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| DJ-180E VHF handheld | RRP £229.95 ASK PRICE £189.95 |
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Ham Radio TODAY

HAM RADIO TODAY VOLUME 15 NO.3

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Bill Robertson answers reader's queries on remote, mobile, and handheld scanning, and looks at some new equipment

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RADIO

RA TO SIMPLIFY RAE FORMAT

The RA have announced that it proposes to simplify the format of the Radio Amateurs Examination (RAE) resulting in reduced fees and speedy release of results.

The examination, a pass in which is required to obtain a Radio Amateur Licence, is currently taken in two parts at a cost of £19.40 per paper. We're told it has been agreed that from May 1998 the two papers will be amalgamated into one paper of 80 questions. The cost for the revised examination will be £26.00. It is emphasised however, that the standard of the examination will not be reduced.

Candidates who have a pass in one part of the current RAE will be able to carry over that pass until May 1998, when they will need to re-sit the full new examination. Other changes agreed were a reduction in the one-off centre approval fee from £250 to £100 for centres running this examination. The RA hope that these changes will encourage more people to take up amateur radio.

50MHz REPEATERS

The RSGB tell us that their Repeater Management Group have applied to the RA for licenses for the first batch of eleven 50MHz FM repeaters. We're told that these repeaters are not yet on the air, but are awaiting licenses. They are:

| Callsign | Location | Keeper |
|----------|--------------------------|--------|
| GB3AE | Tenby | GW0WBQ |
| GB3AM | Amersham | GORDI |
| GB3EF | Martlesham, Suffolk | GOVDE |
| GB3FX | Fleet, Hampshire | G4EPX |
| GB3HX | Huddersfield | G0PRF |
| GB3PD | Portsmouth | G4JXL |
| GB3PX | Barkway, Herts* | G4NBS |
| GB3RR | Nottingham | G4TSN |
| GB3SX | Stoke on Trent | G8DZJ |
| GB3UK | Winter Hill (Manchester) | G8NSS |
| GB3VX | Shaftesbury | G3ZXX |

UKRS NEWS

The United Kingdom Radio Society tell us that following the meeting recently of their Governing Body, they have made significant progress with a number of projects. The date of their first AGM has been set provisionally for Saturday November 15th, in the meantime membership recruitment is continuing and efforts are being made to increase the number of volunteer County Representatives. Members have time before the AGM, to consider whether they would like to offer themselves for election to the Governing Body. The UKRS say their zonal structure was ratified during the meeting, which clears the way for the GB elections to be organised. Up to ten members may be elected from within the zones in which they live, by members resident in the same zones, and a further five may be elected nationally, we're

told there are several vacancies.

The UKRS also ask if there would be general support for the group to become involved in contests. Views have been expressed both 'for' and 'against' and it is clearly a subject which divides opinion. Before committing the Society one way or the other, the Governing Body would value members opinions.

UNITED KINGDOM
RADIO SOCIETY

HEART CHARITY TO BENEFIT FROM AMATEUR RADIO.

The Wincanton Amateur Radio Club announce the launch of their VHF Postcode Charity Challenge. It's an annual event, running from 1st January to 31st December each year, and is based on Postcodes and IARU squares, which are constant and not susceptible to changes in county or district boundaries.

The Challenge is open to all, with special emphasis being given to Novice operators. Entrants may be either full Class A or B, Novice Class A or B, SVL's, including overseas amateurs and SVL's. Either fixed, portable or mobile operation may be used, all mode (AM, CW, FM, RTTY, SSB, and TV modes), on 6m, 4m, 2m, 70cm, and 23cm. A Trophy or Certificate will be awarded to every participant who submits a duly completed entry form, and all profits go to the British Heart Foundation. The basic concept is similar to WAB. Participating UK amateurs purchase a Postcode Charity Challenge book for the sum of £5.50p. Cheques or Postal Orders should be made payable to the "Wincanton Amateur Radio Club" and crossed "Postcode Charity Challenge". Overseas amateurs are requested to send 16 IRC's. The Postcode Charity Challenge book contains all the documentation that will be required for full participation, including: The Rules, a General Postcode / Locator Map, Multi-band Cross Referenced Logging Sheets, and an Entry Form

It is anticipated that, since the majority of amateurs are likely to know their primary postcode area e.g. BA or LE etc., and VHF operators are likely to know their principle locator square e.g. IO81 or JO03, etc., it should be very simple for all VHF operators to participate. For those who are contest minded, there will be an annual contest on each band covered by the challenge, and therefore the book also contains a Contest Log Sheet, Cover Sheet, and Scoring information for both UK and Overseas entrants. Particular encouragement is given to participating stations to contact Novice stations.

Further information may be obtained by sending an addressed A4 envelope with attached postage stamps for 100g 2nd class postage, (currently 31p,) to: The VHF PCC, The Wincanton Amateur Radio Club, c/o King Arthur's Community School, West Hill, Wincanton, Somerset, BA9 9BX. Brief details may be obtained on Packet, via G3OOL @ GB7BNM, or via Email from warc@timanmar.demon.co.uk.



TODAY

UKRS VISITS

Members of the United Kingdom Radio Society's Governing Body tell us they continue to receive and gratefully accept invitations to visit local clubs to speak to their members about UKRS and its objectives. They say that if you think that the members of your own local club might enjoy learning about them, to please check with your Club Chairman / Committee and let them know. Although they say they can often 'fill-in' at short notice, it will obviously help them to have as much advance notice as possible of preferred dates. On a similar subject, they say they reviewed the Society's existing rally commitments for 1997 and re-affirmed their intention to attend as many rallies as possible. Again, they ask rally organisers to please try to let them know as soon as possible if you are involved in the organisation of a rally which you would like UKRS to support.

Contact details for the United Kingdom Radio Society can be found each month in the national and international section of 'Club News'.

UNITED KINGDOM
RADIO SOCIETY

RSGB COUNCIL AND COMMITTEE NEWS

The Radio Society of Great Britain tell us their new Executive Vice-President is John Greenwell, G3AEZ and that he was elected by RSGB Council at their meeting on 11th January. The following changes were also announced by the council:

Paul Essery, GW3KFE, is the new Chairman of the Membership Liaison Committee. He fills the vacancy created when Ian Kyle, G18AYZ, was elected President.

Ian Cornes, G4OUT, has been appointed as the new VHF Manager. David Butler, G4ASR, had earlier resigned from the position and is thanked for his good work in representing UK interests internationally. G4OUT is continuing with his duties as VHF Awards Manager.

The Repeater Management Group is now called the Repeater Management Committee (RMC), to bring its title into line with the other committees. Chris Goadby, G8HVW, is the new Chairman of the RMC. The previous incumbent, Geoff Dover, G4AFJ, was recently elected to RSGB Council.



ISWL NEWS

The International Short Wave League would like to inform readers of the operators for the club's callsign, G64BJC/P, for 1997. As in previous years, a special ISWL Club Callsign QSL card is available for anyone who has either hears or works the station, and that these will be issued upon receipt of an incoming QSL or reception report. QSLs can be sent either via the bureau or direct to David Beale G0DBX, ISWL Club Call QSL Manager, 'Kenwood', London Road, Louth, Lincs LN11 8QH, UK. The operators are:

| | |
|----------|------------------------------|
| Mar | Nigel Dyche, G0RRV |
| Apr | Brian Smith, G0IER |
| May | David Beale, G0DBX |
| Jun/Mike | Rulland, G0VIX |
| Jul/Paul | Westipp, G0SLD |
| Aug | Fred Connor, G4FMI |
| Sep | Dick Rugg, G2BRR using G4BJC |
| Oct | Roger Provins, G0RGJ |
| Nov | Bill Griffiths, GW0UHQ |
| Dec | Philip Conway, G4IAN |



GEOFF WATTS (MEMORIAL) AWARD

Geoff Watts, ISWL G-7187/BRS-3129, was the first Shortwave Listener in the World to be honoured with the CQ Magazine "DX Hall of Fame Award" with "Distinction". He was also the first British SWL to have 40 Zones and 300 DXCC countries confirmed. Geoff Founded the "Islands on the Air Award" and his Prefix lists were used by amateurs and Short Wave Listeners Worldwide. The Geoff Watts (Memorial) Award is now available.

To qualify for the award you must have confirmation of working or hearing the following Countries and Islands since 1st January 1995; Greenland, Europa Island, Orkney Islands, Faroe Islands, Falkland Islands, Wake Island, Ascension Island Taiwan, Trinidad, and St. Lucia Island. Special claims forms, which *must* be used, together with a full details and rules about this award are available from; ISWL Awards and Contests Manager, Belle Fleurs, Wade Reach, Walton on the Naze, Essex CO14 8RG England. The ISWL is a voluntary, non-profit making organization promoting the hobbies of Amateur Radio and Short Wave Listening and is affiliated to the RSGB.

RAIBC WIN LOTTERY AWARD

We're told the Radio Amateurs Invalid and Blind Club (RAIBC), has been awarded a grant of more than £6,000 from the National Lottery. The grant is to enable the RAIBC to purchase new recording equipment to record its magazine on tape for circulation to blind members. Around half the club's 600 members are blind. Further details of the RAIBC can be obtained from the Chairman, Brigadier Johnny Clinch, G3MJK, The Pippins, Dummer Road, Axford, Basingstoke, Hants RG25 2ED



SSL TO WITHDRAW NEW STANDING ORDER FACILITIES

We have been informed that Subscription Services Limited, SSL, is to withdraw standing order as a payment method for new licensees. They say this will not affect current licensees who have chosen to pay for the renewal of their licences by standing order. The decision follows a growing trend, with many organisations removing standing order completely.

73KHZ INFO EXCHANGE NET

In order to encourage experimentation and exchange news, views and technical information on the 73kHz band, an 80m net has been established. It is held on 3.673MHz at 9.00am local time on the first and third Saturdays of each month.

GB2BST

The GPT (Plessey) and Rolls Royce ARC's tell us they will jointly run a Special Event Station, GB2BST to coincide with the UK time change to British Summer Time over the weekend of 29/30 March 1997. The station to be set up in the grounds of Upton Hall, the HQ of the British Horological Institute (watches and clocks), between Southwell and Newark and around 20 miles north-west of Nottingham, IO93NC, SK7354. They hope to be operating on all HF bands except top band, plus 6 metres, 2 metres and 70 cm, and possibly packet.

The station will be on air from 12.00 UTC 29 March, to as late as possible on Sunday evening 30 March, on SSB, CW and FM, hopefully all night, depending on available operators. Previous events at this site have had over 700 contacts and they hope to better that this time. All contacts will be sent a special QSL card via the bureau, and the group tell us they are especially interested to contact any Horologists world wide. For further information contact Alan Timmins, 2E1DPF @GB7DBY

NEW QTH FOR GB2OWM

We're told The Permanent Special Event Station of the Orkney Wireless Museum, GB2OWM, has moved to: Kiln Corner, Junction Road, Kirkwall, Orkney KW15 1LB. For further details of the museum's opening times please contact the museum trustee, Bill Wright, GM3IBU, Crosslea, Berstane Rd, Kirkwall, Orkney KW15 1SZ

SOLENT FORTIFICATION GROUP CLOSE DOWN

We have been informed that The Solent Fortification Amateur Radio Group has now ceased to exist. It was set up in 1987 to activate historical sites around the south coast, but in recent years it had become increasingly difficult to access some of the 36 sites. We're told many of them have been swallowed up by housing developments or are now privately owned. Any claims for awards issued by the group should be submitted to Mike Hirst, GORHD, 196 Parkhouse Farm Way, Havant, Hants PO9 4DS, by the 1st of August at the latest.

WILL THIS BE THE YEAR WE MAKE CONTACT?

Scientists involved in a privatized Search for Extra-Terrestrial Intelligence (SETI) are calling 1997 "The year we might make contact".

Dr. H. Paul Shuch, Executive Director of the SETI League, says: "we have no guarantees, and there's no reason why 1997 should be any better, or worse, than any other year". But this year, he emphasizes, his educational and scientific organization actually has an active search program underway. "In years past," he states, "the best we could do was eye the points of light in the night sky and wonder, am I alone?" Today, they tell us they have a growing network of experimenters mounting a scientifically credible effort to answer that question with solid evidence.

24 observing stations, run by Amateur Radio experimenters around the world, currently comprise The SETI League's *Project Argus* search effort. Plans call for increasing that number to 5,000 volunteer participants within the next decade. At that level, the League's aeralis will be able to monitor the full sky in real time, improving the chances for detecting highly intermittent radio signals which might be emanating from other technological civilizations in the Galaxy. "When we reach full strength", says Dr. Shuch, "we will have achieved a long-term goal: that no direction in the sky shall evade our gaze".

"Some, even within the scientific community, place our chances for success at zero", he admits. "Events of the last year or so have led us to believe otherwise. In 1995, for instance, we could only speculate about the possible existence of planets around other Sun-like stars. Today, astronomers have shown us that they are commonplace. Before last August, we could only guess that life might exist elsewhere in space. Today, we have highly compelling fossil evidence, in the form of probable micro-organisms in three different meteorites. The odds for SETI success have never looked better".

SETI scientists seek to determine through microwave measurements whether humankind is alone in the universe. We're told The SETI League, Inc. is a membership-supported, non-profit educational and scientific corporation, dedicated to the electromagnetic Search for Extra-Terrestrial Intelligence, and that they publish a quarterly newsletter entitled 'Search Lites' keeping members up-to-date with the latest information. Radio Experimenters interested in participating in the search for intelligent alien life, or for further information, contact The SETI League Inc., 433 Liberty Street, PO Box 555, Little Ferry, NJ 07643, USA. Tel. 001 201 641 1770, Fax. 001 201 641 1771. Email: join@setileague.org Internet: <http://www.setileague.org/>

TRADE TOPICS

The following information is based upon submissions by suppliers, and is not necessarily endorsed by Ham Radio Today. We cannot be responsible for false or misleading claims by suppliers. Where indicated however, full and unbiased reviews of products are planned for a forthcoming issue of Ham Radio Today. Please kindly mention Ham Radio Today when replying to any items featured - thanks

FREE KENWOOD TS-570D CONTROL SOFTWARE

Kenwood are pleased to announce that the latest version of their 'RCP' (Radio Control Program) for the TS-570D has

been uploaded to the Kenwood Internet Home Page. This is intended for use on PC compatible machines (it needs a

486 for best performance) and provides full graphical rig control, with the interface already built into the TS-570D. The program

can be downloaded free of charge, point your web browser to: <http://www.kenwoodcorp.com/software/ts570.html>

AIRFLOW DEVELOPMENTS COOLS THE AIRWAVES

Airflow Developments in High Wycombe tell us that Linear Amp UK ensures the safe operating temperatures of its power amplifiers with the inclusion of the Airflow Developments 33BTFL fan.

The 2m and 6m 'Discovery' amplifiers are designed for serious radio communications and incorporate the Eimac 3CX800A47 high mu triode, which has a valve anode dissipation of 800W. The Airflow single inlet fan is fitted as standard and to cool the amplifier and maintain a moderate working temperature.

Providing a maximum performance of 175 cubic metres per hour, we're told the 33BTFL is extremely quiet in operation, and utilizes a zinc and mild steel housing with integral outlet flange and aluminium impeller to therefore be robust and suitable for continuous running over prolonged periods.

Linear Amp UK have been using the Airflow Developments 33BTFL

fan for several years as part of the main specification. Linear Amp UK's Sales Manager, Ken Williams, says "Although we have a wide reputation and high level of penetration into a Europe wide market, we are nonetheless in a niche environment and manufacture very much to specific requirements. Producing 10 or so units at a time we can confidently place an order for additional fans from Airflow and know they will be delivered within 48 hours from stock. This is very important to our production planning. We also find that the fans themselves are perfect for our designs and offer no concerns over their long-term performance".

Further details from John Thelwell, Airflow Developments, Lancaster Rd, Cressex Business Park, High Wycombe, HP12 3QP, Tel. 01494 525252, Email; info@airflow.co.uk

TIMEWAVE DSP-59Y

Nevada Communications tell us that the DSP-59Y is the first Digital Signal Filter built to match existing Yaesu radios using the SP-5 and SP-6 external speakers. It's designed to mount within the speaker cabinet itself, and incorporates a new CPU running at 38.8 million instructions per second. It offers features of correlation based noise reduction, plus data and bandpass filters for CW and RTTY ranging from 10Hz to 600Hz with centre frequencies of 300-1600Hz, and data filters for AMTOR, PacTOR, GTOR, HF packet, SSTV, WEFAX and Clover. Highpass and lowpass voice filters are also included, plus heterodyne elimination. The unit is due to be available at the time you're reading this, and should sell at £389 plus VAT (£457). Further details from Nevada, 189 London Road, North End, Portsmouth, PO2 9AE, Tel. 01705 662145.



The Timewave DSP-59Y fits into your existing Yaesu external speaker

LEP SERIES EARPHONE / MICROPHONES

Since the launch of the Lowe Electronics Professional series of earphones and microphones, we're told they have quickly established themselves as market leaders in the professional markets where people depend on reliable communications. The range of products has now been increased to allow customers a wider choice and to suit many other business applications. Naturally, many of these products will be of interest to amateur radio enthusiasts.



The LBP series of earphones



The 33BTFL fan for high power amplifier cooling

NEW SHORT WAVE RECEIVER

The HF250 Europa has just become available, offering today's short wave listener excellent RF performance coupled with an uncomplicated control system. Lowe Electronics tell us "Our HF250 has proven that performance is a key factor in anyone's choice of receiver but more important than that, today's busy SVL's need a receiver that is uncomplicated and truly easy to operate. The HF250 Europa offers performance through an improved front end with magnetically shielded inductors and low-noise switching diodes. Together with a tighter IF filter bank, this offers a lower noise level, excellent sensitivity with good strong signal handling and better selectivity, making it the ideal choice for the serious DXer and the dedicated listener too. The HF250 Europa includes a synchronous detector with selectable sideband with a deep lock range, offering lower distortion audio for long periods of program listening that also helps with fading. Users will also like the RC250 remote commander that allows tuning, mode changing, memory selection and programming and a

number of other functions. The bright, clear, backlit liquid crystal display shows frequency to 100Hz resolution, or contents of the 255 memory channels, which store mode and filter settings as well as frequency. A bank of LED's keeps you informed as to what mode you are in and a separate moving coil meter tells you the received signal strength. There are two rotary controls for volume and tone plus another for tuning. In addition there are just seven other push-buttons controlling a wide range of functions but keeping the operation very, very simple."

The receiver is priced at £799.00 plus carriage, and you can receive a brochure describing the HF250 Europa with Lowe's Short Wave Information pack.

NEW FREQUENCY COUNTER

The MIC 10C28 is a new low-cost frequency counter. Priced at £79.00 it allows radio amateurs access to high quality equipment without breaking the bank. The MIC 10C28 is compact, designed for ease of use and incorporates advanced features such as field strength measurement. It features 1MHz to 2.8GHz coverage, a backlit LCD display, high speed 250MHz direct count with 1Hz per second

resolution, low battery indicator, and measures 80mm high, 68mm wide, 32mm deep.

Details on this and other Lowe products from Tom Crosbie at Lowe Electronics, Chesterfield Road, Matlock, DE4 5LE, Tel. 01629 580800, Email; tom@lowe.demon.co.uk



SOFTWARE OFFER

We probably have our biggest ever selection of software on a single disk for you this month, your's for a 'cost only' price of just £2.00!

For this issue we've yet another bumper selection of software for you, which will include plenty of interest to all. Each selection is exclusive to Ham Radio Today readers, and is offered on a cost-only basis as a 'thank you' for buying the magazine.

GRP projects is a collection of build-it-yourself weekend or evening projects all in text form and complete with circuit diagrams and parts lists. They include a 40m GRP transmitter, a 20m transmitter, 160m transmitter, 15m transmitter, an 80m 'colourburst' crystal CW transmitter, 1.5W on 80m and 40m, 1.5W on 80m CW, a 2m CW transmitter, and BFO for a low cost SWV receiver, a two transistor 15m transmitter, 1-2W 80m transmitter, a long-wire aerial coupler, and a '10 component' transmitter. Plenty to keep you busy!

CW Reader automatically reads the text from your electronic keyer (elbug) into your computer's logging program - no need to type in on the computer keyboard during your on-air CW sessions - great for contests!

World Time for Windows is a graphical world time clock for your PC, you can even use it in the 'background' with other programs running.

MUF for VHF is an Es MUF calculator for PCs. Give it details of a known path that is open via Es (e.g. from the cluster, off-air, Band II, etc), and it will calculate the critical frequency, the Maximum Usable Frequency, and the Frequency of Optimum Traffic in the E layer, as well as giving a hint as to where you should beam and into which region you might make contacts.

Inverse uses your PC soundcard to decode scrambled frequency-inverted

transmissions which you may come across on your VHF/UHF scanner receiver, providing fully readable audio from those strangesounding scrambled mobile radio signals.

QSL Printer is a simple but useful program to let you create and print your own personalised QSL cards on a postcard, no more excuses for not having any QSL cards to send out any more!

SBPMORSE gives you CW with your SoundBlaster compatible sound card. Originally released as FFTMORSE, then DSPMORSE, this is an updated and rewritten version.

Morse Code Made Easy for Windows is the latest Windows version 6.1 of the popular DOS-based program as featured in last month's issue. It offers lessons, practice, a word list, and it tracks the user's progress and displays the score achieved.

WEFAX is a simple freeware program for weather fax reception, viewing, and printing with your PC and TNC.

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

FROM THE COLUMNS

APRS is a complete collection of the Amateur Packet reporting system, with programs for DOS, Windows, plus a collection of additional

regional UK, national, and European maps which aren't featured in the original programs (see this month's Scanners column). Note, this APRS software disk is a separate disk to the above software collection.

Also for packet enthusiasts, **WinPack Version 6.10** is a superb Windows-based packet radio program, see last month's Data Connection column. If any newer version becomes available to our knowledge, the very latest version will be supplied. Note, this WinPack software disk is a separate disk to the above software collection.

ORDERING

Ham Radio Today Software Collections are supplied on 1.44Mb PC disk format. Each of this month's disks, **HRT Vol. 15 No. 3**, the **APRS** disk and the **WinPack Version 6** disk, are priced at £2.00 per disk including UK p/p and VAT.

Readers outside the UK (including Eire) should instead send a Sterling (not foreign currency) bank draft/demand which can be drawn on an English bank, or cash (i.e. a UK £5.00 note for two disks), to the value of £2.50 per disk. You send cash at your risk, use registered post if you wish added security. All UK orders are sent by standard post, those outside UK by airmail. These are offered as a service to readers and just cover costs, we believe it to be the cheapest postal service anywhere in the UK.

HOW TO GET YOUR DISKS

Simply send a cheque or Postal Order (or as above for outside UK) payable to **S. LOREK**, together with your completed coupon to: Software Offer, PO Box 400, Eastleigh SO53 4ZF England. If you don't wish to cut the coupon, you can send your order on a photocopy or a plain piece of paper with the same details, but this **must be accompanied by the original** corner flash from this page as proof of readership. If you would like the added security of recorded delivery (UK only), include a **fully completed** recorded delivery form (available from your post office), add £1.00 to the total to cover the additional costs, and allow a few extra days for delivery.

Important notes: Please do not make your cheque or Postal Order payable to any other individual or any company (note that "Mr. S. Lorek" is not acceptable), if you do, your order cannot be processed and will be 'held' awaiting an SAE from you. Other payment methods, such as foreign currency, unfortunately can't be accepted. Orders for this month's offer will be accepted up to 31st May 1997. Disks are sent by standard post at readers' own risk. Queries regarding supply of disks should be sent to the above address with an SAE for reply. Faulty disks will be freely replaced if returned with an SAE within 28 days of receipt. **Please do not contact Nexus or the Ham Radio Today Editorial staff with queries regarding these disks, they cannot help you.** Please allow up to 28 days for delivery.

HAM RADIO TODAY SOFTWARE OFFER VOL 15 NO. 3

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World Radio History

CQ FROM G8IYA EDITORIAL

What effect are external interests having on our hobby?



My recent Editorial of 'we lose a bit here, we lose a bit there' which referred to the loss of parts of our amateur bands certainly seems to have stirred up a bit of discussion. But just a week ago I read of another, rather worrying, episode concerning the loss of amateur bands.

Our VHF and UHF amateur bands are being very jealously watched by commercial interests. In the London area, amateurs some time ago lost 1MHz of 70cm to commercial interests, and 431-432MHz is now filled with taxi drivers, despatch firms, and so on. Yes I know that, at least in the UK, 70cm isn't our band. The primary user is the government, which is why permission for unattended amateur operation, such as repeaters and hilltop packet nodes, must often first gain formal 'site clearance' before going on the air. But even the primary user has given us permission to use various 'subbands' of 70cm, 432.600-432.700MHz for example, in unattended use from our home station. Just like they also conceded to commercial interests in 431-432MHz.

CENTRAL AMERICA

Now, there may not be as many amateurs in Guatemala as there are in the UK, but I've been informed they've just lost the whole of their

70cm band, which will soon also be filled with taxi drivers, despatch firms, and so on. "So what?" you may say, at least you might if you're not a TG prefix amateur. But it could soon be the rest of the world who are getting QRM from this.

You'll probably know that the amateur satellite organisation, AMSAT, have been rather technically pioneering in pushing ham radio forward, and of course they still are. Right now you can use your 2m/70cm handheld or mobile rig to have a chat through a Low-Earth Orbiting 'repeater in the sky'. Other higher-orbiting satellites such as Oscars 10 and 13 have naturally used more spectrum and power-efficient modes, such as CW, SSB, and data. The new Phase 3-D satellite, due to be launched later this year, will be one of these, but with the difference of having better aerials and higher power, to bring VHF/UHF satellite communication to more and more amateurs with simpler ground station equipment.

Throughout the world, various parts of the spectrum are, by international agreement, allocated to the "Amateur Satellite Service", as distinct from the "Amateur Service". These, besides other frequencies, include the satellite subsection of 70cm. It's in these sections that Phase 3-D, and other amateur satellites, can receive signals on and re-transmit them on other bands, for

us down on the ground to use for communication. A typical example is receive on 70cm and re-transmit on 2m or 23cm, with a coverage area of several continents.

So what will happen when your intercontinental DX contact is suddenly interrupted by an FM signal with a Central American pizza delivery order?

LONDON SHOW

This month sees the annual 'London Show' at the Picketts Lock centre in Edmonton, North London. You'll see the happy smiling faces of the Ham Radio Today team (at least we hope we'll be smiling!) on our stand in the Blue Hall, so do come and say 'hello'.

A major theme of the show this year is that of the Internet. Whether you like it or hate it, you may have been interested to read the article by Jeremy Boot G4NIJH on this subject in Issue No. 1 of HRT this year. Jeremy is already putting together a 'follow-up' article on this for us. Either way, you may already know how much the Internet and Ham Radio are affected by each other, indeed both can offer the other quite a bit in our hobby. After the London Show organisers contacted us on this, looking for a lecturer, at our suggestion Jeremy has agreed to give a talk on this very subject at the show.

YOUR THOUGHTS?

Jeremy is a very keen Internet user, and if you've seen his own web page you'll know he spends a lot of time and trouble on putting together the 'very best'. We've a couple of further articles by Jeremy planned for Ham Radio Today, maybe even making this subject a regular feature in the magazine if you, the readers, would like this. Don't worry as this subject certainly

isn't going to 'take over' the magazine. But my aim is to remember the 'Today' aspect of the magazine's title, and not just have the magazine live in the 'dark ages' each month. What are your thoughts on this? Are you active on the Internet, do you want to be, or do you think it should have nothing whatsoever to do with the hobby? Let me know your views, maybe even as a letter for publication to share your feelings - remember the 'Letter of the Month' gets the sender a £10.00 cheque in the post!

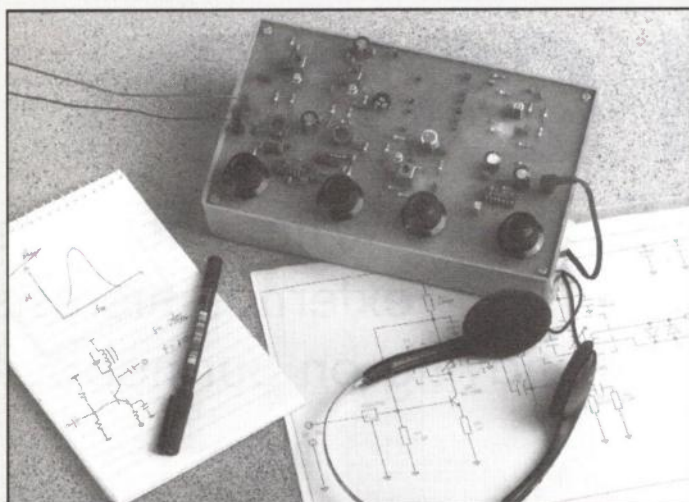
On this subject, the Ham Radio Today Internet web site should hopefully, by now, have undergone a major update and resign. Our Webmaster has unfortunately been suffering from a lengthy, although not serious, illness which has now thankfully been resolved. It precluded him from computer editing over the last few months, but if you keep an eye on <http://www.netlink.co.uk/users/hrt> you may soon be seeing rather a difference!

REVIEWS AND CONVERSIONS

In this month's issue, you'll see reviews of the very latest handhelds to hit the amateur market, I hope you enjoy reading them. For HF enthusiasts, in next month's issue I've planned a full technical review, which I believe again will be the UK's first such review, on the Kenwood TS-570 DSP transceiver. Non 'black box' operators aren't forgotten, as right now I've also a couple of superb ex-PMR conversion articles lined up for publication, along with some nice weekend construction projects for your shack. Is that special subscription deal we plan to have at the HRT stand at the show this month starting to sound tempting?

Radio Receiver Trainer

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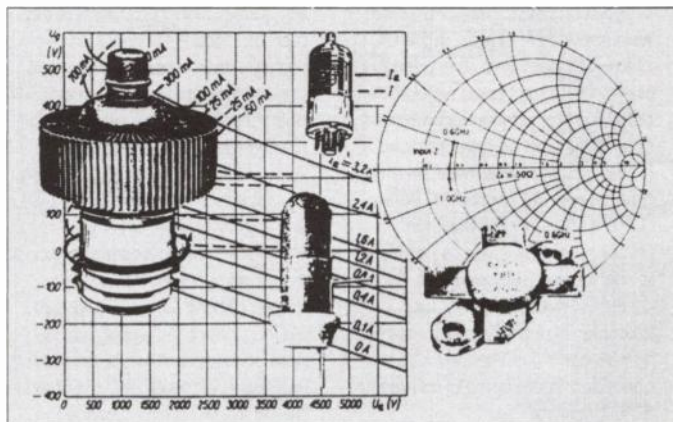
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REVIEWED

- ICOM IC-R10

HANDHELD SCANNER

Everyone's talking about it - Chris Lorek G4HCL gives us the real 'low down'!

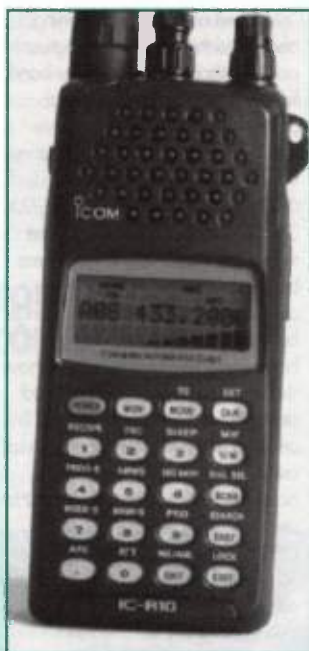
I remember marvelling at Icom's tiny but feature-packed IC-R1 handheld scanner when it first became available. But the time had to come, and it's 'big brother', the IC-R10, is now available. It's packed with a lot more features and modes than its predecessor, and at an attractive price of £379 there are already a lot of amateurs talking about it!

The IC-R10 receives FM, WFM, SSB, CW and AM over a continuous frequency range of 500kHz to 1300MHz. That's virtually anything you'd want to listen to when you're out and about with your set. Whether it's at a radio rally, air show, sporting event, or whatever, you're not likely to miss much!

The receiver has a number of upmarket features, as you'll read about here, and at such a selling price it seems to compete well with other 'high level' handheld scanners. Let's take a look...

OPERATION

A large dotmatrix LCD gives, besides an indication of the receive frequency, mode etc., an FM mode bandscope which works in 'real time', i.e. it doesn't interrupt the received signal to check what's happening either side. For those who like the 'simple life' and for modes besides FM, a large 7-segment S meter display can be selected. The extra receiver circuit is also used to good effect when the set is in scan mode. This is because it can automatically search for the next busy channel while



The IC-R10 has a large 7-segment S meter display which can be selected.

you're listening to a given signal. The set then very quickly switches to that channel when the original signal disappears, rather than simply continuing to scan, searching for activity.

