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with this issue

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and Icom IC-207H
dual band mobiles
reviewed

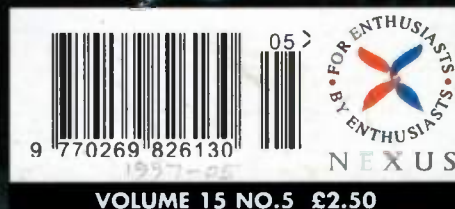


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Ham Radio T O D A Y

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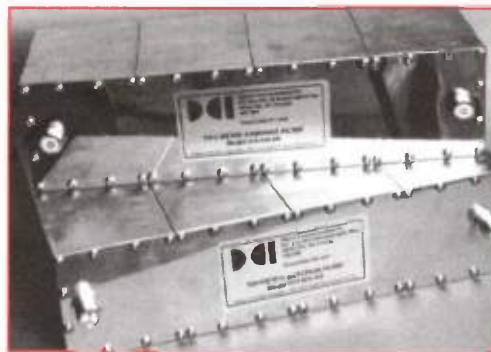
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RADIO

1997 YOUNG RADIO AMATEUR OF THE YEAR AWARD

The Radiocommunications Agency, an Executive Agency of the DTI, in conjunction with the Radio Society Of Great Britain, have announced the Young Amateur of the Year Award 1997. The competition, which is for the most outstanding achievement by a young Amateur Radio enthusiast, is open to anyone under 18 who has an interest in radio. Candidates don't have to be licence holders to apply but the following areas of activity will be taken into account when applications are assessed: DIY radio construction, operation of radio, community service (e.g. helping the disabled or assisting in emergency communications), encouraging others (e.g. through the RA's Novice licence scheme), and school projects. The award was first launched in 1988, the idea behind the scheme is to generate interest in Amateur Radio and to encourage people to become involved for themselves.

The prize, for the most outstanding achievement between 1st August 1996 and 31st July 1997, will be awarded by the Radiocommunications Agency and presented at the RSGB's HF Convention in September 1997. All entrants will receive a copy of the RSGB's Amateur Radio log book, while the winner will receive a £300 cash prize from the Agency and the runner-up a £50 cash prize from the Agency. Both winner and runner-up will also be invited to visit the Agency's Radio Monitoring Station at Baldock, Hertfordshire. In the past, the radiocommunications industry has also been very supportive of this award and has provided additional prizes for both the winner and runner-up.

Last year's winner was 14 year old Christopher Davies from Shrewsbury, Shropshire. Christopher has worked on two special event stations, 'Jamboree on the Air' and 'Thinking Day on the Air'. He is an active member of his local amateur radio club and has been instrumental in persuading his club to support the Novice course for which he intends to become a Novice

Instructor. In addition, Christopher is a keen participant in a number of open evenings for his club, giving demonstrations on Slow Scan TV and packet radio. He enjoys construction and managed to win first prize for a 20 metre receiver in a competition.

Last year's runner-up was 14 year old Ben Clarkson from Reading. Ben is a very keen and active member of his local club taking part in a number of Field Days and hikes. He has also given talks and demonstrations to local Scout groups, a local broadcast station and was the sole participant in the making of a BBC programme in which he explained the intricacies of radio direction finding. Ben received a £50 cheque from the Agency.

The closing date for applications is 31st July 1997. The award is open to any resident of the UK, the Channel Islands or the Isle of Man, who has not reached his or her 18th birthday by the closing date. Entrants must be nominated by an adult sponsor however there is no requirement for entrants (or nominees) to hold an Amateur Radio licence.

Applications should be sent to: Young Amateur Of The Year Award, Radio Society Of Great Britain, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE



501?

For some time now, WACRAL tell us that operators and listeners on the amateur bands have been hearing a rather unusual code during the closing moments of both CW and SSB contacts, and many have been asking about its true meaning and origin. 501 stands for "God be with you 'til we meet again".

