of food and drink outlets, which will keep you entertained all day long.

The Royal International Air Tattoo will be a great day out for everyone, but, with all those aircraft flying about - in constant radio communication with ground control - it will be particularly good fun for airband and scanner enthusiasts. And that's where *Ham Radio Today* comes into the picture! Adult tickets for this event cost £24 on the day, but *Ham Radio Today* has five pairs of tickets to give away in our free competition, courtesy of the RAF Benevolent Fund. To avoid disappointment to others, when entering please make sure that you can attend the event

at RAF Fairford in Gloucestershire on either 25 or 26 July. To enter, all you have to do is answer the three questions below, and the first five correct entries drawn on 30 June will each win a pair of adult tickets (accompanied children aged 15 and under are admitted free).

competition rules

Look at the three questions below. Write your answers on a postcard or the back of a sealed envelope (no letters accepted) and send them to: Air Tattoo Competition, *Ham Radio Today*, RSGB Publications, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. Don't forget to include your name and address! The closing date for entries is the first post on Tuesday 30 June 1998.

questions

- 1) Which anniversary is the Royal Air Force celebrating this year?
- 2) Which anniversary of the Berlin Airlift is the Royal International Air Tattoo 1998 commemorating this year?
- 3) What is the name of the Royal Air Force's aerobatic display team?

Only one entry per reader (multiple entries will be disqualified). No other correspondence can be entered into. All entries will become the property of RSGB Publications; please state on your entry if you do not wish to receive any promotional material. Employees of the RSGB, Royal Air Force Benevolent Fund Enterprises, and of the RAF are not eligible to enter. The winners will be the first five correct entries drawn at random. The draw will take place on 30 June 1998.

Adult tickets £24 on the day, or £19.50 in advance from Waitrose, Victoria Wine and Evans Halshaw. Advance tickets can also be ordered from RAF Benevolent Fund Enterprises for £19.50 plus a £2 per order administration charge, by phoning 0891 122997 (calls cost 50p per minute, of which 15p per minute is donated to RAF Benevolent Fund Enterprises). For group bookings of 10 or more, tel: 01285 713456.



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The Royal International Air Tattoo 1998

**1686 Bristol Road South
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Birmingham B45 9TZ**

SRP TR

(COM213)

100 CHANNEL SCANNER

A high-specification scanner offering 100 channels in 10 banks, with 1 Priority Channel in each bank. For speed and ease of use it offers Jetscan, which can scan 100 channels per second, and also Jetsearch, which can search at up to 100 steps per second. It also features programmable band search, lock-out for up to 10 frequencies, channel look-out, 2 second scan delay, data noise/birdies skip, a key lock and a green back-lit display. 66-88, 108-174, 406-512, 806-956.

£119.99 + £5 P&P.



(COM205)

400 CHANNEL SCANNER

The B111 is the last word in programmable scanners. A free standing desk top unit covering nine radio bands in the 25-512MHz and 806-1300MHz ranges. Operates from AC mains or car cigar lighter via suitable adaptor. It incorporates a microprocessor avoiding the need to change crystals and gives special functions such as scan delay, memory back-up, priority channels and many more.

£249.99 + £5 P&P.



(COM102)

10 CHANNEL SCANNER

This state of the art 10 channel scanner is fully programmable and can receive a variety of PMR communications. It is robustly designed and offers a full frequency LCD display for ease of use. Also features an in-built circuit for recharging Nicad batteries. 66-88, 137-174, 380-512.

£49.99 + £5 P&P.



(COM215)

200 CHANNEL SCANNER

A highly-featured desktop scanner offering 200 channels arranged in 10 scanning banks, with one Priority Channel in each bank. For ease of use it offers Turbo Scan at 100 channels per second max with

Autosort for maximum scan speed and Turbo Search at up to 100 steps per second. Other features include direct search programmable band search, auto station program mode, lock-out for up to 10 frequencies, manual frequency sort, programmable auto-recording and optional CTCSS tone squelch. The unit is powered by AC mains or 13.8Vdc. 66-88, 108-174, 216-512, 806-956.

£219.99 + £5 P&P.



SANGEAN ATS 909 FM-Stereo/MW/LW/SW PLL Synthesized receiver

The ATS-909 is a continuously tunable receiver from 153kHz-29999kHz. This receiver is capable of receiving and tuning all the short wave bands and any stations in between

- 307 memories (261 in SW, 18 each in MW/FM, 9 in LW plus priority station)
- Five tuning methods – direct frequency tuning, auto scan, manual tuning, memory recall and rotary tuning
- ATS (auto tuning system) – auto scan and preset in priority of signal strength in FM/MW/LW bands
- E2 PROM for memories back-up
- FM stereo via earphones
- 29 pages SW stations name memory, 9 memories in every page
- Automatic search strongest signal station within SW station pages
- SSB (USB/LSB) 40Hz/step on fine tuning
- AM RF gain control
- Built-in 42 world cities time plus D.S.T. device
- 3 individual timers
- Adjustable sleep timer
- Alarmed by radio or HWS (Humane Wake System) buzzer
- Battery and signal strength indicator
- Direct key to recall favourite station in one button
- Dual conversion device
- REC out and standby control output
- Pre-programmed station name and frequency according to customer's requirements before ex-factory
- AM wide/narrow filter and FM mono/stereo selector
- Optional features for European market
- RDS (Radio Data System) on PI, PS and CT for station name and clock time
- Size in mm: 215 x 133 x 37.5
- Weight: 850g without batteries



£169.95 + £5 P&P.

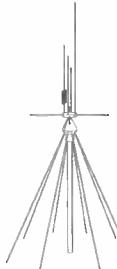
- ★ Free batteries
- ★ Free SW frequency book
- ★ Free SW antenna
- ★ Free headphones

TRADING

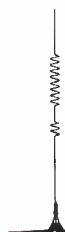
Telephone: 0121-457 7788
 0121-460 1581
 Fax: 0121-457 9009



Super Syncro 1100 – 1100mAH Nickel Metal Hydride (NiMH) AA size rechargeable cells. No memory effect. Twice the capacity of NiCds. £3.00 inc P&P.



Skyscan DX-V1300 base disconne – Most disconnes only have horizontal elements and this is the reason that they are not ideal for use with a scanner. Most of the transmissions that you are likely to receive on your scanner are transmitted from vertically mounted antennas. The DX-V1300 has both vertical and horizontal elements for maximum reception. Constructed from best quality stainless steel and aluminium and comes complete with mounting pole. £49.95 + £3 P&P.



Wideband mini-mag antenna – Wideband (25-1300MHz) receive antenna featuring super strong miniature magnet and coax cable terminated in BNC connector. £29.95 + £3 P&P.



Roberts R861 – compact digital world band receiver – Fully featured 153kHz to 30MHz (AM, SSB) and 87.5MHz to 108MHz (FM) portable digital world band receiver. Features include RDS, world time clock, 306 memories, RF gain control, direct frequency entry. Comes complete with free PSU, antenna, frequency guide and case. £199.00 + £5 P&P.



and 760-1300MHz. Features 500 memories, auto sorting, backlit orange LCD display. Scan rate of 100/300 channels/sec. £249.95 + £10 P&P.



Yupiteru MVT-7100 – All mode switchable handheld HF/VHF/UHF scanning receiver. Covers 0.5-1650MHz. Features 1000 memories, over 500 pass memories, 10 limit search banks, 12 step sizes. Comes complete with earpiece, belt clip, wrist strap, rechargeable batteries, PSU, in-car adaptor and telescopic antenna.

£199.99
+ P&P.
(10 only)



Skyscan Desktop Antenna Model

Desk 1300 disconne – Built and designed for use with scanners. Coverage: 25 to 1300MHz. Total height 36" and 18" wide at widest point. Comes complete with 4m of RG58 coax cable and BNC connector. High performance antenna, ideal indoor or as a car antenna when vehicle is stationary. £49.00 + £3 P&P.



Airband mini-mag antenna – Civil (108-137MHz) and military (225-400MHz) dual band receive antenna featuring super strong miniature magnet and coax cable terminated in BNC connector. £24.95 + £3 P&P



Yaesu FRG-100 communications receiver – Award winning 50kHz to 30MHz base station AM, CW, USB, LSB, FM (optional) communications receiver. Features include two clocks and timer, 50 memories, FM option, remote control jack. Superb value at £449.95 + £7 P&P.



Radio shack DX-394 communications receiver – 150kHz to 30MHz base station AM, CW, USB, LSB communications receiver. Features include clock and timer, signal meter, 100+ memories, RF gain control and direct frequency entry. A steal at £149.95 + £7 P&P.



AKD Target HF3 communications receiver – 30kHz to 30MHz mobile or base station AM, USB, LSB communications receiver. Very simple to operate. Ideal for the novice, but with a performance more demanding listeners will appreciate. £159.95 + £5 P&P.



Commtel COM 206 – AM/FM handheld VHF/UHF scanning receiver. Covers 66-88MHz (FM), 108-137MHz (AM), 137-174MHz (FM), 380-512MHz (FM). Full civil airband coverage, comes complete with free case and rechargeable batteries. £129.95 + £5 P&P.



Realistic PRO-2042 – AM/FM/WFM switchable base station HF/VHF/UHF scanning receiver. Covers 25-520 and 760-1300MHz. Features 1000 memories, 100 monitor channels, backlit orange LCD display. Scan rate of 50 channels/sec. £249.95 + £10 P&P.

**WE ALSO HOLD A LARGE RANGE OF SECOND USERS SHORTWAVE AND SCANNING RECEIVERS.
PLEASE CALL WITH YOUR REQUIREMENTS**

Like most ham radio dealers I have occasionally taken computer equipment in part exchange, and then have had to try to sort out the problems!

Jack bought a 486 system from me for use on packet. Within a few days he was back with the monitor complaining that the screen had gone shaded so that the colour on one side was different to the other. While Jack waited I put the monitor on, and sure enough there was a large area of green on the right hand side. I grabbed a large electric drill, switched it on, and brought it towards the monitor, at which point the look on Jack's face showed that he obviously thought I had taken leave of my senses! Whatever was I up to?

The colour tubes fitted to computer monitors are of higher precision than those fitted to TV sets, and have a very fine shadow mask. If this gets slightly

frier just happens to be switched on or off at a peak in the mains cycle, a strong magnetic field can be left behind in the vicinity. As in Jack's case this can permanently magnetise a monitor, and cause colour shading. But why the drill?

Monitors are fitted with a degaussing circuit as shown in Fig 1. When the monitor is switched on, AC current rushes through the coil, magnetising the tube alternatively north / south, and south / north. As the posistor gets hot, its resistance increases and the current reduces gradually, magnetising the tube less and less and removing any small amounts of residual magnetism at the same time. This is sufficient to deal with normal background magnetism, and any slight residual magnetism, but is not sufficient if the monitor is strongly magnetised. In this case the use of an external degaussing coil, or a suitable

former that stops it flowing excessive current, but its inductive reactance. A high-powered linear amplifier transformer may have a DC resistance of a fraction of an ohm, but when the secondary is not loaded it will only take a very small current. I advised John to look for short circuits, and as a start check the high voltage rectifiers. If these were OK I suggested removing the PA valves, and seeing if this cured the trouble.

After this treatment Jack's monitor was as good as new, and after I had explained what I had done he was happy to conclude that I was just as sane as any other radio ham! He went away after being instructed to be careful where he placed the monitor in future.

faulty mains transformer

John phoned me to ask me if I had a mains transformer for his FT-102. I didn't have one, but I advised him to sit down while I told him the price. I then asked him if he sure it was really faulty. John explained that his rig was

former that stops it flowing excessive current, but its inductive reactance. A high-powered linear amplifier transformer may have a DC resistance of a fraction of an ohm, but when the secondary is not loaded it will only take a very small current. I advised John to look for short circuits, and as a start check the high voltage rectifiers. If these were OK I suggested removing the PA valves, and seeing if this cured the trouble.

An hour later John phoned me back to say that two of the high voltage silicon rectifiers were dead short, and to ask about replacements. I pointed him in the direction of the nearest electronic component supplier, and told him to get any one-amp diodes rated at 1200 volts or more. Whilst he was at it I suggested he replaced all the diodes. This cost him about one hundredth of the cost of a new transformer, and brightened up his day no end.

All in Day's Work

Why might you attack a video monitor with an

magnetised the electron beam going through the holes in the mask are deflected and hit the wrong colour dot, hence the shading. When computers are used in ham shacks quite often the monitor ends up near to something, such as a linear amplifier, fitted with a powerful mains transformer. If the ampli-

substitute, is required.

Demagnetising an object requires a strong alternating magnetic field that can gradually be reduced in strength. In the absence of the correct degaussing coil, suitable substitutes are a powerful tape head demagnetiser - or an electric drill. Switch the demagnetiser or drill on

blowing fuses, and that he had checked the transformer primary, and it only read 4 ohms. "Why, with 230 volts, by Ohms law the transformer must be trying to take over 50 amps". But was John missing something? He was.

It is not the DC resistance of the primary of a mains trans-

external cause

Chasing red herrings when carrying out service work is an occupational hazard, especially when the fault eventually proves to be outside the equipment. On more than one occasion I have wasted time trying to find out why the output of a valve-operated rig was a little on the low side, only to find that there was nothing wrong at all - the trouble was in my workshop.

Bert lived in a small village and had a hi-fi amplifier that needed very frequent attention. Every few months he would bring it in with one of the output valves cracked. After about a year, things were getting desperate, and so I went round to Bert's house to investigate - the trouble was in his house.

The trouble in both cases was

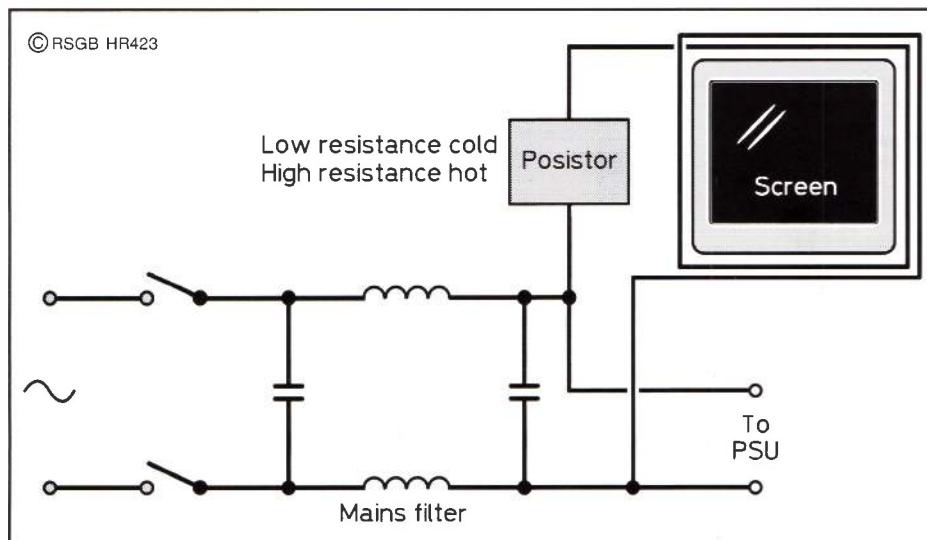


Fig 1: The degaussing circuit commonly fitted to video monitors.

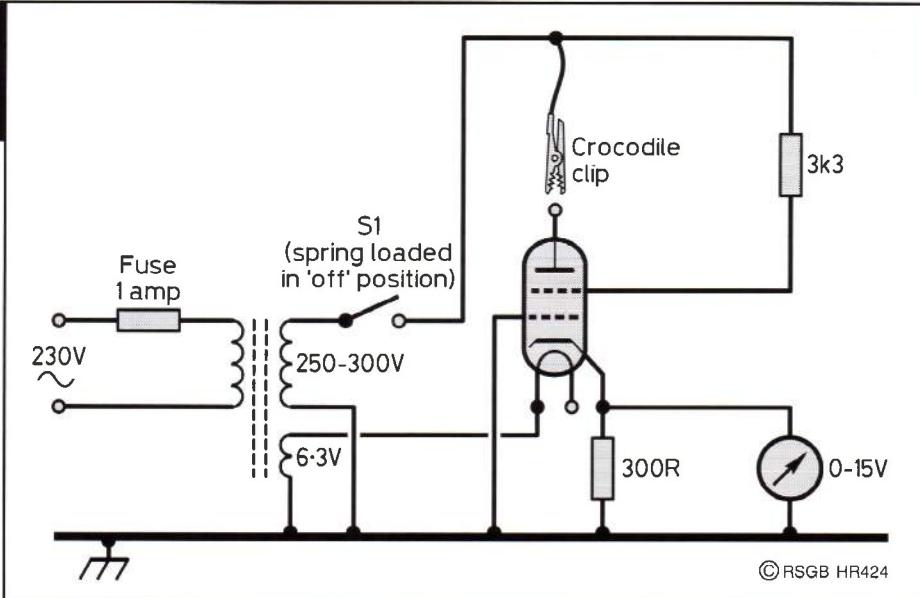
Fig 2: Harry Leeming's home made valve tester: still used to ensure that matched pairs are matched properly.

from the same source. In the former case I checked my mains supply voltage, and found that it had fallen to below 210 volts. In the latter case I found that Bert's was over 260 volts. In both cases a phone call to the electricity board soon had things sorted out, and everyone was happy - well, not quite.

Apparently the village shop had been doing a roaring trade in electric lamp bulbs. When the mains supply came down to a more normal figure, sales dried up rather abruptly!

distorted on ssb

Charley was rather pleased with the FT-480 he purchased from the rally. It had excellent receive



start operating in a mode more like class C. This means that low level signals do not get through, hence the lack of low power operation on FM, and horrible dis-

Four-pin Yaesu and Trio mic plugs and sockets vary slightly in size, and I often find that to operate with a particular mic, the split pins on the rig's mic

Fig 2 shows the circuit of my 'homebrew' valve tester. Valve holders for both 6146 and 6JS6C and 6KD6 valves are wired in parallel, and are sup-

All in a day's work

electric drill? Harry Leeming, G3LLL, explains . . .

audio quality on FM and he got very good transmit reports from the local net. He used it in this mode for a few months and then he erected a 2m beam and had a go at SSB. The reports here were far from complimentary.

He arrived at my counter with his rig and a tale of woe. "Did it just need peaking up on sideband?" The first thing I asked Charley was how the FT-480 performed when switched to FM on low power, and I was told that it gave no measurable output at all. "But surely that can't have any connection with the distortion on SSB?", broke in Charley, but I am afraid it had.

The FT-480 like many other rigs uses a module for the power amplifier stage. This device takes a few milliwatts in and delivers 10 watts to the antenna. As it is used on SSB it must be linear in operation, and when it is new it is. A common fault with these units is that they stop operating linearly in class A/B, and

tortion when using SSB.

Charley was told that by the time he had paid for a new module and fitting, he would not have much change out of £100. In the circumstances he decided that he would use it in the FM mode only, and that he would fully check equipment he had bought second hand in future.

intermittent ts-520

Sammy brought the second-hand TS-520 he had recently acquired in for repair, with the complaint that the transmit audio was intermittent. "It can't be the mic," he said, "I've tried it on my pal's rig and it's perfect." As is often the case with intermittent faults, I could find nothing wrong with it. I telephoned Sammy, and told him just to be on the safe side to bring his microphone in. Sure enough, as soon as I used Tommy's microphone the intermittent problems started. The trouble?

socket have to be prised open slightly. A fine screwdriver pushed down each of the four pins was all that was required, and Tommy had no more trouble with his audio.

valve testing lab

Sid had a retail business in the specialist hi-fi trade, where expensive valve amplifiers are once again very much the 'in' thing. He had noted that I sometimes advertised matched pairs of PA valves for RF amplifiers, and wondered if he could do the same for audio output valves for his hi-fi enthusiast customers. As a radio ham he was a customer of mine, and so he came in to ask me how I tested valves, and how much the equipment cost, explaining that he had been considering whether or not he could justify the expense. He had something of a shock when he found out just how simple my equipment was.

plied with heater and HT voltages by a small mains transformer. No rectifier or smoothing circuits are used, as the valve being tested acts as its own rectifier. The 250 volt supply is connected to the top cap anode of the valve being tested by a crocodile clip, and so for safety the switch S1 is of a spring-loaded type, and only makes contact when it is held.

The valve to be tested is inserted, left to warm up, and then S1 is pressed. A note of the voltage reading across the cathode resistor is then made. Other valves are then tested, and ones with the same reading are brought together as matched pairs.

The system is not perfect, and it could be deceived if used for matching old valves, but with new valves taken from the same batch, it is more than adequate to ensure that one valve is not taking too much of the load. Sid decided that he could put his chequebook away and went home to look in his junk box.

The VHF contesting season is once again upon us. For those of us who participate in this niche of our hobby, this means it's time to blow the dust off the generator, make sure the mice haven't eaten the guy ropes, and renew the waterproofing on the tent. Does your local radio club put on a station in VHF contests? If not, let me try and persuade you that it's worth making the effort - it's great fun, very sociable - and it doesn't always rain!

dispelling myths

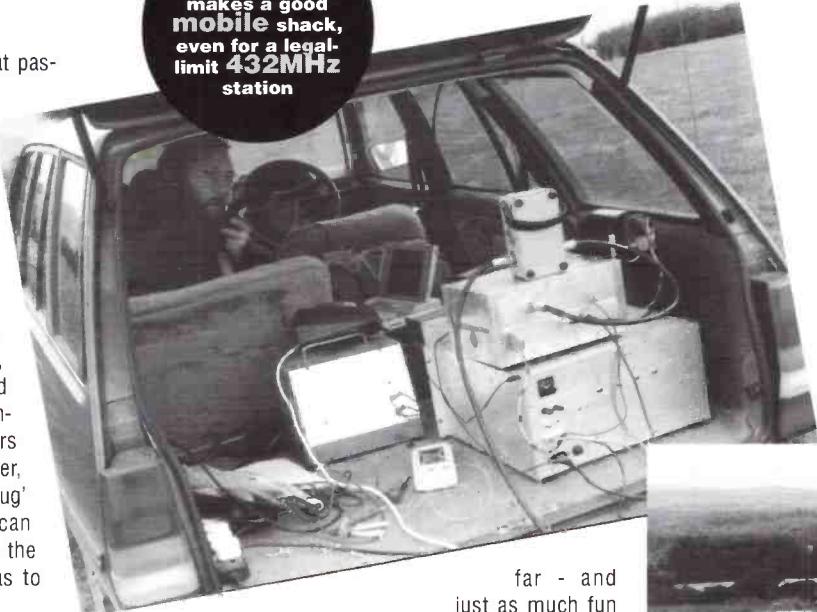
There's a popular myth that I often hear when contesting is discussed at Amateur Radio clubs and rallies, and that is that VHF contests are only for the 'big boys': large contest groups who have been in the game for many years. They can summon up huge amplifiers, multiple arrays of antennas on gigantic mobile towers, and a cast of thousands to put it all up, operate it, and

of the iceberg in that pastime, and many thousands of others enjoy participating at other levels. Contesting is the same: whilst a small club station isn't likely to do very well if they try to take on the large groups in an Open contest, there's much fun and interest to be had competing with your peers lower down the order, and after all, if the 'bug' bites, your group can grow and move up the ladder. Everyone has to start somewhere.

VHF NFD

Most VHF contests in the UK are organised by the RSGB, and the flagship contest in the RSGB's calendar is VHF National Field Day (VHF NFD). This contest takes place during the **first full weekend in July** (that's 4/5 July

An estate car makes a good mobile shack, even for a legal-limit 432MHz station



far - and just as much fun can be had operating from a local high-spot. It's obviously beneficial to be as high as possible, with as good a take-off as you can manage to get, but inevitably there will be compro-



Getting Ready for One of the best fun operating events of the year is coming up SOON.

take it all down again afterwards.