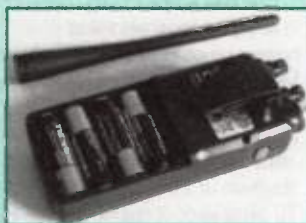
The IC-R10 has the capability of storing up to 1000 memory channels, and each of these can be assigned a short alphanumeric name of up to 8 characters, to help you remember what you've stored. You can even search for a specified channel by entering the channel name or part of



Besides the keypad, a click-step rotary knob on the top panel also acts as a channel and frequency change control.

it. The memories are arranged into banks, each of which can also be given a short name. Besides the keypad, a click-step rotary knob on the top panel also acts as a channel and frequency change control.

To find new active channels, an 'easy' mode provides a quick-touse scan of programmed frequency ranges. The receiver has 20 program scan banks, and an 'auto-write' scan



The receiver is internally powered from a set of 4 AA sized cells, and comes ready-supplied with a set of suitable AA batteries.

mode can automatically store active frequencies the set finds found into bank 'Q' for you. The frequencies found can then easily be transferred into a different bank for subsequent storage and scanning. As well as this, up to 100 skip channels can be programmed (stored in bank 'R'), which the receiver can ignore on subsequent searches if you wish.

To help in strong-signal cases, a switchable internal attenuator is fitted, and for SSB and CW a noise blanker / automatic noise limiter can also be selected. If that isn't enough, then on FM (although not WFM) an AFC facility can also help in automatically pulling in signals which are slightly off frequency.

COMPUTER CONTROL

In addition to handheld use with the front panel controls, by using an optional CSR10 interface the IC-R10 can be connected to an external PC. The memory contents, frequency, mode, memory name etc. can be programmed or downloaded for 'cloning', and Icom's CHV system is incorporated to control receiver frequency, mode, signal strength etc. without using dedicated cloning software.

A further possibility is that you can also optionally program the receive mode and your chosen tuning steps to be automatically selected when you're within various frequency segments on the set. For example, you could program AM with 5kHz steps for the HF broadcast bands,

SSB with 100Hz steps for the HF amateur and utility bands, NFM with 2.5kHz steps for the VHF/UHF amateur bands, and so on. I'm told by Icom UK that your local IC-R10 dealer may possibly be able to supply a set suitably preprogrammed for you in this way without the need for you to purchase the optional software.

POWER

The receiver is internally powered from a set of 4 AA sized cells, and comes ready-supplied with a set of suitable AA nicads and a plug-in wall charger. The side-mounted DC connector can also be used to power the set, and if you wish recharge the nicads, from an external DC supply. A small 'charge on/off' switch is fitted inside the battery compartment to control this.

The IC-R10 measures 58mm wide x 130mm high x 31mm deep, and weighs 310g. As well as the supplied nicads and charger, it comes ready for use with a set-top flexible aerial, a plastic belt clip, carrying strap, and instruction book. Optionally available are a carrying case, headphone, earphone, cigarette lighter cable with noise filter, standard DC power cable, cloning software, a cloning cable, and a C-V level converter.

ON THE AIR

With such a comprehensive set of operation modes, an essential 'first step' would probably be a good read of the instruction book. As with many recent Icom products, I found this to have been very well written, with excellent step-by-step 'worked examples' showing how to use the set and program the various features - well done, Icom!

I started off with a period of using the set in 'portable' mode, at home as well as walking around outdoors and out mobile in the car. Using the set-top aerial, I found the receiver to be reasonably sensitive, although the audio from the internal speaker seemed to be a little on the 'toppy' side. The auto-write scan was very useful indeed, and I was soon filling up a number of the memory banks with various interesting signals! I found here that, unlike one or two other scanners with this apparent feature, on the IC-R10 this mode very sensibly didn't repeat frequencies, i.e., if it had already found an active frequency then on subsequent passes it didn't uselessly program this into yet another



The IC-R10 measures 58mm wide x 130mm high x 31mm deep, and weighs 310g.



As well as the supplied batteries and charger, it comes ready for use with a set-top flexible aerial, a plastic belt clip, carrying strap, and instruction book.

channel. Also, a 'voice scan' function could be switched in, where the set would ignore blank carriers, again very useful in 'auto-write' mode. The result was a bank filled with channels which have actually had activity present.

The bandscope I found quite useful in letting me know what was happening on either side of my tuned frequency. It gave an indication of the signal level, in FM mode, of all signals over plus and minus five 'steps', which could be set to a maximum of 20kHz (i.e. realistically 12.5kHz steps or less for use here in the UK).

Although at first I didn't see an apparent LCD 'backlight' button, I quickly found, when operating the set in the dark, that this automatically activates on the first key press or



Inside the set, the design uses a triple conversion superhet in order to minimise the effects of unwanted signal reception

channel change turn, as well as when the set found a signal in scan or search modes. The backlight very usefully illuminates the translucent keypad keys as well.

As well as VHF/UHF listening, I also found the receiver to be great for portable shortwave broadcast band listening - the small set-top aerial pulling in signals very well. The receiver has selectable preset tuning steps of 100Hz, 500kHz, and 1, 5, 6.25, 8, 9, 10, 12.5, 15, 20, 25, 30, 50 and 100kHz, plus a 'user selectable' tuning step of anywhere between 1kHz and 99.9kHz, although I found I needed to change between these often as I changed between modes and bands. I'd have liked the facility of storing preferred steps alongside modes, although I understand this can be programmed using optional software. I did occasionally find that, with 12.5kHz steps selected, the receiver would sometimes halt on very strong signals 12.5kHz below the actual frequency - although the AFC could help here in pulling the signal in.

Testing the set at home, with it connected to a variety of outdoor aerials, gave good results on UHF although it did tend to suffer from overloading on VHF and HF. I live in a rather congested RF area, and with my small chimney-mounted 2m vertical connected the set suffered very badly from VHF paging signal breakthrough, even with the internal attenuator switched in, I thus couldn't use it in scan or search modes here.

On HF, a fairly compact loft-mounted aerial did give me quite good results in AM mode on the HF broadcast bands, although I couldn't use my large outdoor trap dipole due to overload. I found the receiver selectivity was far too wide for

sensible SSB and CW use in congested amateur bands such as 80m, 20m and especially 40m, although solitary SSB signals without any adjacent interference, as usually found on the less-crowded utility bands, were received without too many problems. On VHF and UHF SSB I found a degree of 'raspiness' on the occasional amateur SSB signal I came across, caused probably by the IC-R10's internal synthesizer.

Overall I might be sounding critical here, but the thing that 'jolting me back to reality' was that this set was a small, feature-packed multimode handheld scanner, at quite a reasonable price, and not a highly expensive base scanner as its wide range of facilities and remote control capabilities often suggested!

LAB TESTS

The IC-R10's design uses a triple conversion superhet in order to minimise the effects of unwanted signal reception, with a high 1st IF plus subsequent IFs of 10.7MHz and 455kHz. When tuned between 340 and 1000MHz the 1st IF is 266.7MHz, on other frequencies it's 429.1MHz. Although I found the 455kHz image to be very well suppressed, surprisingly the others weren't quite so good, although still reasonably acceptable for a scanner of this size and price. The intermodulation and blocking rejection levels measured were quite good for the intended handheld use, and the overall sensitivity was quite reasonable. As found on air, the SSB selectivity was rather on the wide side, I also encountered some raspy phase noise on SSB at VHF and above, e.g. at 250MHz the set wouldn't achieve 12dB SINAD.

CONCLUSIONS

Icom are to be congratulated on launching a worthy successor to the IC-R1. Its easy use to use with a flexible range of operating modes, and operates well on the air when used out and about portable - I feel a great many of these sets will be seen at airports, shows, and other venues in the years to come. Like many other handheld scanners however, I found it suffered somewhat on VHF when used with an external aerial system in a busy RF area, although in portable and mobile use I had no problems whatsoever.

My thanks go to Icom UK for the loan of the receiver for review.

LABORATORY RESULTS:

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

SENSITIVITY

Input signal level in μV pd required to give 12dB SINAD;

| Freq. | Level | | | |
|---------|-------|------|------|------|
| | AM | SSB | FM | WFM |
| 500kHz | 0.59 | 0.34 | 0.34 | - |
| 1MHz | 0.56 | 0.35 | 0.36 | - |
| 2MHz | 0.50 | 0.29 | 0.30 | - |
| 4MHz | 0.38 | 0.21 | 0.23 | - |
| 6MHz | 0.43 | 0.23 | 0.25 | - |
| 8MHz | 0.42 | 0.24 | 0.26 | - |
| 10MHz | 0.37 | 0.25 | 0.23 | - |
| 15MHz | 0.41 | 0.23 | 0.24 | - |
| 20MHz | 0.36 | 0.22 | 0.23 | - |
| 30MHz | 0.39 | 0.24 | 0.24 | - |
| 50MHz | 0.34 | 0.21 | 0.20 | - |
| 70MHz | 0.35 | 0.26 | 0.22 | - |
| 100MHz | 0.51 | 0.33 | 0.28 | 1.53 |
| 125MHz | 0.33 | 0.25 | 0.18 | - |
| 145MHz | 0.31 | 0.21 | 0.18 | - |
| 170MHz | 0.29 | 0.22 | 0.18 | - |
| 250MHz | 0.70 | 0.47 | 0.37 | - |
| 350MHz | 0.65 | - | 0.32 | - |
| 435MHz | - | 0.38 | 0.34 | - |
| 450MHz | - | 0.43 | 0.38 | - |
| 550MHz | - | 0.37 | 0.26 | 0.86 |
| 750MHz | - | 0.40 | 0.38 | 1.38 |
| 950MHz | - | 0.44 | 0.35 | - |
| 1300MHz | - | 0.80 | 0.59 | - |

SSB SELECTIVITY

| | |
|--------|----------|
| -3dB; | 5.59kHz |
| -6dB; | 6.93kHz |
| -20dB; | 8.60kHz |
| -40dB; | 10.41kHz |
| -60dB; | 10.60kHz |

IMAGE REJECTION

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

| | 145MHz | 435MHz |
|---------------|----------|---------|
| 1st IF image; | 69.2dB | 34.5dB |
| 2nd IF Image; | 45.2dB | 58.7dB |
| 3rd IF Image; | Bl. Lim. | Bl. Lim |

SQUELCH SENSITIVITY

Level of signal required to raise receiver squelch

Threshold; 0.11 μV pd (5dB SINAD)
Maximum; 0.33 μV pd (18dB SINAD)

ADJACENT CHANNEL SELECTIVITY

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

| | |
|-----------|--------|
| +12.5kHz; | 21.9dB |
| -12.5kHz; | 26.2dB |
| +25kHz; | 52.4dB |
| -25kHz; | 50.6dB |

MAXIMUM AUDIO OUTPUT

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

65mV RMS

BLOCKING

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

| | |
|----------|--------|
| +100kHz; | 59.4dB |
| +1MHz; | 83.9dB |
| +10MHz; | 87.8dB |

INTERMODULATION REJECTION

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

| | |
|--------------------|--------|
| 25/50kHz spacing; | 52.6dB |
| 50/100kHz spacing; | 53.1dB |

S-METER LINEARITY

| | 10MHz SSB | | 145MHz NFM | |
|---|-----------------------|------------|-----------------------|------------|
| | Sig Level | Rel. level | Sig. Level | Rel. level |
| 1 | Sq open | - | Sq. open | - |
| 2 | 0.33 μV pd | -54.5dB | 0.28 μV pd | -13.3dB |
| 3 | 0.55 μV pd | -50.0dB | 0.38 μV pd | -10.7dB |
| 4 | 0.80 μV pd | -46.8dB | 0.50 μV pd | -8.3dB |
| 5 | 1.66 μV pd | -40.5dB | 0.65 μV pd | -6.0dB |
| 6 | 4.49 μV pd | -31.9dB | 0.89 μV pd | -3.3dB |
| 7 | 176 μV pd | 0dB ref. | 1.30 μV pd | 0dB ref. |

SUBSCRIPTIONS AND BACK ISSUES HOTLINES

ORDERS:
01858 - 435344/

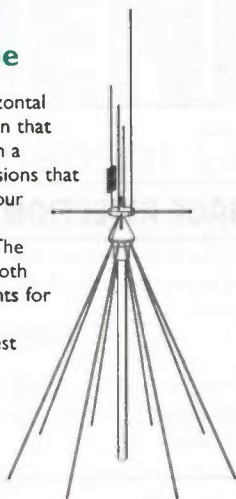
ENQUIRIES:
01858 - 435322

SRP TRADING

MANUFACTURERS & DISTRIBUTORS OF COMMUNICATIONS EQUIPMENT
SRP Radio Centre, 1686 Bristol Road South, Rednal, Birmingham B45 9TZ
Tel: 0121-460 1581/0121-457 7788 Fax: 0121-457 9009

SKY SCAN DX VI300 Discone

Most discons 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 Sky Scan VI300 discone has both vertical and horizontal elements for maximum reception. The VI300 is constructed from best quality stainless steel and aluminium and comes complete with mounting pole. Designed and built for use with scanners.



£49.95

+ £3.00 p&p

SKY SCAN Magmount MKII

For improved performance, wide band reception, 25 to 1300MHz. Comes complete with protective rubber base, 4m RG.58 coax cable and BNC connector. Built and designed for use with scanners.

£24.95

+ £3.00 p&p



SKY SCAN Desk Top Antenna Model Desk 1300

Built and designed for use with scanners. Coverage: 25 to 1300 MHz. Total height - 36ins - 9ins at widest point. Comes complete with 4 metres of RG58 coax cable and BNC connector fitted. Ideal indoor - high performance antenna and can also be used as a car antenna when your car is static. REMEMBER YOUR SCANNER IS ONLY AS GOOD AS YOUR ANTENNA SYSTEM!



£49.00

+ £3.00 p&p

New DX-394

MAJOR FEATURES

- **Frequency Coverage**
 LW 150 - 509.9kHz
 MW 510 - 1729.9kHz
 SW 1.73 - 29.9999MHz
- **Fine Tune**
 Fine tunes the reception signal, especially when you tune to SSB and CW

Step ▲, Step ▼

Selects the 0.1, 1, 5, or 10 (9) kHz tuning frequency step sequentially

Band

Selects LW (150-509.9kHz), MW (510-1729.9kHz), or SW (1.73-29.9999MHz) sequentially

LCD

Large LCD display with LCD signal strength meter



**SAVE
£100**

LIMITED STOCK

WAS £349.99

SALE PRICE ONLY £249.99

+ £10 p&p

ROBERTS R861

Short Wave Receiver

FM-STEREO/MW/LW/SW DIGITAL PLL RDS WORLD RADIO

- AM coverage 153kHz-29.999MHz continuous
 - RDS-Auto clock set
 - SSB (LSB/USB) 40Hz tuning steps
 - Dual conversion if on SW
 - FM stereo via earphone socket
 - Direct frequency input
 - Rotary tuning
 - Auto scan
 - Memory recall
 - 307 memory presets
 - 29 page SW station name memory
 - Home/world time display
 - Adjustable sleep timer
 - AM RF gain control
 - Soft carrying pouch
 - AC adaptor
 - Shortwave aerial
 - Earphones
- SIZE: 210 x 127 x 38mm (8.25 x 5.0 x 1.5in)**
WEIGHT: 850g (30oz) without batteries.



£199.00 + £5 P&P

FREE SW ANTENNA FREE PSU FREE SW FREQUENCY GUIDE

SRP Radio Centre

1686 Bristol Road South, Rednal, Birmingham B45 9TZ

Tel: 0121-460 1581/0121-457 7788

Fax: 0121-457 9009



PRO 2042 BASE SCANNER

(1000 CHANNEL WITH HYPERSCAN) JUST £359.99 WITH ANTENNA AND GUIDE
OR £299.99 ALONE INC P&P*



- 1000 memory channels (100 channels x 10 banks)
- 10 limit search banks ● 100 monitor channels
- 50 channels/sec & 50 steps/sec scanning speeds ● Large orange backlit LCD display ● Rotary or keypad frequency control.

Size: 232mm W x 210mm D x 90mm H.

Modes: AM, FM and WFM.

Step sizes: 5kHz, 12.5kHz and 50kHz (WFM).

COMES WITH TELESCOPIC ANTENNA AND OWNERS MANUAL.

We are offering with each purchase of the **PRO 2042** at a cost of **£359.99 inc P&P***, both a copy of the 5th Edition UK Scanning Directory (RRP £18.50) and a choice of either

our Skyscan DXVI300 discone antenna (RRP £49.95) or our Skyscan Desk 1300 discone antenna (RRP £49.00).

To take advantage of this special offer or for more information, call either Rod, Richard or Mary on:

0121-460 1581 or 0121-457 7788

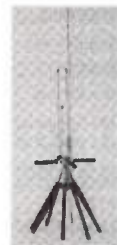
Demand is likely to be high, and orders will be fulfilled strictly on a first come first served basis (subject to stock availability). *Free P&P applies to mainland UK deliveries only.

The UK Scanning Directory
5th Edition



Frequency Coverage

| Freq (MHz) | Step | Mode | | | |
|----------------|---------|------|------------------|---------|----|
| 25.000-29.995 | 5.0kHz | AM | 137.00-224.995 | 5.0kHz | FM |
| 30.000-87.495 | 5.0kHz | FM | 225.000-400.000 | 12.5kHz | AM |
| 87.500-107.995 | 50kHz | WFM | 400.005-520.000 | 12.5kHz | FM |
| 108.00-136.995 | 12.5kHz | AM | 760.000-1300.000 | 12.5kHz | FM |



QUANTEK FC2000 FREQUENCY COUNTER

This sensitive "nearfield" counter is ideal for on-air frequency checking. Simply hold the counter near to the transmitter to get an accurate frequency reading. Comes complete with nicads, AC charger and aerial. An ideal frequency counter for service engineers or surveillance personnel who need an accurate handheld counter.

SPECIFICATIONS

| | |
|------------------------|---|
| Frequency range: | 1MHz to 2.4GHz |
| Sensitivity (Typical): | 800µV @ 10MHz 500µV @ 30MHz 225µV @ 150MHz 640µV @ 450MHz 1mV @ 850MHz <10mV @ 1.3GHz <200mV @ 2.4GHz |
| Maximum Input Power: | +15dB (50mW), 1.26V RMS |
| Input impedance: | 50Ohm |
| Timebase stability: | +/- 1ppm 25-35°C |
| Timebase ageing: | 1ppm per year typical |

| | |
|--------------------|---|
| Timebase accuracy: | +/- 1 count in LSD |
| Gate time: | Fast 0.25 seconds for 1kHz resolution. Slow 2.5 seconds for 100Hz resolution |
| Power: | Internal nicad batteries 4 x AA, 700mAh or mains adaptor/charger, 240VAC input, 12VDC output, centre positive |
| Size: | 100 x 87 x 28mm |

Specifications subject to change without notice

RRP
£135.95



SRP PRICE
£89.95
£5 P&P

ON TEST - STANDARD C568 HANDHELD



The C568 gives twin band simultaneous receive

Chris Lorek G4HCL finds a high-spec dual bander that's really a triple band transceiver

At first glance, the Standard C568 looks like a quite respectable twin band handheld. It is, but with just a 'little bit extra' inside. This is because it's actually a *triple band* transceiver. As well as offering full power transceive facilities on 2m and 70cm, it adds a 23cm receiver section together with an 'extra low power' transmit facility of around 35mW on the band. The transceiver also has a builtin VHF/UHF cross-band repeater function, so you can cross-band repeat 2m with 70cm for local use around your home, or, possibly for a little more privacy, 2m with 23cm.

The C568 offers many of the 'up-market' features of today's dual band rigs, such as DTMF selective calling and paging, VFO and memory scanning, automatic power off, transmit timer, battery saver, and so on. A 'set' mode also lets you personalise the transceiver's operation a little more to your own preferences, for example for memory scan type, channel steps, etc. A 1750Hz toneburst encoder is built in for repeater access, and for CTCSS use an optional encoder/decoder unit is available which fits inside the set.

Besides 2m, 70cm and 23cm operation, the C568 also has a

wide-band receive facility builtin, with both FM and AM receive modes, the set can in fact be tuned between 100-200MHz, 300-500, 800-1000MHz and 1200-1300MHz. Twin VHF/VHF and UHF/UHF reception is available between the left and right hand side frequency displays, so you can keep an ear open on two frequencies in the same band simultaneously if you wish, although 23cm operation is only possible on the right-hand frequency display. The switchable AM receive mode can also be automatically selected for you when you're in the VHF AM airband receive range.

MEMORY MODULE

The transceiver comes with a tiny plug-in memory module, this being a small PCB which fits into the bottom section of the set, accessible after removing the slide-on battery pack. The module supplied as standard gives you 20 memory channels on VHF plus a further 20 on UHF, but if you'd like more then an optional module is available to give 100 channels on each (i.e. 200 channels total). You can, if you wish, even temporarily remove the memory unit, for example if you're loaning your rig to someone, to allow only 'VFO' operation of the



The set gives 23cm transceive as well



Top panel rotary controls are easy to use

set and to keep your pre-stored memory channel settings safe and intact.

POWER

The transceiver can be powered from a battery supply voltage of anywhere between 4.5-15V, or an external supply between 5-16V, and for portable use it comes supplied with a battery case which holds six AA sized cells. With nicads fitted here, i.e. giving a 7.2V supply, the set gives around 2.6W on transmit on both 2m or 70cm. With a 13.8V supply connected, this raises the maximum power to around 5W on both bands, and in each case 'Mid' (2.5W), 'Low' (0.35W) and 'E Low' (50mW) power levels can be selected, switching to 23cm automatically selects the 'E Low' power setting.

The C568 measures 47mm wide x 130mm high x 34mm deep, with the PTT bar extending the width to 55mm, and with batteries fitted the set weighs around 360g. It comes supplied with a belt clip, carrying strap, settop aerial and a 75 page instruction book. Various accessories are optionally available, such as nicad battery packs and AC/mobile chargers, speaker/mics, soft cases etc. At the time of writing, the C568 is priced at around £449.00.

ON THE AIR

After taking a quick look around for some suitable batteries and fitting these, a press of the red 'on' button for half a second or so brought the set to life to the accompaniment of five musical bleeps. I found the basic operation of the set's controls fairly instinctive, no problems at all here, and I was soon listening, tuning around, and even programming memory channels without having yet opened the instruction book. I'm told that you can always identify a 'techie' this way - the instruction book is the last thing that's usually referred to!

In testing the set initially through my local and semi-local repeaters, I found the receiver on both bands to be nicely sensitive. However when I was out portable with the set in

'high power' mode, I found the transmitted ERP to be a little lower than I'd have hoped for, probably due to the settop aerial efficiency. The received audio quality I found was very good considering the small speaker grille area used, and on transmit my audio quality was reported as being quite OK as well.

When using the set at home, with it connected to my rooftop 2m/70cm collinear, I found the 2m receive side suffered to a slight degree from paging signal breakthrough, although in other respects it offered a reasonably 'clean' receiver. Strong AM signals however (with the set in AM receive mode) did however suffer from distortion.

I quickly got the hang of using the main controls, although I often wished for some easier method of starting the set off in selected memory scan mode or similar, as this needed a two-handed double-button push each time. But I did find the set would

usefully remember the mode it was left in between on/off periods, i.e. if I'd left it in scan mode when I switched the set off at the end of an operating period, it would return to that mode when I switched it back on again next time, thus saving more button pushes to select my 'favourite' mode each time.

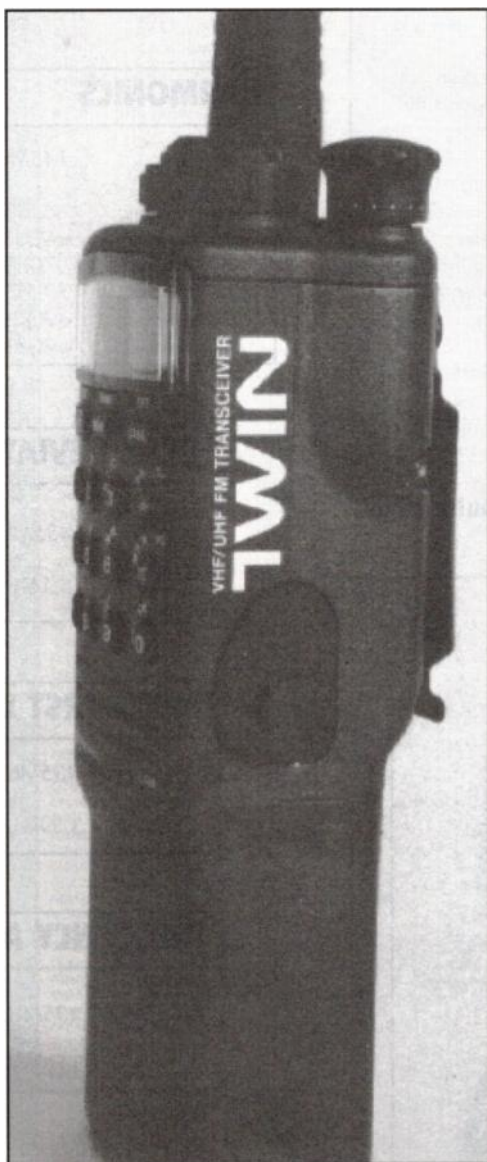
AT NIGHT

In walking around my home area, during the winter evenings coinciding with the review period, I felt the LCD backlight really wasn't bright enough to be useful - I often found I was squinting to see the very small power level, repeater offset, and other small indicator legends on the dimly-lit display. The keys or controls weren't illuminated by the backlight either, so I had to busy myself trying to remember the positions of the main controls and buttons in 'fumble mode'. Here, I sometimes accidentally pressed a wrong button, and trying to get back to where I was before in the dark often meant more button-fumbling! I often wished that the 'key lock' facility was a more easily-located button on the keypad!

However, having had a little 'moan', I did find the volume and channel controls to be very easy to use, even in one-handed operation. Although I usually could see from the LCD, in the daytime at least, which was the 'main' band selected for control, I found that a press of the 'main' button, which changed control between bands, gave me a short 'V' in Morse when selecting VHF, and a short 'U' in Morse when selecting UHF - very useful! I also found that I could easily use the 1750Hz toneburst (which needed a push of the 'Call' button whilst the PTT was pressed) one-handed as well - many sets I've used need either two hands or a multiple button-push arrangement for this. Even so, I feel that CTCSS encode for repeater access would have been more useful, and I'd have been tempted to fit this optional unit if I was to use the set as my own.

LAB TESTS

Confirming the good results I'd found on the air, the receiver sensitivity measurements showed that the set certainly was capable of pulling in weak signals nicely. In general, the strong signal handling performance was fairly reasonable,



A twin or a triple band rig?



although the 'half IF' rejection was probably the cause of the unwanted pager signals found on air. The receiver uses a dual conversion superhet on each band, VHF using IFs of 21.8MHz and 455kHz, UHF using IFs of 23.05MHz and

450kHz. On 23cm, it's apparent that there isn't any close-in front-end filtering, as the image frequency, 46.1MHz lower than 23cm, actually came in better than the wanted signal. However, in actual use this probably wouldn't be too much of an issue!

The transmit side also gave a fairly reasonable performance, with just under 3W maximum output power on both 2m and 70cm, and with accurately set frequency and deviation.

CONCLUSIONS

I enjoyed using the C568 on the air. The performance was quite reasonable, the set had a number of useful functions, the 23cm low-power transceive facility also being a possible useful facility depending upon your own operational needs. I found the set's operation in memory mode to be relatively straightforward, although I'd have preferred easier-to-use keypad functions, as the transceiver I felt was difficult to use to its full extent without a lot of button-pushing operations.

My thanks go to Martin Lynch and Son (Tel. 0181 566 1120) for the loan of the review transceiver.

For portable use the set comes supplied with a battery case which holds six AA sized cells.



TRANSMITTER

TX POWER OUTPUT

Measured with set powered from fully charged set of 6 AA nicads

| Freq. | Power | | | |
|---------|-------|-------|-------|-------|
| | High | Mid | Low | E Low |
| 144MHz | 2.80W | 2.18W | 310mW | 60mW |
| 145MHz | 2.78W | 2.21W | 310mW | 70mW |
| 146MHz | 2.70W | 2.21W | 310mW | 70mW |
| 430MHz | 2.95W | 2.26W | 360mW | 50mW |
| 435MHz | 2.95W | 2.30W | 360mW | 50mW |
| 440MHz | 2.75W | 2.27W | 380mW | 50mW |
| 1296MHz | - | - | - | 50mW |

HARMONICS

| | 145MHz | 435MHz |
|---------------|---------|--------|
| 2nd Harmonic; | -67dBc | -81dBc |
| 3rd Harmonic; | <-90dBc | -76dBc |
| 4th Harmonic; | -70dBc | -85dBc |
| 5th Harmonic; | -82dBc | - |
| 6th Harmonic; | <-90dBc | - |
| 7th Harmonic; | <-90dBc | - |

PEAK DEVIATION

| | | |
|---------|---------|---------|
| 145MHz | 435MHz | 1296MHz |
| 5.20kHz | 5.16kHz | 4.85kHz |

TONEBURST DEVIATION

| | | |
|---------|---------|---------|
| 145MHz | 435MHz | 1296MHz |
| 3.24kHz | 3.39kHz | 3.06kHz |

FREQUENCY ACCURACY

| | | |
|--------|--------|---------|
| 145MHz | 435MHz | 1296MHz |
| +35Hz | +125Hz | +396Hz |

LABORATORY RESULTS:

All measurements taken with set powered from fully charged nicads fitted, high power TX, otherwise stated.

RECEIVER:

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;

| | 145MHz | 435MHz | 1296MHz |
|-----------|--------|--------|---------|
| +12.5kHz; | 31.8dB | 33.4dB | 35.9dB |
| -12.5kHz; | 31.6dB | 26.8dB | 26.3dB |
| +25kHz; | 61.5dB | 57.8dB | 54.1dB |
| -25kHz; | 61.6dB | 57.1dB | 54.0dB |

S-METER LINEARITY

| 145MHz | | 435MHz | | 1296MHz | |
|---------------|------------|------------|------------|------------|------------|
| Sig Level | Rel. Level | Sig. Level | Rel. level | Sig. Level | Rel. level |
| S1 Sq open | - | Sq. open | - | Sq. open | - |
| S2 0.28µV pd | -16.5dB | 0.57µV pd | -14.1dB | 0.97µV pd | -14.6dB |
| S3 0.35µV pd | -14.5dB | 0.73µV pd | -12.0dB | 1.16µV pd | -13.1dB |
| S4 0.51µV pd | -11.2dB | 0.91µV pd | -10.0dB | 1.55µV pd | -10.6dB |
| S5 0.76µV pd | -7.7dB | 1.26µV pd | -7.2dB | 2.19µV pd | -7.6dB |
| S6 1.00µV pd | -5.4dB | 1.56µV pd | -5.3dB | 2.89µV pd | -5.2dB |
| S7 1.36µV pd | -2.7dB | 2.19µV pd | -2.3dB | 3.71µV pd | -3.0dB |
| S9 1.85µV pd | 0dB ref. | 2.89µV pd | 0dB ref. | 5.25µV pd | 0dB ref. |
| S9+ 4.06µV pd | +6.8dB | 5.79µV pd | +6.1dB | 11.6µV pd | +6.9dB |

SQUELCH SENSITIVITY

| | 145MHz | 435MHz | 1296MHz |
|------------|------------------------|------------------------|------------------------|
| Threshold; | 0.05µV pd (2dB SINAD) | 0.05µV pd (2dB SINAD) | 0.15µV pd (3dB SINAD) |
| Max; | 0.15µV pd (19dB SINAD) | 0.42µV pd (29dB SINAD) | 0.87µV pd (29dB SINAD) |



SUBSCRIPTIONS AND BACK ISSUES HOTLINES:

ORDERS:
01858 - 435344/

ENQUIRIES:
01858 - 435322

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;

| | 145MHz | 435MHz | 1296MHz |
|----------|--------|--------|---------|
| +100kHz; | 76.4dB | 71.4dB | 67.5dB |
| +1MHz; | 93.8dB | 84.5dB | 77.9dB |
| +10MHz; | 97.3dB | 90.0dB | 100.6dB |

MAXIMUM AUDIO OUTPUT

Measured at 1kHz on the onset of clipping, 8 ohm load;

| 145MHz | 435MHz | 1296MHz |
|-----------|-----------|-----------|
| 208mV RMS | 202mV RMS | 204mV RMS |

INTERMODULATION REJECTION

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

| | 145MHz | 435MHz | 1296MHz |
|--------------------|--------|--------|---------|
| 25/50kHz spacing; | 68.0dB | 63.2dB | - |
| 50/100kHz spacing; | 65.5dB | 61.7dB | - |

SENSITIVITY

Input level required to give 12dB SINAD;

| | |
|----------|-----------|
| 144MHz; | 0.12µV pd |
| 145MHz; | 0.12µV pd |
| 146MHz; | 0.12µV pd |
| 430MHz; | 0.18µV pd |
| 435MHz; | 0.16µV pd |
| 440MHz; | 0.15µV pd |
| 1260MHz; | 0.31µV pd |
| 1296MHz | 0.26µV pd |
| 1299MHz; | 0.26µV pd |

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;

| | 145MHz | 435MHz | 1296MHz |
|-------------|-------------------|---------------------|---------------------|
| Half 1st IF | 67.8dB (-10.9MHz) | 55.6dB (-11.525MHz) | 63.0dB (-11.525MHz) |
| 1st Image | 73.6dB (-43.6MHz) | 52.6dB (-46.1MHz) | -0.7dB (-46.1MHz) |
| 2nd Image | 84.1dB (+910kHz) | Bl. lim. (-900kHz) | Bl. lim (-900kHz) |

DIFFERENTIAL THERMOSTAT KIT Perfect for heat recovery, solar systems, boiler efficiency etc. Two sensors will operate a relay when a temp difference (adjustable) is detected. All components and pcb. £29 ref LOT93

MAGNETIC RUBBER TAPE Selfadhesive 10 metre reel, 8mm wide perfect for all sorts of applications! £15 ref LOT87

RADIO METERS - REMEMBER THESE? Glass bulb on a display stand that contains four vanes that rotate when exposed to sunlight, scientific novelty for £8.99 ref SC120

MAINS POWER SAVER UK Made up in unit, fitted in seconds, can reduce your energy consumption by 15%. Works with fridges, soldering irons, conventional bulbs etc. Max 2A rating. £9 each ref LOT71, pack of 10 £69 ref LOT72

YUASHA SEALED LEAD ACID Batteries, ex equipment but ok bargain price just £5.99 each ref YA1 100 or more £3.50 each.