A now silent key told of a Scottish lad who was dying, and whispered to his friend "141". When next in church, the friend thumbed through the hymn book and, on reaching number 141, he realised that the above was a message the lad had been trying to convey to him.

In later years, a WACRAL member added the more familiar 73, 88, 99 (Good Health) and 100 (God Bless) greeting to the 141, totalling 501. Since that time 4501 has been used regularly as a greeting and a sign-off blessing by Christians in QSO with one another. For more information, contact G3XNX on 01803 854504 or check the Web at <http://www.g0ppq.demon.co.uk/>

MORE LF RECORDS ESTABLISHED

It's been reported that on the 16th March, a 73kHz CW transmission from G0AKN and G3HMO was heard over a distance of eight kilometres. We're told their transmitter ran a kilowatt into ground rods 150 metres apart and that the receiving aerial was a loop. They claim this to be the best one-way DX so far on this band.

It was also reported that on the 22nd March, the first two-way 73kHz underground two-way contacts took place between G4SPR Portable, manned by G4SPR and G3PAL, and G4AEE Portable who was in a cave with G4OKW. A speech contact was followed by one using slow-scan television, which they say is itself a first for 73kHz.

GBOEND

Captain James Cook set sail from England on the 26th August 1768 on a voyage of exploration and discovery to the Pacific. Cook's first great voyage was a major step in advancing knowledge of geography, navigation, natural science and astronomy. A magnificent replica of Captain Cook's sailing ship H.M. Bark 'Endeavour' set sail from Australia on the 16th October 1996 bound for England. It's due to arrive in its home port of Whitby on the 9th May 1997 and will be berthed at Endeavour Wharf, from where the original ship was built and launched in 1765. To celebrate this historic homecoming, the Scarborough Special Events Group will be on the air as GBOEND during the ship's ten day stay (9th to 19th May), from a site overlooking Whitby

harbour, alongside the bronze statue of Captain Cook. The main HF SSB station will be active on around 3.725MHz, with CW and 2m activity at weekends.

A special full-colour QSL card will be issued to celebrate the occasion and this will be No. 15 in the Group's series of commemorative QSL cards. All contacts will be acknowledged via the Bureau. SWL reports are welcomed. Anyone requiring a direct QSL card can apply via the club call G0000.



CAR CALLSIGN NUMBER PLATES

The RSGB tell us that, responding to requests from their members about the release of 'G' car registration numbers, the RSGB has been holding discussions with the Driver and Vehicle Licensing Agency (DVLA) for over five years. We're told the DVLA have asked the RSGB to look into how many radio amateurs would be likely to purchase 'G' prefix registration numbers if they were to become available.

In a letter to the RSGB's General Manager Peter Kirby, the DVLA Marketing Manager points out that there are many people other than radio amateurs who have expressed an interest in this particular series, so it would not be possible to restrict their eventual sale just to radio amateurs.

In order for amateurs to decide whether they would be interested in purchasing a 'G' registration number, the DVLA has advised of the following terms and conditions under which the registrations would be offered for sale. They are;

- 1) The numeric range will comprise figures 1 to 20 inclusive.
- 2) Almost any three letter combinations may be chosen excluding I, Q and Z. DVLA reserves the right to withhold and withdraw registrations, some of which may be sold at auction. Certain 'G' prefix registrations have already been sold by this means.
- 3) Registration numbers must not be used to make a vehicle appear younger than it actually is. In the case of 'G' prefix registrations, the vehicle which will receive the mark must have been first registered as new on or after 1st August 1989.
- 4) All registrations must be assigned within one year of purchase to vehicles which are used and registered on the British mainland and which are the subject of a valid licensing application and in a classification normally subject to one of the Department of Transport's vehicle testing schemes.
- 5) All registrations must be properly displayed when on a number plate.
- 6) The Agency reserves the right to determine the selling price of registrations and to individually price those registrations which are deemed to have an added appeal. Prices of the recently-released 'B' prefixes series are £999.00 for the number 1 and £399.00 for those in the 2 to 20 range. Some other combinations are at higher prices".