Well, that's about the same as saying that motor sport is only for the likes of Michael Schumacher and Jacques Villeneuve, whereas in fact they are only the tip

this year) from 1400UTC on Saturday to 1400UTC on Sunday [the dates of all the major contests are also in the *Ham Radio Today Event News* pages each month - Ed]. VHF National Field Day is always the busiest event of the year, and provides multiple sections which cater for the smaller 'club' stations, as well as the 'big-gun' contest groups. The full rules can be found in the September 1997 issue of *RadCom*, or from the RSGB VHF Contests Committee WWW site.

All operators should be familiar with the rules before the contest starts, so here's a brief summary:

- You can operate on any or all of 70, 144, 432 and 1296MHz. Separate results tables are produced for each band, as well as overall tables for each section. 70MHz has two sub-sections: CW-only and phone-only.
- All power must come from 'portable' sources, eg generators, batteries, wind or solar power, but not mains.
- All stations must be housed in 'portable' ac-

commodation: tents and caravans are the usual choice.

- All equipment (including antennas) must be installed on-site during the 24 hours immediately prior to the contest.
- There are three main sections: 'Open' (full legal power and unlimited antennas), 'Restricted' (full legal power, but antennas re-

mises made because of access problems or other factors. The exact location for the station is down to local conditions. Don't forget to obtain permission from the landowner if you're intending to operate from private land, and to take all reasonable steps to ensure that neither your operators nor members of the general public are in any danger from insecure antennas or any other mishaps that might befall you.

As of this year, it's no longer *essential* to register your intended site with the VHF Contests Committee in advance - but only those who *do* register will be eligible for awards in the contest. You can get the form you need for registration from the RSGB *Yearbook*, or from the VHF Contests Committee website. The deadline for registration is **10 June**, but last-minute changes can usually be accepted. If you do register, be prepared to have your station inspected by a Contests Committee representative at some time during the event. It's OK: they're pretty friendly folk as a general

logistics

So, what's involved in putting on an entry for VHF NFD? Let's identify a few important things you need to think about.

Firstly, there's the choice of contest site. This choice is often limited by the geographical spread of the people involved - unless you're *really* serious, you probably won't want to travel too



Who needs a rotator when you've got a man in a fur hat?
GOHAC/P



rule, and if fed with coffee, are often prepared to impart advice and guidance from their many years of bitter contesting experience.

Next, what equipment are you going to use? The choice will depend

there's always logging, antenna-turning and tactical discussions for SWLs to get involved with. You also need to make sure that enough people stay around at the end of the contest to help dismantle the station.

Although your station won't have the logistical requirements that the larger groups have, you'll

points if you don't log the required information correctly. Not everyone can be expected to operate at the sorts of QSO rates that big groups can attain; above all, you need to be comfortable with what you're doing. But you do need to make sure that all your operators are conversant with the contest rules, and a careful watch should be kept on less experienced members who might get themselves into difficulties. It can be a little intimidating at first and even the best operators get tongue-tied at times, but after a while you get settled into a rhythm and it all gets much easier. If in doubt, listen around the band to how other stations are operating, and try to emulate them.

after the event

Whether you enter on paper, or send the files from your logging program, you need to get your entry in by the end of July. While the adjudicators prefer to receive electronic logs where possible (on disk or by e-mail), don't be put off entering if you've logged on paper. All entries are equally welcome and will receive equal scrutiny. The results are published on the WWW site as soon as they're available, and are usually published in the November edition of *RadCom*.

After it's all over, it's useful to hold a 'post mortem'. Discuss what went right and what went wrong, so you can do a little better next year. Above all, make sure the experience was enjoyable for all concerned, that way they'll come back for more. Many groups have fallen by the wayside because they stretched themselves too hard: getting involved in the contest station felt

Maybe next year they'll remember to put up some antennas! The minimalist station of GOARC/P during VHF NFD a few years ago.

VHF Field Day

Peter Bowyer, G4MJS, tells you how to get out and operate in VHF NFD

heavily on what bands and what section of the contest you're intending to enter. The obvious section for first-time groups is 'Low Power' - you don't need to drag heavy amplifiers along with their associated power supply requirements, and with the 10m height-limit for antennas, you won't need large masts, either. Many groups start with a single-band 144MHz station - most modern VHF rigs will deliver the full 25W PEP without an external linear amplifier, and a single Yagi (the 9-element Tonna and 10-element Vårgårda are popular) can easily be mounted on a simple portable mast - or a nearby vehicle can be pressed into service.

Having chosen the site and identified the equipment, you'll need some operators. For many radio clubs, VHF NFD is treated as an extended social event - try to get as many club members as possible along to the site sometime over the weekend. Most licensed members, whether full or Novice licensees, will want a go at operating the station, and

still need to plan how you're going to transport the gear and the people to the site - and to decide on the accommodation arrangements. As well as somewhere to operate from (whether that's the back of a car, a tent, or a caravan), it's also very useful to have an area where people who are not immediately involved in operating the station can sit down, chat, eat, drink coffee etc. If you're intending to operate on more than one band at a time, you'll probably want to have the stations in separate areas to avoid mutual interference, at both radio and audio frequencies.

Sleeping facilities also need to be identified - will the operators take a tent each, or are there spare bunks in a caravan? Is there group catering, or does everyone need to take sandwiches?

operating

Now, down to the business of operating the contest. Contest QSOs are very brief, and accuracy is important: you'll lose

As I said before, accurate logging is vital - there's no point in having the QSO if you don't log the information accurately. Nowadays, all but the smallest entries are usually logged on computer. Free software is available for the PC, and some people write their own. You can either log directly into the computer as you go along, or copy-type from pen-and-paper logs after the contest, or in quiet periods. The software will usually spot and eliminate duplicate QSOs from your log, and work out the score for you.

more like a military exercise than a pleasant weekend in the sun. Enjoyment is what it's all about.

Although I'm now involved with one of the big contest groups, where the pressure and activity levels are often at fever-pitch, I believe just as much fun can be had with a small club station. I remember one club I had the pleasure of contesting with back in the 1980s had a compulsory closedown for an hour on the Saturday evening of VHF NFD so that everyone could participate in the communal barbecue. Now, that's contesting!

The RSGB VHF Contests Committee's WWW site (<http://www.blacksheep.org/vhfcc>) contains full rules and results for VHF NFD and all of the other RSGB-organised VHF contests, as well as downloadable contest stationery, software, and instructions for postal and e-mail entries. Rules are also published in the September issue of *RadCom* each year, and contest stationery is in the RSGB Yearbook. For further information, contact the VHFCC chairman, Steve Thompson, G8GSQ, tel: 0118 982 0848 evenings and weekends, by e-mail g8gsq@blacksheep.org, or by post to PO Box 2399, Reading RG7 4FB.

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 6-8 weeks following the publication date). So write in with your views to; Letters Column, ham radio today, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE or send an e-mail to hrt@rsgb.org.uk. We reserve the right to edit letters for length, grammar and clarity 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 (name and callsign will be withheld from publication if requested). Reader's views published here are not necessarily those of the magazine.

Dear Ham Radio Today,

I can confirm receipt of the Icom IC-746 transceiver [see *Radio Today*, page 5 - *Ed*], and all appears to be working well. It has become very clear that the IC-746 is ideally suited to my present requirements, and I would like to thank *Ham Radio Today* for making the transceiver available.

The antenna farm here is very basic owing to my location in the centre of a city, and local restrictions. A collinear antenna for VHF / UHF and a trapped dipole gives coverage of 40 metres upwards. A small HB9CV is used for local packet working. Other small antennas lurk in the loft space, mainly for receiving. Oh, to have the freedom to erect something better, but it still allows me to work the globe if conditions are right.

Wishing you every success following the acquisition of *Ham Radio Today*. A very satisfied customer!

John A Nixon, M0ADS

Dear Ham Radio Today,

Thank you so very much for the splendid feature in your April edition [about WACRAL on page 5 - *Ed*]. The executive committee met on Saturday and were delighted when I put the page in front of them, expressly asking me to ensure a note reached you immediately.

Congratulations! *Ham Radio Today* is already looking better and much more interesting, with the higher word count and the 'buzz' about the pages.

Victor Brand, G3JNB

letters letters letters

£10 for letter of the month

letter of the month letter of the month

letter of the month

letter of the month

Dear Ham Radio Today,

I noted in the Editorial in the April issue of *Ham Radio Today* the difficulty in obtaining the magazine at newsagents. My husband expressed a wish to purchase *Ham Radio Today*, we first tried Stamford W H Smith, I looked for some minutes along the shelves with no luck, so asked, to be told it was "no longer stocked", but I could place an order.

We then tried the Spalding branch of the same store, where I have obtained it in the past, but told there was "no call for it". Yesterday I went to the Peterborough W H Smith. It was very busy in there and there was no-one available to help, so I must have spent 15 - 20 minutes trying to locate *Ham Radio Today*. I was almost on my way out when I had the presence of mind to look at the back of other 'radio' magazines, and there were six copies of *Ham Radio Today* behind the others. I did not complain at cash out, really due to the queue, but how can *Ham Radio Today* get sold if it is not displayed?

In future we will order from our local newsagent.

Mrs Margaret Edwards

Editorial comment:

We wish all prospective buyers were as persistent as you, Mrs Edwards. Like it or not, Amateur Radio is a minority interest and Ham Radio Today will never have the circulation of Hello! or Radio Times. We therefore need readers to place a regular order with the newsagent, or at the very least 'pester' (in the nicest possible way) the manager of their local branch of national newsagents so that others will not be told "there's no call for it". Please do tell the manager if you can't find Ham Radio Today on their shelves!

letter of the month letter of the month

"TONE" BURST

By GM6MEN



(See QRP Corner, pages 40 / 41, in the May issue of Ham Radio Today!)

Dear Ham Radio Today,

I have now had two copies of the new-style *Ham Radio Today* and would like to say what a good job the team has done. It is lively and informative, and I am pleased to have taken out a subscription. The radio publishing scene just about manages to avoid duplication and readers are well served by the authors who write for the excellent magazines now available. Keep up the good work.

Phil Reilly

Dear Ham Radio Today,

You won't believe just how disappointed I am to hear that the RSGB has purchased *Ham Radio Today*. I really hope you don't destroy an already excellent magazine. Please do not fiddle with it and turn it into a boring magazine.

73s.

Alan Maylin, M1ANM

Editorial comment:

Oh well, you can't please all of the people all of the time. I hope by now Alan has seen two or three issues and has decided that we haven't turned it into a boring magazine. Please do let us know what you think.

letters letters letters

£10 for letter of the month

Dear Ham Radio Today,

It seems you will not be short of lively discussion about the future of Amateur Radio, going by the letter in the February issue, claiming that there is no need for construction, because youngsters just want to get access to new modern Amateur Radio equipment quickly.

This view is often held because Amateur Radio has often failed to explain how its personal licensing system uniquely grants scientific freedoms in a way that encourages responsibility and international understanding between science students everywhere.

As secretary of STELAR, which represents schools using Amateur Radio, I can say regular use is made by young licensees of our freedoms to construct equipment. This starts immediately they take their Novice courses and continues when they use their newly-acquired Novice licence freedoms to participate in projects that give direct practical experience in science, technology and engineering.

Given the opportunity, many young people are keen to take part in Amateur Radio activities where they can learn new skills and then use these to produce something that really works. The learning of skills and scientific knowledge needs to continue as the main requirement to obtain a licence, rather than purchasing it, as this teaches the value of scientific freedom and the need for responsibility in its use from a young age.

To restrict experimental Amateur Radio licence freedoms would prevent pupils from gaining all the scientific training advantages they presently enjoy and which in turn society will benefit from as more young people take a greater interest in science.

Mike Wade, G8OGO

Secretary, STELAR (Science & Technology through Educational Links with Amateur Radio)

Dear Ham Radio Today,

You have reprinted from C&G that a person must be successful in Part A of the new style Radio Amateurs Examination to be successful in the exam as a whole. I think many people will be puzzled by this, as I am.

I think what is meant, for instance, is that if a person had a 100% pass in Part A he / she would not need to answer many questions in Part B to obtain, say, 40% - 50% over the paper as a whole.

This would mean to me that C&G insist on a good knowledge of Part A for certain, but not a great deal of radio theory in Part B would be required to obtain a pass as a whole.

Assuming an overall pass mark of 50%, it seems to me a little hard work on Part A and you are nearly there. Could you clarify the situation for other readers as I'm sure it would be of great interest to many?

W Johnson

Editorial comment:

We asked City & Guilds for their comment. Their spokesman said, "The important point to grasp is that Parts A and B will be marked separately out of 25 and 55 respectively. If a candidate fails to achieve a certain number of correct answers in Part A he / she will not be marked for Part B. If a candidate passes Part A he / she will still have to achieve a certain number of correct answers in Part B to prove successful in the examination overall. Result statements will be issued to all candidates via their centres indicating their performance in both Parts A and B. Candidates will need to achieve a pass in both Parts A and B to obtain a certificate. No certificate will be issued to any candidate who achieves a pass in one part only. He / she will receive a result statement only and will need to take the complete examination again."

ham radio today event news

rallies

23 May

Anglo-Scottish Repeater Group / Carlisle & DARS car boot radio junk sale, Nortech radio telephone's site, Blackdyke Rd, Kingstown, Carlisle, 0.5 mile from M6 junction 44. Open 10.00am - 3.00pm. Talk-in on 145.550MHz. Details from Mick, MOAOH, tel: 01228 526436, or Dave, G4KFN, tel: 01228 590011.

24 May

The Plymouth Radio Club Rally at the College of Further Education, Kings Road, Devonport, Plymouth. Doors open 10.30am to 4.00pm. Morse tests on demand, ample free car parking, easy access for disabled visitors, talk-in on S20 (venue will be signposted from the Manadon junction of the A38 Devon Expressway), refreshments and licensed bar available. For further details contact Stephen Ransden, tel: 01752 662051 during office hours.

The Three Counties Radio and Computer Rally takes place on 24 May and *not* on 5 July as previously advertised elsewhere. The rally is held at Perdiwell Leisure Centre, Bilford Road, Worcester, and features trade stands, radio and computer dealers, parts and accessories, a bring and buy stall, refreshments and a licensed bar. Admission is £1.50 and the rally is open 10.30am - 5.00pm. For more details contact Eddie Cotton on tel: 01905 773181.

East Suffolk Wireless Revival, Stoke High School, Ipswich. Tel: 01394 448495 (evenings).

30 May

WACRAL Whitsun Welcome Day, at Alrewas, Staffs. Full details from G4UJW, tel: 01283 791213.

30 / 31 May

Peterborough Radio Festival 98, 'RadFest', replaces the East of England Radio and Computer Rally. Jointly organised by the Peterborough Radio and Electronics Society and the Elite Breakers CB Club, RadFest will be held over two days at the Sacrewell Farm and Country Centre, Wansford, near Peterborough. Camping and caravanning facilities are available and visitors are encouraged to stay the whole weekend. There will be a disco and BBQ on Saturday evening and the radio car boot sale on Sunday. Further details from Vince Edwards, G8NGZ, tel: 01733 331211, e-mail g8ngz@compuserve.com

31 May

Southend and District Radio Society Radio and Computer Boot Sale at Scout HQ, 191 Eastern Ave, Southend on Sea, Essex. Includes a bring and buy stand, under cover and refreshments. Admission just 50p. Doors open 10.00am and talk-in is on 145.550MHz. Details from GOUAW, tel: 01702 304439.

7 June

Spalding & District ARS 30th annual rally, Springfields Exhibition Centre, Spalding (signposted from Spalding bypass). Amateur Radio, scanners, shortwave and CB, satellite TV, books and components. Licensed bar and catering. Huge car boot area, plenty of free parking. Starts 10.00am, talk-in 145.550MHz. For further details contact Mick Pell, G1APV, tel: 0976 271796, or Dennis Hoult, G4OO, tel: 01775 750382.

Royal Naval Amateur Radio Society mobile rally, at the Playing Fields, opposite HMS Collingwood, Fareham, Hants. Trade stands, bring and buy stall, Raynet, SUNPAC, club stands, children's play

area, talk-in via PC / PH repeaters. All in three large marquees. Doors open 10.30am. Further details from the Secretary, RNARS, 103 Torrington Road, North End, Portsmouth.

Red Rose QRP Festival, near Manchester. Entrance fee £1, new bring and buy area. Contact Les Jackson, G4HZJ, tel: 01942 870634 for details.

14 June

Elvaston Castle National Radio Rally, Elvaston Castle Country Park, Elvaston, Derby. On the B5010 between the A6 and A52, 5 miles southeast of Derby. The event includes the WAB awards group AGM. Details from Brian, G1CUH, tel: 01332 751412.

Bangor and District Amateur Radio Society Amateur Radio Rally, Clandeboye Lodge Hotel. The event is open 12 noon to 4.00pm and 'full catering facilities' are promised this year. Details from Roy Finlay, G1OWN, tel: 01247 460716.

Aldershot Amateur Radio Rally, Mytchett Community Centre, Mytchett Road, near Camberley, Surrey - easy access from J4 / M3, talk-in on 145.550MHz FM. Doors open 10.30am, entrance £1. Details from Roland Brade, G3VIR, tel / fax: 01252 837860; e-mail: rally@venusww.demon.co.uk

Barford Radio Rally, Village Hall, Barford, on B1108 Norwich to Watton Road, Norfolk. Trade stands, car boots welcome, bring and buy, Raynet supplies, raffle etc. Talk-in on 145.550MHz FM. Details from Tony, G1ULE, tel: 01760 338938.

20 June

RSGB Headquarters Summer Saturday Opening, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. RSGB bookshop, GB3RS station, National Amateur Radio Museum and Library. Morse tests on demand (11.00am to 12.30pm only). Doors open 10.00am - 2.00pm. Details: Marcia Brimson, 2E1DAY, tel: 01707 659015 (office hours).

21 June

Newbury & District ARS Annual Radio Car Boot Sale, Cold Ash Playing Field, near Newbury. Sellers / traders to arrive at 8.00am, no earlier please. For further details contact Ian Trusson, G3RVM, tel / fax: 01635 826019; e-mail: G3RVM@compuserve.com

Please note that the Denby Dale (Pie Hall) Amateur Radio Rally Computer and Amateur Radio Fair, which was due to take place at Shelley High School, near Huddersfield on 21 June, has been *cancelled*.

26 - 28 June

Ham Radio '98 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 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 21729.

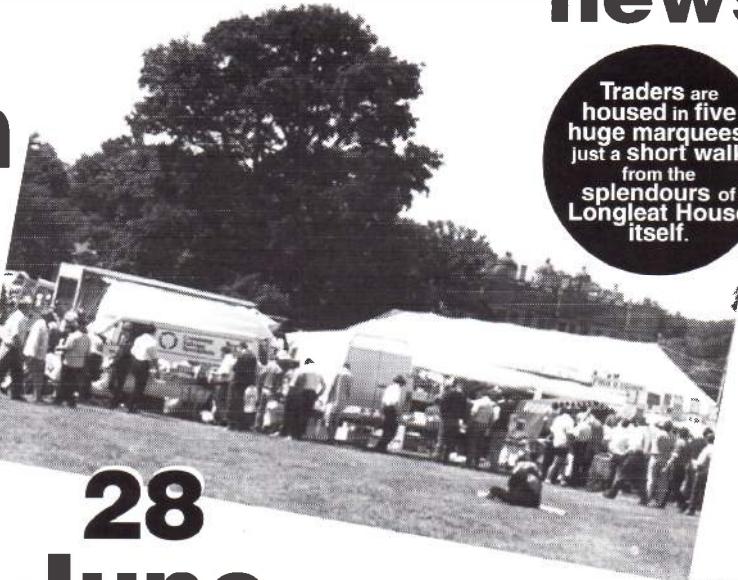
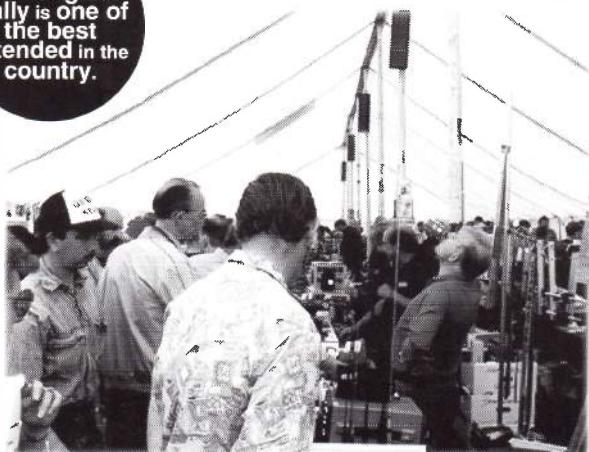
28 June

Horncastle Rally, Horncastle Youth Centre, Lincs. Joint venture between youth centre and Fenland Repeater Group. Good access for disabled. Tables £2 (bookable and payable in advance), entrance £1. Further information from Tony Nightingale, G6CZV, tel: 01507 522482 or e-mail antony.n@virgin.net

To include your rally in this section, please make sure you send us details of your event in time: the deadline for the August issue is 15 June; for September: 13 July, and for October, 14 August. The address for submissions is: The Editor, Ham Radio Today (Rallies), RSGB Publications, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE; fax: 01707 645105. We would be grateful if Ham Radio Today readers would ask their local rally organiser to send information on their rally to this address. 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.

rally of the month

The Longleat Rally is one of the best attended in the country.



28 June

The Longleat Amateur Radio Rally is one of the longest-established such events in the UK. This year is the 41st consecutive event, held in the grounds of the Longleat Estate, near Warminster in Wiltshire, and organised by the RSGB City of Bristol Group.

The large trade show, housed in five huge marquees, is a major attraction for all Amateur Radio, computer and electronics enthusiasts, who travel from all over the country to attend. The Longleat Rally weekend has also become something of a social event amongst Radio Amateurs, with many families returning year after year to meet friends old and new, spending the weekend camping on the site.

Last year, the attendance was over 4000. This was somewhat down on previous years, mainly due to the atrocious weather in the weeks leading up to the rally (remember the TV pictures of mud at the nearby Glastonbury Festival?!) However, at Longleat the site wasn't water-logged and although 'damp', there was very little mud, and everyone enjoyed an excellent day out.

In addition to the five marquees, there are plenty of outdoor traders (no doubt hoping for better weather this year), a craft fair sharing the site, which will provide additional interest, particularly for the non-radio enthusiast members of the family, and plenty of on-site catering, including a fish and chips van and a beer tent.

The organisers of the event are keen to help radio clubs promote themselves and gain new members, saying that "a healthy number of clubs exhibiting at the rally is an attraction in itself". The RSGB City of Bristol Group therefore offers a special discount for the first table booked by each RSGB Affiliated Society, club or group. If the club wishes to use its table for any form of trading, a 50% discount on the normal trader's rate is available, but for clubs using the Longleat Rally purely as a meeting point and to enrol new members, one table is provided for them absolutely free of charge. Many national groups such as ISWL, RAIBC, RNARS as well as packet radio and repeater groups, usually take advantage of these generous discounts and have their own stands at Longleat.

For the family, other attractions include the magnificent Longleat House itself, just a short walk from the rally site, whilst the famous Longleat Safari Park is a short drive away.

Longleat is located just off the main A36 trunk road near Warminster in Wiltshire. For the rally, follow the brown tourist signs to Longleat House (and not the Safari Park).

The Longleat Rally opens at 10.00am. Admission is £3.00, of which £2.00 is for admission to the grounds of Longleat Estate. For OAPs and children, the admission fee is just £1.00 (with free admission to the rally). For further details of the rally, including booking requests, please call Gordon Lindsay, G0KGL, 66 Jubilee Crescent, Mangotsfield, Bristol BS16 9AZ; tel / fax / answerphone: 0117 940 2950. For general enquiries about Longleat House and attractions, call 01985 844400 or take a look at www.longleat.co.uk

other events

30 May

WACRAL Whitsun Welcome Day. Details: Charles, G4UJW, tel: 01283 791213.