DC TO DC CONVERTERS

DRM58 input 10-40vdc output 5v 8A £15 DRM128 input 17-40vdc output 12v 8A £18 DRM158 input 20-40vdc output 15v 8A £18 DRM248 input 29-40vdc output 24v 8A £12 DRS123 input 17-40vdc output 12v 3A £10 DRS153 input 20-40vdc output 15v 3A £20 DRS243 input 29-40vdc output 24v 3A £8

INSTALL A COINBOX FOR LESS THAN £20 Convert any standard phone into a coinbox with this kit, some mods required plus hinges and a lock. £19 ref CBT1

HITACHI LM225X LCD SCREENS 270x150mm, standard 12 way connector, 640x200 dots, tsc spec sheet. £15 each ref LM2

VARIABLE CAPACITORS Dual gang, 60x33x45mm, reduction gearing, unknown capacity but probably good quality (military spec) general purpose radio tuner. £9 ref VC1

ELECTRONIC FLASH PCB Small pcb fitted with components including a flash tube. Just connect 12vdc and it flashes, variable speed potentiometer. £6 ref FLS1

THIEF PROOF PEN! Amazing new ball point pen fitted with a combination lock on the end that only you know! £2.49 ref TP2

JUMBO BI COLOUR LEDS PCB with 15 fitted also 5 giant seven segment displays (55mm) £8 ref JUM1

HOME DECK CLEARANCE These units must be cleared! leads, a n infra red remote qwerty keyboard and receiver, a standard UHF modulator, a standard 1200/75 BT approved modem and loads of chips, capacitors, diodes, resistors etc all for just £10 ref BAR33

6.8MW HELIUM NEON LASERS New units, £65 ref LOT33

COINSLIT TOKENS You may have a use for these? mixed bag of 100 tokens. £5 ref LOT20

PORTABLE X RAY MACHINE PLANS Easy to construct plans on a simple and cheap way to build a home X-ray machine! Effective device, X-ray sealed assemblies, can be used for experimental purposes. Not a toy or for minors! £65 ref F/FXP1

TELEKINETIC ENHANCER PLANS Mystify and amaze your friends by creating motion with no known apparent means or cause. Uses no electrical or mechanical connections, no special gimmicks yet produces positive motion and effect. Excellent for science projects, magic shows, party demonstrations or serious research & development of this strange and amazing psychic phenomenon. £45 ref F/TKF1

ELECTRONIC HYPNOSIS PLANS & DATA This data shows several ways to put subjects under your control. Included is a full volume reference text and several construction plans that when assembled can produce highly effective stimuli. This material must be used cautiously. It is for use as entertainment at parties etc only, by those experienced in its use. £15 ref F/EH2

GRAVITY GENERATOR PLANS This unique plan demonstrates a simple electrical phenomena that produces an anti-gravity effect. You can actually build a small mock spaceship out of simple materials and without any visible means - cause it to levitate! £10 ref F/GRA1

WORLDS SMALLEST TESLA COIL/LIGHTNING DISPLAY GLOBE PLANS Produces up to 750,000 volts of discharge, experiment with extraordinary HV effects, 'Plasma in a jar', St Elmo's fire, Corona, excellent science project or conversation piece. £5 ref F/BTC1/LG5

COPPER VAPOUR LASER PLANS Produces 100mw of visible green light. High coherency and spectral quality similar to Argon laser but easier and less costly to build yet far more efficient. This particular design was developed at the Atomic Energy Commission of NEGEV in Israel. £10 ref F/FICV1

VOICE SCRAMBLER PLANS Miniature solid state system turns speech sound into indecipherable noise that cannot be understood without a second matching unit. Use on telephone to prevent third party listening and bugging. £6 ref F/FVS9

PULSED TV JOKER PLANS Little hand held device utilises pulse techniques that will completely disrupt TV picture and sound! works on FM too! DISCRETION ADVISED. £8 ref F/ITJ5

BODYHEAT TELESCOPE PLANS Highly directional long range device uses recent technology to detect the presence of living bodies, warm and hot spots, heat leaks etc. Intended for security, law enforcement, research and development, etc. Excellent security device or very interesting science project. £8 ref F/BHT1

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LASER LIGHT SHOW PLANS Do it yourself plans show three methods. £6 ref F/LLS1

PHASOR BLAST WAVE PISTOL SERIES PLANS Handheld, has large transducer and battery capacity with external controls. £6 ref F/PSP4

INFINITY TRANSMITTER PLANS Telephone line grabber/room monitor. The ultimate in home/office security and safety! simple to use! Call your home or office phone, push a secret tone on your telephone to access either: A) On premises sound and voices or B) Existing conversation with break-in capability for emergency messages. £7 ref F/TELEGRAB

BUG DETECTOR PLANS is that someone getting the goods on you? Easy to construct device locates any hidden source of radio energy! Sniffs out and finds bugs and other sources of bothersome interference. Detects low, high and UHF frequencies. £5 ref F/BD1

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PARABOLIC DISH MICROPHONE PLANS Listen to distant sounds and voices, open windows, sound sources in 'hard to get' or hostile premises. Uses satellite technology to gather distant sounds and focus them to our ultra sensitive electronics. Plans also show an optional wireless link system. £8 ref F/FPM5

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MEGA LED DISPLAYS PCB fitted with 5 seven segment displays each measuring 55 x 38mm. £5 ref LED5

MOD TRANSMITTING VALVES 6J180E £80 ref LOT112
SWITCHED MODE PSU'S 244 watt, +5 32A, +12 6A, -5 0.2A, -12 0.2A. There is also an optional 3.3v 25A rail available. 120/240v I/P Cased, 175x80x145mm. IEC inlet. Suitable for PC use (6 d/drive connectors 1 m/board). £15 ref LOT135

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VIDEO PROCESSOR UNITS?/6v 10AH BATTS/24V 8A

TX Not too sure what the function of these units is but they certainly make good snippers! Measures 390X320X120mm, on the front are controls for scan speed, scan delay, scan mode, loads of connections on the rear. Inside 2 x 6v 10AH sealed lead acid batts, pcb's and a 8A? 24v toroidal transformer (mains in) sold as seen, may have one or two broken knobs etc due to poor storage. £15.99 ref VP2

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MINI FM TRANSMITTER KIT Very high gain preamp, supplied complete with FET electret microphone. Designed to cover 88-108 Mhz but easily changed to cover 63-130 Mhz. Works with a common 9v (PP3) battery. 0.2W RF. £9 Ref 1001

3-30V POWER SUPPLY KIT Variable, stabilized power supply for lab use. Short circuit protected, suitable for professional or amateur use. 24v 3A transformer is needed to complete the kit. £14 Ref 1007

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ROBOT VOICE KIT Interesting circuit that distorts your voice! adjustable, answer the phone with a different voice! 12vdc £9 ref 1131

TELEPHONE BUG KIT Small bug powered by the 'phone line, starts transmitting as soon as the phone is picked up! £12 Ref 1135

3 CHANNEL LIGHT CHASER KIT 800 watts per channel, speed and direction control! supplied with 12 LEDs (you can fit triacs instead to make kit mains, not supplied) 9-12vdc £17 ref 1026

12V FLOURESCENT LAMP DRIVER KIT Light up 4 foot tubes from your car battery! 9v 2A transformer also required. £8 ref 1069

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SOUND EFFECTS GENERATOR KIT Produces sounds ranging from bird chips to sirens. Complete with speaker, add sound effects to your projects for just £9 ref 1045

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PC TIMER KIT Four channel output controlled by your PC, will switch high current mains with relays (supplied). Software supplied so you can program the channels to do what you want whenever you want. Minimum system configuration is 286, VGA, 4.1, 640k, serial port, hard drive with min 100k free. £24.99

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Miniature adjustable timers, 4 pole c/o output 3A 240v, HY1230S, 12vDC adjustable from 0-30 secs. £4.99

HY1260M, 12vDC adjustable from 0-60 mins. £4.99

HY2405S, 240v adjustable from 0-5 secs. £4.99

HY24060m, 240v adjustable from 0-60 mins. £6.99

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POWER SUPPLY fully cased with mains and o/p leads 17v DC 900mA output. Bargain price £5.99 ref MAG6P9

COMPOSITE VIDEO KIT. Converts composite video into separate H sync, V sync, and video. 12v DC. £12.00 REF: MAG8P2.

FUTURE PC POWER SUPPLIES These are 295x135x60mm, 4 drive connectors 1 mother board connector. 150watt, 12v fan, iec inlet and on/off switch. £12 Ref EF6

VENUS FLY TRAP KIT Grow your own carnivorous plant with this simple kit £3 ref EF34

6"X12" AMORPHOUS SOLAR PANEL 12v 155x310mm 130mA. Bargain price just £5.99 ea REF MAG6P12

FIBRE OPTIC CABLE BUMPER PACK 10 metres for £4.99 ref MAG5P13 ideal for experimenters! 30 m for £12.99 ref MAG13P1

ROCK LIGHTS Unusual things these, two pieces of rock that glow when rubbed together! belived to cause rain! £3 a pair REF EF29

3' by 1' AMORPHOUS SOLAR PANELS 14.5v, 700mA 10 watts, aluminium frame, screw terminals. £55 ref MAG45

ELECTRONIC ACCUPUNCTURE KIT Builds into an electronic version instead of needles! good to experiment with. £9 ref 7P30

SHOCKING COIL KIT Build this little battery operated device into all sorts of things, also gets worms out of the ground! £9 ref 7P36

HIGH POWER CATAPULTS Hinged arm brace for stability, tempered steel yoke, super strength latex power bands. Departure speed of ammunition is in excess of 200 miles per hour! Range of over 200 metres! £8.99 ref R/9

COMPAQ POWER SUPPLIES WITH 12V DC FANS Ex equipment psu's, some ok some not but worth it for the fan alone! probably about 300 watt PC unit with IEC input. £3.50 each ref CQ1

BALLON MANUFACTURING KIT British made, small blob blows into a large, longlasting balloon, hours of fun! £3.99 ref G/VE99R

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ADI AT-600 DUAL BAND HANDHELD REVIEWED

Chris Lorek G4HCL tests this fully featured low priced transceiver

If you're looking around for a 2m/70cm dual band handheld, the market right now is, to say the least, very competitive. Every single one of the major Japanese amateur radio equipment manufacturers has at least one offering in their range to tempt you.

But now, as we've already seen with single-band 2m and 70cm handhelds offered from lower-cost manufacturers, there's another dual-band handheld to choose from. It's the AT-600 from ADI, giving plenty of 'upper-level' operating facilities, and thus competing with other such 'upper level' sets. The big difference though, is the price of the AT-600, which at the time of writing is just £279 complete with nicad and charger. Now that's a difference worth keeping in mind!

FEATURES

For your money you get a 2m/70cm FM handheld, with extended receive capability on both VHF and UHF, including AM reception on VHF airband. With the supplied 700mAh 7.2V nicad, the transmitter gives a maximum 2W out on VHF, and 1.8W on UHF, plugging in an external 12V DC supply increases this to 5W maximum on either band.

The set offers simultaneous reception on both bands, including cross-band 'full duplex' operation if you wish. Twin concentric rotary knobs are used for volume and squelch on each band, together



The AT-600

with a click-step rotary tuning knob.

DISPLAY

A comprehensive dot-matrix LCD is used for frequency and channel readout, together with providing a small bargraph for relative S-meter display, and TX power output indication, for each band.

The front panel keypad is used to control a wide variety of the set's operating functions as well as allowing direct frequency entry, and in transmit mode it acts as a DTMF (touch-tone) encoder. The keys themselves are made of a translucent rubberised material, and the side-mounted 'Lamp' button

illuminates these keys, as well as the set's LCD, for nighttime use.

MEMORIES

The AT-600 has the facility to store up to 55 alphanumerically 'tagged' memory channels on each band. Here, you can store a short name such as "CALL", "S20", "GB3EA" etc. to be displayed in place of the operating frequency. If however you need extra channels but don't mind not having the 'alpha-tag' facility, you can pre-program the transceiver to instead allow up to 100 memory channels on each band, the LCD instead showing the channel number and frequency readout in each case.

PAGING

The AT-600 has DTMF paging and selective calling built-in, using the standard three-digit DTMF system as used by many other amateur set manufacturers. Together with this, the review sample had an internal CTCSS (sub-tone) encoder and decoder fitted, handy for both repeater access as well as quiet monitoring. For 'normal' repeater use, a 1750Hz tone encode facility is also included in the set's features.

A rubber side-mounted PTT bar is used, the upper section of this acting as a 'function' button to 'double up' the keypad functions. As well as these, a 'set' mode is also fitted (using the 'Func' button together with keypad button '0'). The LCD then gives a text display to guide you through the various pre-

stored functions such as CTCSS tone, battery saver and the on/off ratio of this, repeater offset, and so on.

This can even be used to program a short 'Power-on' message of up to six characters, which is shown on the LCD for around a second each time the set is switched on.

The transceiver measures 189mm x 61mm x 43mm, and weighs 380g. It comes supplied with a belt clip, set-top helical, nicad, plug-in wall charger, and an instruction manual.

ON THE AIR

On opening the box, the first thing I noticed was that the supplied nicad was rather familiar. I'd seen exactly the same type (i.e. with the same connections and fitting method) on a number of other 'low cost' 2m and 70cm keypad handhelds in the past. It looks like there's been a bit of 'commonality' in the design here!

Anyway, down to the transceiver itself. It took me a while to fully comprehend the instruction manual, simply because of the large number of operating facilities on the set - I knew I'd never remember them all when using the rig! Suffice to say, the set's features are very comprehensive, including modes such as a transmit time-out timer, automatic power off, auto power on (a radio alarm clock!), even being able to select the time interval of the 'dual watch' speed. I also found that an automatic cross-band

repeater function, and even a selectable 2 second cross-band repeater 'delay' facility, is built in, plus a switchable 1.5dB receiver attenuator - handy if you're using the set into an outdoor aerial in busy areas.

OUT AND ABOUT

On using the set in 'portable mode' around my home area, I found the 2m receive side to be quite sensitive, although it wasn't quite so good on 70cm. However I was pleased to find that the level of receive audio from the narrow speaker grille was well up to the mark, I also found this to be quite ample for mobile use around town without the need to plug in an external speaker.

I found the built-in CTCSS very useful, many 'budget' sets not having this facility at all. Mind you, enabling the 1750Hz toneburst required the PTT to be kept pressed, then an initial push of the 'D' keypad button, followed by a push of the 'A' keypad button which itself produced the 1750Hz tone - rather complicated with two hands and an impossible exercise with one hand! A much more sensible idea would have been to use something like the 'Func' button above the PTT for this. Another slight 'moan' was that reports on my transmitted audio were not very complimentary when compared to my 'usual' 70cm rig, with a reported muffled response, but then I suppose different rigs will give different responses.

HOME BASE

Using the set at home, coupled to my rooftop 2m/70cm collinear, gave fairly reasonable performance. On 2m, as with many other handhelds, I found the set suffered from VHF pager signal breakthrough. A test of a further review sample also gave a problem of a strange 'burble' on some 2m channels. In either case however, switching in the 1.5dB attenuator overcame this. As I'd found when out portable, the 70cm receiver was noticeably 'deaf' than other handhelds I'd used.

I found a handy facility for home use, besides being able to plug in an external speaker/mic to improve my transmitted audio, was that the receiver audio could be switched to an external speaker for one band with the internal speaker being used



A side-mounted PTT bar with an upper 'Function' section

for the other band. I could then nicely differentiate between 2m and 70cm receive signals in my shack.

I'm sure the 'cross-band repeat' facility would also be useful to many amateurs here, with say, one band being fed via an external duplexer to a dummy load to restrict radiation to just around the house, the other band to an outdoor aerial, for 'remote operation' from around the immediate area using just a further handheld.

LAB TESTS

The measured receiver sensitivity results showed the 2m side to be fairly reasonable, although, as found on air, the 70cm section was rather less sensitive. The strong signal rejection was quite good, well up to that as I've found on much higher cost handhelds.

On transmit, I found the frequency and deviation to be accurately set, with adequate power levels on the various settings.

CONCLUSIONS

The AT-600 is a fully-featured dual band handheld, at a remarkably low price for the facilities offered. I found the low cost however was reflected a little in one or two aspects of the set's performance and operation,

TRANSMITTER

TX POWER;

| Freq. | Power |
|--------|--------------------------------------|
| 144MHz | High 3.19W Mid 2.70W Low 370mW |
| 145MHz | High 3.34W Mid 2.70W Low 370mW |
| 46MHz | High 3.39W Mid 2.70W Low 390mW |
| 430MHz | High 2.38W Mid 2.38W Low 300mW |
| 435MHz | High 2.33W Mid 2.33W Low 300mW |
| 440MHz | High 2.25W Mid 2.25W Low 300mW |

HARMONICS;

| | 145MHz | 435MHz |
|---------------|--------|--------|
| 2nd Harmonic; | -63dBc | -80dBc |
| 3rd Harmonic; | -78dBc | -83dBc |
| 4th Harmonic; | -90dBc | -78dBc |
| 5th Harmonic; | -82dBc | - |
| 6th Harmonic; | -71dBc | - |
| 7th Harmonic; | -83dBc | - |

PEAK DEVIATION;

| 145MHz | 435MHz |
|---------|---------|
| 4.94kHz | 4.76kHz |

although it still seems quite a bargain for the price!

My thanks go to Waters and Stanton Electronics (Tel. 01702 206835) for the loan of the transceiver for review.

Waters and Stanton tell us that the supplied set was an early production sample, and that the review comments have been passed back to the manufacturers to note for future production models.

TONEBURST DEVIATION;

| 145MHz | 435MHz |
|---------|---------|
| 2.95kHz | 3.16kHz |

FREQUENCY ACCURACY;

| 145MHz | 435MHz |
|--------|--------|
| +49Hz | +306Hz |

LABORATORY RESULTS:

All measurements taken using fully charged nicad as supplied, high power TX, otherwise stated.

RECEIVER:

SENSITIVITY;

Input level required to give 12dB SINAD;

| | |
|---------|-----------------|
| 144MHz; | 0.15 μ V pd |
| 145MHz; | 0.16 μ V pd |
| 146MHz; | 0.16 μ V pd |
| 430MHz; | 0.39 μ V pd |
| 435MHz; | 0.22 μ V pd |
| 440MHz; | 0.37 μ V pd |

S-METER LINEARITY

| 145MHz | | | 435MHz | | |
|--------|-----------------|------------|--------|-----------------|------------|
| | Sig Level | Rel. Level | | Sig. Level | Rel. level |
| S1 | Sq. open | - | | Sq. open | - |
| S2 | 0.15 μ V pd | -20.5dB | | 0.27 μ V pd | -12.1dB |
| S3 | 0.19 μ V pd | -18.1dB | | 0.33 μ V pd | -10.4dB |
| S4 | 0.23 μ V pd | -16.8dB | | 0.39 μ V pd | -8.8dB |
| S5 | 0.34 μ V pd | -13.2dB | | 0.48 μ V pd | -7.2dB |
| S6 | 0.41 μ V pd | -11.6dB | | 0.55 μ V pd | -5.8dB |
| S7 | 0.61 μ V pd | -8.2dB | | 0.58 μ V pd | -5.3dB |
| S8 | 0.96 μ V pd | -4.3dB | | 0.71 μ V pd | -3.6dB |
| S9 | 1.56 μ V pd | 0dB ref. | | 1.07 μ V pd | 0dB ref. |
| S9+ | 2.20 μ V pd | +3.0dB | | 1.42 μ V pd | +2.3dB |

INTERMODULATION REJECTION;

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

| | 145MHz | 435MHz |
|--------------------|--------|--------|
| 25/50kHz spacing; | 72.3dB | 64.0dB |
| 50/100kHz spacing; | 68.8dB | 62.1dB |

Inside the set, surface mount components are extensively used

MAXIMUM AUDIO OUTPUT;

Measured at 1kHz on the onset of clipping, 8 ohm load;

| 145MHz | 435MHz |
|-----------|-----------|
| 189mV RMS | 183mV RMS |

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;

| | 145MHz | 435MHz |
|----------|--------|--------|
| +100kHz; | 81.1dB | 73.0dB |
| +1MHz; | 96.4dB | 86.5dB |
| +10MHz; | 98.2dB | 91.1dB |

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;

| | 145MHz | 435MHz |
|-------------|---------|--------|
| Half 1st IF | 75.3dB | 56.8dB |
| 1st Image | 101.2dB | 49.2dB |
| 2nd Image | 90.2dB | 68.5dB |

SQUELCH SENSITIVITY;

| | 145MHz | 435MHz |
|------------|------------------------------|------------------------------|
| Threshold; | 0.09 μ V pd (4dB SINAD) | 0.19 μ V pd (3dB SINAD) |
| Maximum; | 0.23 μ V pd (24dB SINAD) | 0.48 μ V pd (20dB SINAD) |

ADJACENT CHANNEL SELECTIVITY;

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

| | 145MHz | 435MHz |
|-----------|--------|--------|
| +12.5kHz; | 33.5dB | 24.7dB |
| -12.5kHz; | 34.4dB | 32.0dB |
| +25kHz; | 65.9dB | 56.9dB |
| -25kHz; | 66.0dB | 58.0dB |

SUBSCRIPTIONS AND BACK ISSUES HOTLINES:

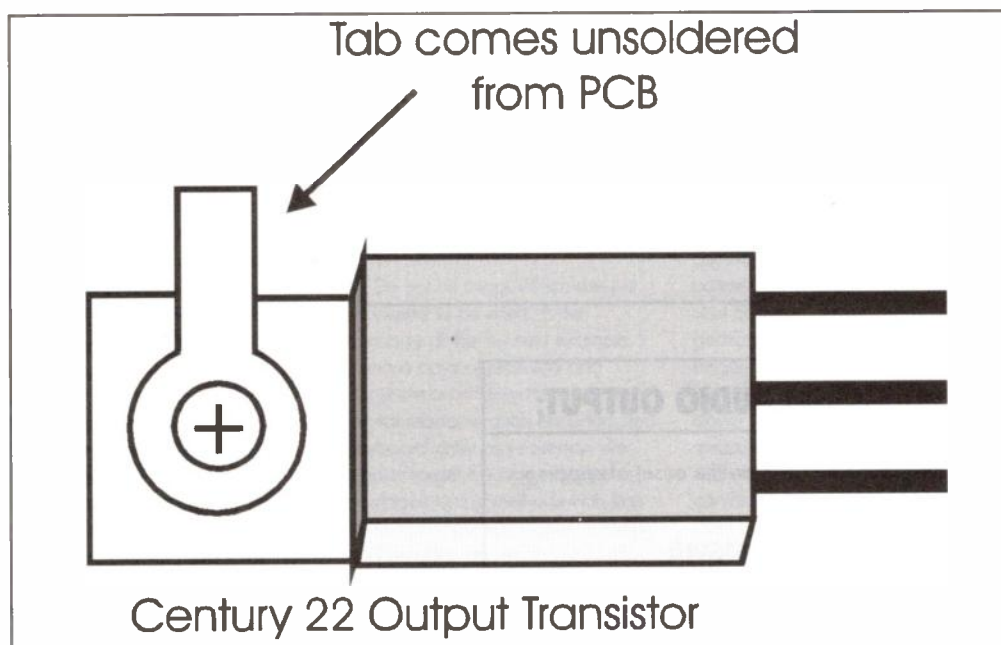
ORDERS: 01858 - 435344/ ENQUIRIES: 01858 - 435322

ALL IN A DAY'S WORK

Harry Leeming G3LLL gives some more valuable 'insider's tips' from his extensive experience in repairing amateur radio equipment

John was in the shop when his next door neighbour Bert walked in. "Who's a naughty boy then, what were you doing listening to the local 'Boys in blue' last night," John looked thunderstruck, "You can't tell what I am listening to on my scanner can you?" Bert went on to explain that he knew that John had a scanner with a 10.7 MHz IF, and by listening 10.7MHz above a few local choice frequencies, he could detect John's local oscillator radiation, and ascertain what he was listening to. It is interesting to note that the new EMC regulations, place strict limits on scanner local oscillator radiation, perhaps it will now be more difficult to enforce the radio telegraphy act - shades of 'Big Brother' shooting himself in the foot.

This reminded me of exploits I had read in the early days of the technical cold war. Apparently it was possible to park outside an embassy, and tell what their spies were listening to by listening to the local oscillator radiation from the embassy's receivers. It was even possible to read the Morse they were copying by detecting a slight wobble on the local oscillator. Of course the embassy could also listen on another receiver and detect your receiver listening to theirs, just to be sure that you picked up any disinformation they wanted the distant transmitter to pass on to you. But then you



Fred brought in his 2m FT480 with the complaint that it was causing TVI.

could listen to their receiver listening to your receiver listening.....! Big fleas have little fleas on their backs to bite them, little fleas have smaller fleas and so on ad infinitum.

SPRINGING OUT OF ACTION

I don't see many Ten Tec Century 22 QRP CW- only transceivers, but those I have seen all had the same fault resulting in either low power, or no output at all. As shown in Fig. 1, the tab on the output transistors is connected by a small tag, which is soldered to the PCB, but which is under tension. All the faulty units I've come across have had either one or both of these tabs come unsoldered, and spring away from the circuit board. Whether this is a mistake in assembly, or a deliberate but simple heat fuse, I am not sure. But a quick blob or two with the soldering iron soon restores full output.

TVI FROM AN FT480

Fred brought in his 2m FT480 with the complaint that it was causing TVI. Now I get a

lot of rigs brought along supposedly with this complaint, with there never being anything wrong with them. However I decided to put Fred's mind at ease, and coupled it up to the spectrum analyzer. The harmonics were over 50dB down, but just to be sure I decided to cross-check with a second rig that I just happened to have in. This seemed slightly cleaner, so I retested Fred's FT480. This time I noticed that the longer I ran it, the stronger the harmonics came, and that after a five minute run, the 3rd harmonic was only 30dB down on the fundamental.

A common cause of trouble in the output stages of most rigs is the PA module. So I changed this, and then tried touching up the alignment, but all to no avail. At this point I happened to notice that if I tapped the rig, the level of the harmonics varied. Using the standard high-tech experienced electronic technician's approach, I started going round bashing things with the handle of a screwdriver. This led me to the aerial changeover relay. Removing the cover and cleaning the contacts produced a complete cure.

Harmonics caused by contact rectification are well documented in the amateur

literature, the so-called 'rusty drainpipe effect'. But I have never had this effect on an aerial relay before. Thinking about it, one would expect oxide at this point to cause trouble, but nearly all complaints at this point are intermittence on receive. We live and learn.

SLOW RELAY OPERATION

I have never been much use at Morse, and have long been amazed by people like Clifford who can carry on a conversation, smoke a cigarette, and copy high speed CW all at the same time. Something was slowing Clifford down though, and in he came with his FT101 with the complaint that it would not switch over to transmit quickly enough, and that sometimes the receiver took several seconds to recover after transmitting.

Inspection found a relay full of an oily residue, the relay contacts were only just strong enough to push out of the way to make a connection. The relay was then thoroughly cleaned with a contact cleaner which didn't contain a lubricant, and all was well. Questions

produced the admission that his original trouble had been an intermittent receive section, which he had 'cured' by cleaning the relay. He was advised that cleaning fluid which contains a lubricant should only be used on contacts which have a wiping action (volume controls sliding or rotary switches for example), and not on relays.

A DISTORTED FT747

Jack went away with a mint second-hand FT747, and initially he was very happy with it. But then he started getting the odd report of poor audio. He gave me a call on the telephone, and initially I suspected RF feedback, so Jack went ahead fitting ferrite cores etc., but to no avail. He brought the rig into me, and I tried it in the workshop but it was perfect. "Perhaps there is something wrong with your PSU" I suggested. "No, that couldn't be the case" Jack replied, "I am using an almost new car battery". That was, however, just the trouble. Why?

The FT747 seems to be designed to operate from a nominally 13.5V supply, and



Clifford came with his FT101 with the complaint that it would not switch over to transmit quickly enough, and that sometimes the receiver took several seconds to recover after transmitting.

not from 12V. I have tested quite a few, and they all move in frequency and 'FM' on transmit if the input voltage is reduced below about 11.5V. When running full power, the voltage drop on the standard DC lead is about 1V, therefore the input to the lead must exceed 12.5V for correct operation at full power. Most FT747's will FM very badly, and produce reports of grossly distorted audio, if operated from anything but an absolutely fully charged battery. In practice, for mobile operation this means that the engine must be left running, and if possible, the DC lead shortened somewhat.

Jack went away with a mint second-hand FT747, and initially he was very happy with it. But then he started getting the odd report of poor audio.



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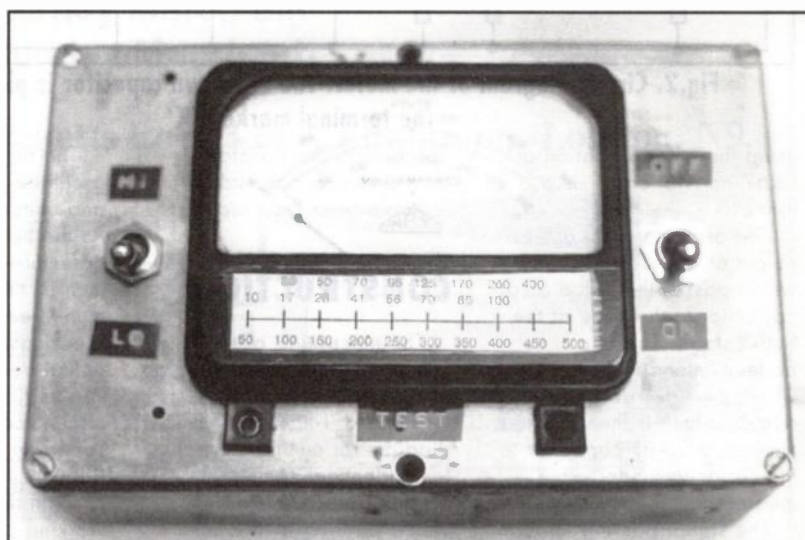
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A DIRECT READING CAPACITANCE METER

Brian Kendal
G3GDU describes
a simple evening or
weekend project to
help you make the
most of your 'junk
box' components



The Direct Reading Capacitance meter front panel

Constructors who habitually re-use components, in one project after another, frequently have the problem that the markings indicating the value become obliterated. Unless some means of measuring the value is available, the components then become just scrap. To overcome this problem in the case of low value capacitors, I recently constructed a Direct Reading Capacitance Meter.

PRINCIPLE

If we were measuring the

value of a resistor, we would place it in series with a milliammeter across a known voltage and then calculate the value using Ohms Law. In a similar manner, as a capacitor has reactance, if we apply a known alternating voltage to the capacitor and again measure the current passing, knowing the frequency of the AC, we can again calculate the reactance and, in consequence, the capacitance. This is the principle of the direct reading capacitance meter.

The meter circuit comprises an oscillator operating at

about 1300kHz, the output of which is buffered and then applied to one side of the unknown capacitor. From the other side, the output is fed first to a rectifier circuit and then to a meter. A choice of shunts gives two ranges of measurement. When complete, the meter is calibrated against capacitors of known value.