It will be noted that those with GM, GW (etc.) callsigns, those with I, Q or Z in their callsign, and also all G0 licensees, will not be able to purchase their callsign as a registration number, also that G1 licensees are likely to have to pay considerably more than their G2 - G8 colleagues for the privilege. It should be pointed out that these restrictions are entirely beyond the control of the RSGB!

The RSGB has agreed to undertake research for the DVLA on behalf of all UK radio amateurs (whether members of the RSGB or not) to determine how popular this scheme is likely to be. If you are likely to want to purchase your callsign as your vehicle registration number, please write to: Peter Kirby, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE, by 31st May 1997 at the latest, stating your callsign.



RADIO AMATEUR RELIEF EXPEDITIONS

Radio Amateur Relief Expeditions (RARE) are holding summer camps in Romania and Slovakia in July and August 1997 and require radio amateurs to help with technology workshops. Amateur radio will be taught and demonstrated at the summer camps. Applicants should be young, fit, and hold a class 'A' licence and a full UK passport. For further details contact Don, G6FHM, or Norma Sunderland on 01743 873815, Fax: 01743 874729, or G6FHM@GB7PMB.#28 GBR.EU, or Email: rare@dansun.demon.co.uk

Radio Amateur Relief Expeditions



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GB3TC COMES ON STREAM AT LAST!

The Wincanton Amateur Radio Club tell us that after three years of frustration and struggle, they are pleased to announce that GB3TC (TopCat), their new 70cm repeater, is due to come on air on channel RB1 by the time this issue appears. They hope this repeater will be a source of joy to those amateurs in the counties of Somerset, Wiltshire and Dorset who will be able to reach further than they have in the past, especially Novice operators.

They tell us mobile operators will have communication over the whole of the 'Blackmore Vale', including the east/west main roads of A303 and A30. The A303 from just east of the Sparkford Roundabout to Stonehenge on high ground. The A30 coverage will be from just east of Sherborne to just west of Salisbury.

Constructive comments from users of this new repeater are welcomed. Contact Jim Hatch G3OOL, Tel. 01963 370352, Fax. 01963 370833, or via packet at GB7BNM. Jim would like to thank all those amateurs who have been so very supportive in the testing and getting 'TopCat' on air.



WEST LONDON 2M REPEATER

We've been told that a voluntary curfew has been placed on the West London 2m repeater GB3WL, which operates on channel R1. They tell us the repeater is now available between 0600 and 1900, allowing its regular mobile users to continue to use the repeater during the working day, whilst denying those who abuse the repeater the opportunity to do so during the evening.

BRITISH EXPEDITION TO THE NORTH POLE

We're told that a two-man British expedition departed from Arctic Russia on Monday 3rd March, in an unsupported attempt to walk to the Geographic North Pole and then on to the Canadian mainland. Dr Steve Martin and Dave Mitchell will keep in contact once a week by HF radio with Lawrence Howell, GM4DMA, using a 30W 1kg transceiver to a dipole aerial. Lawrence's station consists of modified equipment and aerials supplied by amateur radio manufacturers and retailers. The two adventurers hope to arrive at the North Pole in May and the Canadian coast around June this year.

TRIP TO FRIEDRICHSHAFEN '97

The Barnsley & District Amateur Radio Club tell us they are again running a coach trip in June 1997, to the largest Hamfest in Europe, the 1997 Friedrichshafen Hamfest. They tell us they will be staying at Lindau for six nights, with bed and breakfast in one of the local hotels. For people wishing to make their own accommodation arrangements, either in Lindau or Friedrichshafen, they are also offering a transport-only package. If you would like to book into a guest house, the club tell us they can also arrange this if required. For further information, or an information pack, contact Ernie G4LUE, 8 Hild Avenue, Cudworth, Barnsley, S. Yorks S72 8RN, Tel. 01226 716339, or 0836 748958 (mobile).