30 / 31 May

CQ WPX CW Contest (10 - 160m, 0000 - 2400UTC).

6 / 7 June

RSGB 50MHz Trophy Contest (1400 - 1400UTC).

6 / 7 June

National Field Day (10 - 160m CW, 1500 - 1500UTC).

7 June

RSGB 1st 50MHz Backpackers Contest (1100 - 1500UTC)

Ham Radio Today July publication date.

10 June

Scarborough Special Events Group, GX0000, 10th anniversary activity weekend (check 3725kHz SSB).

13 / 14 June

Worked All Britain awards group AGM, Gothic Hall, Elvaston Castle, starting at 1400 (please note this is a *new venue*). Details from the honorary secretary, G8UYD QTHR.

14 June

RSGB HQ Saturday Opening - see rallies.

20 June

RSGB 2nd 144MHz Backpackers Contest (0900 - 1300UTC) - please note this is a *change of date*.

21 June

RSGB 432MHz FM Contest (1800 - 2200UTC).

21 June

PW 144MHz Contest.

21 June

WAB 70MHz Phone Contest (0900 - 1500UTC).

Details from G8UYD QTHR.

26 - 28 June

HamRadio '98 exhibition, Friedrichshafen, Germany. Details tel: +49 7541 7080.

Longleat Rally (see 'Rally of the Month' opposite).

WAB 144MHz QRP Contest (0900 - 1500UTC). Details from G8UYD QTHR.

29 June - 3 July Lions International Convention, NEC, Birmingham, inc special event station.

ARIM 30th anniversary field day weekend, Morokulen (see 'Radio Today' page 6).

RSGB 2nd 432MHz Backpackers Contest (1300 - 1700UTC)

VHF National Field Day (see pages 18 - 19).

RSGB 3rd 144MHz Backpackers Contest (1100 - 1500UTC)

York Radio Rally, details from Pat Trask, G0DRF, tel: 01904 628036.

Harlow & DARS rally and car boot sale. Please note *new venue*: Mark Hall School, Harlow (A414) First Avenue. Details from Len, G7UFF, tel: 01279 832700; e-mail: len.brackstone@virgin.net

ham radio today event news

Sussex Amateur Radio And Computer Fair

Sunday July 12th 1998 10.30 am to 4.00 pm
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Harlow & District Amateur Radio Society

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Sunday 7th June 1998
10.30 - 17.30

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The Secretary R.N.A.R.S., 103 Torrington Road,
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Amateur Radio Operating Manual

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RSGB Yearbook - 1998

edited by Brett Rider, G4FLQ

Formerly known as the RSGB Callbook, the Yearbook has been enhanced to include a wealth of information for all Radio Amateurs. Includes all UK and Republic of Ireland callsign listings, plus over 1200 information pages. Reviewed in *Ham Radio Today* December 1997.
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Passport to World Band Radio

edited by Lawrence Magne

How to find hundreds of programmes you won't find on ordinary radio or TV, from the BBC's incomparable reporting to music from the South Seas. Passport to World Band Radio covers it all - what's on, what to buy, how to get started, and how to get the most from your listening.
1998 Edn, 560 pages

Practical Receivers for Beginners

by John Hey, G3BDQ

A down to earth guide to the construction of many different types of wire antennas, ranging from simple dipoles to ingenious multi-wire systems. Boring and unnecessary theory is kept to a minimum - instead the author shares his years of experience, offering advice for beginners and enthusiasts alike.
£8.92 (plus P&P)

World Radio & TV Handbook

edited by Andrew Sennitt

The comprehensive guide to broadcasting, including domestic and international radio listings, web sites, e-mail addresses, frequency listings, English broadcasts, 1998 survey of shortwave receivers and accessories, worldwide TV station addresses and contacts.
1998 Edn, 608 pages

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by Colin Redwood, G6MXL

How to set up a station and get on the air as cheaply and effectively as possible. It covers all bands, with special emphasis on VHF / UHF. A must for everyone who has just passed the RAE or NRAE. (See the review in *Ham Radio Today* December 1997).
1st Edn, 124 pages

Your First Packet Station

by Steve Jelly, G0WSJ

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by Peter Dudd, G3IDN

Take the guesswork out of adjusting any antenna, home-made or commercial, and make sure it's working with maximum efficiency. An invaluable companion for everyone who wishes to get the best results from their antennas.
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Practical Wire Antennas

by John Hey, G3BDQ

Contains a selection of easy-to-build receiver designs suitable for amateur bands, together with simple 'fun' projects and test equipment. The theory and practice of receiving techniques is outlined to help with understanding the circuits presented. This book is of value to anyone who is building receivers for the first time, or who is considering moving up to microwaves.
1st Edn, 96 pages

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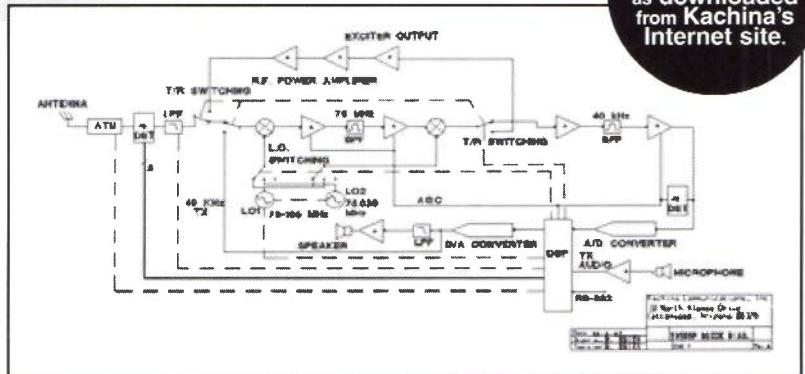
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The microphone, headphones and Morse key are connected via a small control head which can fit into a spare slot in your computer, or alternatively can be installed in a separate desk-top cabinet.

Fig 1: Block diagram of the Kachina 505DSP, as downloaded from Kachina's Internet site.



When the editor asked me if I was interested in reviewing the Kachina 505DSP transceiver, I jumped at the chance. This September I will have been licensed for 30 years, and during that time have used everything from WWII surplus equipment to the latest Japanese transceivers. But, in a sense, all those radios were similar in concept, although the in-

zled that connections are made to the back for the antennas (two may be connected), power, and accessories (connections to linear amplifier, data controller, etc), but that the interface lead to the PC connects at the front, spoiling the otherwise clean appearance. You can mount the unit

Kachina 505DSP Computer

Don Field, G3XTT, operates a 'future-proof' rig which

nards may have changed from valves to transistors and then to integrated circuits.

The Kachina is a totally new approach, albeit one which has been predicted for some years now. The hardware side is relegated to a 'black box' (well, actually, a cream-coloured box to match most computer CPUs), which can be up to 23m from your operating position. Microphone, headphones and Morse key connect to a small control head which is designed to fit into a spare slot in your computer, or can be installed in a small desktop cabinet, available separately. The only physical control is the on / off switch. Every other aspect is controlled from the software.

first impressions

The main unit is about the size and weight that I would expect of a 100 watt transceiver with external power supply (you need to provide a supply capable of 13.8V, 25A), though it looks very different, as there are no external controls. I was a little puz-

zled that connections are made to the back for the antennas (two may be connected), power, and accessories (connections to linear amplifier, data controller, etc), but that the interface lead to the PC connects at the front, spoiling the otherwise clean appearance. You can mount the unit

basis that manuals, once printed, cannot be changed, whereas the design and software is subject to continual upgrade. I have some objections to this approach, though in practice it didn't prove a significant limitation.

The software behaves exactly as other Windows programs, and help is always available by function key or pull-down menu. However, it would have been helpful to have a description of the hardware and a block diagram. These are available from the comprehensive and well-maintained web page (<http://www.kachina-az.com>), but this is not much help if you don't have Internet access.

I should record here two other early impressions. The first is that, on unpacking the Kachina, I was surprised to find the instruction manual consisted of just 17 pages (compared, for example, to 43 pages for my Yaesu FT-1000D). The philosophy has been to limit the manual to what you need to know to set up the unit and troubleshoot any problems such as computer noise. This is apparently on the

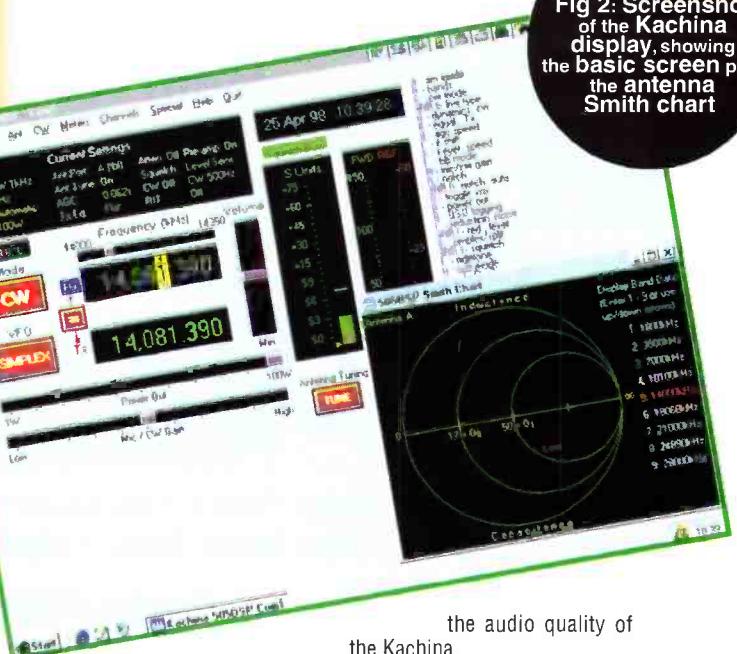
basis in performance between apparently identical transceivers, I very much welcome Kachina's approach and would encourage other manufacturers to do the same.

description

Before moving on, I should say a little more about the Kachina. The basic specification is 0.1 to 30MHz receive, with transmit capability on all the HF amateur bands. It can operate in USB, LSB, AM and CW, including data modes but, unlike many HF transceivers, does not have FM capability. This is a pity, given that the sunspots are returning and 10m FM is likely to become increasingly popular. The receiver uses a dual-IF system - see block diagram (Fig 1) - with the first IF at 75MHz, and the second at 40kHz. This low second IF is because DSP chips are currently unable to operate at a higher frequency. The main filtering therefore takes place at this second IF, with a wide range of filter options, including various notch facilities to eliminate unwanted carriers. 3rd order in-

Fig 2: Screenshot of the Kachina display, showing the basic screen plus the antenna Smith chart

Close-up of the Kachina 505DSP. Note that the interface lead to the PC connects at the front, whilst the antenna, power and accessory connectors are at the rear of the unit.



the audio quality of

the Kachina.

though I didn't get the opportunity to try one out.

My first QSO was with FS/IK2PFL on 15m CW. Although I had selected the CW mode, the bandpass (first IF) filter was still at the 2.4kHz SSB selection. Changing to the 1kHz CW setting

intercept at 20kHz (pre-amp off) is specified at +18dBm (the test report on my review unit showed an actual figure of +22dBm).

phones. Alternatively, you can pipe the receive audio through your PC's sound card. Finally, you need Windows 3.1, 95 or NT.

Computer-controlled Transceiver offers a totally new approach for HF transceivers

Blocking dynamic range is typically 115dB at 20kHz, 118dB at 50kHz. These are good results, suggesting that the receiver is up with the best.

There is a built-in CW keyer with programmable memories, full CW break-in capability and, as you would expect from a computer-controlled radio, a host of memory facilities for your favourite frequencies. An automatic antenna tuner is available as an optional extra; my review unit had this fitted.

The software consists of three elements: the control software itself, a basic station logging package (not intended in any way to replace full-featured station or contest logging packages), and an 'uninstall' package to remove the whole lot from your computer should the need arise.

You don't need a top of the range Pentium to run the software to control the Kachina 505DSP. Your computer requires a 386DX or higher processor, at least 4MB of RAM, and at least 2MB of free hard disc. You will also need a spare serial port, and a small loudspeaker or head-

on the air

I was anxious to put the Kachina on the air at the earliest opportunity. I knew the interface would take some getting used to, but it wasn't quite as big a leap as I had expected. The control screen is clearly laid out, without too much clutter, and most functions can be accessed in several ways. For example, to select frequency you can use the pull-down menus to enter a spot frequency or select a band or memory channel. Alternatively, you can use the mouse to click on a slider bar or the actual displayed frequency. Finally, you can use the up and down arrows on the keyboard. I quickly found myself using all three methods interchangeably, though I have to admit that I still hanker after a VFO knob. I suppose the transition is similar to that airline pilots experience when they go from a traditional to a computer-based cockpit. As it happens, Kachina have recognised that many amateurs will feel happier with a more conventional tuning knob, and a remote rotary tuning control is now available,

reduced background noise considerably, even though I also had the 500Hz CW filter selected (there are no cascaded filter options for SSB).

I also got into a muddle by assuming that, as I was using an external keyer, I didn't need to worry about the setting of the keying speed for the internal keyer. Wrong! For reasons which I don't fully understand, when using an external keyer you need to set the internal keyer's speed to maximum. This doesn't exactly jump out at you from the manual (actually, this isn't covered in the manual at all, so my mistake is perhaps understandable).

As I discovered, you can, in fact, select the option of going immediately to a narrow filter when you switch mode to CW. Unfortunately, this option then remains selected when you go back to SSB.

A few minutes later I worked 7X2BK on 20m SSB. Kamel is an air traffic controller and used to hearing lots of radio transmissions, both good and bad. He commented very favourably on

but in a different guise - the Kachina does not have a standard XIT facility. The end result is fine, indeed it's a great approach when you get used to it, but the method is different to what most of us would be used to and, with no manual, is by no means self-evident.

I very quickly realised that, in effect, I had two reviews on my hands. With the Kachina you are dealing with a piece of hardware which, because it is software controlled, can be made to do almost anything. Unlike most transceivers which are limited by the input / output devices on the front panel (the knobs, switches and displays), the Kachina offers almost infinite flexibility. You want to monitor some different aspects of the radio, or add new features. No problem. For example, Kachina hope to release a facility in the near future to allow the radio to be controlled remotely over a telephone line.

So with the hardware, the question to ask is whether it performs as well as you would expect of a radio which costs close to £2000 (putting it on a par with



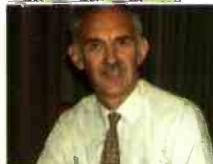
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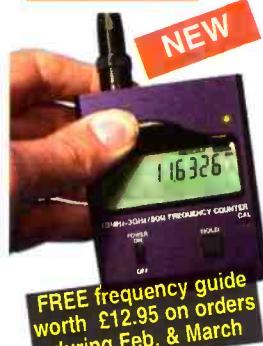
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radios such as the DC version of the Yaesu FT-1000MP).

Then there is the software. Does it offer you easy-to-use facilities, covering all the functionality you would expect from a radio of this sort?

And this is where you realise you are not necessarily comparing like with like. If I bought a traditional radio with a feature I was unhappy with, I would have to put up with it, or change the radio. With the Kachina, you could well find it fixed with the next release of the control software. Your investment in the radio itself would be 'future-proofed'.

control software

Let's have a look at the software a bit more. There are some very nice features. For example, you can get an on-screen display of a Smith Chart, showing a plot of the actual impedance of your antenna, and how it varies with frequency (Fig 2). It must be the engineer in me, but I find this a great facility. An-

other aspect I like is a continuous display of the heat sink temperature. It might be unnecessary, but it's reassuring to be able to see that all is well. There is also a 'bandscope' facility (Fig 3), a feature which most transceivers provide only through an external display unit.

What's more, you can click on the bandscope display, for example if you see a peak indicating a possible pile-up, and the transceiver will immediately move to that frequency. The latest software release also interfaces to the QRZ callsign database on CD-ROM, allowing instant look-up of the name and address of the station you are working.

I have become used, in my everyday DXing and contesting, to seamless interaction between my radio, the *PacketCluster* system, and my logging software. Both *Turbolog*, which I use for day-to-day logging, and *CT*, which I use for contesting, allow me to QSY the radio to the fre-

quency of packet spots, log the radio's frequency automatically when I make a QSO, and so on. The Kachina, being totally computer-controlled, ought to facilitate an even greater level of integration and, I am sure, will eventually do so. But right now the only interface is with the very limited logging software which comes as part of the package.

in use

For day-to-day use I found the Kachina a perfectly acceptable radio. However, in marginal situations it did not quite compare with my FT-1000D. For example, when listening to the FOOFI expedition on 15 metres, when they were very weak indeed, I had almost 100% copy on the FT-1000, but barely any copy on the Kachina, with

The main unit of the Kachina 505DSP is shown here between the author's FT-1000D transceiver and his PC monitor. It could be positioned anywhere, up to 23m from the controlling computer.

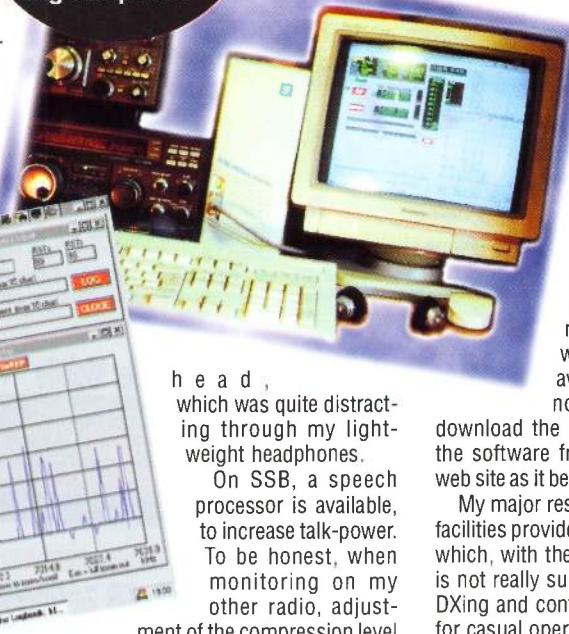


Fig 3: The Kachina display, showing the basic screen plus the logbook and 'bandscope' display.

similar filter settings (cascaded 500Hz filters in each case). With the Kachina I was getting breakthrough from calling stations a few kHz up, which were inaudible on the FT-1000. I can only conclude, without the benefit of test equipment, that this was a consequence of the broad front end and first IF, with the DSP filters in the second IF too late in the chain to put matters right. Having said this, I was pleased with the Kachina's performance on 40m, where very strong broadcast stations just outside the band often cause intermodulation problems. I had no such problems with the Kachina. As a keen CW operator, I was also pleased to find a selection of CW filter bandwidths from 1kHz down to 100Hz. I particularly like the 1kHz option, which isn't available on most radios.

Although I like to use my ex-

ternal keyer, I did try the Kachina's internal keyer, and found it perfectly acceptable. I also liked the QSK (full break-in) facility, which worked well. This is an area where even some of the most expensive transceivers fall down, but reports from other stations and monitoring on my FT-1000 suggested that there were none of the nasty clicks

which often accompany

QSK operation. What I did find annoying in QSK mode was the noise from the transmit relay in the control

metres, and for driving transverters to VHF. I would also comment that most other radios in this price range have a second receiver, allowing simultaneous monitoring of, for example, a DX station and the pile-up calling him. Although I rarely use the second receiver in my FT-1000D, it is an important feature for many DXers and contesters.

The major plus point with the Kachina is that there should be little or no reason to rush out and change it for many years to come. Let's suppose, for example, that we get a new HF amateur band at the next World Radio Conference, as we did in 1979. Other radios would require replacement, or at least some sort of firmware change

w h i c h would not be reflected in the band selection buttons on the front panel. With the Kachina, this and any other enhancements you are likely to want can be made in the software, which is available at little or no cost (you can

download the latest version of the software from the Kachina web site as it becomes available).

My major reservation is in the facilities provided in the software which, with the current release, is not really suitable for serious DXing and contesting, although for casual operating it's fine.

The Kachina certainly points the way to the future, and is useful now to those who enjoy casual 'ragchews' and a little DXing. You will be buying a piece of equipment which should stand the test of time and which is 'environment friendly' in that the bulk of the unit can be hidden in a cupboard, and all that the family will notice is an extra panel in your PC. For the hardened DXers and contesters out there, I would advise holding fire but, given that software can be enhanced much more quickly than hardware, you may not have to wait too long before the Kachina becomes an attractive proposition.

I am grateful to UK importers Waters & Stanton PLC for the loan of the review unit. They have recently been able to negotiate a significant price reduction, partly as a result of the strong pound. The unit which I tested, with ATU, is down from £2195 to £1899, whilst the 505DSP without ATU retails for £1699. The remote rotary tuning control is £190.

head, which was quite distracting through my lightweight headphones.

On SSB, a speech processor is available, to increase talk-power. To be honest, when monitoring on my other radio, adjustment of the compression level

made no noticeable difference to the audio. However, the audio is certainly punchy enough, and I was able to crack several pile-ups, even at the 100 watt level. In any case, there is a transmit equalisation facility, which allows you to modify the audio response to suit your voice and microphone.

conclusions

As a radio, I have little hesitation in recommending the Kachina. It works well on both receive and transmit, with a specification which puts it on a par with other top flight HF transceivers, though a side-by-side comparison with my FT-1000 suggested that the Kachina, or at least the particular one I tested, still has room for improvement. Although I was unable to measure the various parameters, I have no reason to doubt that the general specification is more than met. My major reservation would be the lack of FM capability, useful both on 10



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Icom IC-2100H 2m Mobile Reviewed

Chris Lorek, G4HCL, tests this new 'future-proof' transceiver with its switchable 12.5kHz and 25kHz channel spacing settings



Icom, to the best of my knowledge, have been the very first manufacturer to bring out a dedicated Amateur Radio mobile rig with switchable 12.5kHz and 25kHz FM channel spacing settings. By this I don't mean simply being able to change the tuning step size, but instead the receiver filtering for either channel spacing, and the transmit FM deviation, ie 2.5kHz peak for 12.5kHz spacing and 5kHz peak for 25kHz spacing. Icom's IC-706 HF / 6m / 2m multimode was the first mobile rig with this ability, but

now Icom have bought out a dedicated 2m-only mobile rig that conforms to this latest IARU specification. Another 'world first'?

high power

Not only does the IC-2100H give you flexibility in being able to use it on both channel spacing systems, but the transmitter boasts a maximum power setting of no less than 55W to reach those distant stations, with switchable 'mid' and 'low' power levels of 10W and 5W for more local contacts.

As well as having a 1750Hz for repeater access, full CTCSS (sub-tone) - both encode and decode - is also fit-

ted for repeater access and quiet monitoring. There's also a 'CTCSS scan' which will tell you what tone is being used on a given received signal. With the ever-increasing move towards CTCSS access for repeaters across Europe (many in the UK already have this facility), even if you don't see any use for CTCSS right now, it's something which you'll soon find you'll be wanting to use quite soon.

controls

For easy use on the move, there's a large click-step rotary frequency / channel knob on the right hand side of the front panel, together with separate rotary volume and squelch knobs on the left hand side - which you can use by feel alone. As well as the supplied fist mic having up / down frequency / channel buttons, there's also a handy 1750Hz toneburst button on the rear of the mic shell. The supplied mic itself uses a standard eight-pin RJ type 'telephone-style' connector. These are now easily obtainable, so alternative microphones such as hands-free types can be wired in if you wish. An infra-red remote control mic is also avail-

able as an option - no trailing mic leads needed here, and there's also a full remote control keypad microphone optionally available, allowing you to control a wide variety of the rig's facilities from the keypad itself without using the set's front panel.