THE CIRCUIT

A variation of the Colpitts oscillator was chosen as it uses a minimum of

components whilst being reasonably stable. The frequency of operation is not critical and with the components specified operates on about 1300kHz. The capacitors across the tuned circuit are each 10,000pF, which is much higher than may be expected, but this simplifies the construction of the inductor and provides a low impedance output which is little affected by the subsequent stages. The tuning inductance comprises a 25.4mm winding length of 26 SWG enamelled wire,

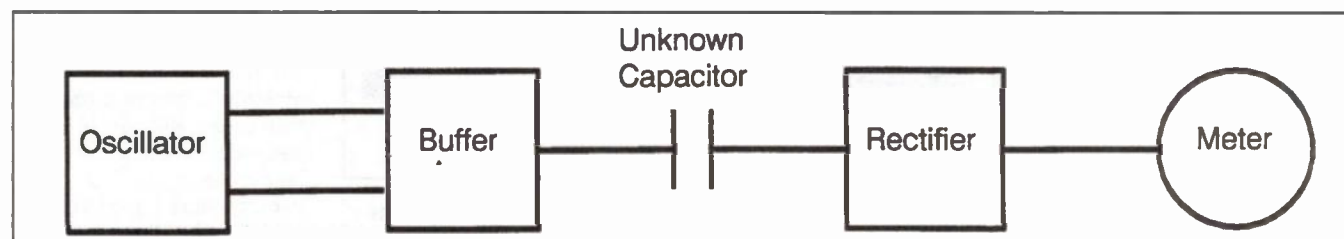


Fig.1. Block diagram of the Direct Reading Capacitance Meter

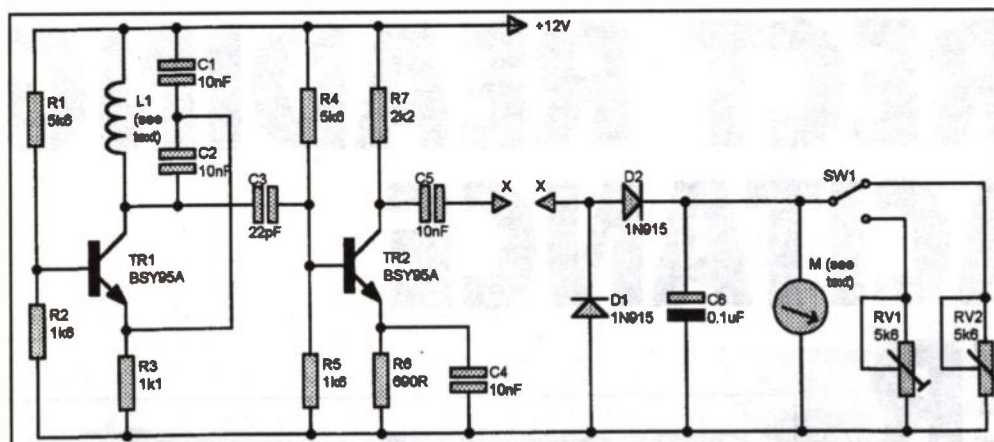


Fig.2. Circuit diagram of the meter. The unknown capacitor is placed across the terminal marked 'X'

using the inner insulation of UR67 coaxial cable as a former.

The oscillator provides an output of about 1V p/p, which passes through a 22pF capacitor to the base of the buffer stage. This is a perfectly standard circuit which provides about 3V p/p output, which is then applied through a 0.1μF capacitor to the capacitor under measurement.

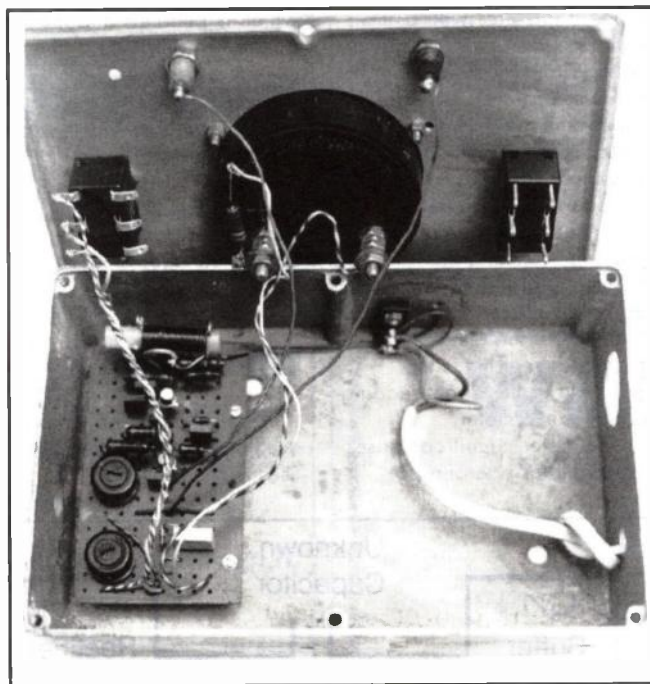
The signal passing through the unknown capacitor is then applied to a rectifier circuit comprising two diodes and then to the meter. In my prototype, I used a Maplin RW92A, 100 μA meter, this was replaced by a larger, more robust, 1mA movement in the final version. With the latter there was initially insufficient drive to fully deflect the meter, but on replacing the 22pF coupling capacitor between the oscillator and buffer with a value of 100pF, the problem was solved. The meter is shunted by two switched preset 5k potentiometers, which are subsequently adjusted to give two ranges of measurement.

In operation, the circuit draws about 10mA at 12 V. This can be supplied by an internal power unit, or the station 12V supply, or internal batteries. In the latter case I would suggest that a spring loaded on/off switch should be fitted to prolong battery life. In my final version of the meter, I constructed a simple Zener stabilised power unit

using the mains transformer from a surplus transistor portable broadcast receiver.

CONSTRUCTION

The electronics of the prototype were constructed on a 100mm x 50mm piece of Veroboard. I have not given a diagram for cutting the tracks, for if identical components are not used, the diagram would be invalid. It is far more safe and simple to fit the components stage by stage, and then cut the tracks as and when required.



The internal construction of the meter. A mains power unit has subsequently been fitted in the space on the right hand side.

completed by wiring the diode, meter switch, meter and shunts. At this point, temporarily connect between the output of the buffer stage and the diode circuits and ensure that there is more than adequate drive to cause the meter to deflect to full scale. Remove the temporary connection and the wiring is now complete. Mount the circuit in a suitable case, and only the calibration remains.

When enclosing test equipment in a case, whenever possible I use diecast aluminium boxes as they are very robust, dustproof to a high degree, and look reasonably professional - all features which help towards prolonging the life of the test equipment.

CALIBRATION

I have often seen the statement "calibrate against components of known value". The statement is easy, but for the unwary it can cause untold problems if not tackled systematically.

The problem is that all components have a tolerance, which means that they could be 20% or more in variance to their marked value. In normal circuits this causes little concern, but in test equipment it can cause serious problems.

There is, however, another technique which can be used which brings the much maligned subject of statistics into play. In this we consider that if a number of components of the marked value are selected, particularly if they are of different makes and types, then the errors from the marked value can be expected to be both above and below this value. If therefore you connect 10 capacitors in parallel, each of 100pF, then in probability their errors will cancel and the combination would be very close to 1000pF. This is the technique I used to calibrate the Direct Reading Capacitance Meter.

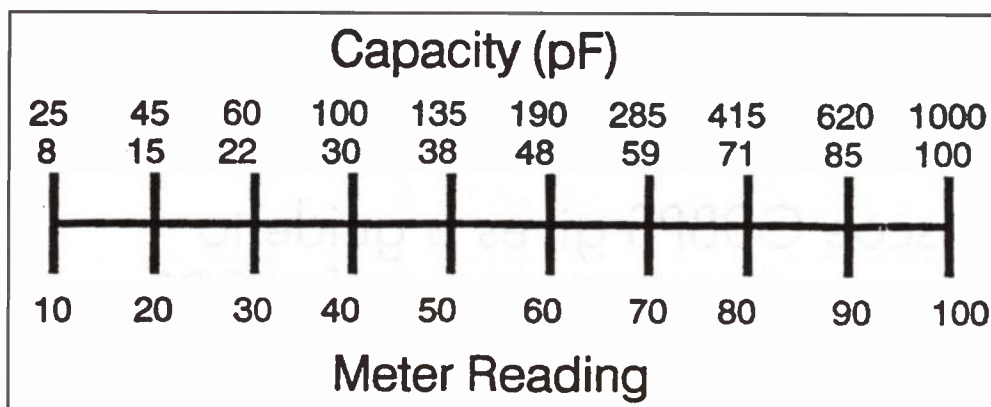


Fig.4. The calibration chart of the prototype meter

far neater job is to fix a calibration chart to the meter, my favoured version of which is to draw a horizontal scale of meter readings with the appropriate capacity value immediately above. This is mounted immediately below the meter face.

CONCLUSION

In the year or so since this project was completed, the meter I made has been continually on my bench. So useful has it proved, that I never now disconnect it from the power supply. Although digital meters may be apparently more accurate, they are also much more expensive. With the exception of the meter movement, which in any case can come from a surplus source like the station junk box, none of the components cost more than a few pence, thus providing a highly economical solution to the problem of those unmarked small capacitors.

Any reported updates to this project following publication will be available on the Ham Radio Today voicebank information line, Tel. 01703 263429 (use with a DTMF phone).

Any other queries regarding this project must be addressed to the author, Brian Kendal, G3GDU, c/o the HRT address (ensure you write the author's name followed by the HRT address so that your letter can be forwarded) enclosing an SAE if a reply is required.

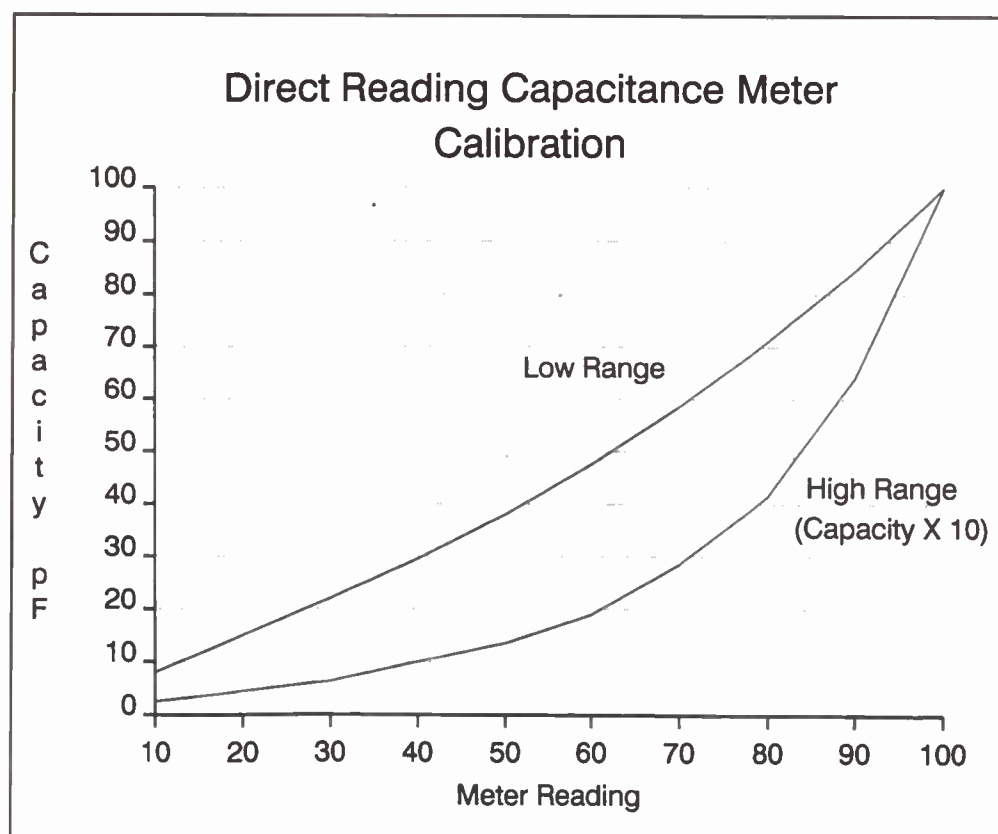


Fig.3. Meter calibration

The first part of the technique is to take two pairs of bare wires about 150mm long. Across one pair, solder ten 10pF capacitors and across the other pair, ten 100pF capacitors.

First, connecting the set of 10pF capacitors across the meter test terminals, adjust the appropriate shunt until the meter reads full scale. Disconnect one capacitor and note the meter reading. Repeat until only one capacitor remains. Repeat the process on the other switch

position with the set of 100pF capacitors.

Take a sheet of graph paper and plot the readings taken with the meter reading on the horizontal and capacity on the vertical co-ordinates. With the points plotted, draw a smooth 'best-fit' curve for each range.

At this point it is a matter of personal choice how this information should be displayed. If you are adept at fine work, then the meter face could be recalibrated. However, for the majority, a

COMPONENTS LIST

| | |
|----------------|-------------------|
| R1, R4 | 5k6 |
| R2, R5 | 1k6 |
| R3 | 1k1 |
| R6 | 690R |
| R7 | 2k2 |
| C1, C2, C4, C5 | 10nF |
| C3 | 22pF |
| C6 | 0.1μF |
| D1, D2 | 1N915 |
| RV1, RV2 | 5k6 pot |
| TR1, TR2 | BSY95A or similar |
| SV1 | SPDT switch |
| M | See text |
| L | See text |

QRP CORNER

Dick Pascoe G0BPS gives a guide to choosing and using components for QRP

Whilst many of those interested in low power operating prefer to just wind down the power to their 100 watt rigs, others prefer to use dedicated QRP rigs such as the Heathkit HWV series and many others that have been commercially made for the hobby. Some of the most popular of these were the Ten Tec series and the 'QRP Plus' rigs imported by Waters and Stanton. Unfortunately they had to stop, as Ten Tec and Index Labs couldn't export to the EEC countries because they didn't meet EC legislations. A sad loss to the low power enthusiast.

However, many more of us prefer to build our own equipment, which also provides the mixed blessing of component searching. I recently mentioned in this column the books available for comparisons of American versus British specifications. There are also other difficulties of finding even good used variable capacitors which seem to have vanished from the face of the earth.

COMPONENT SUPPLIERS

Readers may be aware of the Maplin catalogue which is widely available. I have previously mentioned this because of its wealth of information, especially in its semiconductor department. The many devices held by Maplin will provide for most builders and they will sell one of any item in most cases. One word of warning though, Maplin sell the 'L' version of several devices, such as my favourite BC182L. On the standard transistor, the pin-out is Collector Base Emitter. On the BC182L the base is one of the outer pins. This could cause confusion when using the wrong one in a circuit (as I have found to my cost!).

Rapid Electronics is another company well known in the component world. Again they will sell many items one at a time, and they carry a large range of components which often compliments those from Maplin.

BEC (previously known as Bonex) are well known suppliers and they carry a large range of transformers and similar would components. I use a lot of the KANK series of 10K coils, and BEC are the best for these. They're often at the larger rallies too.

Mainline Electronics has not been around for quite as long as the rest, but John the 'main man' there is very helpful. Their range of components and kits is very comprehensive, John also keeps a small range of variable capacitors.

Another small components company that is also very helpful is JAB Electronic components. Peter at JAB will give advice on component selection and is often found under a pile of components at rallies.

There are several other components suppliers in the UK apart from these I have mentioned. They are not in any particular order and I have dealt with them all at one time or another.

One rep that calls on me regularly stresses that the prices in his particular catalogue are a guide only, as prices can change from the time the catalogue is printed until it actually gets into the hands of the end-user. I would suggest checking out prices before buying. It may also be worthwhile buying a larger quantity of things like standard value resistors and those capacitors such as 10nF, 100nF, 10µF and 100µF. Even transistors. Try and stick to one standard PNP and NPN and use that one wherever possible. In most instances the change from the specified one will not be noticed.

Maplin: PO Box 777, Rayleigh, Essex. SS6 8LU. Tel. 01702 554000, Fax. 554001

Rapid Electronics Ltd;

Heckworth Close, Severalls Industrial Estate, Colchester, Essex CO4 4TB. Tel. 01206 751166 Fax. 751188.

BEC; 12 Elder Way, Langley Business Park, Slough, Berks. SL3 6EP. Tel. 01753 549502, Fax. 543812.

Mainline; PO Box 235, Leicester LE2 9SH. Tel. 0116 277 7648 Fax. 247 7551.

JAB; Rear of 1180 Aldridge Road, Great Barr, Birmingham B44 8PB Tel 0121 366 6928 Fax 6237

Cirkitt; Park Lane, Broxbourne, Herts. EN10 7NQ. Tel. 01992 444111 Fax. 464457

COMPONENT IDENTIFICATION

Component identification is often a problem too. Most amateurs have a rudimentary idea of resistor values on the older four bar resistors, I must admit to a little more difficulty with the newer five bar code. The advantage of this new code though is more accuracy in determining the value of the resistor used.

Thus a resistor in the old code with the bands: Blue (6), Grey (8), Yellow (x 10,000), Gold would have a value of 680k or 680,000 Ohms with a tolerance of 5% (the gold band).

In the new coding this would be shown as: Blue (6), Grey (8), Black (0), Orange (x 1000), Brown (1%) to show the same resistor but this time with a one per cent tolerance.

Capacitors often fox many novice builders. A ceramic capacitor marked with '100' would be assumed by many to be a 100pF capacitor. It will in fact be 10pF (ten with no zero's added) thus 101 will be 100pF (ten with one zero added!). This continues.. 103 being 10,000pF (or 10nF or

0.01µF). This may seem complicated but it will become clearer as the builder gets more experience.

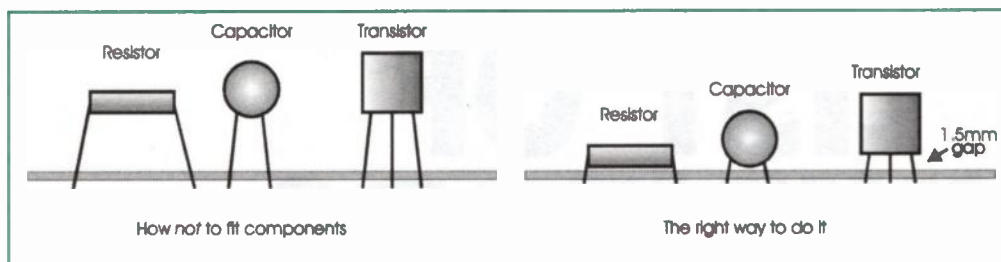
Differing capacitors for different jobs may also cause problems. There may be little use in putting a standard ceramic plate capacitor in a frequency stable circuit, where something like a NPO capacitor or a Polystyrene may be required.

With transistors, there will be many variations of the same device. My usual BC182 also comes as a BC183 and a BC184, in most uses there will not be any noticeable difference but if we exchange this for a BC212 /BC214 etc. we will find problems. The BC212 is a PNP, the NC182 the NPN.

Often we will find a letter after the device, i.e. BC182C. This is used to determine the H_{FE} rating of the transistor; A=125-260, B=240-500 and C=450-900.

Many transistors used in the amateur field are static sensitive, and precautions should always be taken to obviate any build-up of static in the body before handling any of these devices. Several suppliers sell wristbands which, when worn and linked to an earth, provide a path from the body to ground. If this is not available, then simply touching an earth point in the shack may suffice. The potential high voltages that are sometimes found in the human body may astound many readers. Always touch an earth before picking up that valuable transistor or IC.

Integrated Circuits (IC's) are here to stay. They change year by year unfortunately, as the old favourites become more difficult to find. Those SL6440's for instance, the favourite mixer of many circuits in the past is now not available commercially. I do know that the G-QRP club has some though (£2.50 each., from Ian Wye, G00KY New House, Hook Road, Amcotts, Scunthorpe DN17 4AZ.)



The right and wrong way to fit components to a PCB

CORRECT FITTING

The correct fitting of any device to the PCB is also essential. Many times I have seen resistors fitted so that the tips of the resistor legs are in the PCB and the body sways in the breeze above the board. Resistors should be fitted flush with the PCB or not more than 1mm above it. Capacitors should be pushed in so that they also fit as close to the board as possible without breaking the casing, legs can be bent of course.

Transistors should be fitted so that their body is about 1.5mm above the board. In some cases the legs will have to be bent, this

can easily be done with a pair of fine nosed pliers or even a pair of tweezers.

When soldering I teach the '3-3-3' method. Heat the joint of the leg and the track equally for a count of three, add the fine solder for three and then remove the solder and leave the iron tip in place for a count of three to ensure the solder flows to give a good joint. Practice will ensure a good flow over both the track and the component leg.

Under no circumstances should the component leg be heated on its own to allow the solder to flow along it to the track. The track will be cold and an almost certain dry

joint will result. Also, never be tempted to put a blob of solder on the iron tip to take it to the joint. As the solder melts, the flux inside flows over the joint. It is this flux which aids the flow of solder cleanly over the metal surface. If it is melted and burnt away on the iron tip before reaching the joint of the components, the joint will suffer.

After soldering, the joint should be inspected. A bright shiny joint will show that it is a good one, dull brown colouring may indicate a dry joint which should be checked. At this point the legs of the components sticking up from the solder joint may be cut off with a pair of side cutters.

FORTHCOMING EVENTS

May 1st; AGCW DL QRP Party 1300 - 1900. **May 18th;** Yeovil QRP Convention. This one not to be missed, a great meeting with lots of interest for those in the South of England.

June 17th is the IARU Region 1 ARP contest, **June 15th** 144MHz QRP contest. **June 29th;** 0900 - 1500Z WAB contest 144MHz (2). **July 19/20th;** 1500 - 1500Z AGCW DL QRP contest.

Finally, the date for the annual mini-convention at Rochdale has been set for October 25th. I hope to see all readers there for this, the very best QRP gathering throughout the world.

That's it for this time, news and views to me via the Editor or direct; Packet GB7RMS, Email dick@kanga.demon.co.uk or snail mail to Seaview House, Crete Road East, Folkestone CT18 7EG

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The London Amateur Radio & Computer Show takes place on the 8th/9th March, at the Lee Valley Leisure Centre, Picketts Lock Lane, Edmonton,

London N9. Doors open 10.00am to 5.00pm each day (9.30am for disabled visitors). Featuring Trade Show and lecture programme, Bring & Buy, On-

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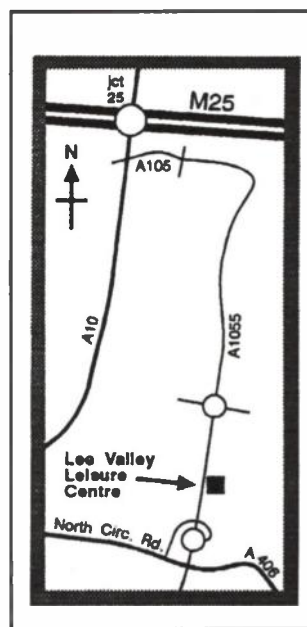
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HOW TO GET THERE



LECTURES;

Saturday 8th March

12.00 noon - Amateur Radio & The Internet, by Jeremy Boot, G4NUH

This talk is aimed at explaining what the relationship is between Amateur Radio and the Internet. What you can do and what you can find. There will be an explanation of how things have changed over the past few decades, some speculation on the future, and how Amateur Radio possibly needs to take note of the changes if it wants to survive.

2.00pm - An Introduction to 2m Direction Finding, by Steve White G3ZVW

Incorporating aspects of orienteering, athletics and science, Direction Finding is growing in popularity all the time. This talk is intended to provide a little bit of the theory of DF, information on how hunts are organised, and what equipment you'll need to get started.

Sunday 9th March

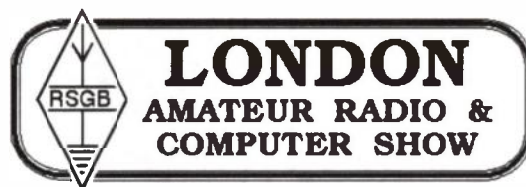
12.00 noon - Backyard Aerials, by Peter Dodd, G3LDO

These days the majority of us live in Suburbia, in houses that have smaller and smaller gardens. If you find it a problem radiating a decent signal, or if you cannot see how to fit a reasonable aerial into a confined space, this is the talk for you.

2.00pm - The Internet's Future - How will it be useful?, by David Carter of Netcom UK

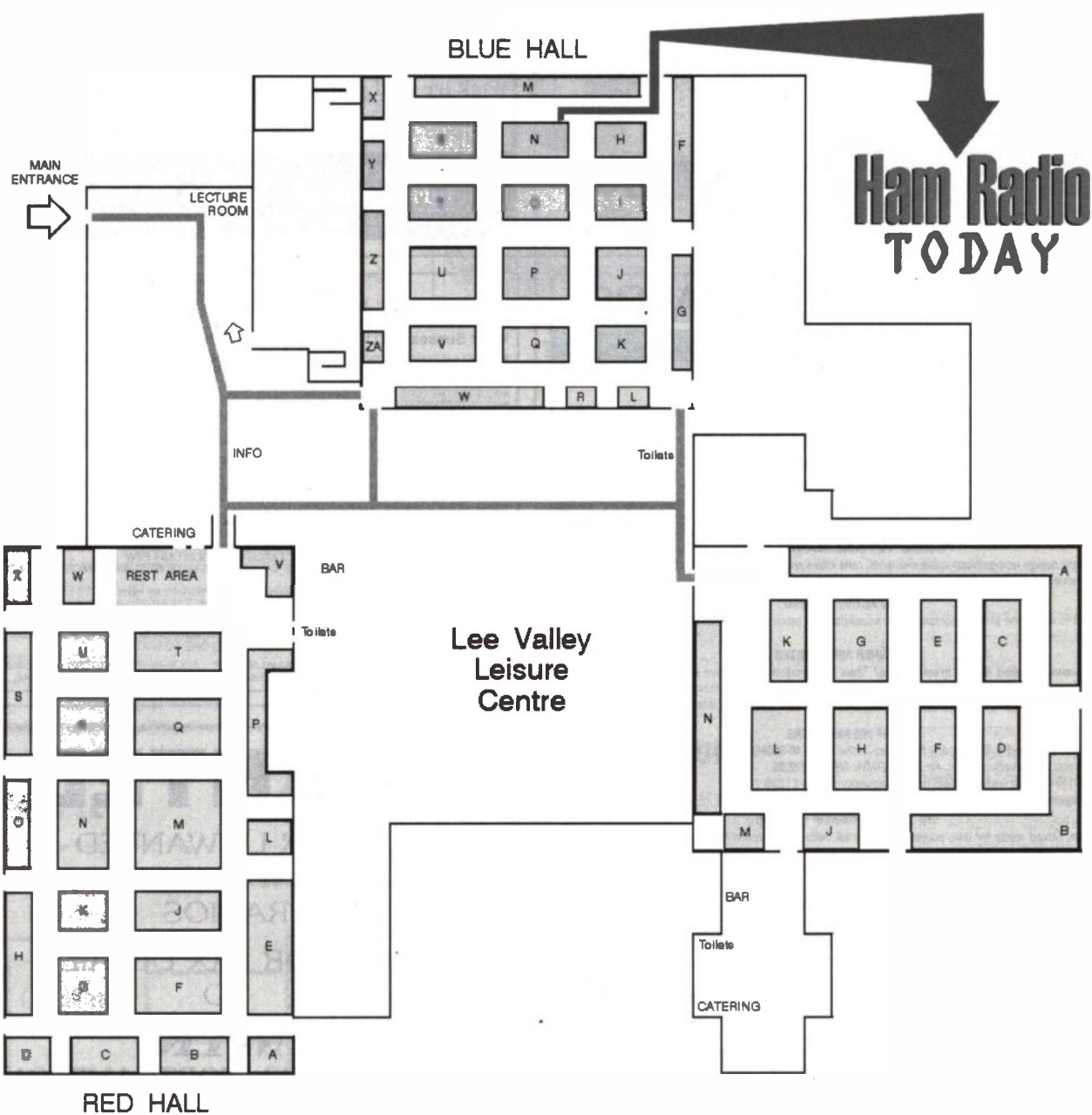
Hear from a leading company's Technical Support Engineer about the current uses of the Net and how they might evolve. Problems with the current system and ways to overcome them will also be covered.

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SCANNERS

Bill Robertson answers reader's queries on remote, mobile, and handheld scanning, and looks at some new equipment

A I've a number of discussion topics this month, taken from both the mailbag and the 'net, which I hope will be of general interest to many readers. So without further ado, here goes...

REMOTE SCANNING

Eric Rutter from Fleetwood has written to me to say that he's completely new to 'Remote Scanning', although he's an SVL and a member of the RNARS, and asks for further information. This refers to the December 96 and January 97 (Vol. 14 No. 13) 'Scanners' columns, where I described how you can operate a scanner remotely, either via the phone line or via the Internet. The phone line method was from Scanmaster products, where a demonstration system was being run by the firm, and probably still is at this time. Here you can listen to and remotely control their ICR-7100 scanner in Dorset by following the instructions given in the column, i.e. pressing the appropriate number buttons on your phone's keypad. Fairly unique, but something that's certainly available!

The other method concerns a growing use of the Internet, that of being able to listen to audio over the 'net using your PC's sound card and appropriate software. For this, you will of course need to have an Internet connection, which is beyond the scope of this column but there's certainly no shortage of "free" 30-day trials of these on the front cover disks of virtually any PC magazine you find nowadays. By connecting to the appropriate web site, i.e. as detailed in the Vol. 14 No. 13 *Scanners* column, you can effectively 'listen

The Pro-Am TGSBNC is a glass mounted wideband aerial designed specifically for mobile scanner use

in' to live audio from airports or even a US city's police force. Will scanning ever be the same again, I ask?

BC-9000 KEYBOARD TRICKS?

Another letter, this time from Mr. S. Harmer in Clacton-on-Sea, says that he's read that the Service Manual for the Bearcat BC-9000 XLT scanner describes a few 'keyboard tricks', and he asks for more information. Mr. Harmer has unfortunately not been able to obtain a copy of the manual from the UK distributors, so does any reader have information on any 'extra' keyboard facilities, or indeed where in the UK a manual may be obtained? I'd suggest one source could be Mauritron Services, who advertise in the magazine, but do readers have any further suggestions or information? I'd be pleased to pass on any details for the benefit of all.

HANDHELD SCANNERS IN THE CAR

On the 'net', Neil Young says that he's getting his first car shortly, and is planning on using an AR8000 handheld scanner in the car, with an external aerial connected, possibly a magnetic type as he doesn't want to drill any holes. He'd also like to use a type that isn't too obvious as being a scanning receiver aerial, but questions the wide bandwidth claims that are made by some of these types. Neil also asks about glass mount types, with the overall requirement is one that's quickly detachable.

MAGMOUNTS

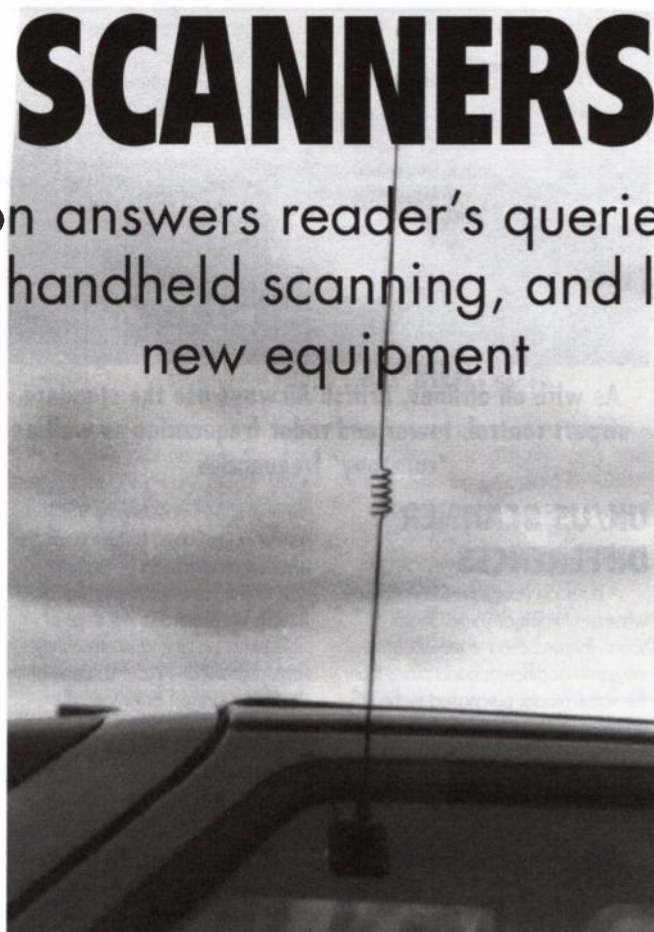
In my experience, magmounts tend to suffer from a number of problems. Firstly, they will usually always damage your car's paintwork to some extent as time goes by, and I'd only use them as

a very temporary measure. A further problem is the coax, which you'll usually have to pass through a rubber door seal, with subsequent problems of water leakage in rainy weather. Also, unless the magnet is of a reasonably substantial size, there's the worry of it sliding, or even falling off, at speed. Remember there's always the risk of the whip element catching something like a piece of paper or even a large falling leaf whilst you're on the move, which could be the thing to make it pull off at speed.