INTERNATIONAL DF EVENT

The Belgian national society, UBA, is organising an international Direction Finding event over the weekend of the 14th and 15th June. The event comprises 3.5 and 144MHz competitions and anyone interested in participating should contact the Chairman of the RSGB ARDF Committee, Geoffrey Foster, G8UKT, as soon as possible. You can contact him on 01789 266402 during the day, or 01789 294699 in the evening.

SPECIAL EVENT STATION

Andrew Cunningham, GM0NWI, of the 'Riding for the Disabled Association', Bannockburn Group, Scotland, tells us that the group plan to run a special event station, callsign GB2 RDA, for a period of approximately one month from the 6th June 1997. He says the purpose of this station is to make people aware of the fantastic and dedicated work that is done daily by volunteer helpers in the Association. We're told RDA centres can be found throughout the length and breadth of the country, and that one of their many aims is to allow the disabled person to feel, if only for a short while, that they can be 'on a par' with the ambulant person, and that they can do most of the things that the more fortunate take for granted.

The station will be active on most amateur bands, HF, LF and VHF, using predominantly SSB, but also covering VHF FM and some CW. There will be a special QSL card available for all contacts and they also intend to run an award scheme. The Basic Award is available to all participants who work the special event station on any four different HF/LF and/or VHF bands. The Advanced Award is available for working the special event station on any six different HF/LF and/or VHF bands, and the SWL Award is available for participants who hear the station on any six different HF/LF and/or VHF bands.

The QSL card and awards should be applied for no later than 31st December 1997, by writing or submitting a QSL card to Andrew Cunningham GM0NWI, 33 Broom Court, St. Ninians, Stirling, Scotland FK7 7UN, or Ron Bloomfield MM0AOL 'Torpin', Princes Street, California, Nr. Falkirk, Scotland, FK1 2BX. As the RDA is a charity and depends solely on voluntary contributions, they ask that participants include £2.00 Sterling, or US\$2.00, to help towards the cost of printing and sending the cards and awards.

MORSE TEST SERVICE 11TH ANNIVERSARY QSO PARTY

Roy Clayton G4SSH, Chief RSGB Morse Examiner, tells us that following the successful 10th anniversary celebrations of the RSGB Morse test service in 1996, when he says more than 10,000 on-air contacts were made by special event stations operated by Morse test examiners, many hundreds of letters were received requesting that the occasion become an annual event. To satisfy these requests, county Morse testing teams throughout the UK will again be on the air during the 11th anniversary weekend of 10th - 11th May 1997.

For ease of identification the stations plan to use a special event GBO prefix, followed by the RSGB county code suffix (with a minimum of 26 stations active, see below). For example, the Isle of Wight team will use the callsign GBOIOW and Norfolk GBO NOR. Additional stations will also be active from the Society's HQ (GBORS), the Chief Morse Examiner (GBOCW) and Deputy Chief Morse Examiner (GBOQSO).

A Morse Test 11th Anniversary certificate will be available to any amateur who makes contact with ten of the special event stations. The cost of the certificate is £2.00 (cheque or postal order made out to the RSGB), US\$5.00, or 6 IRC's. Applications with log extracts should be sent to the Chief Morse Examiner, Roy Clayton G4SSH, 9 Green Island, Irlon, Scarborough, North Yorkshire YO12 4RN. QSL cards are not required to claim the award, which is also available to listeners.