Between the rotary knobs on the transceiver there's a backlit LCD panel with a large and easily-read frequency indication, and a unique feature of this is that you can select either an amber or a green backlit display. The lower section of this is used as a function display to indicate the operation mode each of the six push buttons immediately below the display. A momentary press gives the primary function, whilst a press for more than a second gives the '2nd function' indicated on the display. A 'set' mode is used to pre-set a number of the transceiver's functions, such as CTCSS tone, display backlight level and colour, repeater offset and so on.

rugged chassis

With the high level of transmit power available, the set uses a very sturdy die-cast chassis which doubles as a substantial heatsink - unlike other rigs, the



Close-up of internal view with top cover removed.

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IC-2100H transmitter does not rely on a rear panel mounted fan to keep the transceiver cool. An SO-239 socket is fitted on the rear panel for the antenna connection, and a 3.5mm jack socket lets you plug in an external speaker if you wish, this cutting out the internal speaker which is fitted on the lower lid of the case.

The transceiver itself measures 140W x 40H x 180Dmm and weighs 1.2kg. Besides the supplied fist mic, it comes with a mobile mounting bracket, a substantial fused DC supply lead, and a 67-page user instruction manual.

on the air

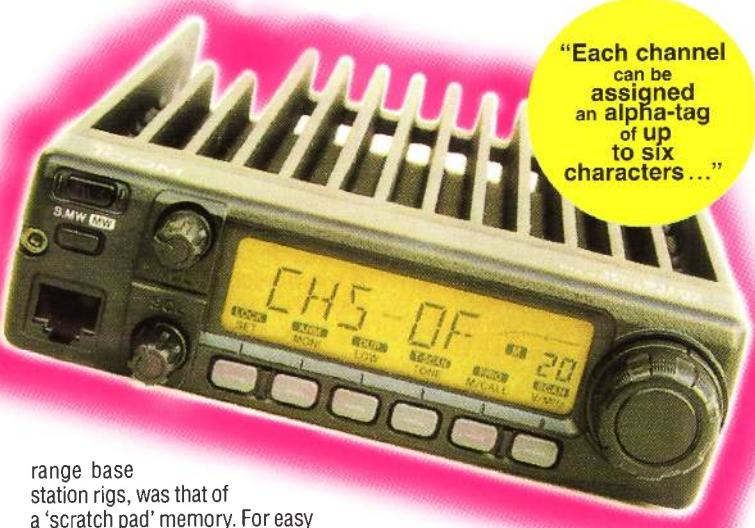
Around my home location, I'm at the 'outer reaches' of the service areas of three 2m repeaters, and a reasonable level of ERP whilst mobile is usually needed if I'm to be able to operate through these successfully. My review time also happily coincided with a family holiday period, encompassing over 800 miles of travelling by car around the UK, which also provided me with a good test of the rig. Upon installing the IC-2100H, the first thing that struck me was that the receiver was very sensitive indeed, it certainly managed to bring in signals in my area that I'd otherwise usually have difficulty in hearing with some other transceivers. The available 55W transmit out reciprocated nicely with this, and the only people who could hear me better than I could hear them on simplex were just running a portable rig with a few watts output.

For use on the move, I programmed the set's memory channels up with every simplex and repeater channel used in the UK (R0 - R7 and S8 - S23 - I'm still living in the days of 'traditional' channel numbers!), the IC-2100H's 100 memory

channels being more than enough for this. Each channel can be assigned an alpha-tag of up to six characters, so I took advantage of this by naming these with the appropriate channel designators. No doubt S20 would eventually be changed to V40, S22 to V44 etc, but that's for the future. Besides storing the frequency, each memory channel could also be programmed for duplex offset and direction, sub-tone status and sub-tone frequency, plus memory 'skip' status for scanning use. Although not mentioned in the user instructions, I also found that, as well as the transceiver being able to be manually switched between 'narrow' and 'wide' operation via the 'set' menu, these settings could also be stored on a channel-by-channel basis in the memories. This facility should be very useful indeed as 2m operation slowly moves towards full 12.5kHz operation area by area.

For local use on the move I usually just let the set scan across the commonly-used repeater channels in my area and the 2m calling channel, so that it would quickly pick up any local activity (with the other memory channels programmed to be 'skipped'). But for more general listening, the set also has three pairs of scan edge memories, which I found supplemented the memory scan nicely. Using these I was able to scan across, say, all repeater channels, all simplex channels, or a combination of these, without the need to reprogram the 'skip' for several memory channels each time. This facility was very useful when I was travelling cross-country listening out for new activity.

Another handy operating facility, which up to now I've usually only found on top -



range base station rigs, was that of a 'scratch pad' memory. For easy mobile operation, the IC-2100H takes this a little further, by automatically remembering the last three simplex frequencies which had been transmitted on, as well as the last three repeater frequencies transmitted on. A simple press of the M/CALL button switched the set into 'scratch pad recall' mode, where I could use the mic-mounted up / down buttons, or the front panel channel knob, to quickly switch back to the channels I'd last used. I found this extremely useful on the move, letting me quickly go back to, say, the repeater I was on after I'd QSY'd for a simplex chat, or back to S20 after switching to a working channel, without taking my eyes off the road at all. I must admit though, I did 'cheat' somewhat during much of the review period on the road, with my wife Sheila, G8IYA, doing the driving whilst I did the operating!

I soon found that I'd learned the front panel push-button positions and their respective functions as I otherwise needed to squint a little to view their small dedicated legends on the LCD, although the switchable amber / green backlight did help somewhat here for night time use. I also found the front panel knob rather less 'positive' than I'd have preferred for mobile use, it was easy to go past the channel I wanted, so I normally used the mic-mounted up / down buttons instead.

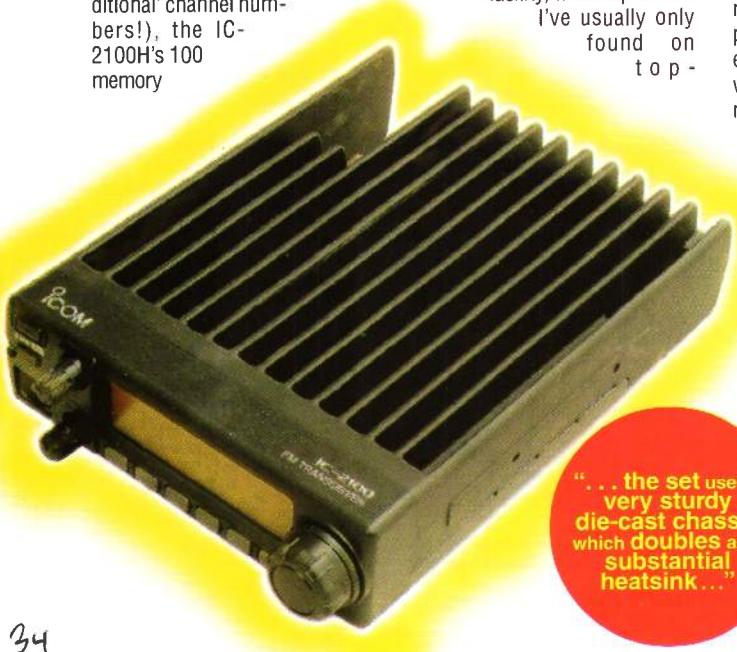
Throughout the on-air review period, operating both from home and driving around, even in city centre locations where I usually get problems from several high-powered VHF pager transmitters, I didn't suffer any interference at all from other strong signals on the band. The squelch control lifted on weak signals very nicely, and when I rotated the

squelch knob further round it also automatically switched in a 10dB receive attenuator, so it could also be used very effectively to just lift on local signals. A further facility was a switchable squelch delay, which could either hold the squelch open for a fraction of a second when a signal drops or instead close the squelch immediately. The former I found was very useful for mobile operation, saving the constant squelch 'chatter' on weak signals, whilst the latter was great for use at home to prevent extended squelch tails each time. Using the IC-2100H for extended 'ragchews', mainly from home but also occasionally mobile, even on high power I found the set to stay reasonably cool as long as the top panel was unobstructed - the large heatsink was doing its job very effectively. There was an ample level of clear, undistorted audio from the internally-fitted speaker, and my transmit audio was consistently described as crisp and clear.

From home on packet, my line-of-sight local BBS operates 12.5kHz away from a further well-sighted and again line-of-sight packet node, yet switching to the 'narrow' bandwidth position on the IC-2100H gave superb results with no breakthrough at all from the adjacent station each time. It's just a pity there's no facility for 9600 baud packet operation with the set rather than just 1200 baud (which I'd need to use the existing mic and speaker connections for - there's no dedicated packet connector on the set), as the 12.5 / 25kHz switchable bandwidth would have been particularly useful here.

lab tests

The specifications claim that "improved receiver IMD helps provide protection from excessively strong signals such as pager signals", and besides finding this very true on air, my



"...the set uses a very sturdy die-cast chassis which doubles as a substantial heatsink..."

Laboratory results

All measurements taken using stabilized 13.2V DC power supply and supplied DC lead, high power TX, 25kHz channel spacing setting (FMW), unless otherwise stated

receiver

sensitivity:

Input level required to give 12dB SINAD:

144MHz	0.12µV pd
145MHz	0.12µV pd
146MHz	0.12µV pd

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:

	FMN setting	FMW setting
+12.5kHz	71.8dB	67.5dB
-12.5kHz	70.6dB	44.4dB
+25kHz	78.1dB	76.1dB
-25kHz	78.4dB	75.0dB

maximum audio output:

Measured at 1kHz on the onset of clipping (10% distortion), 8Ω load:

2.58W RMS

image rejection:

Increase in level of signal at 1st and 2nd IF image frequencies, and 'half 1st IF' over level of on-channel signal, to give identical 12dB SINAD signal:

Half 1st IF	99.2dB
1st Image	87.8dB
2nd Image	>110dB

squelch sensitivity:

Threshold	0.07µV pd	(4dB SINAD)
Maximum	1.36µV pd	(15dB SINAD)

blocking:

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	86.2dB
+1MHz	96.5dB
+10MHz	88.3dB

s-meter linearity:

	Sig Level	Ref Level
S1	0.61µV pd	-8.9dB
S3	0.77µV pd	-6.7dB
S5	1.05µV pd	-4.0dB
S7	1.26µV pd	-2.5dB
S9	1.67µV pd	0dB ref
S9+	2.06µV pd	+1.8dB
S9++	2.62µV pd	+3.9dB

intermodulation rejection:

Increase over 12dB SINAD level of two interfering signals giving identical 12dB SINAD on-channel 3rd order intermodulation product:

25 / 50kHz spacing	83.4dB
50 / 100kHz spacing	81.4dB

transmitter

tx power and current consumption:

Freq	Power	10.8V Supply	13.2V Supply	15.6V Supply
144MHz	High	36W / 8.3A	57W / 10.4A	57W / 10.4A
	Mid	11.7W / 4.7A	11.7W / 4.6A	11.7W / 4.7A
	Low	6.0W / 3.6A	6.0W / 3.5A	6.0W / 3.7A
145MHz	High	37W / 8.4A	56W / 10.4A	56W / 10.2A
	Mid	11.7W / 4.6A	11.7W / 4.6A	11.5W / 4.7A
	Low	5.9W / 3.6A	6.0W / 3.6A	5.9W / 3.6A
146MHz	High	37W / 8.4A	56W / 9.8A	55W / 9.8A
	Mid	11.5W / 4.6A	11.5W / 4.6A	11.4W / 4.6A
	Low	5.9W / 3.5A	5.9W / 3.5A	5.9W / 3.5A

measured lab results certainly confirm this. The adjacent channel rejection was excellent, in particular the very good 12.5kHz rejection when the set was switched to FMN mode. Even with its good strong signal handling performance, the receiver sensitivity was extremely good. The receiver uses a double conversion superhet, with IFs of 15.65MHz and 450kHz, and the measured image rejection was also exceptionally good. The S-meter had a rather limited dynamic range, with about 13dB

difference between zero and full-scale indications.

On transmit, the set gave a well-controlled power level at each setting, with well-suppressed harmonics, and the frequency accuracy was excellent. The measured transmit deviation was a little high in each bandwidth setting, although this probably won't cause any on-air problems in practice.

conclusions

The IC-2100H is the first dedicated 2m mobile to 'grab the bull

harmonics:

2nd Harmonic	-69dBc
3rd Harmonic	-74dBc
4th Harmonic	<-90dBc
5th Harmonic	<-90dBc
6th Harmonic	<-90dBc
7th Harmonic	<-90dBc

toneburst deviation:

FMN	1.82kHz
FMW	3.08kHz

frequency accuracy:

-20Hz

peak deviation:

FMN	3.11kHz
FMW	6.41kHz

by the horns' and offer true switchable 12.5kHz and 25kHz channel spacing operation, even on a channel-by-channel basis using the memories. Not only that, but it does it very well indeed, with extremely good technical performance, especially its immunity to unwanted signals. It offers a substantial 55W of transmit power, matched by an sensitive receiver, with easily switched low transmit power and receive attenuator modes for local contacts when needed; all in all the 'best of both worlds'.

It's also an impressive performer for home-based FM speech contacts, without suffering from the commonly-found scourge of strong-signal overload from out-of-band signals. If you're after a dedicated 2m-only mobile transceiver, maybe also for use from home for FM QSOs, I'd look closely at this latest offering from Icom.

Our thanks go to Icom UK, tel: 01227 741741, for the loan of the transceiver for review. The recommended retail price of the IC-2100H is £269.

The last few articles have been 'themed': that is, they have dealt with a specific topic and reviewed pages from the Internet accordingly. There are plenty more topics around which to write articles. Write down on a scrap of paper a dozen or so topics covered by radio: packet, QRP, antennas, QSLing etc. It doesn't take long to fill the categories, does it, and still there are more. This is a very diverse hobby!

Anyway, from the responses I get, covering a topic with appropriate web page links seems to be a good thing and I shall be continuing in a similar vein. But this month I wanted to pick up on a couple of issues. The first is the general issue of home pages, and the other is a thought or two I received about packet radio and the Internet.

home pages

If you subscribe to a server, the chances are you will be given some free space - sometimes 1Mb, sometimes as much as 10Mb. What do you do with it?

pose themselves, invoke other pages, make scrolling bars, tickertapes and all sorts of nice gimmicks to bring the page alive. There are also Java applets you can use which invoke 'class' files, which are like mini-programs. Not all browsers can cope with these, however, and you should bear this in mind.

MS Front Page: <http://www.microsoft.com>
Hot Dog Express: <http://www.sausage.com>
Hot Dog Pro: <http://www.fourthnet.co.uk/hotdog/>
Home Site: <http://www.allaire.com>
Claris Home Page: <http://www.claris.com/intl/uk/>
Lightning HTML Editor: <http://www.owens.cc.oh.us/Lightning/>
G7WFC's Home Page: <http://wkweb1.cableinet.co.uk/rix/ham/>
RNARS Pages: <http://ourworld.compuserve.com/homepages/pinewood1/>
S53JO's Home Page: <http://www.uni-mb.si/~uve00425b/>
OH6JSL's Home Page: <http://www.lesti.kpnet.fi/~larimo/>

Table 1: List of URLs.

web design programs

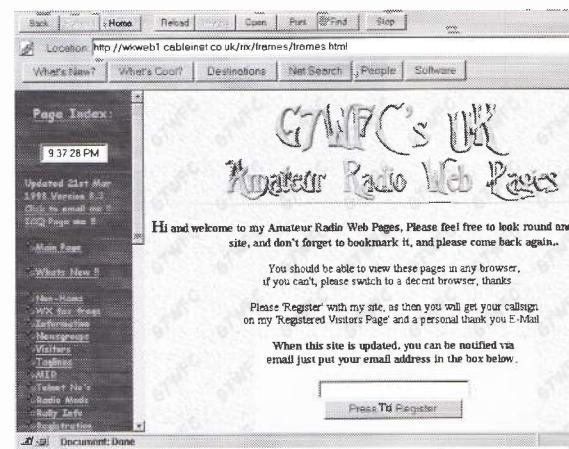
If you really don't feel like tackling HTML, you can opt for one of the many do-it-yourself packages. They range from the simple to the mind-blowing. Of the better known ones, try *MS Front*

mine. A fellow columnist on this magazine was similarly ripped off and the effect on one's temper, I can tell you, is trying, to say the least. International copyright laws do apply to the Internet. So at least have the de-

cency to use your own material, but by all means learn from others' techniques or layout, especially if it is something you would like to master yourself.

content

So what do you put in these pages? Well, it depends what



Net Communication

Jeremy Boot, G4NJH, with a change of theme, this month - he pointers if you w

Well, you could just leave it alone, and many do. But you might just start on the great train of HTML discovery. You read an article, or buy an Internet magazine and decide to have a go at this Hyperlink markup text, and see whether you're up to this new art or not.

HTML came in as a 'cross-platform' language: in other words it could span any computer system that was capable of supporting a browser - an interface capable of using it to order text and images in a fixed form on the monitor screen.

It is actually surprisingly easy in its basic form. You switch on a command and enter text or invoke an image, and then close off that same command. There are pre-set headlining and size commands and text or tables can be made up in a variety of ways. But note, please, this is *not* an article to teach HTML and, really, after initial tinkering, you would be well advised to get a book, or of course look it up on the Internet.

Add to HTML the Javascript language (which derives from C++, they tell me) and you are able to make frames superim-

Page 98; Hot Dog; Claris; Home Page; Lightning - but there are many more. Often CDs available on magazines such as *.net* and *Internet* will include either full web design programs or samplers or limited 30-day trials. *.net* magazine does an excellent course (on its CD) on HTML publishing: a great deal cheaper than buying one of those unbelievably pricey computer books. See Table 1 for URLs.

learning from others

There is nothing wrong with learning from others. Most browsers will allow you to see what's underneath an Internet page. In *Netscape*, the command is *VIEW/Document Source* (or *VIEW/Frame Source* where frames are used) and in *Explorer* the command is *VIEW/Source*. You can then work out how that effect or alignment is achieved. What is not permissible, however, is for you to copy that person's hard work and pass it off as your own. This has been done to me, where even whole pages were copied and the new 'author's' name was substituted for

you have to say to the world! I am assuming that your theme will be on Amateur Radio. Do you want to tell the world about the hobby, how great it is, and your part in it? Would you like to create a useful index of the many thousands of pages others have created on the subject? Do you have a particular interest, such as SSTV or QRP or antenna design? Are you a CW person or a constructor? It's really up to you. You may run a club or have some specialist interest - such as the antique radio sites I reviewed a couple of months ago.

Hopefully whatever you do say will be (a) worth reading; (b) your own work; (c) something original, if not unique; (d) well presented and written; (e) interesting; (f) useful to somebody.

Hopefully, too, it will *not* be the opposite of all that. Not that everyone wants to create an encyclopaedic reference centre or pages of close-typed information.

You might just like to show off your shack and say how you became interested in radio, which might just inspire someone else to do the same; it might be a gallery of your friends on the air, showing what contacts

you make on radio and which people might care to visit, like a sort of Internet QSL bureau. It might be a bio of you and the family, with similar ideas in mind. Or you might combine your radio interests with other things. After all, most of us have interests beyond radio.

How long will this *oeuvre* be? As long as you like. Try not to bore everyone to death, but if it needs to be a multi-page, well let it be. Liven it up with images - the kids, the shack, the contest outing, the gleaming antenna etc - but not *big* images. They are a real pain and take ages to download. Make them small, but if they need to be seen in all their glory, make a small one clickable and then anyone with sufficient desire can download a screen-sized version of the latest Yaesu rig, or you holding the club contest cup, at their leisure.

links and reciprocity

I mentioned links to others' pages and almost all home pages on a theme will wish to point the reader somewhere else once they have wallowed sufficiently



To get the most out of Lars Moberg's, OH6JSL, home page, an understanding of Finnish would help!

One control <...> opens the command and the other </...> closes it. Commands can be grouped.

```
<h1>This is a large header </h1>
<h2> This is a big header </h2>
<h3> This is a medium header </h3>
<h4>But this is much smaller</h4>
<a href= "http://www.thelink.co.uk"> A link somewhere else </a>
<a href= "mypicture.jpg"> This is for an image </a>
<b> This is bold text </b>
<i> This is italic text </i>
<u> This is underlined </u>
<center> This is centred text </center>
```

Table 2: Examples of elementary HTML programming.

to write about the page. You don't want your radio page listed under Food or Horse Racing after all!

You should also be prepared to tell people the page exists, during QSOs or face to face, so they go and look for it. If you are really an ego tripper, you might pay a fee to one of the many companies who reckon that for \$100 they will let everyone on the Internet know about you, and every search engine too. I do draw the line at that! There are banner schemes, where if you will carry a banner for someone else's site, yours

ferent. It's part of the system. People, who ordinarily would never write to *Points of View* or to a newspaper, will not hesitate to tell you, "Your page is great" or "took too long to download," or "why isn't there more on CW?" or "that link doesn't work" or (more often) "will you link to my page at http://...". This is assuming you have put on a link to your e-mail address or similar. Learn to accept these comments. They are spontaneous and genuine, for the most part. You will get to know your readers, who they are and what they want. If your page is to serve a purpose you will soon find out whether it does or not.

other qualities with the Internet systems currently. In general, as I have been arguing for some time, there is no need for a 'them and us' scenario at all, either as far as packet radio (or data modes) goes.

Rich writes: "...It is not necessary to approach the matter

of amateur data versus Internet from a position of weakness. Amateur packet of the 1200 baud BBS + NET/ROM variety is clearly poor in comparison with the most elementary Internet link available to the man in the street. ... Radio Amateurs have something like 5GHz of spectrum available to them, and because most of this is in the microwave region and hence highly directional, it can be re-used again and again to yield an internal network capacity that is effectively infinite. For any single GHz link, very simple equipment can provide data rates so far in excess of today's standard PSTN

Next Communication looks at some amateur's home pages and gives you some ant to set up your own

amateurs, less likely with the big guys - manufacturers, commercial outlets, radio societies etc). This way there is a flow of information and interactivity, for which the net is such a joy.

hello world

How will people know your pages are there at all? There are 'search engines' (Yahoo, Excite, Alta Vista and the like) which trawl the whole Internet and collate this vast amount of data over a period of time. You can use the headers of the page to create a title and use what are known as META tags to describe your page. So you might have something like:

1. <TITLE>G4NJH AMATEUR RADIO PAGES</TITLE>
2. <META NAME="KEYWORDS" CONTENT="g4njh, radio, amateur, radio ham, swl, Nottingham, UK, Club of Friendship">
3. <META NAME="DESCRIPTION" CONTENT="Ham Radio Pages suitable for all levels of entry. SWL and Scanner and links pages, 250 topics and Real Audio">

Line 1 gives the page title, and 2 and 3 tell the search engine what

too will be passed liberally around via a banner .gif displayed on others' pages.

advertise on newsgroups

Worst though are the 'Spammers' - services which saturate the Internet by posting, for a fee, hundreds of thousands of e-mail messages worldwide. These are usually used for get-rich-quick schemes and, speaking personally, I zap them before they are downloaded. This would not be your recommended means of publicity.

On the other hand, newsgroups set up for amateurs can quite properly be used to tell people of your new page. In effect they are notice boards. The UK newsgroup is: uk.radio.amateur, but a brief glimpse of the total newsgroup list will identify at least a dozen others dealing with Amateur Radio worldwide.

feedback

Everyone says they want feedback, like criticism, but often they don't in reality. In the world of the Internet, you *will* get feedback, good, bad and indif-

packet and the internet

This is really offered to invite readers' responses. Stemming from comments I made on my own web pages that it never fails to surprise me that packet radio remains so popular amongst those with Internet connections. I would have thought that of all the modes, with Internet e-mail and ftp facilities so much more efficient and quicker than packet, that interest would suffer. Not a bit of it! Most readers who offer an opinion about their preferences in radio put packet very much towards the top. It shows you should never jump to conclusions.