A better alternative would be a gutter-mounted version, possibly with an amateur-type 2m/70cm dual band aerial used with the scanner. These aerials are usually fitted with a screw-on PL-259 mount, making removal fairly quick and easy, although the aerial and mount tend to be fairly noticeable.

GLASS MOUNT

A reasonably smart and unobtrusive solution however is one of the small glass-mounted scanner aerials that are available, such as the Pro-Am TGSBNC which was reviewed in the March 1994 issue of *Ham Radio Today*. This uses a matt black coated whip, the base of which simply screws onto the glass-mounted fixing, again making removal when needed a very quick affair. However, as with all glass-mount types, there will be some compromise in performance, especially at the lower frequency end of the spectrum (e.g. on VHF low band and particularly on HF), but then any physically short car-mounted whip will also have this effect.



BANDWIDTH

Many scanner aerials claim a very wide bandwidth, 1MHz to 1300MHz for example. Any type of aerial will give some form of reception at virtually any frequency, but to provide good performance it needs to be electrically resonant at these frequencies. Therefore an aerial for UHF needs to be appropriately short, one for VHF needs to be longer, one for HF longer still. Thus any wideband aerial is usually a compromise, although you'll often be able to use a single 'whip' aerial on two or three frequency ranges, e.g. 150MHz and 450MHz, if it has suitable loading or 'trap' coils used along its length for multi-frequency operation.

Finally, Neil adds that he'd also like to mount the handheld scanner in the car, so that he can see the display clearly when on the move. Here, I'd suggest one of the ventilator grill mounts which are available from specialist hobby radio dealers. This mount simply clips onto one of your car's dash-mounted grilles, and has a rubber-coated surface for your handheld scanner's belt clip to slide onto. I've used one of these myself for a couple of years with great success, usually with my external wideband scanner aerial plugged in. Alternatively, as the resultant position of the scanner mounted like this usually has the set-top aerial being positioned near to the window, you could even find you get acceptable results with the set-top whip as a temporary measure, at least for local signals, although an external aerial will of course always win in terms of on-air performance.

CONCORD FREQUENCIES

Darren Bamforth asks which VHF frequencies are used by Concorde on its daily flights to and from New York. The answer here are the same as any other aircraft at the airport or 'en-route'. For the UK, start with 121.900MHz on the ground, and follow the frequency 'QSY' handovers as they occur. A check on the British Airways 'company frequencies' may also prove useful, these do vary but I'm told that 131.850MHz is used for most of the time.



As with all airlines, British Airways use the standard airport control, tower and radar frequencies as well as 'company' frequencies

UK/US SCANNER DIFFERENCES

A question from John O'Mara asks whether Uniden or Radio Shack scanners purchased in the UK have the same or different band plans than the same model purchased in the US, and if so is the difference material?

Here you'll find that most of these, also sold under the 'Bearcat', 'Realistic' or 'Netset' brand names, invariably have the US cellular telephone sub-band sections around 800-900MHz (which are different to the analogue cellular bands used in the UK) 'locked out' of the receive coverage. This however is not usually of concern in the UK, although 'UK version' scanners do not usually have these band segments enabled. However, what is usually a difference is the 'Low Band' VHF segment. In UK and European models, this is usually 68-88MHz, as used by PMR users in these countries. US models usually have 30-50MHz on this range instead (i.e., no 68-88MHz). You'll sometimes find that a PCB mounted circuit link can change between the two ranges indicated on the set's display, even if the actual receiver

front end and possibly the VCO circuit stages don't cover this range without modification or realignment. Note that these scanners invariably also have fixed channel steps of 12.5kHz on UHF and unfortunately only 5kHz (not 12.5kHz) steps on the VHF FM ranges, automatically switching to AM and 25kHz steps only on the VHF civil airband range.

The above does not of course refer to scanners from some other manufacturers such as AOR, Yupiteru etc. which are invariably 'wideband' rather than banded, although there are import restrictions of these into the US unless they have the cellular bands locked out as above.

NEW TANDY SCANNERS

On the subject of Radio Shack / Realistic scanners, I've just received news of a couple of new models which are now available. The first is the Realistic PRO-70 handheld scanner, having 50 memory channels and a frequency coverage of 68-88MHz, 137-174MHz and 380-512MHz, with 10 pre-programmed

search ranges for quick-access scanning. The PRO-70 is powered from six internally fitted AA batteries, either dry cells or nicads. It's intended either as an 'entry level' scanner, or as a second, portable, scanner for enthusiasts who already have a base scanner.

What would possibly also made a complementary companion to this, from the same stable, is the new Radio Shack PRO-2045 base station scanner. It's a 200 channel receiver, with a coverage range of 68-88MHz, 108-136.975MHz (civil airband), 137-174MHz, 216-512MHz and 806-1000MHz. The PRO-2045 has the ability to automatically 'count' the activity level on stored channels, and an optional CTCSS decoder unit can be internally fitted for monitoring only specific CTCSS-enabled transmissions. More useful facilities include 50 programmable 'search skip' frequencies, an 'auto-memory store', a 'data skip' (which skips unmodulated signals), and the ability to select either AM or FM mode on any band.

The Editor has planned for both of these scanners to be featured as technical reviews in next month's issue, so watch out for more information there. In the meantime, if you'd like more details and prices, then you can contact Link Electronics, 216 Lincoln Road, Peterborough PE1 2NE, Tel. 01733 345731.

NEXT MONTH

I've discussed trunked radio systems here in the past, but another commonly used method for wide area radio coverage is that of quasi-synchronous transmitter operation. I hope to detail the operation of this in next month's column, to explain the reason behind the 'slow/rapid fading' sometimes observed on received FM signals on your scanner. But that's for next month.

Bill Robertson is always pleased to hear from readers, and will answer queries through this column. You can write to him c/o the Ham Radio Today Editor, either by post, fax, or Email.

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



The new Radio Shack PRO-2045 base scanner and Realistic PRO-70 handheld, watch out for the reviews planned for next month

FROM MY NOTEBOOK

Geoff Arnold G3GSR gives a warning on the use of chemicals in our hobby

When all else fails, read the instructions" is a sentiment which can be applied to quite a few situations, and one which I must admit I tend to favour when faced with new equipment or with a new or updated piece of computer software. Assuming that you have a grasp of what the item is intended to do for you, you should be able to use it in at least its basic form without having to refer to a handbook or 'HELP' file. How well you can do so will depend to a large extent on the skill of the team which designed the equipment or software.

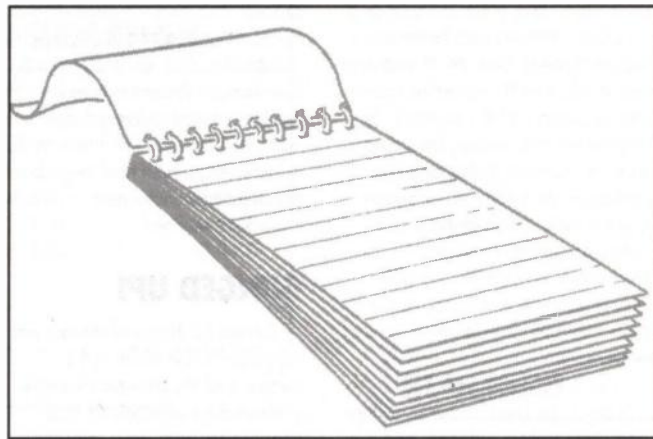
However, there are occasions where a more cautious approach to the unfamiliar is advisable. An injunction to "Always read the label" now features prominently in all press and TV advertising for medicines and drugs, and is advice that can just as well be applied to some of the materials which we use in radio and electronics.

The types of materials I am thinking about here are adhesives, sealants, lubricants, cleaners and the like. The problems can come in several forms, the most important of which is where personal health and safety may be put at risk.

PERSONAL SAFETY

In this category come the obvious hazards of poisonous or inflammable materials, whether solids, liquids, gases or fumes. If the instructions say "Avoid contact with the skin", "Wash hands after use", "Extinguish naked lights" or "Ensure adequate ventilation" they mean it!

With impact adhesives being discussed, in an article recently



submitted to me it was advised "A well-ventilated space is advisable if you don't want to be found lying down wearing a silly grin. And don't smoke, otherwise you won't even grin"!

It's not all that many years ago that the chemical carbon tetrachloride (commonly known as 'CTC') was required by statute to be carried in the radio office of every UK merchant ship, for equipment cleaning purposes. It was also widely used in extinguishers for use on electrical fires. CTC made an excellent cleaner for removing marks from clothes, and it was its use for that purpose on shipboard that was instrumental in it being totally banned. Naval ratings would remove tar-spots, etc., from their uniforms with it, then hang them up to air before turning in. They never woke up, for the fumes killed them! Similarly, many people (including myself) once breathed in the fumes from soldering fluxes without realising the dangers involved. Now we know better - or at least I hope we all do.

The moral of this story is, reduce

your exposure to any chemical fumes, etc., to the minimum. We may think that the product we're using is quite harmless, but in years to come, could discover that it was anything but.

WHICH PLASTIC?

Plastics, the man-made materials which have revolutionised life in the twentieth century, fall into two categories, called thermosetting plastics and thermoplastics. So what are the differences, and which plastics fall into each category?

A thermosetting material is one which, once having been subjected to heat and pressure, undergoes a chemical change and permanently loses its plasticity.

A thermoplastic material, on the other hand, is one which becomes plastic on being heated, and can be repeatedly melted or softened by heat without changing its properties. It undergoes a physical change on solidifying but not a chemical change.

Thermosetting materials include phenolic plastics such as Bakelite,

a material widely used for old-time wireless cabinets and for other items so favoured by collectors nowadays, and Catalin, a comparable though more visually attractive product in the USA.

Thermoplastics materials include ABS, polycarbonates, polythene, polypropylene, polystyrene, polyvinyl chloride (PVC) and Perspex. Polyester and polyurethane can be either thermoplastics or thermosetting plastics, depending on type.

A useful way to remember the difference between the two terms, which may at first appear confusing, is that thermosetting materials set (permanently). This also gives us a clue that thermosetting materials are far better at resisting the onslaughts of solvents used in adhesives and cleaning products.

ADHESIVES AND SEALANTS

Fastacting adhesives such as the cyano-acrylate (superglue) variety pose a well-publicised hazard in their ability to cause careless user's fingers - or worse still, eyelids - to stick together. You have been warned!

Some adhesives will attack styrene, acrylic and polycarbonate based plastics. Anyone who has ever tried to stick 'expanded polystyrene' foam board or tiles using the likes of Evo-Stik or Uhu will have undoubtedly learned this fact of life the hard way. Many of the popular plastic project boxes, too, will tend to melt away wherever they come into contact with solvent-based adhesives such as Uhu.

Silicone sealants of the type used to waterproof joints and junction boxes should be used with some caution. This product is often referred to as RTV sealant, standing for 'room temperature vulcanising'. During the curing process which takes place after application of the sealants, some of them produce vapour which can attack copper or silver-plated electrical contact surfaces. This seems to be far less of a problem than it used to be a few years ago, but it would be as well to stick with (no pun intended) sealants sold as being specifically suitable for use in electrical enclosures and the like.

CLEANERS

Some cleaning liquids and sprays will also attack styrene, acrylic and polycarbonate based plastics. Old hands will no doubt recall the early switch-cleaner liquids, which would make short work of many of the more modern plastic materials. Enormous strides have been made in the formulation of such cleaners, but still read the instructions - particularly any cautions - with great care. If you are not sure exactly what the material is, that you are proposing to use the cleaner on, then don't use it!

Although there are a variety of cleaners intended for different applications, they all have one basic purpose - to remove unwanted surface deposits of dirt, oil, grease, etc. Having done their job, however, what do they leave behind?

Sometimes, what we require is a completely clean surface (if there is such a thing), ready perhaps for soldering, painting, or whatever. Some cleaners (the aforementioned CTC was a notorious example) leave behind a scaly residue. In any case, if a surface was left completely clean, it would soon begin to oxidise, producing a layer of tarnish or rust, or even simply accumulating surface dust. Some other treatment must normally follow the cleansing process, and it must be applied quickly, before the surface needs to be cleaned again.

One of the problems of some cleaners, such as CTC, is that they remove essential lubricants from the contact surfaces of connectors and unsealed switches and relays. A properly formulated switch cleaner will usually leave behind a trace of

lubricant on those surfaces, which would otherwise soon suffer wear, and so make imperfect contact. The result of that is likely to be overheating, further contact deterioration, and eventually the contacts possibly welding themselves together.

LUBRICANTS

The contact lubricant is a specialised form of the oil or grease which we apply to bearings and other sliding surfaces to achieve smooth movement with the minimum expenditure of mechanical energy. Sometimes it is necessary to apply a specialised contact lubricant, which may take either a liquid or a jelly form. Where such treatment is recommended, beware of applying too much, which may either upset free movement of the contacts, or drip or run onto nearby insulating surfaces, attracting dust and dirt and promoting electrical leakage. Contact jelly is something that is only appropriate to large contactors; on small relays with only a light mechanical action, it is quite capable of preventing contact movement.

The more usual sorts of lubricants, as used in shaft bearings and other sliding surfaces, again should be chosen and applied with a certain amount of care. Some mechanisms are designed to operate without any additional lubricant, and if any is applied, it can cause all sorts of problems.

CASE HISTORIES

Just to show you that the professionals are perfectly capable of making their own terrible mistakes when it comes to the use of adhesives, cleaners and lubricants, I shall close with a small selection of case histories from my own experience. To save some blushes I shall not, for the most part, name names!

As already mentioned, the early switch-cleaner fluids were really vicious in the way they attacked plastic component parts. My own outstanding memory of its effect was following its use on a 'Yaxley'-type wafer switch with a plastic 'spider' supporting the rotor contacts. A quick squirt, followed by the usual vigorous turning back and forth of the control knob, left me with a switch with no mechanical association whatsoever

between shaft and rotor! Luckily it was a fairly simple switch, but it still took about half a day to find and install a suitable replacement. I was always very careful where I used switch-cleaner after that!

Another instance of an over-zealous or unsuitable cleaning regime was that followed by the 'goods-inwards' department of a large manufacturer. The quality control department had laid down that incoming deliveries of switches were to be dunked in an ultrasonic cleaning bath. Unfortunately, in the case of a particular type of illuminated rocker switch, as well as getting rid of any unwanted residues from the manufacturing process, this also removed essential traces of lubricant from the switch mechanism. The result was that a few months after the finished equipment was delivered, the switches began to fail intermittently, and the equipment had to go back to have new, uncleaned, replacements fitted.

GUNGED UP!

Do not oil things which are not supposed to be oiled, is the message of the my next example. In these days of receivers and transceivers using synthesisers, digital readouts, shaft encoders and keyboard entry of frequency, we tend to forget the old-fashioned analogue tuning methods with their drive-cords, pulleys, drums, springs and pointers, etc. In communications receivers, there would very often be some sort of slow-motion drive, to give finer control when using narrow-band modes such as CW.

A popular type of slow-motion mechanism would be one called an epicyclic drive, in which a system best described as 'wheels within wheels' produces a reduction in the rate of rotation between input and output. The wheels may be toothed gears, but they more usually take the form of pairs of spring-loaded wheels or washers bearing on knife-edge wheels or rings. (Trying to describe an epicyclic drive without a working example to demonstrate is probably a bit like the traditional aptitude test: 'describe a spiral staircase without the use of your hands', but I hope you get the idea.)

The spring-loaded washers or wheels are usually plain metal, but

one manufacturer decided to improve the smoothness and reliability of operation by fitting neoprene washers between the metal surfaces. It was also decided that the drive required lubrication, but unfortunately the oil selected was one which softened the neoprene in tropical climates, so that the whole thing tended to jam up. Many a happy hour was spent stripping drives down, cleaning off all traces of oil, and reassembling with new neoprene washers!

AND FOULED UP

Not quite in the same vein as the previous examples, but one which shows that it is unwise, in designing an equipment, to depend on a single safety barrier where its failure can be crucial if not catastrophic. It relates to a DC electric motor used to turn the scanner of a shipboard radar system.

The motor was mounted vertically, the reduction gearbox being at the top and the commutator and brush-gear at the bottom. All went well until the shaft-seal between the grease-packed gearbox and the motor armature began to leak, again in tropical climates. The grease then ran down the shaft, ending up splattered all around the armature and stator and over the commutator and brush-gear. The latter objected most strongly to this treatment, and the motor stopped turning.

Luckily, no damage had been done to the insulation on the motor windings, and with the assistance of the ship's electrician it was all cleaned up, and a new shaft-seal fitted, restoring our radar to operation. I believe that a modified motor and gearbox was later designed and fitted to prevent the fault recurring, but I can't help feeling that the problem should have been foreseen.

FINALLY

After more than six years of producing this feature, I've reluctantly decided that the time has come to put my notebook away. I've greatly enjoyed writing it, and in the process discovering some interesting facts whilst doing background research. I hope that some of it at least has proved enlightening and useful to you.

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LETTERS

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publication only, for general readers queries please see the 'Readers Queries' section in the 'Who's Who and What's What in Ham Radio Today' section at the rear of this issue), or Email to hrt@netlink.co.uk. Please keep your letters short, we reserve the right to shorten them if needed for publication. Letters must be original and not have been sent to any other magazines, and must include name and address plus callsign if held. **Reader's views published here are not necessarily those of the magazine.**

LETTER OF THE MONTH

DEAR HRT,

With regard to your Editorial entitled "Use it or lose (sic) it? - oh dear, we've just lost a bit", I would dispute that this particular part of the amateur spectrum was not in use. In fact I would suggest that it has been in use by ATV, Wide Band FM and quite a few narrowband stations. However, many other amateurs thought, or maybe still think, that it is a minority interest in an underpopulated part of the spectrum allocated to amateurs and could be lost with no harm to them personally.

However, in my opinion, a greater problem lies in the fact that, apart from some areas that could be described as evergreen, we take a parochial view of our own bands. My point is that the various factions of the hobby are so busy sparring with one another that the authorities can effectively take whatever action they like, no matter that they have the

legal right to do so anyway.

I am afraid that since I became a 'Ham' in the early eighties, someone else, (another amateur) it seems, has either scorned me, or despised me! Maybe that language is too strong, but a sense of common purpose seems lacking. Don't get me wrong, I've made a lot of friends and had support from a great many, but there seems still to be an underlying set of rifts in the hobby. Let me explain from a personal perspective;

I enjoy CW, but I don't necessarily think that a CW test is necessary for access to the HF bands. Ergo: Two camps now view me with suspicion; I have been involved in microwave operating - some HF operators seem to imagine that erosions of microwave facilities have nothing to do with them and that what should they care anyway as long as their bands are still intact, or are proposed to be expanded;

I am a member of the RSGB Propagation Studies Committee,

in some peoples eyes this seems to make me one of the "establishment" and an enemy of the people. To others I'm an outspoken critic of the system because I dare (sometimes) to ask why certain things should be, just because they have been done that way for many years; I'm also (shock, horror, gasp) an ex-CBer (AM/SSB to boot). If that doesn't condemn me in some peoples' eyes, nothing will.

To summarise, in my opinion the scraps between various modes and interests is self-defeating. The Romans defined the term 'divide and conquer', does that mean we have to divide ourselves up to make it easy to be conquered? Just because it is not 'your' bit that is going, or you think that new rules will mean the 'great unwashed' get your bit of the band then it seems fair game to attack other amateurs and not address the real problem.

So what is the real problem? In my opinion it is that we

share a common interest - Radio - but not a common objective! I'm not talking about whether you should, or should not, be a member of RSGB, or UKRS, or any other organisation, I'm talking about being an Amateur Radio Enthusiast. A person interested in "the self training of the licensee in wireless telegraphy". I didn't see a reference to an SWL, a Class 'A', or Class 'B' or Novice, or CW, or SSB, or FM, or anything else there, so why can't we agree that a degradation of privileges for one is a degradation for all? Why can't we agree that an attack on one is an attack on us all? If we want to draw distinctions between DXCC on CW or SSB, that should be an internal matter, a case of similar achievement in a common interest, not a way for governments or outside interests to gain advantage at our expense.

Dave Ackrill

For what it's worth - GODJA - Ex-G6VMQ (one of the first NoVs for CW on a Class B licence). Ex-10GHz and 24GHz Wide band FM operator. Ex-Packet and TCP/IP operator. Homebrew enthusiast (any band). Holder of NoV for 73kHz. CW enthusiast. Ex-FM mobile user of 2m and 70cm. Occasional user of HF. G-QRP Member No. 3247, FISTS Member No. 1372, Ex-member of MEB Radio Club, Ex-member of Wythall Radio Club, Ex-member (and membership liaison officer) of Midland Amateur Repeater Group, ex-member of MAXPAK. Ex-member AMSAT-UK. Present Member of Wakefield & DRS, present Member of Wakefield Repeater Group, present committee member of the RSGB Propagation Studies Committee, founder member of UKRS (oh, that's blown it again!). The point is I am, and have been, a member of many groups and organisations in Amateur Radio, but due to time and money factors one cannot be a member of every club! Which is probably the real message behind this letter.

MORE POWER FOR NOVICES?

Dear HRT,

May I add a suggestion to those of J. Davies-Bolton [Vol. 15 No. 1] for increasing the use of the bands.

In this respect, I wonder whether or not there is any reason to continue the restriction on power applied to Novices on 70cm? Maybe when the Novice scheme came into effect it was felt necessary to be very cautious, but I would suggest that excess caution is no longer needed, as the vast majority of Novices (certainly in my experience) operate excellently.

In practise the restriction, when applied to the 70cm band, results in frustration and consequent underuse of what is often a very quiet band anyway and perhaps, therefore, in urgent need of greater use to avoid any loss to commercial or other interest.

The Novice limitations become very apparent when working mobile. For instance, I was recently talking to two mobile stations from my home location via a repeater. One of the mobile stations was a Novice, the other was not. Whilst the other mobile station was able to hold the repeater quite easily, the Novice had great difficulty at times. Such instances are, I'm sure, common and apply equally to simplex contacts as well as repeater-aided.

I know that it is frustrating for a Novice to feel 'left out' in this way, continued discouragement can only lead to loss of interest in Amateur Radio as a whole. I should add that I have nothing against QRP operation and am a member of the G-QRP Club myself, but I feel when QRP is compulsory, it loses some of its attraction!

C.J. Charles, GOLWA

"TONE" BURST

By GMBMEN



EDITORIAL COMMENT;

It's interesting to note, that according to a recent report, the Novice drop-out rate is causing concern amongst many Novice Instructors. Several reasons were given for this; Lack of access to popular bands, lack of responsibility given to Novices and

the attitude of some radio clubs towards newcomers. It seems that many Novices are frustrated with the current situation and are losing interest and dropping out, which is not good for the future of our hobby, is it. As a 'parallel', the US amateur Novice class licence allows a transmit power of 200W.

CAT AMONGST THE PIGEONS

DEAR HRT,

J. Davies-Bolton G4XPP, has at last stated something that will certainly put the cat amongst the pigeons, but let us take it in its logical conclusion. Why bar Class B licence holders from HF, when Novices had this given to them, this was the bone of contention amongst most Class B's.

Certainly let Novices A and B use 2m with no power restrictions and let Class B's use HF with restrictions. My eldest son is a Class B holder and is

lucky, he has the advantage of using HF under my supervision, and is very often called upon during our club special event stations, and been congratulated on his operational procedures. He is trying to fit in CW practice, but with his work times he may only be able to fit in two half-hourly sessions a week.

So let's see what happens, give the young ones who are really interested in Amateur Radio, with all it's aspects and job opportunities, a chance.

J.H. Clifton, GOUJI

GOOD FOR J. DAVIES-BOLTON!

DEAR HRT,

Having been brought up on wavelength, TRF receivers and the Regional and National programmes and later seen the great days of war surplus I have observed the amateur scene for rather a long time. There has always been a tendency for some amateurs to be more interested in keeping others off, than letting them on to, the bands, certainly not on terms less than those applying when they entered. It made me hopping mad for many a year that people would prefer to have just a few more in the game who have gone through all the ancient hoops like themselves and not a mob of undesirables 'who just want things easy'. In the interests of having things nice and cosy with room even on 20m SSB many who could have

enjoyed radio transmission have been condemned to other vices like gardening, goggling at the box or even piracy. These - or should I say we? - have been and are really not wanted and so there will be outcry against G4XPP.

Ham Radio has gone on long enough for there to be a pretty large degree of stability and those now licensed are using the bands as far as they are inspired to. Any significant increase of usage would arise from more users. New entrants of sufficient aptitude and motivation in all things to become licensed, in the various categories, under present conditions and requirements will come forward roughly as at present - if that. So, let me say bluntly, entry should be made as easy as is compatible with reasonable standards of behaviour on the bands and competence in the use of modern equipment, and that is what we and those who purport to represent all of us

should be seeking. From having had more than a little to do with negotiating situations I propose that the logical way to strike a balance in the UK would be for all concerned to seek the utmost liberalisation with the Radiocommunications Agency seeking to maintain such entry requirements as it sees to be necessary (the function of the RA in amateur radio should be the maintenance of adequate standards, not the gratification of the exclusive instincts of a certain clique of existing licensees).

At this point the RSGB (and some other, but not all, national societies) will be having a collective hernia. I propose that here is where the United Kingdom Radio Society can take up a distinct position, on behalf of all radio enthusiasts and not just the upholders of ancient initiation rights.

Alex I Dick,
"Sandy" GMOIRZ

As well as our post and fax facilities for receiving letters, you can Email your 'Letter' direct to; hrt@netlink.co.uk

VHF/UHF MESSAGE

Geoff Brown GJ4ICD with a collection of operating reports from around the world

Quadrantids MS Shower News: There were several views as to when the peak would occur. From a personal point of view, I thought that conditions were at their best around 1500 on the 3rd January, however Jukka OH6DD sent in the following news.

"Iikka, OH5IY, just called me and said that Quadrantids produced a huge peak at 1015 UT today, January 3rd. Iikka's 87 MHz measurement system recorded some 3000 reflections at the top hour, which is more than any major shower has produced during the past years".

So certainly I missed the peak! Many stations were heard on both 144MHz and 50MHz. On 144MHz, EA6SA was heard with a very fine signal many times, on 50MHz chaos reigned on 50.110 again, but for once let's drop that subject. OH2BUA's 144MHz cluster page showed a large number of 'spots', proving that for once things were very good.

OTHER NEWS

David V29RSD sent in an email with the following information from December;

"After several weeks of CQ calls on the calling frequency without success, PP5VX was worked (with great difficulty) at 0030z on 18/12. The PY2AA beacon was also heard 339 in Antigua at 0045z. I presume this is TEP? Aerial set-up here is still simple with a wire delta loop N/S being used. Tom DL7AV has just received his 5A1A QSL card from a QSO in 1996. The address was Box 6318 Tripoli".

Mike VE9AA has now confirmed that the expedition to CY9 will go ahead in June, around the 10th to 20th. The station hopes

to be operational on 144MHz EME and certainly 50MHz. This will be the major VHF expedition of 1997, one that you should now book your holidays for to make sure you work it off the Moon, or via sporadic 'E' on Six. Mike also hopes for the first Transatlantic QSO via sporadic 'E' on 2 metres. D44BC phoned in to offer his accommodation for another '50MHz shot' from Cape Verde this year, but it is unlikely (due to the cost) that I will take up the offer.

Icom IC-756 news; I have now carried out some tests on the radio. It is quite clear that only *inter-band* 'dual watch' is operational. Although the radio seems to receive on 28.885MHz and 50MHz, this is not true, due to the receive bandpass RF front end. Therefore the radio cannot be used for monitoring 28MHz and 50MHz at the same time, which is very disappointing.

Diplomatic information from Saudi Arabia reports the following; "7Z is not authorised for 50MHz. ARRL have declined 50MHz operation to date. 50MHz permits are now being applied for. We hope in 1997 that the situation will change". More information later.

News that Brian 9J2BO has made his first 50MHz QSO with 9J2DS came in from Ted G4UPS in early January, the UK Six Metre Group has been trying to get Brian on 50MHz for a number of years.

BEACON NEWS

WA1OJB Beacon information: The aerial is now a two-element collinear array, with the pattern favouring Europe. The frequency is still 50.066MHz.

Ron, FP5EK, who is the licensee for **FP5XAB**, reports that the beacon is not on the air yet, as he has chosen, but not yet purchased the aerial he feels is most suitable for his weather conditions. The

power output will be just over 15W and the aerial will be a horizontally polarised. After the winter bills are paid, he looks forward to having the beacon operating continuously in late April, or early May.

Jimmy ZB2BL informs us that, after a move of QTH, the beacon **ZB2VHF** will return in the next week or so (Feb 97). The beacon will be as before, 50.035MHz, 30W and a half wave vertical dipole. **ZD8VHF** (50.0325MHz) was copied at 2030z on Jan 5th in Jersey, the beacon was S5 for about 5 minutes.

LU and JA beacons were

December after a full overhaul/rebuild. GB3RMK is operational on 50.060MHz. Peter PY5CC reports good TEP conditions in December and heard the following beacons; V44K, J3EOC, YV4AB, HIOVHF beacons about S1 to S9.

News from ZS6VWB is that the **ZS8MI** 50MHz aerial has been severely damaged, the beacon is now QRT.

BEACON UPDATES

VP2EA is confirmed as being off the air. A new beacon came on line during late December,

NEW REGION 1 50MHZ BANDPLAN:

| | |
|------------------|--|
| 50.020 to 50.080 | Beacons. |
| 50.090 | CW centre of activity |
| 50.110 | Inter-continental DX calling frequency |
| 50.150 | SSB centre of activity |
| 50.185 | Crossband centre of activity |
| 50.200 | MS centre of activity |

reported in Pretoria, South Africa on January 1st between 0900 and 1100 UTC. **LU9EHF** (50.0155MHz, FF95) and **JA6YBR** (50.017MHz, PM51), were heard and identified by ZR6VE and other local operators. Calls were made on 50.110MHz CW but no response was heard. Signals were weak, 439-559, and it took some time for the beacons to be identified.

The **V51VHF** beacon was also heard in the same time frame with strong signals. The JA6YBR beacon peaked on a beam heading of 260 degrees and LU9EHF at 300 degrees. Another beacon was heard just above V51VHF but it was too weak to identify. (This all seems very strange but has been confirmed by Hal ZS6VWB).

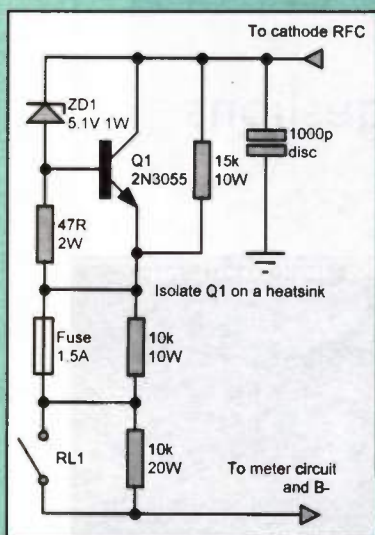
Chris GM3WOJ phoned in the following information; **GB3RMK** resumed operation on the 23rd

50.078MHz, **KE4SIX** EM83, 5W to a Ringo Ranger, 50.072MHz, W4IO is its new callsign, 50.080MHz, ZS1SIX is now changed to ZS1SES, VE3TWO, 50.885MHz, keyer not operational. **VE1PZ** is now QRT due to QRM, and finally **VE9MS** is now on 087 and now runs 10W.

Mark G0TYA comments on the Internet newsgroups, that in his opinion, the DX segment on 6m should be abolished, as 50.110MHz, the Inter-continental calling frequency, cannot be enforced. It is not enforcement that is needed, just education. Imagine if the higher bands produced the same sort of action, what a mess we would all be in. Bandplans have to be observed. I received over 30 emails regarding this subject, with virtually all of them agreeing that the VHF bands have to have calling/working frequencies.

3CX800 PSU ZENER

Several readers phoned in to say that they could not obtain the 5.1V zener for the 3CX800 50MHz amplifier project, but here is a solution. The circuit uses a 2N3055 power transistor and a low power Zener diode. I hope that helps.



6m amplifier Zener diode circuit

DOWN UNDER

Several long reports have been received from Adam VK3ALM, Steve VK3OT and Eric VK5LP, on the 50/144MHz Sporadic E season in Australia and New Zealand. More on their season next month, but here is a taster of what was worked:

7/1/97 1130 ZL4TBN
calling CQ VK6, Perth -
Melbourne opening on 2m at this
time. 7/1/97 1145 ZL3SIX
519. 7/1/97 1145 ZL Ch 1
45.240/250/260 video.
7/1/97 1145 ZL Ch 2 55.250
video.

7/1/97 1214 ZL4TBN.
7/1/97 1219 ZL3AAU.
6/1/97 long opening to ZL,
0800 ZL2MQ 58 RF80, 0804
ZL2IA 58 RF80, 0809 ZL2TPY
59+++ RF70, 1054 VK5ZBK 59
backscatter from East, 1530
ZL3SIX 529 still being heard
2 30am local.

That's all for this month, News
and views to Geoff Brown, TV
Shop, Belmont Rd, St Helier,
Jersey. C.I. fax/phone 01534
877067.