In particular I received a most interesting e-mail from Dr Rich Artym, G7EXM, (rich@galacta.demon.co.uk), from which I quote with his kind permission. You can read all his comments on my own pages [www.innotts.co.uk/~asperges], but I will quote just enough (I hope) to do justice to his argument that there is already a capacity in the GHz spectrum to run a packet system comparable in connection and

modems that the Radio Amateur can feel very well rewarded for his efforts, just like in the early days of Amateur Radio. This is not just pie in the sky - as is now well known, the Slovenians have already done it, despite limited resources. . .

"So, in summary, two things: (i) Amateur Radio has a resource of immense potential at its disposal which makes the inferiority complex that stems from slow AX25 packet only temporary - let's put those GHz TCP/IP links in place and once again stand proud; and (ii), the 'them and us' position of a few is not only destructive and regressive but not even properly representative of the current situation, since amateur TCP/IP networks have always been integrated into the Internet design and are already integrated into the routing where connectivity allows. The isolation and isolationism portrayed and 'defended' by some is largely a misrepresentation."

I would recommend reading all of Dr Artym's comments, but space does not allow them here. Anyway, it encouraged me and made me see the question in a different light.

Continuing on from last month's *Ham Radio Today*, 11 March was just one of the days that produced the real DX. Stations in Queensland, on the east coast of Australia (VK4s), worked KH7 - there was much confusion there as everybody thought KH7 was Kure Island. Sadly it wasn't - it was in fact Hawaii, normally KH6. This came about because the licensing body is now issuing KH7 as well as KH6 callsigns to Hawaiian amateurs.

By the 13th, daily openings were being reported between Italy and South Africa. It really was very frustrating for us 'Northern Europeans' to see the *PacketCluster* 'popping' away with ZS6, 7Q7, Z21, V51 and TR8CA spots - if we could just have a little Sporadic E on the top end from the Mediterranean to the UK we would be able to join in the fun. Unfortunately this never happened, although on the 14th I heard the ZS6DN beacon on 50.050MHz at RST 419 and a couple of ZS6 stations on CW,



Photograph: G3WOS

Left to right:
Bob, W6BYA; Hatsou,
JA1VOK; and Neil,
GOJHC, at the
RSGB VHF
Convention in
February.



VHF / UHF Message

Geoff Brown, GJ4ICD, says the really

albeit very weakly, into Jersey. This seemed to be direct TEP with no Sporadic E being present. No reports were received from any of the Italian QRO stations that 144MHz TEP had been worked, or even that any of the South African stations were even trying contacts on this band.

On the 15th, another major 50MHz opening occurred when stations in Argentina worked into Hawaii at 2300UTC: some people do have all the luck!

Again on the 16th, stations in Italy had another opening into South Africa. At 1230UTC ZS6s were pouring into southern Italy but nothing was detected any further north. Then, out of the blue, PT7NK in Brazil was reported into the I5 area of Italy. I had decided that watching the 'Super Highway' (Internet) was becoming even more frustrating, in seeing live most of the world working 50MHz DX when there was nothing in the UK at all! Later in the day 7Q7RM and TR8CA were also working into the Mediterranean area.

In theory (and practice) the openings will move further north

as we progress towards the Sporadic E season in late April / May, then the link up will occur, albeit only for a few weeks until the TEP season finishes. In fact, by the time you read this, the TEP season may well have finished and you may well have worked your first South African on 50MHz! Please let us all know what DX you worked.

Following on, in mid-March reports came in from Hal, ZS6WB, who sent an e-mail with information on what had been happening in South Africa as well as news from Tony, A45ZN. Hal says, "I received an e-mail from Tony, A45ZN, indicating that his 50MHz permission for the Dimaniyat Islands has been rescinded pending an investigation among other government bodies regarding their use of 50MHz. However, Tony will be monitoring 50.110 and 28.885 for cross-band working." Hal also said, "we are having almost daily afternoon and early evening openings on 50MHz to Europe, but the Italian hordes are covering up any chance we have of working the new ones. I still need LZ, HA, SV5, T9, Z3 and others in that area".

The TEP openings continued throughout March but the nearest it came to the UK was Switzerland (JN36 square).

picture gallery

Pictured this month are Californian VHF DXer Bob, W6BYA; Hatsou, JA1VOK; and Neil Carr, GOJHC, at the RSGB VHF Convention in February. All three have 50MHz DXCCs and hope to complete the 'magic' 200 DXCC countries on the 'magic band' during the forthcoming solar cycle 23! Both Bob and Hatsou flew in from the USA and Japan to attend this year's VHF Convention - now that's what I call *real* enthusiasm!

Another Japanese DXer, Yama, JA5GIQ, shows how easy it is to build a neat all-band station in a minimal space.

Our third picture shows Nick Waite, G3KOX, with Yasser Arafat in the Middle East. Nick, who works for ABC News, and is a well-known voice on the VHF / UHF bands, recently met up with Yasser Arafat when Nick was setting up ABC News SHF

satcom equipment in Palestine. Nick explained Amateur Radio to Mr Arafat, in the hope that one of these days a new DXCC country will be activated in the Middle East on the VHF bands.

beacon news

The PA3FYM beacon is now back on with the call PI7SIX. It is on 50.053MHz. QSL via PA3FYM who is QTHR.

SK3SIX is now back on the air after winter storms damaged the antenna system.

GB3LER on 50.064MHz seems to be QRT. No reports have been received of it even during weak aurora.

FY7VHF on 50.039MHz is reported as being non-operational. This is rather a shame, as this beacon, which is located in French Guiana, has been a very good indicator for South American openings. Let's hope that it returns to service soon.

Michael, OX3LG, confirmed that as of 19 March OX3VHF is still on the air on 50.045MHz.

Leo, PP1CZ, e-mailed me requesting the following, "I have a beacon on 50.080 with the message 'V V V PP1CZ PP1CZ'



Tsutomu 'Yama' Yamamoto, JA5GIQ, is active on all HF, VHF and UHF bands between 3.5 and 1296MHz from this neat, simple, station in Kagawa, Japan.



Nick Waite, G3KOK, with Yasser Arafat in Palestine recently (see text).

VHF / UHF Message

big 50MHz openings arrive!"

paused for one second. The equipment is an FT-680R with 3 watts to a 5-element Yagi (beaming north east). If anyone hears my beacon, let me know via e-mail at pp1cz@br.home shopping.com.br

march 144 / 432 contest

David, GM4WLL, in I085 sent in an interesting report from Lothian. He was QRV for the event in early March, in all he made 61 144MHz contacts, the best DX was ON50GRC in J010 at 775km. David also mentions hearing the PI7CIS beacon in J022 just at the end of the contest.

On 432MHz David used an old Belcom Liner 430 with just 4 watts output that he picked up for £50 [proof, if any were needed, that Amateur Radio needn't be an expensive hobby - Ed]. David's best DX was G4KUX in I094. Several stations in the Midlands reported hearing David on 432MHz, but sadly the Belcom receiver did not hear them!

march aurora

Håkan, SM3EQY, in JP81 sent in a log of his activity during an aurora which took place on 21 March. Håkan's log is shown in **Table 1**. He made 27 QSOs, with 21 squares in five fields and 11 countries: LA, SM, OH0, OH, OZ, SP, GM, GW, G, GJ and PA. His best DX was your columnist, GJ4ICD, at 1816km.

signing off

That's all the mouth watering news for this month. I hope you manage to have some fun on the VHF bands. If so, please let us have some information on what DX you manage to work.

E-mail me at: equinox@itl.net or you can 'snail mail' your reports to: Geoff Brown, TV Shop, Belmont Rd, St Helier, Jersey, Channel Islands JE2 4SA, or fax them on 01534 877067 any time. Finally, we also have a 'hot line' for VHF / UHF reports. This is QRV 24 hours a day on tel: 0979 711382.

Table 1: The 50MHz SSB log of Håkan, SM3EQY, in JP81 during the 21 March aurora.

Time/UTC	Callsign	Reports	Locator
1339	OH5NQ	58A 58A	KP30ER
1406	SM0DXG	59A 59A	J099CE
1410	OH0JFP	57A 57A	JP90XC
1414	SM0GJK	59A 59A	J099IV
1415	OH2MFE	56A 55A	KP20JE
1421	OZ5AGJ	59A 59A	J056DF
1424	OZ7IS	59A 57A	J065DQ
1429	SP2IQW	59A 59A	J094GM
1456	G8ECI	57A 57A	J003
1458	G4FVP	56A 57A	I094FM
1526	GOJHC	57A 59A	I083
1527	GM1ZVJ	57A 57A	I086GB
1532	LA0HB	58A 58A	J028UX
1536	PE1CZG	56A 55A	J022OK
1549	G3JHM	55A 59A	I091LC
1551	GJ4ICD	56A 59A	IN89WF
1552	G6YIN	59A 59A	I093EJ
1554	G4VPD	57A 55A	I092BJ
1555	G6EGM	59A 55A	I084NT
1556	PA3ANV	56A 57A	J032HC
1557	PE1MCD	58A 58A	J023XE
1558	G6DOX	57A 59A	I084NU
1559	G4PCI	55A 57A	I091
1601	G4OBK	58A 59A	I094OF
1602	PE1MTS	59A 59A	J032HN
1604	G3SYC	58A 58A	I093IQ
1605	GW3JXN	58A 59A	I072RC

ham radio d regular

Many readers will well remember my comments about the great data book from Paul Hardin, NA5N. This book is full of information to the builder and is an essential for most builders. Mine is getting quite dog-eared now with lots of use.

It is obviously very difficult to follow a book of this type with similar information, but a small *Radio Constructor's Recipe Card* booklet is now available. It contains a wealth of information for the workshop and the builder.

radio recipes

The real beauty of this booklet is that it not only contains lots of useful information but, as it is a flip-top type of publication, it sits upright on the bench and thus is easily readable as you glean information from it.

It covers such diverse things as 'recognising resistors and capacitors'. Yes, most regular builders can pick up a resistor and tell the value at a glance, but

The G3RJV Radio Constructor Recipe Cards

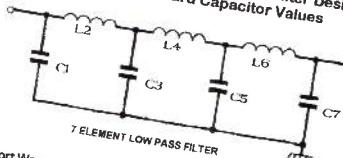


Useful Bits of Information
For the Workshop
From George Dobbs G3RJV

The new
*Radio Constructor
Recipe Cards*
published by
George Dobbs,
G3RJV.

Example
of one of the useful
pages of
information in
*Radio Constructor
Recipe Cards* - in
this case for low pass
filter design.

THE W3NQN 7 ELEMENT LOW PASS FILTERS [1]
Easy to use "off the shelf" Low-pass Filter Designs
which use Standard Capacitor Values



In the Short Wave Magazine (Dec. 83/Jan. 84) Ed Woetherhold, W3NQN, produced a definitive article called Low-pass Filters for the Attenuating of RF Amplifier Harmonics. The article concluded with computed design tables for Seven-Element Chebyshev Filters with Standard Value Capacitors.

The table below is an extract from that information quoting the values known to have worked well in designs by G3RJV. To calculate the numbers of turns for the inductors see: CALCULATING NUMBER OF TURNS REQUIRED ON A TOROID FOR A GIVEN INDUCTANCE

W3NQN 7 ELEMENT STANDARD VALUE CAPACITOR LOW PASS FILTERS

Band MHz	F _c - MHz	F-.3dB MHz	F+.3dB MHz	C _{1,7} pF	C _{3,5} pF	L _{2,6} uH	L ₄ uH
1.8	2.16	2.76	4.0	820	2200	4.442	5.608
3.5	4.125	5.11	7.3	476	1260	2.434	3.612
7.0	7.36	9.04	12.9	270	680	1.380	1.698
10.1	10.37	11.62	15.8	270	560	1.090	1.257
14.0	14.40	16.41	22.5	180	390	.773	.904
18.068	18.93	22.89	32.3	110	270	.548	.668
21.0	21.55	27.62	39.9	82	220	.444	.561
24.98	25.24	28.94	39.8	100	220	.430	.515
28 - 30	31.66	40.52	58.5	56	150	.303	.382

QRP Corners

A useful new publication for QRP enthusiasts and hom

we all have to start somewhere. I still get the odd value that foxes me and I'm in the business!

A great version of Ohm's law is given with the 'Ohm's wheel' giving the relationship of all units to each other. You can see at a glance what each relationship is too. A description of the uses of diodes, LEDs and zenors is given with values for each type. A good guide with examples of the calculations used.

Many builders have problems calculating the value of a given number of turns on a toroid. I use a simple computer program called 'Toroid'. The author of this publication has given the inductance for ten turns of windings on a number of different cores from the T37-2 mix T44, T50 etc right up to T37-10 mix and up to the T80 range of dust iron cores. I learnt something here too. Although I use the T37-2 a lot I didn't know until I read the booklet that the 37 referred to the outside diameter of the core in tenths of an inch. Thus the T37 is 37/10ths of an inch diameter.

Calculating low pass filter val-

ues is always a bugbear. All the values of capacitors and inductances for the HF bands are clearly laid out here. Even the cut-off points are shown. Very nice.

Many modern circuits use band-pass filters and I first thought they had been missed from this publication and was on the point of phoning the author to suggest they be included. Needless to say I had turned over two pages and missed it all! Using KANK Toko inductors and standard capacitors it shows each band and a circuit diagram for the components to be used.

A small booklet like this would be worthless without some form of simple VFO. Here we find a simple Colpitts VFO with values given for operation on bands from 1.8MHz to 14MHz. Mind you, I would prefer not to run a VFO directly on 20m, as the drift might be a serious problem. Better to mix a crystal with the VFO. There is even a diagram of how to use the above KANK inductors in a VFO circuit with success. All values are given and have been

tested thoroughly.

Making a tuned circuit for the HF bands can, at times, be a bit of a hit and miss affair, but a table with all the values is given. Whether you want to use a KANK 3333 inductor with a 150pF capacitor to get a circuit resonant on topband or use a 1.2pH axial choke with a 27pF capacitor for the 10m band, it is all there. Even a choice of using the KANKs, the axial fixed inductors as well as the Dust Iron cores such as the T50 and T37 types.

The final page gives details of the right Toko inductor to use on each of the HF bands. Whilst many will stick to the KANK 3333, 3334 or 3335, others are recommended such as the KXNK 3767EK.

Astute readers will have noticed by now that I have omitted to name the author. This was deliberate, because I wanted to whet your appetite by the content of this booklet. Whilst only running to 14 pages it is full of a wealth of knowledge gathered over thirty years of building and designing projects for himself

and others to share. You will also now guess that I highly recommend this booklet, not only because I count the author as a friend but also because I think it has great value to the builder and also may well become a collector's item in future years.

Copies of the *Radio Constructor's Recipe Card* are available direct from the author for the princely sum of £3.00, which includes postage and packing. Send your order to: Rev George Dobbs, G3RJV, Book Offer, St Aidan's Vicarage, 498 Manchester Road, Rochdale, Lancs.

Please remember that George will be at the Dayton Hamvention in Ohio, representing the G-QRP Club, in May. Please be patient with your order and he will dispatch them as quickly as possible.

dual pots?

Jurek, GOWPL, has been trying to find a source of dual potentiometers. There are plenty on the market that operate as a pair, but not so many that operate individually with one shaft

inside the other. I used to use these a lot in my own homebrew rigs. Often if I wanted two different values I would strip a pair down of the two values I wanted and build one out of the two. They have become more difficult to find over the years and Jurek reminded me of this. However, as usual the Internet list came to the help with an answer with the name of a supplier.

ElectroValue not only are able to supply these but can also make them to order. You can have a 47k and a 4k7 on a pair of shafts. As might be expected they are not cheap, but if the need is there a reasonable price must be OK. ElectroValue can be found at Unit 3, Central Trading Estate, Staines TW18 4UX; tel: 01784 442253.

new qrp club

The 9A (Croatia) QRP club has recently been founded - another one to join! Membership for life is for the modest fee of just £10, \$12, or DM15. As DM15 equals

from the MD of S&S. Not Dick, but his wife Kathy. The next booth is taken by the QRP Amateur Radio Club International (our sister club in the USA). Needless to say we all have a great time together. Rumour also has it that Rob Kent of Kent Keys is trying to join our British corner. I promise to bring back some photos and a report on the events.

News has also arrived that Pacificon, the Californian Hamfest, will be held over the weekend of 17 / 18 October. It may seem strange advertising yet another American event, but this one is fast catching up with Dayton as 'the' US QRP event of the year. At Dayton there is something happening every evening after the show with, of course the full one-day technical conference with speakers on many QRP-related subjects. These include Roy Lewallen, W7EL; George, G3RJV, and this year a new boy, Dick, G0BPS.

Pacificon is a smaller event,

Sheldon Hands, GW8ELR, of Hands Electronics, has stopped using this device. He commented, "There are many mixer alternatives . . ." and suggests using the old diode rings made of 1N4148 and an FT50-43 core as in the *Solid State Handbook* (also shown in Fig 1), BJT switch mixers with 2N5179, BFY90 etc as in the *ARRL Handbook* 1997, and several more.

He also suggests replacing the SL6440 with SRA1H with 17dBm drive via MAV11, which he states as being a real 'bombproof' front end set-up. As for the NE602, Sheldon now tells us that he has tried replacing the NE602 with a 1N4148 diode ring and an 2N2222 (product detector). He thinks that the "...602 is a lousy product detector, [now] all the white noise has gone and big signals don't need the gain backing off to avoid distortion." For more ideas contact Sheldon by e-mail at hands@rf-kits.demon.co.uk

One American also told me that the NE602 was discontin-

ued that pops up out of commercial equipment to solve all our problems? Without doubt the NE602, coupled with the LM386 audio amplifier, gave the homebrew hobbyist a terrific boost in the mid-1980s, making home construction much easier.

I am sure that if you have any ideas or comments about replacements for the NE602 readers would love to hear them.

a final thought

Whilst chatting with Dave, the owner of a shop that I frequent, he let slip that he was an ex-Signals type. I, of course, replied that I was a Radio Amateur, with which he responded, "I want to join, how do I get a licence?" I gave what help I was able, and soon the conversation got round to CW. Dave told me that his main interest was CW and that he thought it was not used by hams any more. I was able to confirm that Morse was alive and well, and one more amateur is

QRP Corner

e constructors is recommended by Dick Pascoe, G0BPS

£5 at the time of writing I know what I will send!

There is a membership certificate and they also send their contest rules to every member. The contact point is: 9A QRP Club, Franjevacka 5, 42220 Novi Marof, Croatia.

There has been a profusion of QRP clubs sprouting up all over the world. What a wonderful way to confirm the 'homebrew' lives! It's a pity that one writer wrote to this very magazine asking why so much space was wasted on circuit diagrams and constructional projects. I was pleased to see the replies confirming that they are wanted. After all, Amateur Radio is not just about operating black boxes, is it?

dayton

I shall be in Dayton this month with George, G3RJV, manning the G-QRP Club stand. A small part of our stand is used to promote the Northern California Club, NorCal. Next to us is a table shared by the Michigan QRP Club and S&S Electronics. I always enjoy the welcoming kiss

but also attracts the big names in QRP. Roy, W7EL, of M/MINEC, ELENCE and EZNEC fame (the computer antenna modelling programs); Ade Weiss, the author of *Milliwatt* magazine, famous throughout the 80s; Paul Hardin, NA5N, of data book fame, often mentioned in this column. There are whispers of a well-known Englishman attending too. Lots of events and forums for the QRPer, and I intend to make it next year.

ne602 / 612

The saga of this very well-known device continues. Jack, GMORWU, came up with a good question; "if this device is disappearing, cellphones must be using something else similar." Yes, they are, but what is it? Can we use it? Where is it available? Lots of questions, but is there anyone out there that knows the answers?

ued, but the NE612 was a direct 'drop-in' replacement. I have heard that they are both going. I wonder what the real story is?

All the comments made about the NE602 over the years make me think. Before this device came along the diode ring was used widely. Are we going full circle and going back to the ring again? Will there be another de-

now on the way. Now a question. It was a sub aqua equipment shop: how can I send CW to him when underwater?

Your comments and ideas to me via the editor, or e-mail to: Dick@kanga.demon.co.uk; packet to: GB7RMS; or 'snail mail' to: R A Pascoe, Seaview House, Crete Road East, Folkestone CT18 7EG.

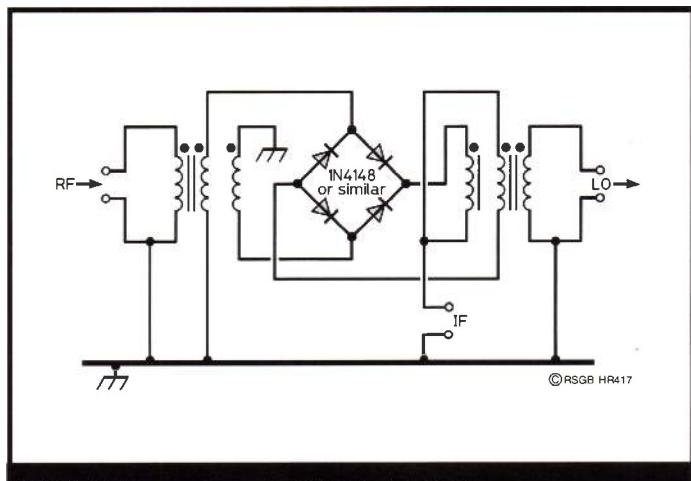


Fig 1: Diode ring mixer using 1N4148 and FT50-43 cores, as recommended by Sheldon Hands, GW8ELR.

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HFT6/98

Photograph: AMSAT-NA website.

StanWood, WA4NFY,
works on the
Phase 3-D
spaceframe.

Oscar 10 is still operational. Its uplink is 435.030 to 435.180MHz CW / LSB, and downlink (inverted) is between 145.975 and 145.825MHz CW / USB. Despite brief moments of deep QSB, AO-10's downlink signals have been excellent (even at apogee), with heavy Stateside and DX activity. Now is the time to be active on this bird.

AO-10's apogee has continued to move into the northern hemisphere. The apogee will continue to rise higher to the north for the rest of 1998, peaking in December.

W4SM has updated his AO-10 web page, use the following URL: <http://www.cstone.net/~w4sm/AO-10.html>

russian satellites

The current uplink for Mir's SAFEX 70cm repeater is 435.750MHz FM, with a CTCSS access tone of 141.3Hz. The downlink is on 437.950MHz. The SAFEX installation has been utilised recently in QSO mode

have the habit of bouncing back! Great credit to its design philosophy."

Clive, G3CWV, has an Oscar-11 web site that contains information regarding the UoSAT Oscar-11 spacecraft. Clive recently added some audio files including a 20-second recording of the Mode-S beacon as received by KC6SZY. The other audio files are examples of each type of data transmitted

by Oscar-11, and each plays for about ten seconds. All the audio files are zipped so that they can be played off-line. They should help listeners identify the various types of data transmitted by the satellite, and give an indication of the signal quality required for successful decoding. The URL for Clive's Oscar-11 web site is: <http://www.users.zetnet.co.uk/clivew/>

IO-26 (ITAMSAT) is now operational (at last). On 16 March,



Meinzer, DJ4ZC, AMSAT-DL President and Phase 3-D Project Leader; and Bill Tynan, W3XO, AMSAT-NA President, commented on recent progress made on the satellite. Karl said, "I am happy to say that after successfully recovering from the setbacks caused by the major structural reworks of last summer and autumn, the spacecraft is now

Werner Haas, DJ5KQ, is responsible for co-ordinating the entire communications suite for Phase 3-D. While in Orlando, Werner performed yet another bench test on each of the flight electronic modules just prior to their re-installation into the satellite.

Satellite Band Zwoot

The latest on Phase 3-D and other AM

(uplink 435.725MHz FM, CTCSS tone 151.4Hz, downlink 437.925MHz).

Mir's PMS up / downlink is on 145.985MHz FM simplex, 1200 baud AFSK (same as terrestrial mode). The new modem is a Kantronics KPC-9612 Plus, Revision 8.1.

MIREX has created an Internet web page containing information regarding Mir and the various ham radio experiments taking place from the space station. Please check out the pages for pending and proposed projects. The URLs are: <http://www.ik1sl.org/mirex.htm> and <http://www.geocities.com/~ik1sl/mirex.htm>

digital satellites

Here's a report from Clive, G3CWV: "Oscar-11 celebrated its 14th birthday on 1 Mar 1998. It is a wonderful achievement by the UoSAT team who designed, built, and launched the satellite in a very short timescale. Although there have been various component failures during its long time in orbit, Oscar-11 does

ITAMSAT command stations IK2XRO and IW2EGC, successfully switched the satellite to active status from the safe MBL mode it had been in. They also reloaded the high level code. The spacecraft is now sending the full set of 64 telemetry channels and collecting Whole Orbit Data survey information. After a full check is completed, the digipeater will be turned on and the file system code reloading process will begin. The uplinks are on 145.875 / 900 / 925 / 950MHz, 1200 baud PSK, downlink: 435.822MHz PSK. Alberto, I2KBD, reports the satellite appears to be in a healthy state, with all the subsystems working nominally.

phase 3-d

AMSAT teams from a number of countries recently converged on the Phase 3-D Integration Lab in Orlando, Florida to install the remaining electronic and communications modules into the new satellite, and make it ready for launch.

In a joint statement issued just prior to their departure from Orlando on 18 March, Dr Karl

once again rapidly nearing flight readiness."

Soon after his arrival, Peter Guelzow, DB2OS, AMSAT-DL's Digital Integration Manager, performed a number of checks and measurements on the spacecraft's Internal Housekeeping Unit, the spacecraft's main computer. Following this extensive checkout, Peter successfully accomplished a major milestone by sending and receiving commands from the spacecraft via radio uplink. This was a critical task that had to be accomplished before each of the individual flight electronic modules could be commanded on and tested for flight readiness.

Dr Stacey Mills, W4SM, Phase 3-D's North American Command Station, put in the finishing touches on software to format and decode the telemetry stream from the satellite. Needless to say, there were big smiles all round when, once again, Phase 3-D team members heard the familiar growl of 400 baud PSK telemetry coming down.

In addition to his duties as AMSAT-DL's Vice President,

Then, Werner directed other members of the communications team, including Freddy de Gucheneire, ON6UG, and Dr Matjaz Vidmar, S53MV, in successfully powering up each of the onboard flight electronic modules. Michael Fletcher, OH2AUE, and Harri Leskinen, OH2JMS, were also on hand in Orlando during this time to re-install the 10GHz transmitter hardware. In addition, Stefaan Burger, ON4FG, assisted the communications team by connecting and powering up the 24GHz transmitter. It performed as advertised, delivering its designed 1 watt output into its 26dB gain feed-horn antenna.

The RUDAK team was well represented in Orlando by Peter Guelzow, DB2OS; Bdale Garbee, N3EUA;

Another view of the Phase 3-D spaceframe during assembly in the Spacecraft Integration Facility in Orlando, Florida.

Jim White, WDOE; Chuck Green, NOADI; and Harold Price, NK6K. They gave the RUDAK digital experiment module a thorough checkout and declared it electrically flight ready.

Meanwhile, the structural specialists were busy preparing the second Specific Bearing Structure (SBS) for flight. The SBS is the large cylindrical structure that will contain Phase 3-D during the flight into orbit.

Despite the very good progress made in this most recent effort, a definite launch opportunity for Phase 3-D remains unsure. However, negotiations with the European Space Agency for a flight are continuing in earnest, and all remain optimistic that Phase 3-D will be successfully launched - hopefully sometime this year.

Ron Broadbent, G3AAJ, said recently that the 'Callsign to Fly Award' for Phase 3-D is still open for more donations from around the world in any currency. Those individuals that contribute a large amount will

the AMSAT-UK office (c/o G6ZRU).

short bursts

Some possible launch dates for satellites of interest to Radio Amateurs include: 15 July - Ariane 503. Hot Bird 5 and the ARD are currently manifested (would have been a flight opportunity for Phase 3-D and might still be); 16 July - NASA Deep Space 1 and SEDSAT-1; and 27 August - SUNSAT on USAF ARGOS flight, using Delta II launch vehicle. The Danish Orsted spacecraft will also be on that flight.

US astronaut Jerry Linenger, KC5HBR, a physician and a captain in the US Navy who was aboard Mir from January to May 1997, has retired from the astronaut corps, according to NASA sources.

The 16th Annual AMSAT-NA Meeting and Space Symposium will be held 16 - 18 October 1998 at the Park Inn International Hotel in Vicksburg, Mississippi. Information regarding Vicksburg area attractions and

VHF Committee and is presented annually for "advances in space communication". Ron's 20 years of service as Secretary of AMSAT-UK, before his retirement last December, make him well fitted for this honour; many advances could not have happened without his tireless work for the good of amateur satellites and the Amateur Radio fraternity worldwide.

The 13th AMSAT-UK Colloquium will be held at Surrey University, Guildford, Surrey from Friday 31 July to Sunday 2 August. This year's event will include technical and operational matters as well as an IARU forum.

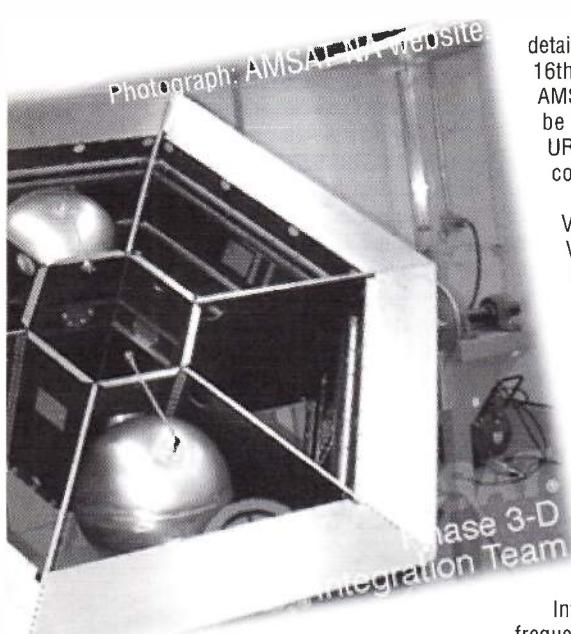
AMSA-TUK invites authors to submit papers, about Amateur Radio space and associated activities, for this event and for the *Proceedings* document which will be published at the same time. We normally prefer authors to present the papers themselves, rather than having someone else read them in the author's absence, but we also welcome 'unpresented' papers for the document.

to' articles on building your own, software, satellite Internet sites, profiles of all the current active satellites and much more. This new edition is over 375 pages in length and is full of information, including how to prepare for Phase 3-D. Contact the AMSAT-UK office for further information.

At an AMSAT-UK Committee meeting we heard that a major satellite builder was willing to include a Mode-A transponder in one of their spacecraft - but only if it was worth doing, if there would be enough users. I offered to poll prospective users to find this out. The builder wanted answers within a month so I was limited to using electronic methods only. The question was posted to the amsat-bb Internet reflector, which currently has about 1600 subscribers (lots in the US); to the world-wide packet network; and to four digital satellites -Oscars 16, 22, 23 and 25.

About 200 replies came in; 164 said yes, 17 said no and a few made comments without expressing a preference. I recog-

Satellite Rendezvous



details on arrangements for the 16th Space Symposium and AMSAT Annual Meeting can be found at the following URL: <http://pages.prodigy.com/DXHF93A>

One decision taken at the Vienna meeting of national VHF managers, which relates to amateur satellites, was that 2.435GHz plus or minus 8MHz may be used for ATV for so long as there is no active satellite using this frequency. In the case of an active satellite on this frequency, the ATV use will cease immediately.

Other topics including SAREX and International Space Station frequencies were discussed but no proposals were accepted.

amsat-uk news

Ron Broadbent, G3AAJ, was honoured by the RSGB recently when he was presented with the Louis Varney, G5RV, Cup. The cup is in the gift of the RSGB's

receive a personal engraved plaque and have their name and callsign engraved on a plate fixed to the spacecraft. A photograph will also be sent to each contributor. Information on the Callsign to Fly Award can be obtained from G3AAJ using his e-mail address: g3aj@amsat.org or via

Offers of Papers should be submitted as soon as possible; the final date for full documents is mid-June, in order that the *Proceedings* document be available to participants.

Submissions should be sent only to G3RWL, by e-mail: g3rw@amsat.org; packet radio: G3RWL @ GB7HSN.#32.GBR. EU; satellite: AO16 / 19 / 22 / 23 / 25; terrestrial mail: R W L Limebear, G3RWL, 60 Willow Road, Enfield EN1 3NQ.

AMSA-TUK also invites anyone with requests for programme topics to submit them as soon as possible to G3RWL. Topics already in are: 'Who Are the Little LEOs and Why Do They Want My Bands?'; 'What do we do with P3D?'; Future Software SATCOM; Mobile LEO terminals; 23cm PA and front-end; Radio astronomy. AMSAT-UK is also investigating the possibility of a talk by an astronaut (volunteers needed!).

AMSA-TUK is pleased to announce the arrival of the new version of the *Satellite Handbook*, by Dr Martin Davidoff, K2UBC. This brand new edition contains information on satellite operating, types of antennas including 'how

nise that the method of distribution used excluded those satellite operators who have limited resources and are in less developed countries and I trust the results will be looked at in this light. The majority of Mode A users aren't on Internet; this can be seen from the following list of countries that replies came from (by Amateur Radio prefix):

4X, 9Y, CO, DL (10), EA (2), EI, F (3), G (27), GM, HB9, HR, I (2), LA (2), ON, OZ, PA, SM (2), VE (4), VK (9), VP9, VR, VU, W (96), CE, ZL, ZP, ZS (2).

Brief additional comments included: FM rather than SSB / CW uplink (more 2m FM rigs than SSB); a high-orbit mode-J bird; Mode K and / or mode T too (many said this); high (RS-15) orbit; suggest that HF beacons be added; like UO-9, up higher with a transponder; also a 70cm SSB (and FM?!) input / output as well; need for analog transponders, not just Mode A.

These are the raw results. The results have gone to the man who wanted to know. If his decision is favourable, I'm sure we'll all hear about it: watch this space.

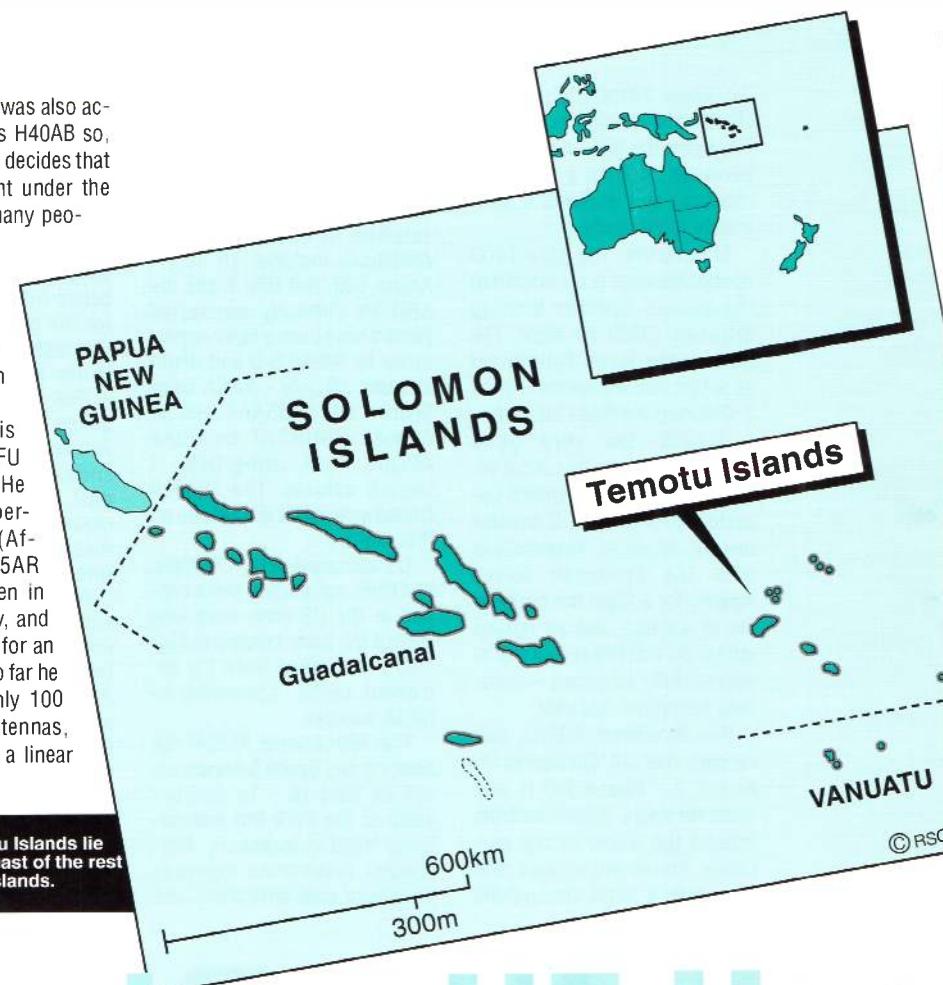
Propagation has obviously been better than I had realised, with John, G4DUW, sending me a list of 134 countries he had worked on 10 metres by late March. His list included some nice ones like FT5XN (Kerguelen Island), WHOAAV (Northern Mariana Islands) and VR2KF (Hong Kong). He had also worked ZC6A (Palestine) which currently doesn't count for DXCC purposes, but which presumably will do some time in the future. Looking back at the solar data, John's success is perhaps not that surprising: the flux was over 120 for several days in March, indicating that we may finally be seeing the long-awaited climb up the new cycle. Indeed, by early April the bands were in excellent shape in time for the H40AA Temotu Islands DXpedition (see last month). The Temotu Islands lie just over 350km east of the rest of the Solomon Islands (Fig 1).

The PacketClustersystem was full of 'spots' for H40AA,

Jim Smith, VK9NS, was also active from Temotu as H40AB so, assuming the ARRL decides that this one does count under the new DXCC rules, many people should be in a position to claim it. As far as I can tell, UK stations were able to work H40 on 40 through 12 metres.

Åke, SM7CIP, is now active as 5R8FU from Madagascar. He has previously operated as YA1AR (Afghanistan) and T5AR (Somalia), has been in 5R8 since February, and is likely to be there for an extended period. So far he has been using only 100 watts and wire antennas, but hopes to have a linear

Fig 1: the Temotu Islands lie just over 350km east of the rest of the Solomon Islands.



© RSC

HF Happenings HF Happenings

Don Field, G3XTT, looks at the new DXCC entities which are appearing.

3D2CB/R (Rotuma), FW2EH (Wallis and Futuna), JT1Y (Mongolia), ZK2FT (Niue), S08R (Western Sahara) and other nice ones. Most of these were workable on 12 metres, and even 10 metres produced some rare DX, with openings to Australia, Japan and elsewhere.

Incidentally, if you have a particular interest in 10 metres, you might like to write off for details of *The Six and Ten Report*, compiled and published by members of the RSGB Propagation Studies Committee. This is not a 'glossy', but a typed summary of what has been happening from a propagation point of view. Subscription information is available from Dr S J Reed, G0AEV, Bridlands, Kington Langley, Chippenham, Wilts SN15 5NN, or e-mail: steve.reed@me.rtz.co.uk You might also want to check the links at the propagation website [1].

dx news

The H40AA expedition (see above and last month) logged in excess of 65,000 contacts, and

and directional antennas before too long. His QSL manager (who still holds logs for Åke's previous operations) is Jan 'John' Hallenberg, SM0DJZ, Siriusgatan 106, SE-195 55 Märsta, Sweden.

Ted, NH6YK, reports he worked almost 900 contacts from Midway Island (KH4) during the last part of March. He plans to back there in June.

island operations

Lew, N6VV, a veteran island activator, has announced an operation from Mokil Atoll, scheduled for 1 - 7 June. This will be the first time an operation will take place from Mokil Atoll. It is located in the State of Pohnpei (IOTA letter d. in the *IOTA Directory*) in the Federated States of Micronesia (V63). Before the activity on Mokil, the team of Mike, NG7S; Lew, N6VV; and Dan, W7DR, are due to be active from the former German colonial town Kolonia on the island of Pohnpei (IOTA OC-010) between 24 and 31 May, in-

cluding multi-op activity in the CQ WPX CW contest (30 / 31 May). Callsigns to be used on Mokil are V63VV/P and the other assigned callsigns by Dan and Mike. Their equipment list includes: Yaesu FT-1000MP, FinnFet FF-1001 Solid State kW amplifier, Force 12 C3S Yagi, monoband ground plane verticals for 40, 20 and 15 metres, a Cushcraft R-7000 vertical and wires for 80 and 160 metres. QSLs for V63VV go to N6VV (callbook or via bureau). The V63 callsigns for W7DR and NG7S will go to their home callsigns. For more information e-mail Lew, N6VV, at: lew@book.net

The US Islands Awards Program club station KL7USI will be active from IOTA NA-041 islands (also several 'new ones' for the USI program) in Alaska, 6 - 13 June. Check 14260kHz for SSB activity. Also, look for maritime mobile and RTTY operations. QSL direct or send an 'e-QSL' [2].

Carlos, LA9PJA, plans to be active from Svalbard as JW9PJA between 12 and 16 June. As more information develops he

will post it to his homepage [3].

The WestNet DX Group will operate from Great Saltee Island (IOTA EU-103) 25 - 29 June, using the callsign EJ7NET. Their operation will be on all bands from 160 to 2 metres. The team will be active on SSB, CW and RTTY. EI2GX is handling QSLs and all stations worked will be QSL'd via the bureau.

K8RF, WOCG and WA9S were due to operate as CY9/K8RF (St Paul Island) in the CQ WPX CW contest (30 / 31 May), with low-band and WARC activity both before and after the contest, using their individual callsigns.

more new ones?

Paul Granger, F6EXV, reports that on 1 April, he filed a petition on behalf of the Clipperton DX Club for the addition of two new counters to the DXCC list, the Marquesas Islands and the Austral Islands. Paul states the following: "Under the new definitions of what constitutes a 'political entity', namely IARU mem-

bership, French Polynesia is clearly a 'point 1 country'. Furthermore, any island of the Marquesas group is situated more than 350km away from any other island of the parent country. Any island of the Australs is situated more than 350km away from any other island of the par-

two groups of islands. Watch this space!

prefixes

Many newcomers to short-wave listening and transmitting become confused over callsign prefixes, which is not helped by the frequent changes which take

callsigns used to appear from some Commonwealth countries (MP4B for Bahrain, for example) but reverted to the UK when those countries became independent (Bahrain now uses the prefix A9).

The system I have described goes back to the late 1920s, and

was introduced soon after it became clear that radio waves were quite capable of travelling great distances. In the early days, amateurs were allocated callsigns such

**QSL card from
NU1AW, club
station of the
IARU Interna-
tional Secretariat,
which was used in
last year's IARU
contest.**

subsequent official system has stood the test of time, except that new prefixes have to be created from time to time due to political changes. Many of these start with a number / letter or a letter / number combination (such as 8P for Barbados, or A9, as above, for Bahrain).

Incidentally, as it happens NU1AW continues by chance to be a valid US callsign, and was aired last year in the IARU contest as a reminder of days gone by (The callsign is commonly found as W1AW, the headquarters station of the American Radio Relay League. The call 1AW was originally assigned to Hiram Percy Maxim, the founding president of the ARRL).

The above was prompted by some recent questions about callsigns starting with the letter R. 'R' callsigns are used in Russia and its possessions. They can be interpreted as follows:

R1M - - is Malyj-Vysotskij Island

R1F - - is Franz Josef Land

nu1AW

International Amateur Radio Union

International Secretariat Club Station

Inaugural Operation • 12-13 JULY 1997

IARU HF World Championship • 7154 QSOs in 24 hours

Stations provided by: Tom Frenaye, K1KI
Dave Sumner, K1ZZ

Other operators: K1CC, K1RO, K1TO, K1JT, KG1D,
N1RL, K2KQ, W1OD, WA2GO

Location: Connecticut, USA



B HR425

penalties, HF Happenings

ent country, and more than 800km away from any island of the Marquesas. The submission asks for addition to the list as of 2 June 1983, the date when the CORA, representing French Polynesia, joined the International Amateur Radio Union (IARU)."

Old hands will remember that Paul and others filed such a petition previously, in connection with their 1989 operation from the Marquesas and Austral groups. At that time the DX Advisory Committee of the ARRL voted against the addition on these islands, because they felt that the French Polynesia is not considered to be a 'parent' country, and that France is the parent country. It will be interesting to see what happens.

Either way, as I write this I have just seen an announcement that W6RJ and W6KR were planning to operate from the Austral group starting 13 April, and from the Marquesas starting 21 April, obviously in the hope of a positive ruling. Round about the same time Kan, JA1BK, was also planning an operation from the

place, and the allocation of special prefixes from time to time.

The first thing to remember is that all prefixes you hear on the amateur bands should be consistent with the overall ITU prefix allocation, which applies to all radio transmitters, commercial as well as amateur. For example, the callsign letters you see on aircraft follow exactly the same system. These ITU allocations can be found in many publications, for example the *RSGB Yearbook*.

Amateur callsigns constitute just a small part of a country's need for callsigns, but still fit into the overall system. And where some commercial callsigns use only letters, it is normal for amateur callsigns to consist of the recognised prefix, plus a number (usually one digit, but occasionally more), plus a suffix of one, two or three letters. To take an example, the UK has, for many years, had an ITU allocation which included G, M and 2 prefixes, though only G was used for amateur callsigns until that series ran out and until the Novice licence was introduced. M

as 1AW in the US (the digit, in that case, signifying the area of the US in which the callsign was located, and the suffix being allocated alphabetically from AA to ZZ). When international communication became possible, 1AW would typically have signed NU1AW, N standing for North America and U for the United States. But this unofficial system (introduced by the International Amateur Radio Union in 1927) quickly became confused, given that there were many countries in the same continent with the same first letter (I don't go back that far, but EF for both France and Finland might be an example). So some rationalisation was required, and the International Telecommunication Union took on the job not only for amateurs but commercial users as well.

The unofficial (or 'intermediate') system lasted only about 20 months in all. The

R1A - - is used by Russian bases in the Antarctic

Apart from these:

Anything with 2 is in Kaliningradsk

Anything with 1, 3, 4 or 6 is in European Russia (except those listed above)

Anything with 8, 9 or 0 is in Asiatic Russia

Another recent prefix change of interest is that Pitcairn Island now uses VP6, rather than VR6 as previously. This is because of an agreement that all VR prefixes will be allocated to Hong Kong following the handover to China.

Finally, I was sorry to hear of the passing of Peter Watson, ZL3GQ. Peter gave me my first 160m QSOs with ZL, and was always a fine signal on all bands. I am sure we all extend our sympathies to his wife Maire.