VK30T is active on 50MHz from 'down under'

OH2BUA'S 144MHZ CLUSTER PAGE

| | | | | | | | |
|----------|--------------------|--|-------------------|---------|------------------|--|-------------|
| D3JAE | 144131 0 SP8ACV | K011 c 40min | 1743 03 Jan | R829ZFV | 144200 0 R0R | hearing 4 sec burst | 1221 03 Jan |
| D8EBVV | 144119 0 1A4XGA | JP33 C20m 1b 1P 1'S5 | (J031)1735 03 Jan | D8N9B | 144200 0 D8N9D | clg cq 1591k | 1212 03 Jan |
| PAOCIS | 144115 0 RU1AA | C37/28 1b. mw cqr pse loc | 1731 03 Jan | D8WDV | 144100 0 1B7VX | GR2 without letter | 1215 03 Jan |
| G0FG | 144116 0 SP20FV | O93 > IO90 c 20mins | 1730 03 Jan | D8EBVV | 144300 0 EB4GIA | IN80 10' 59 (hd J031>) | 1211 03 Jan |
| CH9NYWV9 | 144100 0 D11UU | on random = 10 sec | 1708 03 Jan | Y03VAF9 | 144100 0 Y03DUW | clg mw cqr to dl | 1145 03 Jan |
| D11UU | 144100 0 1A1K | yes, changed reports mw on | 1001728 03 Jan | EATOCJ7 | 144300 0 D2GSAR | | 1203 03 Jan |
| DD0VF | 144107 0 1A1K | leaving b'd c our qso?? | 1724 03 Jan | D13BK | 144100 0 CH9NYW | hrd in J054 | 1201 03 Jan |
| IK1PA6D | 144000 0 SP4MVP | MY loc in 353p still confirm | 1720 03 Jan | NWSDAN | 144202 0 D8FVND | HWSD 59+ Burst 30sec | 1202 03 Jan |
| IK1PA | 144072 0 SP43AKV | JP02 10b 8p 10' 59 C #308 | 1717 03 Jan | EATOCJ7 | 144300 0 D14DFD | | 1157 03 Jan |
| IK1PA | 144000 0 SP4MVP | Tx for YOU at 21Z 1pwr 1.44 | 101709 03 Jan | H89D8M | 144112 0 SP43AKV | JP80 1b 38/38 ft ends | 1155 03 Jan |
| D11EX | 144106 0 SP4MVP | narescint Tru 20micm 1.5' 50 | 1709 03 Jan | D11UU | 144100 0 9H1CG | CQ without letter | 1155 03 Jan |
| 11WVY | 144205 0 DK2CO | PT 529 | 1706 03 Jan | GW7KTP | 144206 0 GW7KTP | cq mw 5s | 1150 03 Jan |
| G0FG | 144126 0 1A0BY | J059 > IO90 c 20mins | 1700 03 Jan | G15WH | 144200 0 D89YE | 39 | 1148 03 Jan |
| D11UU | 144107 0 1A1K | JP53 s9+30, in cqr wd DD0VF | 1654 03 Jan | DLSBAC | 144100 0 CH8ULV | KP34 cqr N | 1148 03 Jan |
| PA3JFY | 144200 0 HA7UL | | 1637 03 Jan | GW7KTP | 144200 0 EA3TI | | 1143 03 Jan |
| PA3JFY | 144200 0 EA6SA | | 1635 03 Jan | D8EBVV | 144215 0 CH8KLT | KP02 > 21UT Random!!! | 1135 03 Jan |
| DHSNBE | 144200 0 H80/HB9QG | /jn47sc | 1622 03 Jan | D89YE | 144200 0 MGGOC | clg cqr 30sec. refl | 1138 03 Jan |
| D89YE | 144200 0 1BAPO | 29/29 ft | 1622 03 Jan | H89SNR | 144212 0 H89SNR | cqr 30mq | 1127 03 Jan |
| D89YE | 144200 0 1K4VIV | topo 55qsb clg d0ear>j041gy | 1625 03 Jan | D11UU | 144203 2 SW7WVT | CQ second Per | 1125 03 Jan |
| DLSGAC | 144199 0 H80/HB9QG | /CQ MS | 1619 03 Jan | D40DTU | 144100 0 1B7VX | | 1113 03 Jan |
| DHSNBE | 144200 0 1K4VIV | | 1616 03 Jan | IKSEHR | 144200 0 D89VX | 37/37 > n53lu C | 1115 03 Jan |
| D3JAE | 144133 0 SK0HD | j068 c sked 15min | 1617 03 Jan | GBXK | 144203 0 4YNO | 38+ | 1107 03 Jan |
| PA3JFY | 144100 0 1A1K | hrd, str cluster problems | 1616 03 Jan | D89YE | 144112 0 SP43AKV | JP80 10u sigs c l | 1109 03 Jan |
| D12FD | 144310 0 DLOES | SDOK HES 50 IN J0404J OP g nse 1612 03 Jan | 1612 03 Jan | ON7UC | 144100 0 TK5J | cqr 1fb refl | 1104 03 Jan |
| DD0VF | 144200 0 EA6SA | | 1548 03 Jan | D11UU | 144099 7 SP43AKV | CQ F | 1103 03 Jan |
| DD0VF | 144200 0 NV5AVM | | 1547 03 Jan | ON1AEN | 144200 0 4XCC | 39 R39 | 1056 03 Jan |
| D81DCN | 144112 0 SP43AKV | 38/R38 max 28sekt, C | 1545 03 Jan | GOKAS | 144110 0 TK5J | 27 | 1059 03 Jan |
| D3JAE | 144153 0 SP43UZS | JP92 nwr qiz wff refl | 1542 03 Jan | 1K4VY | 144000 0 1K4VY | svt test | 1051 03 Jan |
| NV50AN | 144198 0 GBXK | Hrd very strong JN53 | 1544 03 Jan | GW4CXM | 144199 5 SP43AKV | 10' 59+ in IO75 | 1054 03 Jan |
| D11EX | 144147 0 F6CPR | super 10micm 13sekt 57 l | 1534 03 Jan | D11EAP | 144100 0 DD0VF | qvr 28sekt 88 | 1051 03 Jan |
| NV1BCV | 144100 0 NV1BCV | agn cqr at 3000p | 1531 03 Jan | IKSEHR | 144200 0 D89MS | 39/37 > n53lu | 1052 03 Jan |
| GOKAS | 144110 0 TK5J | LOC ? | 1532 03 Jan | VE9AA9 | 144200 0 VE9AA | 450 125 cqr MS from hrd5n | 1045 03 Jan |
| NV50AN | 144198 0 GBXK | Hrd very strong JN53 | 1530 03 Jan | GMOCIN | 144199 2 SP43AKV | 4' in IOB5MX | 1040 03 Jan |
| ON1DOR | 144360 0 G0FG | 59+ j090U | 1526 03 Jan | DLSGAC | 144202 0 D2A9HA | 57 C/GSO | 1041 03 Jan |
| D89YE | 144109 0 SP43UZS | (JP92 new loc agn cqr mw) | 1532 03 Jan | D40DTU | 144110 0 TK5J | 137/27 | 1041 03 Jan |
| GBXK | 144200 0 4M3IQ | 38/38 59+----- | 1522 03 Jan | 1K4VY | 144000 0 1K4VY | svt test | 0939 03 Jan |
| DD0VF | 144157 0 GBECI | J003 2'S7 C my last G-square | 1519 03 Jan | D8EBVV | 144199 3 8AMP | JN70 25'S9 (hrd J031>) | 1037 03 Jan |
| NV1BCV | 144119 0 D2GV | 28/27's c jn47 73 | 1520 03 Jan | F6DIO | 144200 0 D89YE | 29 complete | 1034 03 Jan |
| PDOHCV | 144300 0 9H1CD | as is in j031lw | 1521 03 Jan | D8EBVV | 144199 2 D89E | J043 5'S7 Backsc (hrd J031>) | 1029 03 Jan |
| NV50AN | 144198 0 F6EAM | 37/37 only 1 burst | 1520 03 Jan | D11KDA | 144100 0 SP43AKV | JP80 mw B&P 20'S9 mdl #304 C | 1027 03 Jan |
| V5WAS | 144200 0 1NAUK | SC EM84**>EWA4 KEN 5/8 | 1511 03 Jan | D8EBVV | 144199 2 8AMP | JN44 5'S99 (hrd J031>) | 1026 03 Jan |
| NV1BCV | 144119 0 DHZUD | 27/27 c jn44 trs 73 | 1510 03 Jan | D8EBVV | 144199 2 K11GV | JN44 5'S99 (hrd J031>) | 1024 03 Jan |
| H89FAF | 144200 0 HBMPQ | 37/37 20sec now CI | 1506 03 Jan | GMOCIN | 144200 0 4XCC | 8 sec burst in IOB5MX | 1019 03 Jan |
| IK1PA6D | 144000 0 SP4MVP | col you at 21Z 144.106 1th | 1504 03 Jan | D11UU | 144100 0 TK5J | CQJ | 1019 03 Jan |
| D11UU | 144100 0 CH9NYW | | 1459 03 Jan | IKSEHR | 144200 0 PA3JFY | 37/37 jm 73 | 1018 03 Jan |
| D11UU | 144109 5 SP43UZS | CQ JP02 | 1454 03 Jan | D11EAP | 144100 0 CH6MAZ | loc KP22WVG | 1017 03 Jan |
| GOKAS | 144119 7 11JTJ | 10' 55 | 1450 03 Jan | DH8UD | 144115 0 CH6MAZ | R28/27 Random C 10 | 1010 03 Jan |
| DD0VF | 144199 2 YU1VG | 27/27 UFB REFL LOC 2 | 1455 03 Jan | PA3JFY | 144200 0 KSEHR | r37/37 | 1014 03 Jan |
| GOKAS | 144112 0 SP43MVR | 2'S5 qrt 210 | 1446 03 Jan | D89YE | 144201 0 MVI4Z | 9h1 log 4clg | 1011 03 Jan |
| D11KDA | 144125 0 EU6MS | K045 10b 8p 25' 59 C #307 | 1443 03 Jan | D89YE | 144200 0 EA3DUJ | also 9h1 qg, no2to hrd | 1007 03 Jan |
| GOKAS | 144112 0 SP43MVR | 37/RR37 UFB REFL C | 1430 03 Jan | D89YE | 144200 0 EA3DUJ | 49 > n41 J99 | 1005 03 Jan |
| ON1CIC | 144310 0 G7HEX | 54 j001pc | 1430 03 Jan | GW4CXM | 144200 0 4XCC | 8p | 1001 03 Jan |
| GOKAS | 144112 0 SP43MVR | 37/RR37 C UFB REFL | 1434 03 Jan | D11KDA | 144107 0 CH8ULV | KP34-JY30 4p0b 13' 52 C mdlm | 1003 03 Jan |
| ON1CIC | 144310 0 G7HEX | 54 j001pc | 1430 03 Jan | GOKAS | 144201 0 4XCC | V5 STRONG | 1003 03 Jan |
| GOKAS | 144112 0 SP43MVR | 37/RR37 UFB REFL C | 1430 03 Jan | GW4CXM | 144200 0 D89VE | 2s | 0958 03 Jan |
| D6JWD | 144110 0 TK5J | r27/37 C | 1425 03 Jan | D11UU | 144100 0 SW1B8A | CQ F | 0959 03 Jan |
| D3JAE | 144153 0 IT9VDQ | 12min c ubt refl in JN49 | 1415 03 Jan | D11UU | 144100 0 CH6MAZ | CQ O | 0959 03 Jan |
| DLSBAC | 144200 0 EA2LU | | 1412 03 Jan | PA3JFY | 144200 0 MVDUC | 37/37 suffic udc/ugc???? | 0955 03 Jan |
| EB3EQM | 144300 0 PA0P3Z | IN JN12FE | 1401 03 Jan | IKSEHR | 144200 0 D89YE | ms r27 37 big signal | 0955 03 Jan |
| H89FAF | 144200 0 EA2LU | 37/27 single burst qso | 1411 03 Jan | D8EBVV | 144198 8 KSEHR | JN53 10'S7 (hrd J031>) | 0951 03 Jan |
| NV50AN | 144198 0 ON4NANT | Hrd 15s, rel | 1414 03 Jan | DD0VFJ8 | 144100 0 9H1CG | CQ without letter | 0942 03 Jan |
| ON1AEN | 144200 0 EA2LU | 37 REC R27 | 1410 03 Jan | D8EBVV | 144199 9 1BAPO | JN70 15'S9 (JY3031>) | 0941 03 Jan |
| DLSBAC | 144106 0 SP4MVP | K003 | 1407 03 Jan | GOKAS | 144198 0 4WCC | 37/RR37 C | 0939 03 Jan |
| GOKAS | 144106 0 SP4MVP | LOC? | 1405 03 Jan | DD0VFJ8 | 144099 5 DL3RAV | weak backsc. cq in 15fter | 0936 03 Jan |
| GBXK | 144200 0 CT1DMK | 28 LOC ? | 1356 03 Jan | OEOHGF | 144100 0 DK5KX | cq e 8' 59 | 0931 03 Jan |
| D11EAP | 144200 0 SP4MVP | 37/RR27 GUD REFL | 1358 03 Jan | D8EBVV | 144198 9 4WCC | JN63 15'S99 (hrd J031>) | 0923 03 Jan |
| D11EAP | 144173 0 U3APTW | K093 C26/R26 9b 2100kml | 1350 03 Jan | DF1SO | 144000 0 D11KDP | KN12QP in vhf/1mtr 1.4 345 ms/sk | 0915 03 Jan |
| DK8ZJ | 144161 0 J07DFA | K050 27/RR26 C 2351km | 1349 03 Jan | D11EAP | 144100 0 TK5J | and 1B7VX Burst>0sec/s91 | 0910 03 Jan |
| GBXK | 144200 0 F1CBW | 39 LOC ? | 1345 03 Jan | GW4CXM | 144200 0 MVI4Z | 3s burst | 0900 03 Jan |
| ON1AEN | 144200 0 4YNO | GOOD REFLECTIONS | 1345 03 Jan | D89YE | 144200 0 553W | give me 57 rpt 1 | 0859 03 Jan |
| H89FAF | 144153 0 IT9VDQ | 27/26 ubt refl 10min C | 1341 03 Jan | NV1BCV | 144120 0 DHZUD | 27/27 NC NE 11111 | 0855 03 Jan |
| NBZIN9 | 144210 0 AAOXB | EN405-EM79 | 1319 03 Jan | PA3JFY | 144200 0 K11GV | r37/39 | 0846 03 Jan |
| PA3JFY | 144200 0 EA2LU | 39/27 | 1335 03 Jan | D89YE | 144200 0 K11GV | 1 burst fbs alscap33ly | 0848 03 Jan |
| PA3JFY | 144203 0 F5SOH | 39/39 | 1331 03 Jan | DH2UD | 144100 0 553W | JN65 10' 57 hrd J044 | 0837 03 Jan |
| PA3JFY | 144200 0 F1VBW | 39/37 | 1330 03 Jan | D89YE | 144100 0 4XCC | 49 vto ms fbs refl in an200 | 0840 03 Jan |
| DH3YAK | 144112 0 SP43MVR | JP80 C 20'S9 nwr CQ | 1330 03 Jan | D11KDA | 144100 0 4XCC | JN63 m QTF 60dkg big bursts | 0828 03 Jan |
| D8EBVV | 144201 6 CH5UK | KP30 fb (hrd J031>) | 1328 03 Jan | PA3JFY | 144100 0 4WCC | coming in fto topo 91111 | 0804 03 Jan |
| IKSEHR | 144202 0 DFOVD | r27/27 C > JN53FU | 1326 03 Jan | DD0VF | 144100 0 1B7VX | JN64 10'S2/27 hrd CQT | 0802 03 Jan |
| GA4PD | 144300 0 DL3AB | 59 ms t092 | 1321 03 Jan | VE9AA9 | 144144 0 NBZIN | em79>h05 imprints sced, QSO1 | 0616 03 Jan |
| ON4AY1 | 144000 0 LOC | of oh5lk is loc30cn | 1318 03 Jan | D11KDA | 144110 0 554AA | JN76 J030 9b 12p 3' 55 C 27/20 545 ms/sk | 0610 03 Jan |

DATA CONNECTION

Chris Lorek G4HCL offers a few suggestions on getting linked together

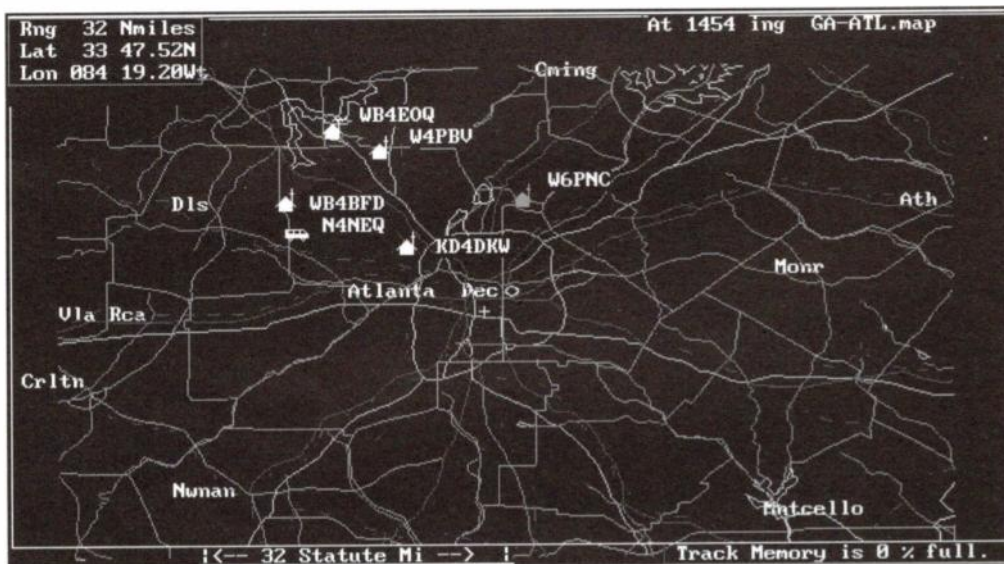
I'll start off this month with an Email I received from Alex Cockell from Exmouth. Alex isn't licensed but he actively reads the magazine and from his Email he's certainly interested in finding out more about our hobby. My thanks for your contribution and ideas Alex, which I hope will be of interest to 'Data Connection' readers in provoking some thought. Alex writes;

"I'd like to ask a few questions about the possible gatewaying of Amateur Packet Email services with others.

"I am not a radio amateur, but I would be interested whether the ham community has approached the idea of running Ham to Internet mail-only gateways (SMTP to whatever you use). I would reckon that this could be the next stage discussed, along the road to greater integration of the comms services, as there are discussions apparently going on in the CB community as to rolling out Packet Radio there. This could extend the community idea of the Net before it gets taken over completely by big business.

"Might it be possible or feasible to do this in the future, since the outcomes could be very beneficial. Web searches could be brought back by Email from Agora engines, people could discuss without a view to whether they are on CB, Ham, a local LAN onto a high-speed line, or via a commercial user of a dial-up service.

"Tacking them onto the Internet would be no problem at all, as the Net as you know was originally UUCP-Net, Arpanet, BITNET, CSNET, CYPRESS, and a whole



A typical APRS map display, showing locations of packet stations

load of others. Adding on HAMNET and CBNET would be no problem at all. I am wondering why the radio authorities do not want this. Surely the easy passage of information could be facilitated.

Alex concludes by saying "I would like to learn more."

Well Alex, there are already a number of 'gateways' in existence linking amateur radio digital modes, primarily packet radio BBSs (i.e. similar to Email and newsgroups), and the Internet. These are mainly US based, although there are a number of 'one-way' gateways in the UK run by amateurs who allow Internet access to their amateur radio packet BBS, as our licence conditions currently don't allow unrestricted and/or unattended operation of our station by non-licensed users. In terms of digital voice links, I've detailed the

Repeater Link software, which is an extension of *Iphone*, in this column before. This allows Internet speech links via remote amateur radio FM repeaters, again primarily US based, where such 'remote autopatches' are allowed when they are under the control of the remote station operator.

But what do other readers think? Is this a natural progression, or not? Please let me have your thoughts on this, by Email, packet, or whatever, I'll gladly share them via these pages.

APRS USE IN THE UK?

In the US, the Automatic Packet Reporting System, APRS, is 'big'. Amateurs are driving around with their mobile packet TNC and transceiver combinations linked to

GPS receivers, transmitting their positions to other amateurs and listeners. Fixed stations beacon their position to others, all in order for a large 'packet map' to be built up over not just a given area, but even nationwide. There's even activity on HF using this. APRS map overlays are available for many areas, and each month more and more become available. But APRS doesn't seem to have caught on in such a big way over here for some reason. It has been very successfully used for Raynet communication in the past in the UK, as I've reported in these pages, although this was admittedly a specialist application. Maybe we individual amateurs simply just enjoy our privacy a little more?

I've used APRS software myself on packet radio in the past, and it's really interesting to see a local

'map' of packet stations slowly build up on my PC monitor screen! Many current TNC software versions have the ability (sometimes this is even the 'default') to send their position information in the ID or beacon text

As packet develops and expands, maybe we'll be seeing a reversal from primarily BBS use to, once again, 'real time' packet QSOs (does anyone else remember the 'good old days'?). Maybe APRS could offer just this incentive to 'get going' again. If nothing else, it would act as an indication that you're active, in the shack, and 'on the air' waiting for a chat.

What's undoubtedly needed is an agreed 'simplex' or 'direct' channel for such activity. Has anyone an idea on this? Or is this already in the 'master plan' for the new 2m bandplan? Feedback would be welcome! Maybe we could get something going?

APRS SOFTWARE

There are excellent APRS programs available for both

information, text files, and ready-made maps. I've also collected together a number of additional UK and European maps for APRS which include, besides all of the UK, regional maps for Kent, the North West, Cheshire, Liverpool, the Irish Sea, Cumbria, N. Ireland, and Penrith. I've put the whole lot together in self-extracting form on a single 1.44Mb PC disk (which expands to over 3Mb of files), and I've arranged for copies to be available as a service to readers as an additional disk in this month's software offer service, for a 'cost-only' price of £2.00 which includes the disk, UK p/p, and VAT. See the 'Software Offer' elsewhere in the magazine for info on how to get your copy if you're interested.

MAXPAK CELEBRATES 10TH BIRTHDAY

This year MAXPAK, the Midlands AX25 packet group, celebrate their 10th birthday, which makes me think they must have been one of the first 'formal'

the coming rally season - watch out for them at the Wythall Rally on the 9th March and the MARS Drayton Rally on the 11th May.

The group hold meetings at the Perton Centre, near Wolverhampton on the first Monday of each month, often with outside speakers and/or demos arranged, so why not pay them a visit if you live in the area? You can get further details from their Membership Secretary Richard G1NZZ, by packet @ GB7MAX or Tel. 0973 262287 evenings/weekends.

GETTING INTO TCP/IP

I'm often asked for more information on TCP/IP, and for recommendations on how to get started. This has often been described as the "Internet of amateur radio", and is becoming of greater interest to amateurs each week. In this respect, the *Why? and How? of TCP/IP* is a book which I've detailed in this column in the past. It's been put together by David Norris G4TUP in order to give a guiding hand to the newcomers, helping them easily create their own fully-working TCP/IP system.

The book starts with "Why TCP/IP", and gives a breakdown of why the TCP/IP protocol was created and an explanation of its rugged nature. A number of 'worked examples' are shown throughout the various chapters, without extraneous comments or commands that the reader would, at the time, possibly be confused with, to give a 'clear view' to guide the amateur in setting up their own system. Continuing on, the book goes through on-air operation, leaving little doubt as to how TCP/IP should be used correctly. There's a 'Question and Answer' chapter, and a 'Quick Reference' section helps with an easily-accessible guide to the many commands. This guide has been written particularly for newcomers to the mode, is £5.95 including UK p/p.

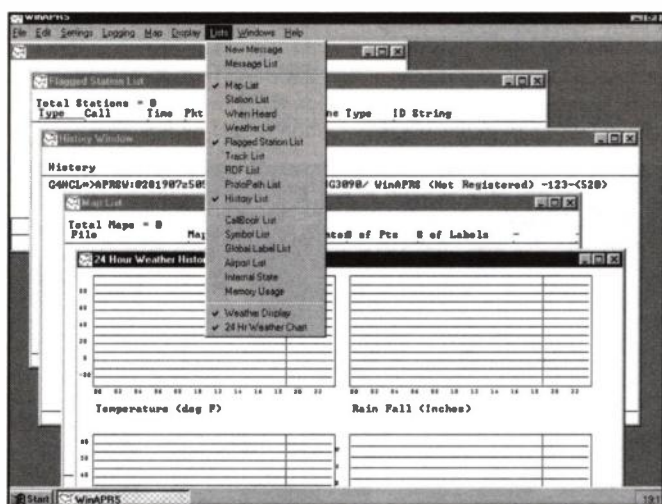
For those who've possibly already read the 'Why? and How? of TCP/IP', or have already started in the mode, there's now a second book from the same author. This is aimed at

the newcomer who has already become active with TCP/IP on the air and wants to delve more into files, commands and different protocols. Again written with a number of examples aimed to help you 'get going', *So You Want More? Of....* takes the newcomer into the more advanced stages of using TCP/IP, by going thoroughly through various files and technical commands. The areas of NNTP, POP3, SMTP, TNC optimisation, SLIP, the 4-port USCC card and ETHERNET are covered in detail for example. The 'What? For the Future...' chapter details the new protocols of HTTP, JAVA and Shockwave, whilst another tells how to compile your own version of the NOS program.

So You Want More? Of.... is a 46 page A4 sized comb-bound offering, and is priced at £6.95 including UK p/p if ordered at the same time as the first book, or separately at £7.95. Both books are based on the popular JNOS program and a PC. To order, send a cheque or PO to: David Norris G4TUP, 148 Sefton Street, Southport, Lancs. PR8 5DA (EU add 75p, rest of the world add £1.25, per book)

CTRL-Z, END OF MESSAGE

That's all I've room for this month. As usual, please do send me your news, or ideas for what you'd like covered in this column. You can contact me by fax, Email or post via the HRT Editor, or via packet with a message to G4HCL @ GB7XJZ.#48.GBR.EU

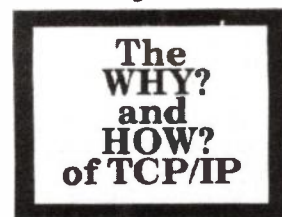


APRS for Windows offers several communication 'Window' facilities

Windows and DOS on a PC as well as for the Macintosh, indeed one has been distributed in the Ham Radio Today software service in the past. If you're interested in more, then read on! The latest DOS and Windows versions for the PC are currently, as I write this, version 7.7e for DOS and version 1.2.3 for Windows, which include a whole host of extra and background

regional packet groups in the UK. They've gone from strength to strength, and now help to look after a number of packet nodes as well as the GB7MAX BBS. Their committee and members man their stand at a number of rallies in the Midlands, and the group believe that 1997 will be the year that 9600 baud packet starts to really 'take off'. They thus hope to have this on demonstration throughout

So you want more? of...



DAVID NORRIS
G4TUP

A guide to TCP/IP can be invaluable.

HF HAPPENINGS

Don Field G3XTT reports on the latest from Heard Island

The New Year started with some excellent low band conditions, but with dismal propagation on the higher bands. So that, for example, Carlos TI4CF who went off to the Cocos Islands, signing TI9CF, was easily workable from the UK on 160, 80, 40 and 30 metres, but harder on 20 and, as far as I know, not reported at all on any of the higher bands. The morning of 11th January was especially good on 160 metres. In an hour I worked eleven west coast North American stations in W6, W7 and VE7. But perhaps most interesting of all was a contact I made with K1HTV in Maryland who was running just 1 watt! Although he was very weak, we had a perfectly good exchange of reports and information.

1AOKM, the Knights of Malta, was active over the Christmas period, with good signals into the UK on all but the highest bands. JH1NBN also put in a very welcome appearance as TN7A from the Congo, and was worked on several modes on SSB and RTTY.

Clive Penna GM3POI reports working all US states including Hawaii and Alaska on 160 metres during the weekend of the ARRL 160m Contest in December. This is a truly remarkable achievement, and is tribute to Clive's operating as well as the excellent lowband conditions we have been experiencing recently and, of course, to the benefit of a quiet northern location (in this case on the Orkney Islands) and a great aerial system. After 28 years on the air I still don't have all states on 160, Idaho being my bete noir.

HEARD ISLAND LATEST

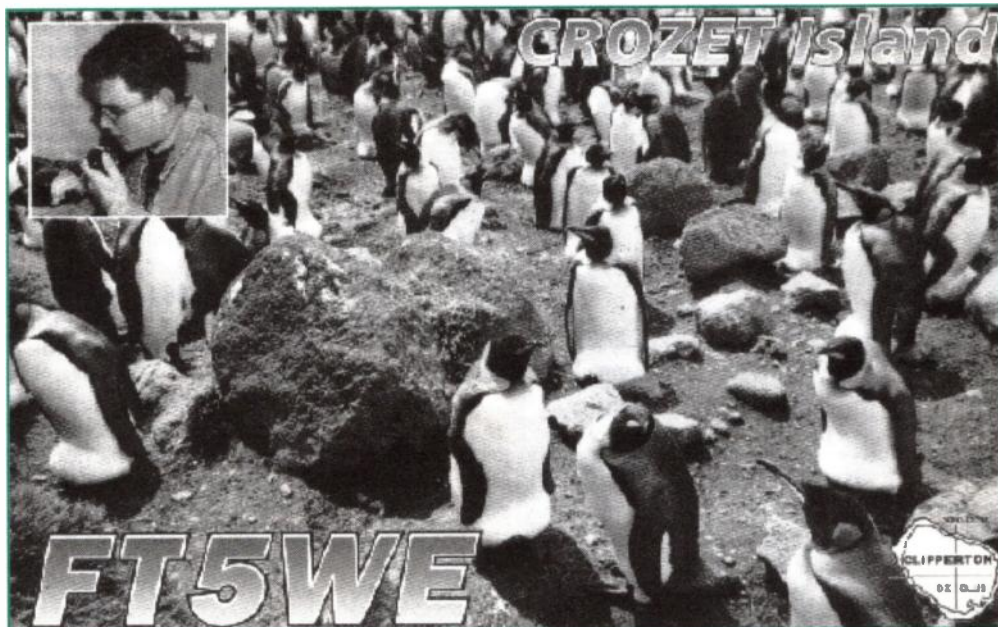
As I write this the team has arrived at Heard Island and is busily setting up camp. They arrived on Saturday 11th January, and in 5 hours and 51 helicopter trips took all 30 tons of equipment safely ashore and set up the beacon transmitter. This is all rather more civilised than the rigours the previous expeditions incurred in going ashore, but the cost of achieving this sort of sophistication is also high, of course. The team is aiming to set a record for the maximum number of contacts made by a DXpedition, with a target of 100,000! They planned to start operations a couple of days after landing, with six stations firing up simultaneously to take the heat

out of the early pile-ups. As ON6TT put it, in a fax to pilot station ON4UN announcing their arrival at the island, they intend to 'kick ass'. So by next month's column I expect to be able to report on their success.

But even at this stage it is fascinating to reflect on what the team has already achieved. They were able to operate from Reunion Island as TOOR prior to embarking for Heard, and focused on 160 metres and RTTY (Radio Teletype) operation during that period, with good results. The operation was used to test out some of the equipment and capabilities that the team will be exploiting on Heard Island. I particularly appreciated the way the logs were uploaded to Internet so that I was easily able to confirm that my 160m contact was OK in the TOOR

log. I am sure this facility will be useful in minimising unnecessary duplicate contacts once the team is active from the island.

Plans to operate from Crozet Island (FT8W) had to be abandoned when the crew of the Marion Dufresne, taking the team to Heard Island, went on strike in Reunion for two days in sympathy with a French seaman's strike. In the event it actually meant they got to Heard earlier, by cutting out the stop, but it just goes to show that even with the most meticulous planning there are some things over which it is impossible to have control! Fortunately FT5WE, who has been operating from Crozet for the past year or so has done a good job in reducing the demand for that one on most bands. But he has now



QSL card of FT5WE, who has been operating from Crozet for the past year or so. He has now completed his tour of duty, so we can expect Crozet to start working its way back up the most wanted list.

completed his tour of duty, so we can expect Crozet to start working its way back up the most wanted list.

The Heard Island team's World Wide Web pages also carried lots of useful background reading, such as biographies of team members, details of operating frequencies, a copy of the team's policies and operating practices, photographs of the team at Reunion Island, and so on, as well as daily progress reports on their progress.