Table of URLs

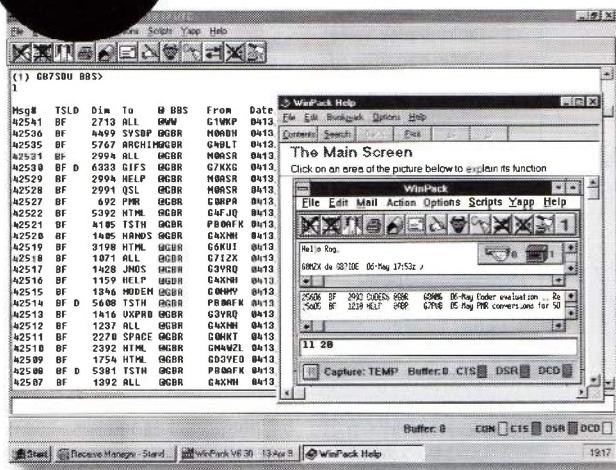
- [1] <http://www.keele.ac.uk/depts/por/psc.htm>
- [2] <http://www.eng.mu.edu/~usi>
- [3] <http://home.sol.no/~la9pja>

From my mention last month of the WX APRS Node add-on for WinPack, the program author, Roger, G4IDE, tells me that he only ever supplied it to local WinPack users, so they could

WinPack V6.4 will soon be available.

new packet engine

This new program is a very interesting concept. It's a Win95 'TNC driver' application that supports all sorts of different hardware (KISS TNCs, BayCom modems, DRSS cards, USCC cards etc) and communicates with high



you'll find the VK5RQ PacTOR BBS is now operational on a mark frequency of 21072.5kHz. The SysOp, Joe, VK5RQ, says he's leaving this on 24 hours a day until further notice, for individual users and for anyone that wants to forward or log any personal mail for anywhere in the world. This 15m port is in addition to, but totally different from, the 20m port - which is also operational 24 hours a day on a mark frequency of 14072.5kHz. Joe says, "Give a try, so we make it worthwhile leaving it there". For further information, you can contact Joe via packet with a message to VK4WIA@VK4WIA.BNE.QLD.AUS.OC

On the quieter WARC band of 17m, Nev, VK4TX, has set up a 1200 baud PSK port on his BBS of VK4WIA, operating on 18102kHz USB. His PSK modem is using a 1500Hz crystal-locked oscillator for the transmit side, and the transceiver is crystal

NLD.EU via packet, or e-mail: pa3gmz@worldonline.nl

If you'd like a complete and up to date list of HF PacTOR BBSs and HF / VHF gateways, the *ON6TS Fact Sheet*, which is accessible through the 'Aerts Family Homepage', has been updated with a new PacTOR mailbox and gateway list. This has been put together by Albert, ON6TS, and you can find it on the Internet at <http://www.club.innet.be/~pub01234> or <http://surf.to/aa>. Albert himself is active on HF PacTOR on 14.0765MHz, 18.1065MHz and 21.0765MHz mark carrier, or you can also contact him via e-mail to albertaerts@innet.be

There are a number of PC-based speech recognition programs available, as well as text to speech readout programs (which are often combined with the former). I've already read a few examples of packet messages using these techniques, one being used by an amateur who's paralysed from the neck

Data Connecting Data Con Chris Lorek, G4HCL, brings news on packet, SSTV, PacTOR and shows how your amateur packet net

get a display from his WX node. He did the original about a year ago, but at that time the node sent its data in Roger's own proprietary format, although Roger converted it to APRS format a couple of months ago. He adds that I'd be amazed at some of the wonderful things that he has made available to packet users in his location in Lincolnshire! Roger has kindly forwarded me a copy of the program saying, "feel free to pass it on to anyone who might be able to make use of it". I've arranged for it to be included, together with (as usual) every other known add-on for WinPack, on each current version of the QSP73 Amateur Radio software CD-ROM (tel: 01703 263429 or see <http://www.qsp73.demon.co.uk> for details).

As regards serious versions - WinPack V6.4, with support for the SV2AGW Packet Engine (see below) will be released soon - again you'll be able to find it on Roger's web site as well as on the QSP73 CD-ROM, as soon as it's available.

level applications by DDE. SV2AGW has a whole suite of rather smart applications to use with it, but a few people have asked if it could be supported with WinPack. It's now working fine with this system, and it will be a feature of WinPack V6.4.

In some ways the packet engine isn't as powerful as BPQ or Flexnet - it doesn't provide a node, in fact it doesn't even provide a digipeater - but where it does score over BPQ or Flexnet is that it runs from within Win95 as a normal application. You don't have the horrors of having to load it underneath Windows. This means that you can load it and unload it when you need it, as opposed to having it stuck there impacting on your Windows performance all the time, whether or not you are actually using it. My thanks go to Roger, G4IDE, for the above information.

data down under

If you fancy trying out the sub-noise capabilities of PacTOR,

controlled, being a high-spec commercial rig. To use the port, first connect to VK4WIA-0 which is the router, after which you'll need to send one of the following commands:

BBS

C WIAQ

C VK4WIA-1

C ETHER VK4WIA-1

Nev says "Have fun", and if you do manage to connect, do send him a report, either via the BBS or packet with a message to VK4TX@VK4WIA.BNE.QLD.AUS.OC

datamodes news

There's a new WinLink BBS operational on HF, with the callsign PA3GMZ. This BBS automatically scans the following frequencies: 7035 / 37 / 38 / 40kHz (24 hours), and the following frequencies during daylight hours: 14070 / 71 / 72 / 73 / 74 / 75 / 76 / 77 / 78 / 79kHz plus 28080 / 85kHz. More information from the SysOp PA3GMZ .#ZH1.

down but is now happily able to 'join in' on data modes. Are you using such a program? If so, please do let me know what success, or otherwise, you're having, and I'll be pleased to share it with others through this column for the benefit of all.

GB7SWN, the BBS located in Swansea and covering South and West Wales and North Devon has now closed. There may be a chance of another BBS opening in West Devon to fill some of the gap, but it remains to be seen whether this plan will come to fruition. The GB7SWN SysOp, Richard, GW8TVX, is packing it in due to work pressures and commitments, although Richard says he's enjoyed most of it, including the endless hours restoring back-ups after crashes, the back-ups themselves, the sorting / checking / reading of mail and so on! Richard says "73 all, see you around as a normal packet user, not a SysOp".

Luc, LX2GT, says that in his area there exists a digipeater operating on 29.210MHz, and asks whether there's another

dipeater or node on this frequency which he can connect to? LXOPAR and HB9VV are both active on this frequency, anyone else? You can contact Luc with a packet message to LX2GT.DBOABH. #BAY.DEU.EU or via e-mail: lx2gt @db0abh. #bay.deu.eu

Michael, G7TFV, from South Shields says that he's recently been bitten by the SSTV 'bug' after seeing a demonstration at his local Amateur Radio society. He asks about the latest version of *Win95 SSTV*, as he's using version 1.03. *Win95SSTV* is written by Jim Barber, N7CXI, and the first full release version of *Win95SSTV* is V1.10, and it's available on the Internet on his site at: <http://www.siliconpixels.com/W95SSTV/W95SSTV.HTM>

The file is quite large at around 3.8Mb so it'll take you a while to download, but it's also on the QSP73 CD-ROM if you don't have an Internet connection, or indeed you simply don't like large phone bills!

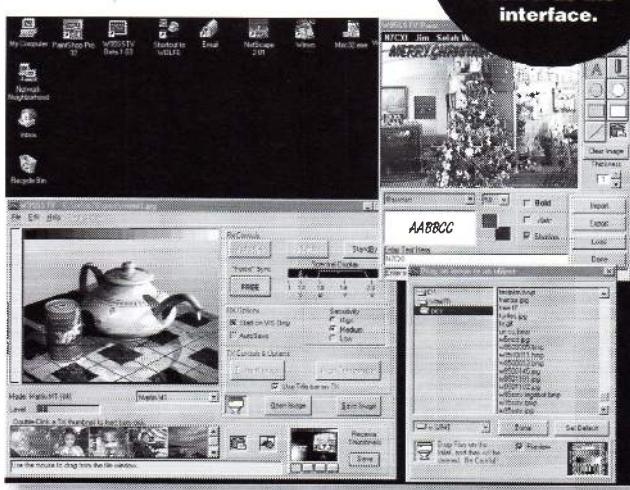
London and the Thames Valley and the south east, together with a separate detailed node map of the home counties and East Anglia areas. These comprehensive and very informative maps were compiled by G4FPV in July 1997, and although nodes do change as the network itself changes, they certainly do give a good idea of 'what's what'. Also in the issue is a useful guide to 12.5kHz modifications for the Trio TR-9130, and the continuation of the *9600 baud Handbook*, this time with some very useful information from James, G3RUH. You can get further details on the MaxPak group from their Membership Secretary, Richard G1NZZ @ GB7MAX, or tel: 0374 826085 evenings / weekends.

Also from *Digicom* comes information on a 'fix' for locally-radiated

significantly reduced - good news all round!

packet pmr conversion

Many amateurs contact me each week asking if I have conversion information on such-and-such an ex-PMR rig. There's a signifi-



Win95 SSTV
is a freely-available
SSTV program
which uses your
PC's sound card as the
interface.

connection Data Connection

You can get PMR conversion information over the air using the worldwide work

maxpak news

On the subject of national node maps, the April / May 1998 issue of *Digicom*, the bi-monthly newsletter of the Midlands Packet User Group, contains an entire map of UK packet trunk links, including those in Scotland, the north west, north east, Wales, West Midlands, East Midlands, home counties and East Anglia, south west and Channel Islands.



MaxPak, the Mid-Lands Packet Group, publish a highly-informative bi-monthly newsletter **Digicom**.

emission on 144.850MHz, which is a commonly-used packet channel, from a PK-88 which is a popular terminal node controller. The reported problem is that the 5V regulator inside the TNC, which is mounted on a heatsink isolated from the chassis, is actually at 0.7V above ground potential, rather than at earth potential itself as is usually the case with such regulators. The interference is reported to be radiated by the heatsink acting as a small antenna. Fitting an insulation kit to this regulator (usually consisting of an insulating rectangular heat-conducting pad and a sleeved single-hole mounting washer), allowing the heatsink to be earthed, can be useful. The heatsink can then be directly earthed by using a wire strap between this and the 25-way RS-232 'D' connector mounting bracket which is at ground potential. The radiated signal is thus sig-

nant amount of information in the RSGB's *PMR Conversion Handbook* [see Book Browser on page 25 - Ed], as well as the earlier *Surplus 2-Way Radio Conversion Handbook* (which is now out of print, although limited stocks are available from Poole Logic, tel: 01202 683093) which gives information on earlier Pye / Philips sets not covered in the later book.

But there's also a great deal of information available via packet, on the MODBOX server which has been running for a few years now on GB7PMR. A couple of weeks ago I was told that Steve, GM7DUG, who is the SysOp of GB7PMR, will no longer be able to support the PMR / MODS database he's been running under the title MODBOX. But the good news is that Ian, GM0JQE, who's the SysOp of GB7AYR, has agreed to host all of the files at GB7AYR and has set them up in a user directory titled (quite appropriately) MODBOX. Note that the PMREX and MODEX servers are not available on this BBS.

Information can be requested using the usual FBB REQDIR/REQFIL process, ie:

SP REQDIR @ GB7AYR
MODBOX*.*

>/EX

and

SP REQFIL @ GB7AYR
MODBOX\{SUB-DIR\}FILENAME.EXT
>/EX

My thanks go to Ian, GM0JQE, for this information.

ctrl-z, end of message

I'm now happily using my new Kenwood TM-G707E with its front-panel data ports for both 1200 and 9600 baud packet. See the review in last month's issue of *Ham Radio Today* if you'd like more information (and yes, my wife Sheila, G8IYA, did buy me one for my birthday - it's a great rig!).

That's it for this month. Please do drop me a packet, e-mail, letter or fax with details of what you or your group is doing on data modes. My contact details are given every month on page 58.

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THE VHF/UHF HANDBOOK

*Edited by Dick Biddulph,
G8DPS*

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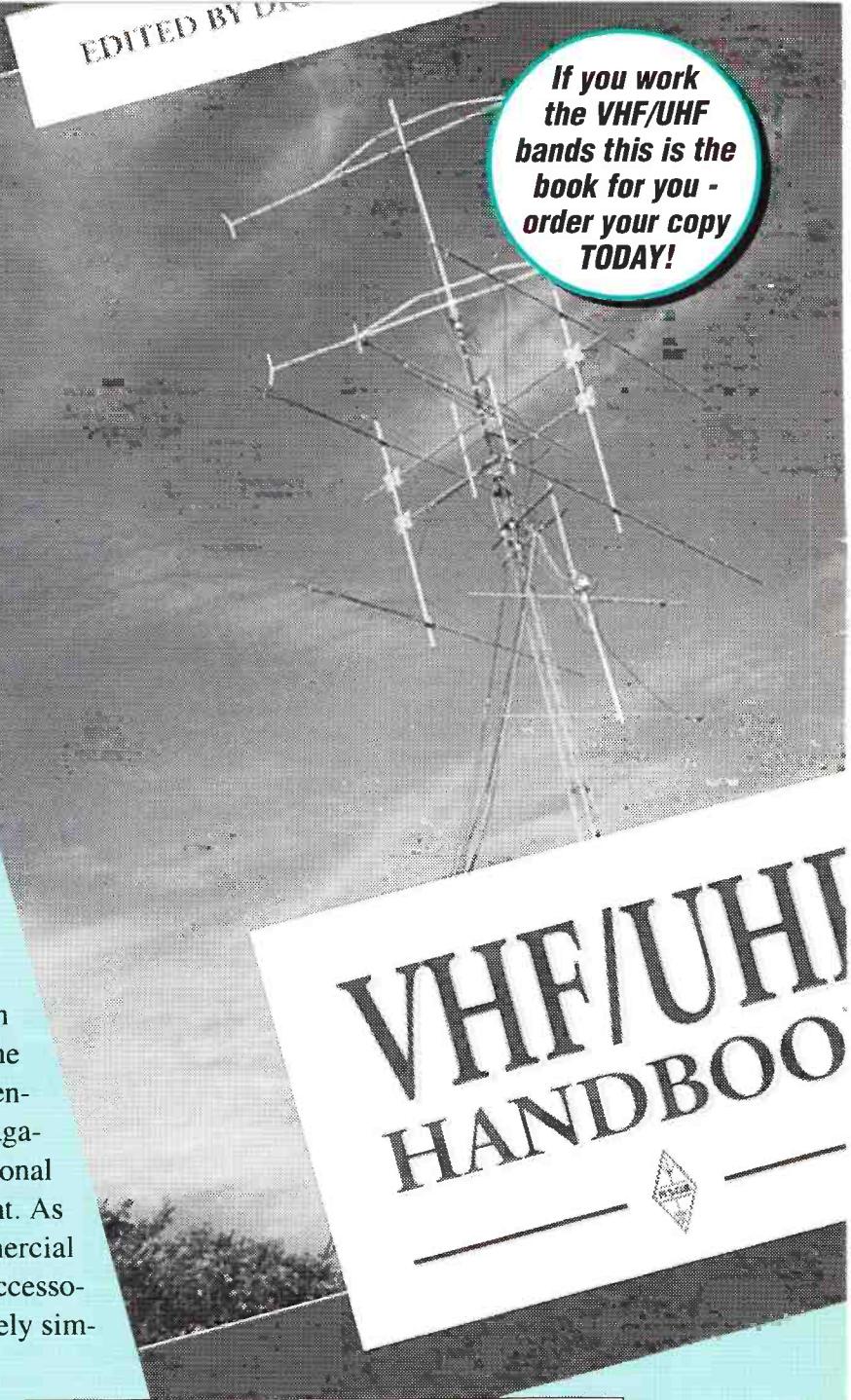
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Satellite communications	Ron Broadbent, G3AAJ
Repeaters	Geoff Dover, G4AFJ
Test equipment, methods & accessories	Clive Smith, G4FZH
General data	Dick Biddulph, G8DPS
Fitting coaxial connectors	Roger Blackwell, G4PMK

To include your club in this section, please make sure you send us your events details in time: deadline for August issue is 15 June, for September: 13 July; October: 14 August. We only list active clubs, ie those who send us their diary of planned talks / events. Send your club event details to: The Editor, Ham Radio Today (Club News), RSGB Publications, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE; fax: 01707 645105.

Aylesbury Vale RS

8.00pm on 1st & 3rd Wednesday of month, at Hardwick Village Hall, 3 miles north of Aylesbury on A413. 3 Jun video, James, M1BXQ. 17 Jun discussion evening. Secretary Gerry, G7VVF: 01296 432234.

Bangor &DARS

8.00pm on 1st Wednesday of month (except Jun / Jul) at Clandeboye Lodge Hotel, Bangor, Co Down. 3 Jun rally preparations, CW night, Morse keys display. Roy, G10WVN: 01247 460716.

Bristol (RSGB) Group

7.15 for 7.30pm last Monday of the month at Avon Combined Services Club, St Pauls Rd, Clifton, Bristol. 25 May Gibraltar & Barbados, Martyn Phillips, G3RFX / ZB2FX. 29 Jun QSL bureau, John Densem. Robin Thompson, G3TKF: 01225 420442; e-mail: robin@g3tkf.demon.co.uk

Buxton Radio Amateurs

2nd & 4th Tuesday of month, 26 May Roger, G3YBO, of N Derbyshire Comms. 9 Jun AOR UK, Richard Hillier, G4NAD. Derek Carson, G4IHO: 01298 25506.

Cardiff RSGB Group

2nd Monday of month. 8 Jun shortwave senders. Dave, GW3RWX. David Thomas, GW3RWX: 01222 620939.

Chelmsford ARS

1st Tuesday of month. 2 Jun constructors' competition. Charles Shelton, G0GJS: 01245 256654.

Cheltenham ARA

7.45 for 8.00pm on 1st Friday of month at Prestbury Library, The Burghage, Prestbury, Cheltenham. 5 Jun SSTV demo, G3SZS & G3VTS. Mrs Patricia Thom, G1NKS: 01242 241099 (9.00am 9.00pm); e-mail: g1nks@g3nks.demon.co.uk

High Street, Cockenzie, from 1900 'till late'. Bob Glasgow: 01875 811723.

City of London ARS

is a new club in central London. For details please contact Tony Hern, G1UFX, by e-mail: g1ufx@mcmail.com; by packet: G7UZN @ GB7HSN, or by writing to: COLARS, c/o Flat 7, Block H, Peabody Square, Blackfriars Road, London SE1 8JJ.

Cornish RAC

7.30pm on 1st Thursday of month at Perranwell Village Hall, near Truro. 4 Jun computer scanning for blind. 2 Jul pre-rally meeting. Robin Worsley, G0MYR: 01209 820118.

Coulsdon ATS

7.45pm on 2nd Monday of month at St Swithun's Church Hall, Grovelands Road, Purley. 8 Jun electronic warfare, Derek Atter, G3GRO. Secretary, Alan Bartle, G6HC: 0181 684 0610.

Droitwich Spa ARC

7.30pm on 1st Thursday of month at Ye Olde Shoppe, 17 Ombersley St W, Droitwich Spa. Edward, G4PQZ, tel / fax: 01905 773181.

Dunstable Downs Radio Club

8.00pm Fridays at Chews House, 77 High Street South, Dunstable, Beds. The club has 'library nights' on 1st Friday of month, plus: 12 Jun junk sale. Paul McVay, G7TSJ: 01582 861936.

East Cleveland ARC

7.00pm Fridays at Jubilee Hall, Gurney St, New Marske. 22 May under £5 construction competition. No club meetings Jun - Aug; Novice class starts Sep. Paul Mooney, G7SPV, 01287 660821.

Echelford ARS

2nd & 4th Thursday. 11 & 25 Jun TBA. Details: 01784 456513.

This Month in the Clubs

Bristol (South) ARC

7.30pm Wednesdays at Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol. 27 May Amateur Radio Software demo. 4 Jun activity evening. 10 Jun digital evening. 17 Jun NFD training. 24 Jun Longleat preparation. Jean Fletcher, GOAWX: 01275 834282.

Bromley &DARC

7.30 for 8.00pm on 3rd Tuesday of month, at Victory Social Club, Kechill Gardens, Hayes, Kent. 16 Jun DF hunt, Graham, G4NPD & Alan, GOTLK. Alan Messenger, GOTLK: 0181 777 0420.

Bromsgrove ARS

8.00pm on 2nd & 4th Tuesday of month at Lickey End Social Club, Alcester Rd, Burscot, Bromsgrove. 9 Jun DF construction event. 23 Jun mobile DF. A Malcolm, G8DEC: 01527 875573.

Bury Radio Society

7.45 for 8.00pm Tuesdays at Mosses Centre, Cecil Street, Bury, Lancashire. 9 Jun the CIA and RFE / Radio Liberty, Gordon Adams, G3LEQ. Keith Rothwell, G8EAP, keith@g8eap.demon.co.uk

Chesham &DARS

each Wednesday. 3 Jun general meeting. 10 Jun computing for the amateur. 17 Jun members' forum. 24 Jun pedestrian radio treasure hunt. P Blakeney, G8BLB: 01494 784811.

Cheshunt &DARC

8.00pm Wednesdays at the Church Room, Church Lane, Wormley, Herts. 3 Jun night on the air. 10 Jun 10GHz ATV. 17 Jun natter night. 24 Jun portable on Baas Hill Common. Details John Crabbe, G3WFM, 47 Torrington Dr, Potters bar EN6 5HU or at GB7HSN.

Chichester &DARC

7.30pm 1st & 3rd Tuesday of month at St Pancras Hall, St Pancras, Chichester. 2 Jun Goodwood picnic. 16 Jun, 7 Jul, 21 Jul: free / open evenings. John Stratfull, G3JJS: 01243 861578.

Christchurch ARS

8.00pm Thursdays in the radio club room, behind the Sports & Social Club, Grange Road, Somerford, Christchurch. Secretary K P Harris, G7WSN: 01202 484892 (evenings).

Cockenzie & Port Seton ARC

has 'normal club nights' on first Friday of month at the Thorntree Inn.

Crystal Palace &DRC

3 Jun constructing a wavemeter. V H Johnston, G1PKS; tel: 0181 653 2946; e-mail: vjohns653@aol.com

Derby &DARS

Wednesdays. 3 Jun junk sale. Details: 01332 556875.

Devizes &DARC

8.00pm Fridays at Hare & Hounds Inn, Hare & Hounds St, Devizes. 21 Jun 'spending your money wisely'. Noel, G4TIX: 01380 724533.

Dorking &DRS

7.45pm on 4th Tuesday of month except July / August, at the Friends Meeting House, South St, Dorking (opposite the Spotted Dog). Informal meetings held on 2nd Tuesday at various venues. 26 May D-day radio aids, Walter Blanchard, G3JKV. Details John Greenwell, G3AEZ: 01306 631236.

Dragon ARC

7.30pm 1st & 3rd Mondays of month at Ebenezer Hall, Foel Graig Lane, Higher Village, Llanfairpwll. June (date TBA) ATV demo by John Lawrence. Tony Rees, GW0FMQ: 01248 600963.

Edgware &DRS

at Watling Community Centre, 145 Orange Hill Rd, Burnt Oak, Edgware. 11 Jun RadCom, Steve White, G3ZVW. 25 Jun VHF NFD briefing. G4ZOD: 0181 958 6178.

Exeter ARS

7.45pm 2nd Monday of month at Moose International Centre, Blackboy Road, Exeter. 3rd Monday is committee / open meeting. 8 Jun 'foxhunt' (TBC). Theo, G3EQM: 01392 875498.

Exmouth ARC

1st & 3rd Wednesday of month. 20 May RAE exam evening. 3 Jun TCP/IP. 17 Jun 12.5kHz channel spacing. Details: 01395 271880.

Fareham &DARC

7.30pm Wednesdays at Portchester Community Centre. 20 May natter night. 27 May fax, Andrew Vare, G4XZL. 3 Jun video: radar. 10 Jun visit to maritime mobile at Hamble. 17 Jun natter nite. 24 Jun modern rig theory, Mick, G4ITF. Andrew Sinclair, GOAMS: 01329 235397.

Felixstowe &DARS

8.00pm at Orwell Park School, Nacton, Ipswich. 1 Jun kite flying for

Radio Amateurs, Iain, GOOZS. 15 Jun Backpacking contests, Steve, M1ACB. 29 Jun special events, what to do, Paul, G4YQC. Paul, G4YQC: 01394 273507.

Gloucester AR&ES

Mondays. 1 Jun Waters & Stanton visit. 8 Jun on air. 15 Jun Morse practice. 22 Jun on air. 29 Jun Morse practice. Details: 01452 618930 office hours.