I also noticed that OH2BUA had added a new option to his WebCluster pages on Internet, allowing download of the latest VKOIR 'spots' and 'announcements', pulled from PacketClusters around the world. Also, the Heard Island Reflector on Internet is allowing amateurs throughout the world to ask questions, pass on information about likely band openings, and so on, all of which is collated by team of pilot stations, headed by ON4UN, and forwarded to the island. Data links to and from Heard Island will be by Oscar satellite, only resorting to commercial satellite circuits if there are problems with the amateur satellite.

Incidentally, I wonder whether any of you noticed that British yachtsman Tony Bullimore, rescued from his upturned yacht in the southern ocean, mentioned several times in his press interviews that he had sailed within five miles or so of Heard Island shortly before capsizing. I can't imagine that many newspaper readers would have had a clue where he meant, whereas all *HF Happenings* readers would, of course, have known immediately!

SPLIT OPERATION

In anticipation of the Heard island operation, Andrew K4HQ posted a plea on the Heard Island Reflector, asking how he could be expected to work the expedition when his elderly TS-820 transceiver has no facility for split frequency operation. The expedition will, as a matter of policy, operate 'split' in order to avoid chaos on their own

frequency, which would only slow down the rate of making contacts. Of course, Andrew's problem is nothing new, as split frequency operation has been common for expedition operations, especially major expeditions, for 20 years or more. It wasn't even an issue when I was first licensed in the 60's, as most of us were using 'separates', in other words a separate receiver and transmitter. The idea of a transceiver, with both in the same box, was relatively new, and still rather frowned upon by the aficionados, rather like buying an all-in-one hi-fi system might be today.

The early transceivers had only one VFO, and some provided no RIT, so even limited split operation was impossible. This didn't stop one friend of mine getting a high country score using an old FT-200 transceiver, spinning the VFO back and forth between 'overs', and asking the DX operator to hold on a second or so before transmitting. For most of us the solution was to keep a second receiver in the shack (I owned a succession of World War II surplus and, later, Eddystone and other receivers), or eventually to buy an external VFO for the transceiver to give exactly the same facility that most (all?) HF transceivers now offer as standard.

If any of you, however, remain in Andrew's position of being unable to work split, rather than expect the expedition to accommodate you, beg, buy or borrow an external VFO or separate receiver the next time a major expedition comes on.

Incidentally, there is nothing new about split operation. In the past it was the rule rather than the exception, with many operators using crystal-controlled transmitters for stability, and tuning round the bands for calls. I well remember, before I was licensed, listening in the mid-60's on an AR-88 receiver we had in the school Cadet Corps to US stations on 10 metres calling CQ and indicating which part of the band they would be tuning for replies (and most of them were on AM, rather than SSB, as well!).

1A0 - SMOM

As I said above, station 1AOKM was once again active over the Christmas period, giving out a DXCC 'country' counter to many callers (I was able to catch them on RTTY for a new one on that mode). But, you may quite reasonably ask, how can a villa in Rome count as a country?

SMOM, or the Sovereign Military Order of the Hospital of St. John of Jerusalem, of Rhodes and of Malta, traces its history back to the 11th century when a group of Catholics from Amalfi near Naples established a hospital in Jerusalem for Crusaders and pilgrims. The Order received formal recognition from the Pope in 1113, making it one of the oldest lay Catholic orders.

However, its subsequent history was mixed, to say the least. Of necessity it became a military order in due course, and its armed knights were of noble birth. However, the Knights were driven out of Jerusalem in 1187 and, about 100 years later, they left the Holy Land completely, reestablishing themselves in Cyprus. In 1309 they conquered the island of Rhodes which they ruled for the next 200 years, only leaving there when defeated in battle by the Turks in 1522. After eight years without a base, in 1530 Charles V of Spain gave them the island of Malta, where they continued to run their hospitals until the late 18th century, when Napoleon seized Malta and the Order once again had to flee. The convent was moved to Trieste in 1798 and to Rome in 1834, but the order went into decline during this period until it was reestablished in 1879 by Pope Leo XIII. It has continued to operate since then, maintaining the St. John Ambulance Association (whose eight-pointed symbol is, of course, the Maltese cross) and other health-related activities, based out of several properties in Rome including the two and half acres at Villa Malta on top of one of Rome's seven hills, from where the various 1AOKM operations have taken place. Current SMOM membership is around 13,000 and, most importantly for our purposes, the Order has 'the

status of sovereignty among the world of nations' with diplomatic ties with 49 countries. It is this sovereignty and diplomatic recognition that were the basis on which the ARRL recognised SMOM as a 'country' in 1981.

Although an easy country to work from the UK, with excellent skip on all bands, SMOM remains a tough one for the Americans and the Japanese. Amateurs are only allowed occasional access to SMOM property, there are tough restrictions on the kind of aerials which can be erected, and overnight operations are frequently prohibited. Whether SMOM would make its way onto the DXCC list under present criteria is a moot point but, now that it is on the list, it looks as though it is there to stay.

By the way, a photograph of the 1AOKM QSL card appeared in this column in October 1994.

(For the previous historical information, I am indebted to the October 1994 issue of *CQ Magazine* and to the always invaluable Microsoft Encarta encyclopaedia).

CHILTERN DX CLUB

The Chiltern DX Club now has a Home Page on Internet, thanks to Steve G4UOL. Point your browser at <http://www.g4uol.demon.co.uk/cdxc.htm>

Finally, my usual request for input. When I see *Ham Radio Today* readers at conventions I frequently get favourable comments and useful feedback on this column, which I very much appreciate, but the amount of correspondence I receive is very small. I am always interested in whether I am covering the right topics, and I particularly welcome photographs and news of HF interest. If any other magazines are giving better coverage, then where am I falling down? Write, fax, or Email via the Editor (contact details each month in the 'Who's Who and What's What' section) or direct by post to me at 105 Shiplake Bottom, Peppard, Henley on Thames RG9 5HJ. Alternatively, why not Email me direct at 100646.2344@compuserve.com 73 de Don.

SATELLITE RENDEZVOUS

Richard Limebear G3RWL reports on the last days of Oscar 13 in this month's AMSAT-UK news

Graham Ratcliff, VK5AGR, of the AO-13 command team, heard AO-13's Engineering Beacon cease transmitting on 24th November at 0538:16 UTC. On December 5th, at approximately 0900 UTC, AMSAT OSCAR-13 re-entered the Earth's atmosphere and burned up.

AMSAT OSCAR-13 was launched on June 15th, 1988, into a highly elliptical orbit on board the first test flight of the new European ARIANE 4 rocket. AMSAT OSCAR-13 had been constructed within four years by an international project group under the leadership of Dr. Karl Meinzer of AMSAT-DL.

During its operational period, AMSAT OSCAR-13 was monitored and controlled by a group of ground stations in Germany, the United Kingdom, Australia, New Zealand and the US. Prior to re-entry, the on-board monitoring system had transmitted much data relating to the satellite's behaviour in the upper atmosphere.

Note; the underlying cause of the AO-13 destruction was *not* atmospheric drag. The decay of the orbit was caused by the gravitational attraction of the Sun and the Moon. The elliptical orbit was stretched so that the satellite gradually approached the Earth which lies at one of the two focal points of the ellipse.

Such orbits are inherently unstable because of the gravitational effects of the Sun and Moon. Just like the tides in the ocean, the satellite is 'nudged' gently by the Sun and Moon twice per orbit.

This phenomenon motivated AMSAT to develop new analytical

and computational methods to allow long term predictions for future satellites in similar orbits.

The last days of AO-13's life were quite interesting, with temperatures rising suddenly at perigee until the temperature rise exceeded the range of the sensor. Subsequently the solar panels failed, one by one, and eventually there was insufficient voltage generation to run the spacecraft (we think the heat either cracked the cells or melted their solder).

This last message came from AO-13 a few days before it lost the ability to send telemetry:

M QST de AO-13 BIRTH ANNOUNCEMENT 1996 Nov 20 0240 EST My child, P3D, began 'thinking' today when its IHU was activated. I'm glad I lived long enough to learn of this wonderful event. I wish P3D a long, functional life. Do not grieve for me when I'm gone. I'm only metal, plastic, & sand. My 'life' came from enriching the lives of those who built, commanded & utilized me, and it's been a good 'life'. Danke Karl, et al. No regrets. The baton will soon be passed. AO-13 signing off....

Heartfelt thanks are due to all those who made AO-13 such a tremendous success. From the integration and design team, to those in the command team who spent countless hours trying to make it through one more orbit - Thank you fellahs. I had to smile, though, when an Amsat-Italy member claimed that G3RUH had fired the rocket motor to bring the spacecraft down at exactly the predicted time so that he could win the 'chicken little' competition. (He was joking.)

RUSSIAN SATELLITES

During a recent Mir spacewalk by cosmonauts Valeri Korzun and Sasha Kaleri, the Mir amateur radio aerial was damaged. This only affected the 2m voice and packet operations, not the Priroda SAFEX operations. They repaired it during a later EVA.

70cm operations continue with the repeater on most of the time, but the digitaler was heard for a while, with the message repeating about every two minutes.

DIGITAL/ MICROSATS

It was recently observed that **UO-11's** spin period was non-nominal. Ground controllers at Surrey checked the magnetorquers that are used to control the spacecraft attitude; both the X and Z torquers were found to be operating correctly, but the Y torquer appears to have failed. The Y torquer is used for maintaining the spacecraft spin period at approximately five minutes per revolution, this failure therefore prevented the OBC from controlling the spacecraft spin rate. New flight software has now been uploaded that uses the X magnetorquer for spin control, instead of the Y magnetorquer.

The magnetorquer on **UoSAT-2** is controlled by a relay and it is assumed that the probable failure mode is that the contacts have failed or the magnetorquer coil has become open circuit. UoSAT-2 was launched from Vandenberg Air Force Base in the United States in March 1984, and has operated successfully for over 12

years, completing over 68,000 orbits of the Earth.

WO-18 remains in good condition. Commanders have completed the initial reload and the satellite is now broadcasting telemetry frames every 15 seconds. The remaining software modules will be loaded soon, followed by the resumption of photos and spectra.

Since November 2nd, the **AO-27** schedule has the TX turned on 8 minutes after the satellite enters the Sun for a duration of 18 minutes. AO-27's current Command Station reports he's deliberately letting the 'turn on' time drift later (for about 4-5 minutes), so stations in the southern latitudes can also have a chance to work AO-27. Every few months he will be letting the turn-on time drift like this, to give more stations a chance to make contacts through the satellite.

The Phase 3-D Integration Team successfully performed the first power-on testing of the spacecraft on November 16th. The prototype integrated Housekeeping Unit was installed in the spaceframe and attached to the wiring harness. Power for this test was supplied by two bench power supplies. The team used a series of tests to check out the G3RUH modem and the ground test umbilical cable which connects the spacecraft to the control computer.

The next electronic modules scheduled for checkout are the Battery Charge Regulators, which will be the first European made modules to be 'brought to life'. P3D has three BCRs as compared to only one in Phase-3C (Oscar-13).

Some information has trickled

out about the 24GHz equipment on P3D. The module is almost flight ready, its been under test for more than a year, and working perfectly. The configuration on the bird for now is 1 Watt into a 26dB Horn feed. The transponder will be 25 kHz wide. Ground stations are expected to need at least a 45 cm dish and a preamp, with an Noise Factor of 2dB or better.

A report released by the European Space Agency indicates the planned launch date for Phase 3-D; it will be on the next flight of the Ariane 5 booster, Ariane 502.

A detailed timetable for operations leading up to flight 502 has now been established. The launch campaign is now scheduled to begin on April 9th with the launch itself now planned for early July. (Ariane 503 has been scheduled for November 1997.)

Please remember that every month the launch is pushed back, it means more funds are needed as well!

OSCAR 10

It's still operational in Mode-B and currently available when in view, but **please do not** attempt to use it if you hear the beacon or the transponder signals FMing.

INTERNATIONAL SPACE STATION OPERATION

On November 4/5th an international conference was held at the NASA Space Centre in Houston, Texas, to map out plans for a permanent amateur radio presence on the International Space Station. Delegates from eight member nations (Russia, Japan, Germany, Great Britain, Italy, Canada, France and the United States) attended this meeting.

This meeting laid a firm foundation for the future of crew-tended Amateur Radio in space. The international delegates jointly developed a draft Memorandum of Understanding, to promote the development of Amateur Radio on the International Space

Station (ARISS). The primary goals of the ARISS international group are to provide for the planning, co-ordination and performance of amateur radio projects on the Space Station.

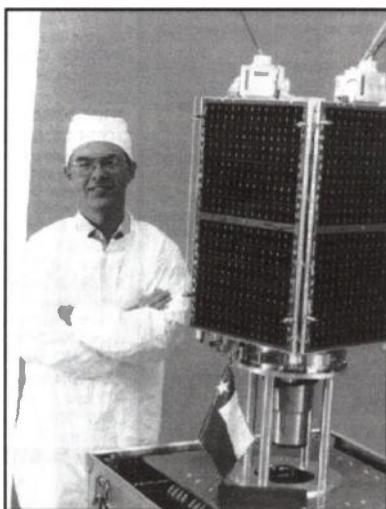
The Memorandum of Understanding is to be reviewed by the AMSAT and IARU organization in each of the eight countries for review and approval. This Memorandum, once signed, will solidify amateur radio's permanent presence in crew-tended space activities.

MONITORING SERVICE EXTENDED TO SATELLITES

At the recent IARU Region 1 Conference it was agreed that the IARU Region-1 Monitoring Service will include, on a trial basis, a system for the monitoring of the Amateur Radio Satellite Frequencies. The 1997 IARU International Satellite Forum will be held on Sunday 19 October from 09:00-12:00 in Toronto, Canada as part of the AMSAT NA Space Symposium. Details will follow later.

SOUTH AFRICAN CONFERENCE

SA AMSAT announce that their 18th Annual Space Communications conference will be held in Durban South Africa on Saturday 23 August 1997.



Professor Martin Sweeting, G3YJO, Professor of Satellite Engineering at the University of Surrey

G3YJO HONOURED

Professor Martin Sweeting, G3YJO, Managing Director of Surrey Satellite Technology, and Professor of Satellite Engineering at the University of Surrey, and Chairman of Amsat-UK, has received two honours: election to Fellowship of the Royal Academy of Engineering, and an invitation to join the Defence and Aerospace Panel of the Government's Foresight Committee, which advises Government on those areas of research needed to keep British industry at the forefront of new developments, and help it to maintain a competitive edge in world markets. Congratulations, Martin and SSTL.

1997 COLLOQUIUM

The 12th AMSAT-UK Colloquium will be held at Surrey University, Guildford, Surrey, UK, from Friday 25th to Sunday 27th July 1997. Since IARU will be at the Amsat-NA symposium, this year's event will comprise three days of technical matters only; there will be no 'political' subjects.

Amsat-UK invite authors to submit papers, about amateur radio space and associated activities, for this event. AMSAT normally prefer authors to present the papers themselves rather than having someone else read them in the authors' absence.

Abstracts of papers for presentation should be submitted as soon as possible. Submissions should be sent to myself G3RWL, via the following routes: *Internet e-mail: g3rwl@amsat.org Packet Radio: G3RWL @ GB7HSN.#32.GBR.EU Terrestrial mail: R.V.V.L. Limebear G3RWL, 60 Willow Road, Enfield EN1 3NQ*

AMSAT-UK also invite anyone with requests for Program Topics to submit them as soon as possible to G3RWL as above. All other enquiries about Colloquium-97 go to the AMSAT-UK office: AMSAT-UK London E12 5EQ.

The delay in the P3D launch means there is a bit more time for anyone who wants to contribute to the 'Callsign on Satellite' fund. £150 secures this.

Ron reports that sales are down this year - so buy something from Amsat-UK please. Wisp-32 (for Windows 95) is now in stock. Talk to Ron to re-register. The complete program costs £35 if you didn't download it from anywhere; it will also be commercially available from UoS (at commercial prices too).

For further information about Amsat-UK contact: Amsat-UK, c/o Ron Broadbent MBE, G3AAJ, 94 Herongate Rd, London, E12 5EQ. A large SAE gets you membership info. SWL's are welcome. All new joiners get the USAT-P tracking program on 5-1/4 disk.

KEPLER SOFTWARE

When a new year starts, so do the day-numbers in the Keplers; and some old tracking software refuses to cross between the years. A tactic to use in this instance, e.g. until 1996 Keplers are used, is to deceive the software by giving it a 1995 date; i.e. 2 January is 33 December etc.

Another problem comes in some software when the epoch contains spaces, i.e. '1996_4.xxxx'; the tactic here is to edit the kepler file before feeding it into the program, so that the spaces are replaced by zeros - extra zero's do not affect the checksum of 2-line elements.

Some amateurs still use 'old' tracking software which requires a sidereal time offset, and it is necessary to update it at the beginning of each year. The number for 1996 was 0.27486399 and the number for 1997 is 0.27693880.

Of course, it would be better to buy new tracking software from your local Amsat organisation; all recent software calculates sidereal time routinely.

LATEST KEPLERS

AMSAT-UK Keplers are put out on packet weekly sent to KEPLER @ GBR. The latest satellite Keplers as provided to us by AMSAT-UK are also available as a service to readers by automatic fax retrieval from the 24hr Ham Radio Today fax-back line, 01703 263429 (use with a personal DTMF, i.e. 'touch-tone', phone/fax keypad - follow the voice menu), request fax document 87 from the satellite voice menu for this month's.

RUSSIAN BORDER GUARD BINOCULARS £1799

Probably the best binoculars in the world ring for brochure.

VEGA RUSSIAN MULTIBAND World communications receiver, 3 wave bands, (5 short, 1 LV, 1 FM, 1 MW) internal ferrite and external telescopic aerials, mains or battery. Large, typically Russian radio! £45 ref VEGA

NEW LASER POINTERS <5mw, 75 metre range, hand held unit runs on two AA batteries (supplied) 670nm £29 ref DEC49

MULTIBAND RADIO Compact general purpose radio receiver covering air, pb, tv, cb etc. Squelch vol and tuning £24 ref MB1

DIVINING RODS £3.99 a pair! ref EF111

MOONSHINE BIBLE 270 page book covering the production of alcohol from potatoes, rice, grains etc. Drawings of simple home made stills right through to commercial systems £12 ref MS3

NEW HIGH POWER MINI BUG With a range of 800 metres or more and up to 100 hours use from a PP3 this will be popular! Bug measures less than 1" square! £28 ref LOT102

BUILD YOUR OWN WINDFARM FROM SCRAP New publication gives step by step guide to building wind generators. Armed with this publication and a good local scrap yard could make you self sufficient in electricity! £12 ref LOT81

PC KEYBOARDS PS2 connector, top quality suitable for all 286/386/486 etc £10 ref PCB 10 for £65

TRACKING TRANSMITTER range 1.5-5 miles, 5,000 hours on AA batteries, also transmits info on car direction and motion! Works with any FM radio. 1.5" square. £65 ref LOT101

ELECTRIC DOOR LOCKS Complete lock with both Yale lock and 12v operated deadlock (keys included) £10 ref LOT99

SURVEILLANCE TELESCOPE Superb Russian zoom telescope adjustable from 15x to 60x complete with metal tripod (impossible to use without this on the higher settings) 66mm lens, leather carrying case £149 ref BAR69

WIRELESS VIDEO BUG KIT Transmits video and audio signals from a miniature CCTV camera (included) to any standard television! All the components including a PP3 battery will fit into a cigarette packet with the lens requiring a hole about 3mm diameter. Supplied with telescopic aerial but a piece of wire about 4" long will still give a range of up to 100 metres. A single PP3 will probably give less than 1 hours use. £99 ref EP79. (probably not licensable)

GPS SATELLITE NAVIGATION SYSTEM Made by Garmin, the GPS38 is hand held, pocket sized, 255g, position, altitude, graphic compass, map builder etc £179 ref GPS1

CCTV CAMERA MODULES 46X70X29mm, 30 grams, 12v 100mA, auto electronic shutter, 3.6mm F2 lens, CCIR, 512x492 pixels, video output is 1v p-p (75 ohm). Works directly into a scart or video input on a tv or video. IR sensitive. £79.95 ref EF137

IR LAMP KIT Suitable for the above camera, enables the camera to be used in total darkness! £6 ref EF138

INFRA RED POWERBEAM Handheld battery powered lamp, 4 inch reflector, krypton bulb, gives out powerful infrared light! 4 D cells required. £29 ref PB1

MONO VGA MONITORS, Perfect condition, Compaq, 14", 3 months warranty £29 ref MVGA

SUPER WIDEBAND RADAR DETECTOR Detects both radar and laser, X K and KA bands, 360 degree coverage, front and rear wave guides, may be illegal to use! 1.1"x2.7"x4.6" £149 ref RD2

9 WATT CHIEFTAN TANK LASERS

Double beam units designed to fit in the gun barrel of a tank, each unit has two semi conductor lasers and motor drive units for alignment, 7 mile range, no circuit diagrams due to MOD, new price £50,000? us? £199. Each unit has two gallium Arsenide injection lasers, 1 x 9 watt, 1 x 3 watt, 900nm wavelength, 28vdc, 600hz pulse frequency. The units also contain an electronic receiver to detect reflected signals from targets. £199 for one. Ref LOT4

TWO WAY MIRROR KIT Includes special adhesive film to make two way mirror(s) up to 60"x20" (glass not included) includes full instructions. £12 ref TW1

NEW LOW PRICED COMPUTER/WORKSHOP/HI-FI RCB UNITS Complete protection from faulty equipment for everybody! Inline unit fits in standard IEC lead (extends it by 750mm), fitted in less than 10 seconds, reset/test button, 10A rating. £6.99 each ref LOT5. Or a pack of 10 at £49.90 ref LOT6. If you want a box of 100 you can have one for £250!

WIND UP FLYING PARROT! Genuine parrot that flaps its wings and flies for up to 50 meters £6 ref EF2

RADIO CONTROLLED CARS FROM £6 EACH!!! All returns from famous manufacturer, single channel (left, right, forwards, backwards) £6 ref LOT1. Two channel with more features £12 ref LOT2

THOUSANDS AVAILABLE RING/FAX FOR DETAILS!
MAGNETIC CARD READERS (Swipes) £9.95 Cased with flyleads, designed to read standard credit cards! they have 3 wires coming out of the head so they may write as well? complete with control electronics PCB just £9.95 ref BAR31

WANT TO MAKE SOME MONEY? STUCK FOR AN IDEA? We have collated 140 business manuals that give you information on setting up different businesses, you peruse these at your leisure using the text editor on your PC. Also included is the certificate enabling you to reproduce (and sell) the manuals as much as you like! £14 ref EP74

COIN OPERATED TIMER KIT Complete with coin slot mechanism, adjustable time delay, relay output, put a coin slot on anything you like! TV's, videos, fridges, drinks cupboards, HiFi, takes 50p's and £1 coins. DC operated, price just £7.99 ref BAR27

ZENITH 900 X MAGNIFICATION MICROSCOPE Zoom, metal construction, built in light, shrimp farm, group viewing screen, lots of accessories. £29 ref ANAYLT

AA NICAD PACK Pack of 4 tagged AA nicads £2.99 ref BAR34

NIGHTSIGHTS Model TZ54 with infra red illuminator, views up to 75 metres in full darkness in infrared mode, 150m range, 45mm lens, 13 deg angle of view, focussing range 1.5m to infinity. 2 AA batteries required. 950g weight. £199 ref BAR61. 1 years warranty

LIQUID CRYSTAL DISPLAYS Bargain prices, 16 character 2 line, 99x24mm £2.99 ref SM1623A

20 character 2 line, 83x19mm £3.99 ref SM2020A

16 character 4 line, 62x25mm £5.99 ref SMC1640A

TAL-1, 110MM NEWTONIAN REFLECTOR TELESCOPE

Russian. Superb astronomical 'scope, everything you need for some serious star gazing! up to 169x magnification. Send or fax for further information ref TAL-1. £249

SOLAR ENERGY/GENERATOR PLANS For your home, loads of info on designing systems etc £7 ref PV1

SOLAR COOKERS Comprehensive guide to building solar powered cookers, includes plans, recipes, cooking times etc £7 ref SBC1

WOLVERHAMPTON ELECTRONICS STORE NOW OPEN IN WORCESTER ST TEL 01902 22039

CENTRAL POINT PC TOOLS Award winning software, 1,300 virus checker, memory optimiser, disc optimiser, file compression, low level formatting, backup scheduler, disk defragmenter, undelete, 4 calculators, D base, disc editor, over 40 viewers, remote computing, password protection, encryption, comprehensive manual supplied etc £8 ref lot 97 3.5" disks.

COLOUR CCTV VIDEO CAMERAS, BRAND NEW AND, CASED, £119.

**PERFECT FOR SURVEILLANCE,
INTERNET, VIDEO CONFERENCING,
SECURITY, DOMESTIC VIDEO**

**Works with most modern video's, TV's,
Composite monitors, video grabber cards etc**
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500x582, 12vdc, mounting bracket, auto shutter,
100x50x180mm, 3 months warranty, 10 or more £99 ea
MICRO RADIO It's tiny, just 3/8" thick, auto tuning, complete with headphones. FM £9.99 ref EP35

HANDHELD SCANNERS 10 channel, built in charger, LCD display £119 ref B110B, 100 channel model £229 ref B110E

SMOKE MACHINE 42.3 cubic metres a min from this mains operated machine £299 ref G002B, smoke fluid £25 (5 litres) gives about 2.5 hours use. ref G002AA

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IBM PS2 MODEL 150Z CASE AND POWER SUPPLY

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1.2 DISC DRIVES Standard 5.25" drives but returns so they will need attention **SALE PRICE NOW ONLY £3.50** ref EP69

PP3 NICADS Unused but some storage marks. £4.99 ref EP52

GAS HOBS AND OVENS Brand new gas appliances, perfect for small flats etc. Basic 3 burner hob £19 ref BAR316. Basic small built in oven **SALE PRICE £59** ref EP73

ENERGY BANK KIT 100 6"x6" 6v 100mA panels, 100 diodes, connection details etc. £99 ref EF112

PASTEL ACCOUNTS SOFTWARE, does everything for all sizes of businesses, includes wordprocessor, report writer, windowing, networkable up to 10 stations, multiple cash books etc. 200 page comprehensive manual. 90 days free technical support (01342-326009 try before you buy!) **SALE PRICE £9.95** ref SA12. **SAVE £120!!!**

PC PAL VGA TO TV CONVERTER Converts a colour TV into a basic VGA screen. Complete with built in psu, lead and s/ware. Ideal for laptops or a cheap upgrade. Supplied in kit form for home assembly. **SALE PRICE £25** REF SA34

YUASHA SEALED LEAD ACID BATTERIES Two sizes currently available this month. 12v 15AH at £18 ref LOT8 and 6v 10AH at just £6 ref LOT7

ELECTRIC CAR WINDOW DE-ICERS Complete with cable, plug etc **SALE PRICE JUST £4.99** REF SA28

AUTO SUNCHARGER 155x300mm solar panel with diode and 3

BULL ELECTRICAL 250 PORTLAND ROAD, HOVE, SUSSEX. BN3 5QT. (ESTABLISHED 50 YEARS).

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13.8V 1.9A PSU cased with leads. Just £9.99 REF MAG10P3

UNIVERSAL SPEED CONTROLLER KIT Designed by us for the C5 motor but ok for any 12v motor up to 30A. Complete with PCB etc. A heat sink may be required. £17.00 REF: **MAG17**

SOLAR NICAD CHARGERS 4 x AA size £9.99 ref 6P476, 2 x C size £9.99 ref 6P477

VIEWDATA SYSTEMS made by Phillips, complete with internal 1200/75 modem, keyboard, psu etc RGB and composite outputs, menu driven, autodialler etc. **SALE PRICE £12.99** REF SA18

MEGA POWER BINOCULARS Made by Helios, 20 x magnification, precision ground fully coated optics, 60mm objectives, shock resistant caged prisms, case and neck strap. £89 ref HPH1

GIANT HOT AIR BALLOON KIT Build a 4.5m circumference, 1.8m high fully functioning balloon, can be launched with home made burner etc. Reusable (until you loose it!) £12.50 ref HA1

AIR RIFLES .22 As used by the Chinese army for training purposes, so there is a lot about! £39.95 Ref EF78 500 pellets £4.50 ref EF80

VIDEO SENDER UNIT. Transmits both audio and video signals from either a video camera, video recorder, TV or Computer etc to any standard TV set in a 100' range (tune TV to a spare channel) 12v DC op. Price is £25 REF: **MAG15** 12v psu is £5 extra REF: **MAG5P2**

"MINIATURE RADIO TRANSCEIVERS A pair of walkie talkies with a range up to 2km in open country. Units measure 22x52x155mm. Including cases and earpieces. 2xPP3 req'd. £37.00 pr. REF: **MAG30**

"FM TRANSMITTER KIT housed in a standard working 13A adapter! the bug runs directly off the mains so lasts forever! why pay £700? or price is £18 REF: EF62 (kit) Transmits to any FM radio. Built and tested version now available of the above unit at £45 ref EXM34

"FM BUG BUILT AND TESTED superior design to kit. Supplied to detective agencies. 9v battery req'd. £14 REF: **MAG14**

GAT AIR PISTOL PACK Complete with pistol, darts and pellets £14.95 Ref EF82B extra pellets (500) £4.50 ref EF80

6"x12" AMORPHOUS SOLAR PANEL 12v 155x310mm 130mA **SALE PRICE £4.99** REF SA24

FIBRE OPTIC CABLE BUMPER PACK 10 metres for £4.99 ref MAG5P13 ideal for experimenters! 30 m for £12.99 ref MAG13P1

**MIXED GOODIES BOX OF
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4X28 TELESCOPIC SIGHTS Suitable for all air rifles, ground lenses, good light gathering properties. £24.95 ref R7

GYROSCOPES Remember these? well we have found a company that still manufactures these popular scientific toys, perfect gift or for educational use etc. £6 ref EP70

HYPOTHERMIA SPACE BLANKET 215x150cm aluminised foil blanket, reflects more than 90% of body heat. Also suitable for the construction of two way mirrors! £3.99 each ref O/L041

NICAD CHARGERS AND BATTERIES Standard universal mains operated charger, takes 4 batts + 1 PP3, £10 ref PO11D. Nicads- AA size (4 pack) £4 ref 4P44, C size (2 pack) £4 ref 4P73, D size (4 pack) £9 ref 9P12

LENSTATIC RANGER COMPASS Oil filled capsule, strong metal case, large luminous points. Sight line with magnifying viewer. 50mm dia, 86gm £10.99 ref O/K604

RECHARGE ORDINARY BATTERIES UP TO 10 TIMES! With the Battery Wizard! Uses the latest pulse wave charge system to charge all popular brands of ordinary batteries AAA, AA, C, D, four at a time! Led system shows when batteries are charged, automatically rejects unsuitable cells, complete with mains adaptor. BS approved. Price is £21.95 ref EP31

TALKING WATCH Yes, it actually tells you the time at the press of a button. Also features a voice alarm that wakes you up and tells you what the time is! Lithium cell included. £7.99 ref EP26

RUBBER COATED HELIOS Binoculars, 10 x 25, fully coated optics. £45 ref RP1, same spec but nitrogen filled and waterproof £75 ref RP2

PHOTOGRAPHIC RADAR TRAPS CAN COST YOU YOUR LICENCE! The new multiband 2000 radar detector can prevent even the most responsible of drivers from losing their licence! Adjustable audible alarm with 8 flashing leds gives instant warning of radar zones. Detects X, K, and Ka bands, 3 mile range, 'over the hill' 'around bends' and 'rear trap facilities. micro size just 4.25x2.5x.75". Can pay for itself in just one day! £89 ref EP3

3" DISCS As used on older Amstrad machines, Spectrum plus3's etc £3 each ref BAR400

STEREO MICROSCOPES BACK IN STOCK Russian, 200x complete with lenses, lights, filters etc very comprehensive microscope that would normally be around the £700 mark. our price is just £299 (full money back guarantee) full details in catalogue.

SECOND GENERATION NIGHT SIGHTS FROM £748

RETRON Russian night sight, 1.8x, infra red lamp, 10m-Inf, standard M42 lens, 1.1kg £349 ref RET1

LOW COST CORDLESS MIC 500' range, 90 - 105mhz, 115g, 193 x 26 x 39mm, 9v PP3 battery required. £17 ref MAG15P1

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CLUB NEWS

To include your club, or rally, in this section, make sure you send us your events details in time. We only list active clubs, i.e. those who send us their diary of planned talks/events, (due to space restrictions we can only include clubs who send us details of events and talks, not 'natter nights' for every meeting). DATES TO BE INCLUDED IN THE ISSUE PUBLISHED ON THE 25th APRIL MUST REACH US BY THE 13th MARCH LATEST (some clubs are being missed out because their details arrive too late) addressed to; The Editor, Ham Radio Today (Club News), Nexus Special Interests Ltd., Nexus

Appledore & District ARC meet on the third Monday each month, 7.30pm, at Appledore Football Clubroom, Devon. Club CW net; 8.00pm - 8.30pm every Wednesday on 28.200MHz, 8.30pm - 9.00pm SSB. Morse speed adjusted to the slowest sender. 2m FM every Tuesday 145.475 at 8.00pm. Planned club events/talks;
Mar 18th - AGM
For further details contact Dave Brierley G3YGJ, Tel. 01237 476124

Aylesbury Vale RS meet on Wednesday evenings in the Village Hall in Hardwick, located off the A413 between Aylesbury and Buckingham. Club diary;
Mar 19th - AGM
Apr 2nd - Open evening
For further details and meeting times, contact Gerry Somers G7VVF, Tel. 01296 432234

Bristol ARC meet every Thursday, at the Scout Hut, Firtree Lane, St. George, Bristol. Planned club talks/events;
Mar 6th - Round table
Mar 13th - Air time all modes
Mar 20th - Construction new beams
Mar 27th - Computers /packet/shareware exchange
Apr 3rd - Round table on fox hunting
For further details contact David G4ZBT, Tel. 0117 965 4886, or Derek G7HYS, Tel. 01454 772662. Internet: <http://www.gifford.co.uk/barc>

Bristol (South) ARC meet every Wednesday at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol. Club diary of events/talks;
Mar 5th - 15m activity evening
Mar 12th - HF workshop for newcomers, G0NQG
Mar 19th - Build a basic receiver, the club project
Mar 26th - 2nd evening to build the receiver, G0TDS
Apr 2nd - 10GHz activity evening
For more information and meeting times, Tel. 01275 834282 24hr. Answerphone.

RSGB Bristol Group meet on the last Tuesday in the month, 7.00pm for 7.30pm, at New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. Club diary of events/talks;
Mar 25th - 'The Enigma' Eric Williams has first hand information on the fascinating facts of this incredible WW2 cipher machine
Further details can be obtained from Robin Thompson G3TKF, Tel. 01225 420442

Bromley and District ARC meet on the third Tuesday of each month, 7.30pm for 8.00pm at the Victory Social Club, Kechill Gardens, Hayes, Kent. Club net; Sundays 11.00am on 145.350MHz FM. Planned events/talks;
Mar 18th - Equipment test evening, G4VTD
Apr 15th - Construction contest
Further details from Alan Messenger G0TLK, Tel. 0181 777 0420

Bromsgrove ARC meet on the second and fourth Tuesday of the month at Lickey End Working Men's Club, Alcester Rd, Burcot, Bromsgrove. Club diary of events/talks;
Mar 11th - Night on the air/construction
Mar 25th - C.M. Howes Kits, by Dave Howes G4KQH
Apr 8th - Night on the air/construction
Further details from Barry Taylor G0TPG, Tel. 01527 542266

Buxton ARC meet at the Lee Wood Hotel, Buxton, at 8.00pm on the second and fourth Tuesdays each month. Club diary of events/talks;
Mar 11th - Diagnosing faults
Mar 25th - Goyt Valley Challenge discussion
Apr 8th - Home brew night
For further information contact Derek Carson G4IHO, Tel. 01298 25506, or G4IHO@GB7DAD

Cheltenham AR Association, meet on the first Friday of the month at the Prestbury Library, The Burgage, Prestbury, Cheltenham, at 7.30 for 8.00pm. Visitors and prospective members welcome. Club nets, Wed 9.00pm on 2m. Mon & Thurs 1960kHz at 9.00pm. Sun 1848kHz at 10.00am. Planned club talks/events;
Mar 7th - Construction Contest
Apr 4th - Top Band DXing, by G3SNN
For further details contact the Club Secretary, Mrs P.M. Thom G1NKS, Southern House, 9 Southern Rd, Cheltenham, Glos GL53 9AW, Tel.

01242 241099
Cray Valley RS meet on the first and third Thursday of each month, 8.00pm at the Progress Hall, Admiral Seymour Road, Eltham SE9. Planned club diary;
Mar 6th - A YL in YO (Romania), G3VUN
Mar 20th - Annual construction contest
Apr 3rd - Ballooning, G8KDC
For further details contact Tony G4WIF, Tel. 0171 739 5057 office hours only. Up-to-date information can also be obtained from the club Internet pages; <http://ourworld.compuserve.com/homepages/g4wif/index.htm>

Dover RC meets at Duke of York's Royal Military School, Guston, Dover on a Wednesday evening, 6.30pm to 10.00pm during the school's term time. Morse & Novice training classes are held between 7.00 & 8.00pm at the school. The club has now been accepted by City&Guilds as an examination centre for the RAE and NRAE and is setting up for the May exams. The club also hold regular 'operating and natter nights'. All ages over 8 welcome. Club net (The White Cliffs Net) on 3745kHz, 11.00am every Sunday morning. Planned club talks/events;
Mar 5th - Morse tests
Mar 12th - Lines & Feeders, by Ian G3ROO
Mar 19th - Construction contest
Mar 26th - AGM
For further details contact Brian Hancock G4NPM, Tel. 01304 821007

Dragon ARC meet on the first and third Mondays of each month at the Four Crosses Hotel, Petraeth Road, Menai Bridge, at 7.30pm for 8.00pm. Visitors and new members are welcome. The club run several special event stations throughout the year. Club diary of events/talks;
Mar 3rd - Talk by Dan Lockyer GW3HCL
Mar 17th - Surplus equipment sale
Further details from the Secretary Tony Rees GW0FMQ, Tel. 01248 600963

Felixstowe & District ARS meet, 8.00pm, at Orwell Park School, Nacton, Ipswich. Planned club events/talks;
Mar 3rd - Equipment Rummage & Inventory - a chance for members to see the wide range of equipment the club has to offer
Mar 17th - AGM at the Fox Pub,

Newbourne, Suffolk
Apr 7th - The Packet DX Cluster, by G0OZS
Apr 21st - Visit to Suffolk Constabulary HQ, names to Paul G4YQC at least a week before visit
For further details contact Paul Whiting G4YQC, Tel. 01394 273507 evenings

Halifax and District ARS meet at 7.30pm on the first Tuesday each month, at The Tap and Spile Pub (formerly Royal Oak), Clare Road, Halifax, for committee and Morse tuition. On the second and fourth Tuesdays they meet, 7.00pm, at Queens Road (note Queens Road is closed for some periods at school holidays). Planned club events/talks;
Mar 18th - Power from the moon, G2FKZ
Apr 15th - Converting PMR gear to Top Band, G4IZH
Further details can be obtained from Mr. D. Moss G0DIM, Beechwood Lodge, Lightcliffe, Halifax HX3 8NU, Tel. 01422 202306

Hastings Electronics and RC meet every third Wednesday of each month for their main meeting, at West Hill Community Centre, Croft Road, Hastings, and every Friday for a social evening, at the Sea Anglers Club, 16 Grand Parade, St. Leonards. The club is a registered City and Guilds examination centre, and also run RAE, Novice and Morse courses. Planned club events/talks;
Mar 19th - AGM
Apr 16th - Auction
For further details contact Reg Kemp G3YFF, Tel. 01424 830454



Vital Spark' monthly journal of the Hastings Electronics & Radio Club. In January this magazine celebrated its 20th birthday

Horndean and District ARC meet on the first and fourth Tuesday of each month, 7.30pm, at Lovedean Village Hall, Lovedean Lane, Lovedean, Hants. The first Tuesday is usually a 'Natter Night'. Visitors welcome. Club nets are Sundays 1.955MHz 09.00hrs CW, 09.30hrs SSB, and Wednesdays 145.350MHz at 19.30hrs. Planned Club events/talks;

Mar 25th - Any questions
Apr 22nd - CW operating techniques,
G3JFF & G3LJK
Further details can be obtained from Stuart
Swain, Tel. 01705 472846

Horsham ARC

meet on the first Thursday each month,
8.00pm, at The Guide Hall, Denne Road,
Horsham, W. Sussex. All welcome.
Planned club talks/events;
Mar 6th - Junk sale
For further details contact Miss M. J. Dixon
G7EYL, 6 Lambs Farm Road, Horsham,
W. Sussex RH12 4DJ, Tel. 0181 686
5701 (daytime), or 01403 27552
(evenings).

Itchen Valley ARC

meet on the second and fourth Fridays
each month, at the Scout Hut, Brickfield
Lane, Chandler's Ford, Hants (just up the
road from SMC), 7.30pm for 8.00pm.
Planned club events/talks;
Mar 14th - AGM
Mar 28th - On air evening using W9GR
DSP filter
Apr 11th - Surplus equipment sale
Further details from Sheila GOVNI, Tel.
01703 813827

Keighley ARS

meet at the Cricket Club, Ingrow, near
Keighley, every Thursday at 8.00pm.
Many club meetings are 'Natter nights'
and 'nights on the air', other events/talks
include;
Mar 20th - Visit by RSGB RLO GORZP
Apr 10th - Junk sale
Further details from Kathy Conlon G1IGH
on 01274 496222

Leicester RS

meet every Monday, 7.30pm, at The
Chantry, Gilroes Cottage, Groby Road,
Leicester. The HF and VHF shacks are
available at each meeting, and have
regular HF/VHF nights on the air
combined with a general natter evenings.
The club also run RAE, NRAE and Morse
courses. Planned club events/talks;
Mar 3rd - LRS invites Loughborough Club
to meet them
Mar 17th - John Evans of 'The Medium
Wave Circle'
Apr 7th - Howes Communications, by
Dave Howes
For further details contact Stan Hay
G3HYH;
Tel. 0116 239 4367

Liverpool and District ARS

meet at 8pm every Tuesday evening at
The Churchill Club, Church Rd.,
Wavertree, Liverpool. They run RAE,
Novice RAE and Morse courses every
Tuesday evening beginning at 7.30pm
and have regular 'on air' evenings.
Planned club events/talks;
Mar 4th - Special events
Mar 18th - QRP night
Mar 25th - Surplus sale
For further details contact Ian Mant
G4VWXX, Tel. 0151 722 1178.

Lothians Radio Society

meet on the second and fourth
Wednesdays each month, 7.30pm, at
Orwell Lodge Hotel, Colinton Road,
Edinburgh. Planned club events/talks;
Mar 12th - Junk sale
Mar 26th - Flight simulators
Apr 9th - 24GHz, Brian GM8BJF
For further details contact Tommy Main
GM4DCL, Tel. 0131 663 8501, or
GM3HAM@GB7EDN

Loughborough and District ARC

meet every Tuesday (term time), 7.45pm,
at Hindleys Community College,
Shepshed, Leicestershire. The club have an
'On the air' evening on the first Tuesday
each month. Planned club events/talks;
Mar 11th - Quiz night, Guests Melton
Mowbray ARC
Mar 18th - Forum, 2m & DF's
Apr 8th - Fun 2m DF with clues
For further details contact Ian G8SNF, Tel.
01509 218259

Maidstone YMCA ARS

Meet at the YMCA Sports Centre, Melrose
Close, Maidstone, Kent ME15 6BD. They
run RAE and Morse courses. GB2CW is
on Sundays, 8.30pm, 144.250MHz
USB/CW, club net on same frequency at
9.05pm. Planned club events/talks;
Mar 28th - Shack maintenance
Apr 4th - Junk sale (visitors £1)
For further details call Mike Grainger, Tel.
01634 856765

Malvern Hills ARC

meet on the second Tuesday each month,
at the Red Lion, Malvern, Worcester.
Planned club events/talks;
Mar 11th - The GB3EH Repeater, by Paul
G4OHP
Apr 8th - Transmission lines, by Dave
Buick
For further details contact Jim Davis
G0OWS, Tel. 01684 576538

Midlands AX25 Packet Radio Users Group

(MAXPAK), meet on the first Monday each
month (when this is a Bank Holiday, the
meetings are on the second Monday),
8.00pm, at the Perton Community Centre,
Perton, near Wolverhampton. Non-
members and visitors welcome (non-
members 50p per evening to help cover
costs). Planned events/talks;
Mar 3rd - What's new in the packet world
Apr 7th - AGM/packet software
discussion
For further information contact Club
Secretary Edward Loach G4ZXS, Tel.
01902 741877 (evenings), or via packet
G4ZXS@GB7MAX

Newbury and District ARS

meet on the fourth Wednesday each
month at the Bucklebury Memorial Hall,
Bucklebury near Thatcham, at 7.15pm.
Planned club events/talks;
Mar 26th - A look at some contest logging
programs with G3RVM
For further details contact the club
secretary, Tel. 01635 863310

Norfolk ARC

meet every Wednesday at The Norman
Centre, Bignold Road, off Drayton Road,
Norwich, 7.30pm for 8.00pm start.
Informal meetings are usually held on
alternate Wednesdays, where it is a night
on the air, construction QRP and Morse
practice evening. Club diary of
events/talks;
Mar 8/9th - Club trip to London Show
Mar 12th - HF NFD (CW) briefing
Mar 26th - Science for all, Arnold G3PTB
Apr 2nd - AGM
Further details can be obtained from Mike
G4EOL, Tel. 01603 789792. A
programme of future club events/talks is
available on packet by typing "NARC"

Nottingham ARC

meet every Thursday, 7.30pm, in the
Sherwood Community Centre, Mansfield
Road, Nottingham. Visitors interested in
amateur radio, whether as a transmitting
amateur or SVL, are most welcome.
Forthcoming events/talks include;
Mar 13th - Practical moonbounce,
G6ABU
Mar 20th - Surplus equipment sale
Mar 27th - Construction exhibition/contest
For further details contact Jo 2E1BSN, Tel.
0115 9691436

Salop Amateur Radio Society

meet at The Telesports Club, Abbey
Foregate, Shrewsbury every Thursday.
They presently run a Novice course on
Tuesday evenings (details from Tony
MOAMP @ GB7PMB) and have regular
on air/natter nights. Planned club diary of
events/talks;
Mar 13th - TCP/IP, by John G6DQY
Mar 27th - Talk on Light, by Ken G3UDA
Apr 10th - Construction evening
For further details contact Ian G7SBD, 56
Roselyn, Harlescote, Shrewsbury SY1 4LP,
or @ GB7PMB
Internet: <http://www.clemalv.demon.co.uk/>

Shefford and District ARS

meet every Thursday, 7.45pm, at the
Church Hall, Amphil Road, Shefford,
Beds. They run a Novice course on
alternate weeks have regular activity
nights. All newcomers are welcome.
Planned club events/talks;
Mar 6th - Frequency spectrum
Mar 13th - Visit to Luton airport control
tower
Further details contact Derek Clarkson
G4JLP, Tel. 01462 851722

Silverthorn RC

meet every Friday, 7.30pm, at the Adult
Education and Community Centre, Friday
Hill House, Simmons Lane, Chingford,
London E4 6JH. A warm welcome is given
to everyone. They offer Morse tuition and
tests, and have a fully equipped shack
with packet radio facilities for members to
use, plus regular 'on air' and social
evenings. Planned club diary of
events/talks;
Mar 14th - Debrief for London Show
For further details contact Andrew

Mowbray, G0LWS / G1NPT, at above
address, or from Dave GOKHC, Tel.
0181 505 1871, or packet to G1NPT @
GB7TUT. A programme of club events can
be obtained by using REQFIL on
file C:\CLUBS\SILVERTH\CLUBINFO.TXT
from GB7TUT

Southgate ARC

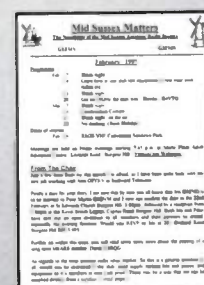
meet on the second and fourth Thursdays
of each month at the Winchmore Hill
Cricket Club Pavilion, Firs Lane,
Winchmore Hill, London N21. Meetings
are held each 2nd and 4th Thursdays of
the month, between 19.30 and 22.00.
The club also runs Novice licence courses
and have regular 'on air nights'. Planned
club diary of events/talks;
Apr 10th - Surplus equipment sale
For further details contact Dave Michael
G0ASA, Tel. 0181 482 6795, Fax.
0181 807 5366,
Email: msm4dave@netcomuk.co.uk

Stourbridge and District ARS

meet on the first and third Mondays each
month (except bank holidays), at the Robin
Woods Centre, Scotts Road, Stourbridge.
The first Monday is usually an 'on air and
natter night'. Visitors always welcome.
Planned club events/talks;
Mar 17th - AGM
Further details from Gordon Bryant
G0TZV, Tel. 01384 395206

Stratford upon Avon & District RS

meet on the second and fourth Mondays,
at the Home Guard Club, Main Road,
Tiddington, Stratford upon Avon, at
7.30pm. The club also run an RAE course
(write to Mr. J. Harris, 57 Evesham Road,
Stratford upon Avon CV31 2PB, enclosing
an SAE, or Tel. 01789 295257 for
details). Club events/talks include;
Mar 10th - Aerials, by Terry G3JFH
Mar 24th - Surplus equipment sale
Apr 14th - AGM
Further details from Club Secretary Jeff
Porter G4OHJ, Tel. 01789 773286



Mid Sussex
'Mid Sussex
Matters'
monthly
newsletter of
the Mid
Sussex ARS

ARS

meet on the first and third Fridays each
month, 7.45pm, at Marle Place, Burgess
Education Centre, Leylands Road, Burgess
Hill, West Sussex. Club shack open all other
Friday evenings. The club also run RAE and
NRAE courses (contact John G00JO, Tel.
01444 450957 for details) and have
regular 'operating evenings'. Visitors are
welcome. Club net: Sundays 8.00am
3.740MHz (+/- QRM), 11.00am
145.350MHz FM, 8.00pm 7.00m Novice

net on GB3HY. Planned club events/talks;
Mar 7th - Shack night
Mar 14th - Construction contest
Further details from Mike GOGNV, Tel.
01444 241407

Sutton and Cheam RS

meet on the first Thursday (natter night) and third Thursday (formal meeting) each month, 7.30pm for 8.00pm at the Sutton United Football Club, The Borough Sports Ground, Gander Green Lane, Sutton, Surrey. Club 'natter freq' 70.3875MHz, Club nets; 20.30 Mon starting on 145.500MHz then QSY, Tue at 10.30 on 3.760MHz. Club talks/events;
Mar 20th - DX packet clusters, by Keith G3KVV
Mar 22nd - Annual club dinner
For further details, Tel. 0181
644 9945

Swindon and District ARC

meet every Thursday evening, 7.00pm, at the Eastcott Community Centre, Sovereign Street, Old Town, Swindon. The club hold regular 'natter and operating' evenings. Visitors and new members always welcome. We're told that those considering preparing for the RAE and Morse tests, will always find experienced operators and skilled technicians to provide support and advice. Planned club events/talks;
Mar 6th - Digital Audio - what's happening? Graham Carter, Dolby Laboratories
Mar 20th - Royal Air Force Lyneham and the Hercules, Ray Evans G3VHE
For further details contact Den G7PDV, Tel. 01793 822705

Torbay ARS

meet every Friday at the ECC Social Club, Highweek, Newton Abbot at 7.30pm. They have informal meetings most Fridays with a talk/event once a month, details as follows;
Mar 21st - Crime prevention, by Peter Yelland
Apr 18th - 90/10 junk sale
Further details from Peter G4VTO, Tel. 01803 864528 [day works No.]

Trowbridge and District ARC

meet at Southwick Village Hall, Southwick, Trowbridge, Wiltshire for a main meeting every first Wednesday of the month, and a natter night every third Wednesday (except October). The club also run an RAE course (for details contact Chris G0HFX Tel. 01225 764874 evenings). Visitors welcome, fee 50p. Planned club events/talks;
Mar 5th - Surplus sale
Apr 2nd - Telewest Communications
For further information contact Ian G0GRI, Tel. 01225 864698 evenings and weekends.

Verulam ARC

meet, 7.30 for 8.00pm, on the second and fourth Tuesdays each month (except December), at the RAF Association Headquarters, New Kent Road (off Malborough Road), St Albans. On the second Tuesday they have an activity evening and on the fourth Tuesday the monthly meeting. Visitors welcome at all meetings.

Planned events/talks;

Mar 25th - G3PAO Memorial lecture; AKDs 'Target' and beyond, by John Armstrong
For further details available from Walter Craine G3PMF, 5 The Crescent, Abbots Langley, Watford, Herts WD5 0DR, Tel. 01923 262180

Wakefield and District RS

meet every Tuesday, 8.00pm, in the first floor rooms, Ossett Community Centre, Prospect Road, Ossett, West Yorks. We're told the club has a well equipped station, library and licensed bar and run Morse and Novice classes. The club net is on 2m FM on Mondays. Club diary;
Mar 4th - Visit to West Yorks Police control room
Mar 11th - On the air
Mar 18th - Great egg race
Mar 25th - Visit to West Yorks Police helicopter
For further details contact Bob Firth G3VWVF, 6 Eastfield Drive, Woodlesford, Leeds LS26 8SQ, Tel. 0113 282 5519, or via packet G3VWVF@GB7VRG

Mid-Warwickshire ARS

meet on the second and fourth Tuesdays each month, 8.00pm, at 61 Embsale Road, Warwick. Planned club events/talks;
Mar 11th - Surplus equipment & magazine sale
Mar 25th - Natter night
For further details contact G8HRI, Tel. 01926 424465

Wimbledon and District ARS

meet on the second and last Friday each month, at St Andrew's Church Hall, Herbert Road, Wimbledon SW19. Planned club events/talks;
Mar 14th - Junk sale
Apr 11th - Microprocessors - applications in AR, G4ZXO
For further details contact J. Gale G4VWJ, Tel. 01737 356745

Wirral ARS

meet at The Club Room, Ivy Farm, Arrowe Park Road, Wirral L49 5LV, every Tuesday ('Natter Night') and every Wednesday each month, meetings besides those below are usually 'activities' nights. Planned club events/talks;
Mar 19th - Surplus equipment sale
For further details contact John Phillips G3PXX, 18 Rockfarm Drive, Little Neston, South Wirral L64 4DZ, Tel. 0151 336 4452

Yeovil ARC

meet every Thursday at 7.30pm, at the Red Cross Centre, 72 Grove Avenue, Yeovil, Somerset. The club run Novice and RAE courses, plus Morse tuition if required, by arrangement with G3GC. All are welcome. Club nets, Sundays 10.30 on 3.665MHz (80m SSB), Tuesdays 20.30 on 145.350MHz (2m FM) and Fridays 20.00 on 3.550MHz (CVI). Club events/talks;
Mar 6th - Site selection for VHF, by G3GC
Mar 13th - Direct Digital Synthesis, by G7SDD
Mar 20th - Adjudication of club constructors contest
Mar 27th - Club station on the air

Further details can be obtained from Malcolm Sadler G7VVAL, Tel. 01460 54657

NATIONAL AND INTERNATIONAL British Amateur Radio Teledata Group (BARTG)

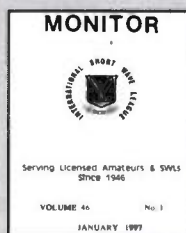
have a quarterly magazine, 'Datacom', and hold a rally and HF RTTY contest each year. For more details about the group contact Membership Secretary Bill McGill, G0DXB, 14 Farquhar Road, Maltby, Rotherham, S.Yorks S66 7PD, Tel. 01709 814010 (Tues, Thurs & Fri, 7pm to 9pm. Sat/Sun before 9pm), or via GB7VRG
Internet: <http://www.bartg.demon.co.uk>

British Amateur Television Club

are particularly active with Amateur Television (ATV) - the transmission and reception of vision. They produce a quarterly magazine entitled 'CQ-TV' and have regular gettogethers at their rally stands, and hold their own rally each year. For details of BATC membership write to: Dave Lawton, 'Greenhurst', Pinewood Road, High Wycombe, Bucks HP12 4DD.

G-QRP Club

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



'Monitor' the monthly journal of the International Short Wave League

International Short Wave League

who as well as running an International QSL bureau for amateurs and SWLs, have a monthly magazine and regular gettogethers at their rally stands plus several on-air nets on HF and VHF. For more details send an A4 sized SAE to: ISWL HQ, 3 Bromyard Drive, Chellaston, Derby DE73 1PF.
Internet: <http://www.aber.ac.uk/~sn5/iswl.html>

The Irish Radio Transmitters Society

publish regular newsletters giving details of local activities, and the yearly IRTS Callbook, they also have a video library. Their AGM is due to be held on the 26/27th April at Ballybale, Donegal. For further details contact Dave Moore EI4BZ, 12 Castle Ave, Carrigrohilly, Co Cork. Tel. (Eire) 021 883555, or by Email: jryan@iol.ie

Radio Amateurs' Emergency Network (RAYNET)

can be contacted at Hunters Moon, Newton le Willows, Bedale, N. Yorks DL8 1SX. 24hr national emergency contact line: 0141 621 2121. The RAYNET Training Team produce a quarterly newsletter for people interested in the National Training Scheme, and can be

contacted at P.O. Box 2, Chinnor, Oxon OX9 4JY,

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

Radio Amateur Relief Expeditions (RARE)

is a registered charity made up of Radio Amateurs and friends who take aid to Eastern Europe and organise summer camps for young people to learn about Amateur Radio, English language and life in the UK. New members required to support this work both at home and by taking part in expeditions. Please contact The Secretary, RARE, 1 Allfield Cottages, Conover, Shrewsbury SY5 7AP, Tel. 01743 873815. Fax. 01743 874729 Packet: G6FHM@GB7PMB. Email: rare@cdnsun.demon.co.uk

Radiocommunications Agency

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

Radio Society of Great Britain (RSGB)

are the National Society who have been representing UK radio amateurs and short wave listeners for many years. They are based at Lambda House, Cranbourne Road, Potters Bar, Herts EN6 3JE, Tel. 01707 659015. Internet: <http://www.rs.gb.org>

United Kingdom Radio Society (UKRS)

are a newly formed National Society (see 'Radio Today' Sept '96). They can be contacted at Box 100, Meadow Street, Northwich, Cheshire, CW8 1FA. Tel. 01606 783270, or 0115 925 6597. Via Packet: RADSO@GB7OAR (please send as an 'SP' message), Email: admin@ukrs.org Internet: <http://www.ukrs.org>

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

RALLIES

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

MARCH 8/9TH

London Amateur Radio & Computer Show, Lee Valley Leisure Centre, Picketts Lock Lane, Edmonton, London N9. Doors open 10.00am to 5.00pm each day (9.30am for disabled visitors). Featuring Trade Show, Bring & Buy, On-demand Morse Tests, Talk-in on 2m & 70cm, Special Interests Groups, disabled facilities, bars, restaurants, ample free parking, lectures. New this year, try the Internet for yourself at the NETCOM Cyber Café. Adults £3.00, OAPs/under 14's £2.00. For further details please telephone 01923 893929

MARCH 16TH

Norbreck Radio, Electronics and Computer Exhibition, organised by the Northern Amateur Radio Societies Association (NARSA), will be held at the Norbreck Castle Exhibition Centre, Blackpool. They say it's the largest single day exhibition in the country, and not to miss it! For further details contact Peter Denton G6CGF, Tel. 0151 630 5790

APRIL 6TH

Launceston ARC Rally, Launceston College. Featuring traders, bring & buy and on-demand RSGB Morse tests. Refreshments and hot snacks available from 7am. Doors open 10.30am. For further details contact G3XNE, Tel/Fax. 01288 354564

APRIL 27TH

British Amateur Television Club Annual Rally, Sports Connexion, Coventry. Featuring over 200 trading tables, bring & buy, large outdoor flea market, specialist television displays, ex-broadcast vehicles, etc. GB6ATV talk-in on S22 and GB3CV [RB9]. Refreshments and licensed bar. Doors open 10.00am (9.30am for disabled visitors). Admission £1.00, 50p for OAPs and under 14s. For further details contact Mike Wooding, G6IQM, Tel. 01788 890365, Fax. 01788 891883, Email: batc97@g6iqm.demon.co.uk

MAY 5TH

Dartmoor Radio Rally, Yelverton Memorial Village Hall, Meavy Lane, Yelverton, Devon. Featuring trade stands, bring & buy, etc. Parking for 600 cars, access for disabled visitors, playground for children. Refreshments available. Doors open 10.30am, talk-in on S22. For further details contact Ron G7LLG, Tel. 01822 852586

MAY 11TH

Drayton Manor Radio and Computer Rally, Drayton Manor Park, Fazely, Tamworth, Staffs (on A4091). Featuring main traders in four large marquees, large outside flea market, bring and buy, local radio clubs and special interest group stands. Open from 10.00am onwards, a great day out for all the family. Further details available from Norman G8BHE, Tel. 0121 422 9787, or Peter G6DRN, Tel. 0121 443 1189 evenings please.

MAY 18TH

Dunstable Downs Radio Club - 14th National Amateur Radio Car Boot Sale, Stockwood Country Park, Luton, nr. junction 10 M1. 10am to 4pm. Talk-in on 2m. Free entry to the Massman collection of horse drawn vehicles, craft museum, plus much more. For plot details Tel. 01582 613899. Pre bookings for plots taken until May 14th, however plots can be purchased on the day.

Yeovil ARC 13th QRP Convention, Digby Hall, Hound Street, Sherborne. Featuring lecture programme, trade stands, bring & buy, prize draws, plus the ubiquitous 'Constructors Challenge'. Doors open 9.00am, refreshments available, talk-in on S22. Remember too, that the historic Abbey town of Sherborne offers a wide range of interest for the XYL. For further details contact Peter G3CQR, Tel. 01935 813054

MAY 25TH

Plymouth Radio Club Rally, Plymouth College of Further Education,

Kings Road, Devonport. Doors open at 10.30am, 10.00am for disabled visitors. Admission £1.00. For further details contact: Stephen Ramsden G7UXL, Tel. 01752 662051 office hours, or 777189 after 9pm.

JUNE 21ST

Royal Naval ARS Rally, HMS Collingwood, Fareham, Hampshire. We're told this year's event will be bigger and better than ever! For further details contact Rally Organiser, Mike Mathews G3JFF, 127 Drift Rd, Clanfield, Waterlooville, Hants PO8 0PD

JUNE 22ND

Bridgend & District ARC Mid-Summer Radio & Computer Rally, For further details contact Maurice GWQJZN, Tel. 01656 864579

JUNE 27TH TO 29TH

Ham Radio '97 Friedrichshafen, Germany, Europe's largest gathering of over 20,000 ham radio enthusiasts, by the shores of the Bodensee (Lake Constance) at the Messe Friedrichshafen. Wide and varied selection of interests, immense trade presence with 280 exhibitors from 40 countries, large flea market, on-site camping and caravan facilities. For further venue/rally details Tel. +49 7541 7080, Fax. +49 7541 75290. Accommodation/tourist information; Tel. +49 7541 21729

JULY 6TH

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

JULY 27TH

Colchester Radio and Computer Rally with hobbies and leisure fair, St. Helena School, Colchester. Doors open 10am. Family event. For further details contact Frank G3FJJ, Tel. 01206 851189

Scarborough ARS Radio, Electronics and Computer Rally,

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

AUGUST 10TH

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

AUGUST 15TH

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

NOVEMBER 23RD

Bridgend & District ARC Radio & Computer Rally, For further details contact Maurice GWQJZN, Tel. 01656 864579

DECEMBER 14TH

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



The London Amateur Radio & Computer Show due to take place on 8/9th March, see elsewhere in this issue for show guide

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Yaesu FT-708R, FT-202M, both complete with speaker/mic, YM-24A charger, NC1A, NC9C, soft cases, maintenance service manuals, any reasonable offer accepted. D. Tulk (Dorset), Tel. 01305 772759

Kenwood R2000 comms receiver, VGC. £250. J. Bell (Sunderland), Tel. 0191 565 2482 after 7pm.

Shack sale: FT-101ZD, £375. FT-277ZD with 2m transverter, £475. Codar ATS T28 PSU, £60. FTV-107R with 2m for 101 etc., £100. Navico 1000S 2m FM, £140. AT50, TS50, BNOS PSU, £850. All GWO. Alan G4OSN (Essex), Tel. 01277 624386

KDK FM740 70cm mobile transceiver, 16 memories and CTCSS, all programmable, 3/10W output, mic, mobile mount, manual and circuit diagram, £175. Doug G1BWW (Cambs), Tel. 01480 890992

Kenwood TS-850SAT with 1.8kHz, SSB filter and Kenwood SP31 matching speaker, £1,050. Daiwa PS304 30amp power supply, £75. Daiwa CN101 1.5kW SWR/PWR meter, £35. Yaesu G1000SDX rotator complete with control, £300. Datong Morse tutor, £35. GOUll (Wakefield), Tel. 01924 210117

Yaesu FT-1000D, fully loaded inc accessories and R7 aerial, 200W output, mint condition. First to see will buy. A. McKenzie (Stoke on Trent), Tel. 01782 331875 evenings and weekends.

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AEA PK900 multimode TNC, only few months old, like new, very little used, £230. Stuart G4CPJ (Newark, Notts), Tel. 01636 640593

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Also wanted Collins 455kHz CW filter, have 500Hz filter for Yaesu FT-901/2 for exchange or sale. GW3PDW (Pemb), Tel. 01437 891017

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Handle for Sangean ATS 803A and photocopy of owners manual. J. Graley (Liverpool), Tel. 0151 486 2606

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HRT Vol. 15 No. 3

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