Goole R&ES

7.30pm Fridays at West Park Pavilion, Goole. 22 May troposcatter. 5 Jun on air. 12 Jun VHF NFD preparation. 19 Jun DF competition. G6YYN: 01757 638539.

Halifax &DARS

7.30pm on 3rd Tuesday of month at Tap & Spile Pub, Wards End, Halifax, for committee & Morse tuition. 16 Jun HF propagation, Gerald Edinburgh, G3SSY. D Moss, G0DLM: 01422 202306.

Hambleton ARS

7.30pm at Allertonshire School, Northallerton. 21 May soldering skills, G3KJX. 4 June fox hunt. 18 Jun junk sale. John Hampson, G0VXH: 01845 537547, or packet: G0VXH @ GB7CYM.

West Sussex. 4 Jun - quiz against Crawley ARC. David Miller, G4JHI: 01403 252101, or e-mail: davidmiller2@compuserve.com

Ipswich Radio Club

27 May Morse practice. Iain, GOOZS: 01206 396419.

Itchen Valley ARC

2nd & 4th Friday. 22 May 'HALO' Britain's secret weapon, Paul Wilton, M1CNK. 12 Jun static electricity, Mike Homer, G6AIQ. 26 Jun 'treasure hunt' from Netley Marsh Community Hall. Sheila Williams, G0VNI: 01703 813827.

Keighley ARS

8.00pm Thursdays at Ingrow Cricket Club, Hainworth Rd, Ingrow, Keighley. 1st Thursday is on air night, except where shown. 21 May RTTY on air night. 28 May caving & electronics, Mike Bedford. 21 May RTTY on air night. 28 May caving & electronics, Mike Bedford. 11 Jun antennas for 21st century, G3OTE. 18 Jun natter night. 25 Jun RAFARS, Peter Lewyn. Ann, M0BLZ: 01274 499733.

Kent Repeater Group

holds its AGM on 19 Jun at Electronics Building, University of Kent, Canterbury.

27 May VHF rig installation. 3 Jun RSGB matters, Ray Degg, G0JOD. 10 Jun barbecue. 17 Jun visit to Humberside Radio GKZ. 24 Jun aviation anecdotes, Robin Fletcher. Cliff Newby, G3EBH: 01522 750637.

Liverpool &DARS

8.30pm Tuesdays at Churchill Club, Church Road, Wavertree, Liverpool. 26 May surplus sale. Publicity Officer, Ian Mant, G4WWX: 0151 722 1178.

Lothians Radio Society

7.30pm on 2nd & 4th Wednesdays of month at Orwell Lodge Hotel, Colinton Road, Edinburgh. 10 Jun AGM. 24 Jun social. Tommy Main, GM4DCL: 0131 663 8501.

Loughborough &DARC

at Science Lab, Hind Leys Community College, Forest St, Shepshed, on Monday evenings for general chat / operating & on Tuesdays as follows: 26 May Deans Lane, operate /P. 9 Jun transformers & power supplies, Noel, G0WTA. 16 Jun 4th DF. 23 Jun TVI & breakthrough. 30 Jun annual fun golf competition. Ian, G8SNF, on tel: 01509 218259.

Louth &DARC

8.00pm 1st Wednesday of month at Woodman PH, Eastgate, Louth.

Mid Cheshire ARS

8.00pm Wednesdays at Cotebrook Village Hall on A49 north of Tarporley. 20 May video. 27 May construction & VHF on air night. 3 Jun construction & HF on air night. 10 Jun activity night. 17 Jun trends in modern radio equipment, Waters & Stanton. 24 Jun construction & VHF on air night. 31 Jun VHF NFD final preparation. Ted Bannister, G0RBA: 01606 592207; e-mail: G0RBA@aol.com

Newbury &DARS

7.30pm on 4th Wednesday of month at Memorial Hall, Upper Bucklebury, near Newbury. 27 May 3rd method SSB, Peter Rhodes, G3XJP. 21 Jun NADARS Amateur Radio Boot Sale, Cold Ash, near Newbury. 24 Jun radio in aviation, Mike Grierson, G3TSO. Secretary: 01635 863310.

Norfolk ARC

Wednesdays at Ugly Bug Public House, Colton. Informal evenings, including night on air, construction QRP, & Morse practice, on 1st, 3rd & 5th Wednesdays, plus: 27 May NFD briefing. 10 Jun, radio team quiz, Peter, G3ASQ. 24 Jun 'foxhunt'. Hon Sec, Sandra Simpson, 2E1FOF.

This Month at the Clubs

Hastings Electronics &RC

7.30pm on 3rd Wednesday of month at West Hill Community Centre, Croft Road, Hastings. 20 May marine radio, Tim Strickland, G4EOA. 17 Jun engineering experience for Orange. Doug Mepham, G4ERA: 01424 812350.

Hereford ARS

19 Jun Rob Mannion, G3XFD, Editor Practical Wireless. Eddy, G0UDF: 01432 263575.

Hoddesdon Radio Club

8.00pm alternate Thursdays at Conservative Club, Rye Road, Hoddesdon, Herts. 28 May video. 11 Jun gliding, Mike Hodgson. 25 Jun barbecue at Tolmers Scout camp, Cuffley. Don, G3JNJ: 0181 245 8119.

Horndean &DARC

7.30pm 1st & 4th Tuesday of month at Lovedean Village Hall, 160 Lovedean Lane, Lovedean, Hants. The 1st Tuesday is usually a social evening. 23 Jun vintage radio, Douglas Byrne, G3KPO. Stuart Swain, GOFYX: 01705 472846.

Horsham ARC

8.00pm on 1st Thursday of month at Guide Hall, Denne Road, Horsham,

Kidderminster &DARS

8.00pm first Tuesday of month at Sutton Arms, Sutton Road, Kidderminster, Worcs. Geoff Philpotts, G0RJP, tel: 01299 822206.

Leicester Radio Society

meets every Monday. 1 Jun LRS invites, Midland radio societies, open evening. 15 Jun quarterly progress meeting. 22 Jun mains power generation, Vic Ward, G3MXV. 'On air' nights are held on Mondays not shown above. John Alexander, G7GCK: 0116 231 3194.

Leiston ARC

at 7.30pm at Leiston Town Athletic Association, Victory Rd, Leiston. 2 Jun meeting at Sizewell B Information Centre: Sporadic E, Jim Bacon, G3YLA. John Rabson, G3PAI: 01394 460298; fax: 01394 420795.

Lincoln Repeater Group

holds its AGM at 8.00pm on Wednesday 27 May at British Railways Club, Ropewalk, Lincoln. John Middleton, G8VGF, 01522 525760.

Lincoln Short Wave Club

7.45pm Wednesdays at Railway Sports & Social Club, Ropewalk, Lincoln. 20 May BARTG, Ian Brothwell.

Lincs. 3 Jun rally / summer fete organising. Roger Wilson, G4IPE: 01507 602220; e-mail: g4lrc@lincom.demon.co.uk

Maidstone ARC

4 Jun NFD arrangements. Details: 01628 485167.

Maidstone ARC

holds Morse tuition Tuesdays and Fridays and Novice classes Wednesdays, plus: 6 Jun nostalgia. Mike Grainger, G0VQB: 01634 856765.

Malvern Hills RAC

8.00pm 2nd Tuesday of month at Town Club, 30 Worcester Road, Malvern. Club call is G4MHC. 9 Jun HF night on air. Secretary Dave Hobro, G4IDF, 60 Linksview Crescent, Newtown, Worcester WR5 1JJ; 01905 351568 (evening / weekend), e-mail: DHobro@aol.com

Mansfield ARS

7.30 for 8.00pm 2nd Monday of month at Debdale Sports & Recreation Club, Debdale Ln, Mansfield. 8 Jun talk / video on Russian amateur /arctic explorer Krenkel, Mike Hewitt, G4AYO. David Peat, G0RDP: 01623 631931.

North Kent RS

8.00pm 1st & 3rd Tuesday of month at Pop-in-Parlour, Graham Rd, Bexleyheath. 2 Jun HF / VHF Field Day preparations. 16 Jun on the air night. 23 Jun 2m DF hunt. Secretary G8MLQ.

North Wakefield RC

8.00pm Thursdays at East Ardsley Cricket Club, Wakefield. 11 Jun semi-conductors, Dr Robert Kelsall. 25 Jun barbecue. Further details: 0113 253 9087.

Nunsfield House ARG

Fridays at Nunsfield House Community Association, 31 Boulton Lane, Alvaston, Derby. 22 May junk sale. 29 May quiz, Frank Whitehead, G4MLL. 5 Jun foxhunt. 12 Jun preparation for Elvaston Castle rally. 19 Jun rally post mortem. 21 Jun Derbyshire fire & rescue. 26 Jun on the air evening. Neil Davison, M1AFB: 01332 736362.

Plymouth Radio Club

7.30 for 8.00pm 1st & 3rd Tuesday (summer schedule until Sep). 2 Jun Plymouth Hospital Radio, Bob Smith. 16 Jun Dartmoor Prison, Bill Green. Den, G7HMA: 01752 346158 (before 9.00pm).

Poldhu ARC

7.30pm 2nd Tuesday of month. 9 Jun VHF 'foxhunting', John, G0GUO. David Barlow, G3PLE: 01326 240738.

Radio Society of Harrow

8.00pm Fridays at Harrow Arts Centre, Uxbridge Rd, Hatch End, Middx. 5 Jun alternative therapies. Jim Ballard, GOAOT: 01895 476933 (evenings / weekends); tel: 0171 278 6421 (day).

Reading & DARC

8.00pm 2nd & 4th Thursdays at the Pavilion, Woodford Park, Woodley, Reading. Details of June meetings from Chris Nunn, GOMZN: 0118 987 4870.

Shefford & DARS

8.00pm Thursdays at the Church Hall, Ampthill Road, Shefford, Bedfordshire. Before the meetings, there is CW practice from 7.30pm. 21 May visit Eaton Socon substation. 28 May natter night. 4 Jun Shefford contest videos. 11 Jun pedestrian DF hunt. 18 Jun VHF NFD planning, briefing for flying evening. 25 Jun flying evening at RAF Henlow. Derek Clarkson, G4JLP: 01462 851722.

St Austell ARC

1st & 3rd Monday of month at Polstair School (PS) or SkyWave, Charlestown Harbour (CH). 1 Jun aerials in restricted spaces, David Blackford, G3NPB (PS). 15 Jun CH. 6 Jul junk sale (PS). R A Pears, G4TRV: 01726 72951.

Stevenage & DARS

7.30pm Tuesdays at the Day Centre, Chells Way, Stevenage. 19 May HF on air. 26 May video. 2 Jun preparations for VHF NFD. 9 Jun 40m operating / instruction. 16 Jun 'K9 on Patrol', dog handler PC Paul Miller & friend. 23 Jun final preparations VHF NFD. 30 Jun video. Peter Bell, 2E1CRK: 01462 674505.

Stourbridge & DARS

8.00pm on 1st & 3rd Monday of month (except Bank Holidays & no meetings in Aug), at the Radio Shack, Oldswinford Hospital, Heath Lane, Stourbridge. 1 Jun on air. 15 Jun air ambulance. Gordon Bryant, GOTZV: 01384 395206.

Stratford upon Avon & DRS

7.30 for 8.00pm on 2nd & 4th Monday of month at Home Guard Club, Main Road, Tiddington, Stratford upon Avon. 25 May on the air. 8 Jun QRP equipment demo. 22 Jun visit

Dartmoor, Mike Wright. 19 Jun 'watts on the radio', Peter, G4VFG. Peter Tanner, G4VTO: 01803 864528 (working hours).

Trowbridge & DARC

8.00pm 1st & 3rd Wednesday of month (3rd Wednesdays usually 'natter nights') at Southwick Village Hall, Southwick, on A361 Trowbridge / Frome road. 3 Jun 144MHz DF 'foxhunt' (starts at 1930BST). 17 Jun event planning meeting. Ian Carter, GOGRI: 01225 864698 (evenings / weekends).

Verulam ARC

7.30 for 8.00pm at RAF Association HQ, New Kent Road, St Albans. 26 May Raynet, Martin Green, G4PMG. 23 Jun packet repeaters, Ken Ashcroft, G3MSW. Walter Craine, G3PMF: 01923 262180.

Wakefield & DRS

8.00pm Tuesdays at Community Centre, Prospect Road, Ossett, West Yorks. 19 May radio treasure hunt. 26 May on the air. 2 Jun barbecue. 9 Jun on the air. 16 Jun pitch & putt. 23 Jun on the air. John Carter, G7JTH; tel: 01924 251822.

Warrington ARC

8.00pm Tuesdays (Morse classes Wednesdays) at Grappenhall Youth

ter nights' Tuesdays from 7.30pm; Morse tuition Thursdays. 21 May Thailand, Bob Blain, G3NTI. 18 Jun construction project, Mike Tyrell, G6GAK. The society will put on a special event station at the National Guide Jamboree 24-31 July 1998. John Phillips, G3PXX: 0151 336 4452, @GB7OAR, or e-mail: vectis@nordee.u-net.com

Wolverhampton ARS

8.15pm Tuesdays at Wolverhampton Electricity Sports and Social Club. 26 May junk sale. 2 Jun committee meeting. 9 Jun 'Y' Service & Enigma, Charles, G3BQQ. 16 Jun DF hunt. 23 Jun homebrew competition. 30 Jun social. Joy Smith: 01902 751936.

Worthing & DARC

20 May junk sale. 3 Jun NFD planning. 10 Jun Marconi father of radio. 17 Jun discussion. 24 barbecue. G4GPX: 01903 753893.

National and International Groups

British Amateur Radio Teledata Group (BARTG)

has a quarterly magazine, *Datacom*, and holds a rally and HF RTTY con-

This Month at the Clubs

South Birmingham Radio Society

on 1st Wednesday of month at West Heath Community Centre, Hampstead House, Fairfax Rd, West Heath, Birmingham. The club is "generally" open Mondays, Thursdays & Fridays from 8.00pm. 3 Jun RSGB Zonal Council Member Dave Whalley, G4EX. Secretary Don Keeling, tel: 0121 458 1603.

Southdown ARS

First Monday of month. 1 Jun barrows, bones & beacons. 6 Jul commercial radio in the community, Sovereign Radio. 3 Aug talking machines. Brian Gauntlett, G4LYU: 01323 840530.

Southgate ARC

7.30pm on 2nd & 4th Thursday of month at Winchmore Hill Cricket Club, The Paulin Ground, Firs Lane, Winchmore Hill, London N21. Bernie Godfrey, G4AOG: 01923 674542.

South Manchester RC

Fridays. 22 May AGM. 29 May winner of homebrew. 5 Jun shack developments. 12 Jun computers in radio, G4HON. 19 Jun DF hunt. 26 Jun sonic hedgehogs, G8APB. G E Spark, G7FQY: 0161 969 1964.

(TBA). Secretary Jeff Porter, G4OHJ: 01789 773286.

Stroud RS

7.30pm alternate Wednesdays at Minchinhampton Youth Club, nr Stroud, Glos. 27 May 6m amp. 10 Jun transmission lines. Stuart, GOGNM: 01453 752411; e-mail: stuart.gognm@gifford.co.uk

Sudbury & DRA

on 1st Tuesday of month at the Old School on junction of Head Lane, Wells Hall Rd, Great Cornard, & on third Tuesday of the month, at a new venue: The Brook PH, Bures Road. Jun living science & technology, Dave Powis, G4HUP. Secretary Mark Bean, G7UTC, on tel: 01787 377493.

Sutton & Cheam RS

7.30 for 8.00pm on 1st Thursday (natter night) & 3rd Thursday (formal meeting), at Sutton United Football Club, Borough Sports Ground, Gander Green Lane, Sutton, Surrey. 21 May AGM. 18 Jun junk sale. John Puttock, G0BWV: 0181 644 9945.

Torbay ARS

7.30pm Fridays at ECC Social Club, Highweek, Newton Abbot. Informal meetings most Fridays & talk / event once a month. 22 May industry on

& Community Association, Bell House Lane, Grappenhall, Cheshire. 9 Jun Peter Kirby, GOTWW, General Manager RSGB. 16 Jun 'foxhunting'. Secretary John Riley, GORPG: 01925 762722.

West Somerset ARC

7.30pm 1st Tuesday of month in Room GB7, Gibbs Block, West Somerset Community College, Minehead, Somerset. 2 Jun fox hunt. Alan Elliott, MOAOJ: 01643 707207.

Wimbledon & DARS

2nd & last Friday of month at St Andrews Church Hall, Herbert Rd, Wimbledon SW19. 29 May 'desert island radio'. 12 Jun digital radio. 26 Jun handhelds. J Gale, G4WYJ: 01737 356745.

Wirral & DARC

8.00pm Wednesdays at Irby Cricket Club. 27 May complimentary therapies, Elaine & Sue of 'Body & Soul'. Other Wednesdays are social evenings. Andy: 0151 677 4448 or packet CLUB @ GB7OAR.

Wirral ARS

8.00pm at Club Room, Ivy Farm, Arrowe Park Road, Birkenhead, opposite Landican Cemetery. Activity nights 1st & 3rd Wednesdays; 'nat-

test 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, 7.00pm to 9.00pm Sat/Sun before 9.00pm), or via GB7WRG. Internet: http://www.bartg.demon.co.uk

British Amateur Television Club (BATC)

produces a quarterly magazine, *CQ-TV*, and holds its own rally each year. BATC has an Internet site at http://www.batc.org.uk For details contact: Dave Lawton, GOANO, Grenehurst, Pinewood Road, High Wycombe, Bucks HP12 4DD.

CDXC (Chiltern DX Club) - the UK DX Foundation

membership is open to all amateurs and SWLs who have worked (or heard) more than 100 DXCC countries. It is the UK's first and largest grouping of amateurs interested in HF DX / contesting and was organiser of the recent 9MOC Spratly Islands Expedition. Internet site: http://www.cdxc.org.uk For a prospectus and further details please contact the Secretary, Alan Jubb, G3PMR, 30 West St, Gt Gransden, Sandy, Beds SG19 3AU.

for sale

● **KANTRONICS KAM** all mode TNC v6.1 12V inc cables, manual, software £65. Yaesu FT-2FB 12 channel mobile tcvr 144 - 148MHz one or 10 watts output, complete with mic, manual £55. Tel: 0181 340 4784 (London N8).

● **AR-2002 COMMUNICATIONS** receiver 25 - 550MHz, 800 - 1300MHz £100. Ring McCallum, tel: 0161 748 8030.

● **JRC NRD-525** receiver with extra filters fitted plus manual. Excellent condition £500. Trio 9R-59D receiver plus manual. Good condition £60. Phone Arthur 0151 259 2456.

● **DATONG D70** Morse tutor £45. Also 2m handheld CTE 1600 with speaker mic, charger. £60. Dave, G7SRE, tel: 01670 812221 (Ashington, Northumberland).

● **YAESU FT-840** had very little use. As new £550. 486 DX250 multi-media PC 10x CD-ROM drive, Internet Blaster modem, Astound sound blaster, twin

MFJ 1270 series TNC, £25. Tel: 0121 742 3832 (West Midlands).

● **PAKRATT PK232** MBX packet TNC, all mode, as new, £150. Tel: 01294 463114 (Ayrshire).

● **TEST BENCH** power supplies, almost new, 0 - 35V DC / 40A and 0 - 50V DC / 20A. Voltage and Amp meters, rack mount. Top quality. Bargain at £225 each. Nigel Wilford, tel: 01803 555060.

● **YAESU FT-747** HF station with accessories £550. Yaesu FRG-7 receiver £80. VHF spectrum analyser £100. 6m transverter £100. Standard C150 2m handle £70. 28MHz transverter £30. Tait T500 PMR rigs £30. Other bits for sale. Pete, tel: 0117 963 3306 (Bristol).

● **JRC NRD-345** HF receiver. Top quality radio, 100kHz to 30MHz. Multi mode multi function. Mint condition in original box with manual. Under makers warranty until November 1998. £450. Tel: 01892 653154 (East Sussex).

● **KW-107** £95. KW Match £15. Manuals for KW-2000. 2000A. 2000B. Argosy II, Corsair II. Cent-

Belcom 2m + SSB handheld £100. SMC 10m FM 40ch + 80 watt amp £60. SMC 1045L2 2ch 70cm mobile RB4 + SU22 £50. Dymar Liynx 2000 full band 2m + tone burst £70. Europa 3ch 4m FM 70.450 fitted £30. Europa 3ch 2m FM 145.700 fitted £30. Michael McFarland, GW0GLX, Min Afon. Garreg Fawr Rd, Groeslon, Caernarfon. Gwynedd LL54 7ED. tel: 01286 831245.

● **ICOM IC-706** mint, £700 ono. AC voltage stabiliser 1500 watt, ideal for field days £50. G2HOS QTHR Tel: 0121 445 1397.

● **AR-3030 AS NEW**, Collins 2.5kHz filter, 2m (144MHz) converter fitted, cost £685. boxed, manual, power supply, plus G5RV ant 51ft. CTU8 ATU, short wave freq book. sell £450. Bill, Morecambe. answerphone: 01524 833506.

● **AR-8000 WITH CASE** and accessories. Excellent condition £225. Vega Selina SW, LW, MW, FM £25. Koyo multiband LW, MW, SW, VHF, air, PSB, mains / battery £30. Tel: 0191 258 0522 (evenings).

● **CIRCUITS EMI** scope M101. Advance scope board 36738. Y amp No 36489. Monitor Telonic M121. Advance sig gen SG62. H-kit IM22. H-kit AR3. Acorn p/pack 19VAb. Monitor National WV5310. Sharp TV C1421H-W. Tuner Rotel RX503. Amery tuner 8-track. Dennis, GOIPT, tel: 0181 883 3474 (N London).

● **CIRCUIT OR MANUAL** for Green and Davis Falcon 2m15-20A transmitter. Also Eddystone receiver type 840A. Will purchase or borrow to copy. Expenses paid. Mike, GOIIS, tel: 0181 304 9197 (Kent).

● **DEAD OR ALIVE**: handheld PMR two-way radios, especially Motorola or Philips, but anything considered. G4ZOW, tel: 01908 365726; fax: 01234 391152 (Bucks).

● **KENWOOD SP-940** speaker. Tel: 01222 598945.

● **BALANCED ATU** for open wire feed (not Balun type). Homebrew no problem. WHY? Also power plug for Collins TCS transmitter. Contact Peter, G4VUN, tel:

free readers ads

speakers, keyboard, mouse, SVGA monitor, under warranty. A gift at £395. Tel: 01536 522007 (Kettering).

● **ICOM IC-740** HF, WARC bands, 100 watts, VGC, £360. Yaesu FT-50 handheld £160. IBM 286 PC packet software £45. Compaq 286 386 sold as pair, Windows £85. Tel: 0181 262 2524.

● **PK-88 PACKET** terminal £80. AMT-3 AmTOR / RTTY terminal £50. MFJ 1289 multimode terminal program for PC, suit any

tury 22, Titan, Paragon, Omni. Telequip S31 'scope £5 each. RSGB 1996 Callbook £1. TF144 info £1. KW-109 £1. Plus post. Tel: 01795 873100 (Kent).

● **REVOX B77** high speed, perfect. £450. Revox F 36 perfect condition, sounds dull. £95. Rogers power amp, Valve Cadet £70. Quad 34 control unit. £130. Tel: 01623 812455 (Mansfield).

● **YAESU FTV-2** 2m transverter. £100. Kenwood TH-78E dual band handheld £250.

● **AR-3000A COMM RADIO** mint cond, original packing. Box, manual etc. £500. Tel: 0161 437 5161 (Manchester).

wanted

● **BOUND OR LOOSE** copies of *Radio Constructor* Vols 1, 2, 3 1947 - 1950. Can collect, super price offered. Can you help me finish an historical review? Phil Beckley, GW0WQX, tel: 01633 853906 (Newport, S Wales).

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