Activity will be concentrated in the 80 and 40 metre bands, and in order to encourage newcomers to apply for the award each team will spend some time working QR5 in the Novice CW section of the 80 metre band. The event is not a contest and examiners will be happy to reply at any preferred calling speed. There is no restriction on the type of Morse key used; straight, bug, sidewriter, semi-automatic or keyboards will all be welcomed; just call in to say hello and enjoy the friendship. Here is a list of the special event stations taking part to date:

GBOCW
GBOQSO
GBORS
GBQARM
GBQATM
GBOCNL
GBQDFD
GBQDHM
GBQDD
GBQHLD
GBQICW
GBQICN
GBQIEC
GBQINH

Chief Morse Examiner
Deputy Chief Morse Examiner
RSGB HQ (Hertfordshire)
Co. Armagh
Co. Antrim
Cornwall (Poldhu)
Dyfed
Co. Durham
Gwynedd
Highland
Isle of Wight
Lincolnshire
Leicestershire
Lancashire

GBQMSY
GBONOR
GBQSCD
GBQSHD
GBQSPF
GBQSRV
GBQSKW
GBQTVR
GBQTVS
GBQYSE
GBQYSN
GBQYSW

Merseyside
Norfolk
Strathclyde
Staffordshire
Shropshire
Surrey
Sussex West
Tyne & Wear
Tayside
Yorkshire East
Yorkshire North
Yorkshire West

LIGHTSHIP TO BE ACTIVATED BY WACRAL

The Goleulong 2000 Lightship, moored in Cardiff Bay, will be on the air as the special event station GC3NJB over the weekend of 16th to 18th May.

Organised as a special project by The World Association of Christian Radio Amateurs and Listeners (WACRAL) in response to an invitation by the local churches, the station is to be installed as part of the city's celebration of the centenary of Marconi's first transmissions from Lavernock Point near Cardiff. The weekend has also been designated by WACRAL as the first of their bi-annual activity weekends, when members seek out other Christians on the HF and VHF bands to foster the true spirit of international amateur radio and good fellowship.

UK SSB operators are invited to check-in on Friday 16th at 1900 UTC on 3.747MHz or 2100 UTC on 1.972-1.980MHz. Saturday morning local nets will start at 0800 UTC on 3.747MHz and at 0915 UTC on 144.205MHz SSB. A full schedule of SSB and CW operating times for EU and DX nets has been prepared and is available direct from WACRAL's Membership Secretary on 01803 854504, or 51 Alma Road, Brixham, South Devon TQ5 8QR. For late news check the Web at: <http://www.g0ppq.demon.co.uk/>

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.

STOLEN EQUIPMENT

At the recent London Amateur Radio Show at Picketts Lock on the 8/9th March, Waters & Stanton tell us they suffered a loss by burglary on the Saturday night, where goods to the value of £7,000 were stolen including a Yaesu FT-1000MP/AC transceiver, 20 Yupiteru scanners, including 7 MVT-7100's, plus various Morse keys and second hand items. Some serial numbers are known: 2 Yupiteru MVT-8000 scanners, No.'s 60600016 and 60600020, MVT-7100's No.'s 60700322, 323, 324, 326, 327, 328 and 329. Other traders also lost goods and the Police are investigating. Waters & Stanton, Tel. 01702 206835 would appreciate any information that may be of interest to them. Readers are reminded that a national stolen equipment register, which of course includes the above serial numbered equipment, is maintained by the Ham Radio Today Editorial team, and is accessible 24 hours a day on the automatic fax-back service on 01703 263429.

NEW NRD HF RECEIVER

Nevada are pleased to announce the arrival of the new NRD-345 HF receiver from JRC. They say that JRC already have a reputation for top class communications equipment and that this receiver is no exception. It has many features including AM synchronous detection, wide dynamic range, 100 memories, scan facilities, RS232 interface and clock/timer function.

They tell us the NRD-345 will appeal to the Broadcast and SWL enthusiast wanting high quality interference free

reception and that the retail price is £795. For further details contact Nevada Communications, Tel. 01705 662145 or 613900, please mention Ham Radio Today magazine when enquiring.



AIR CADET RADIO

The Air Training Corps, 'Air Cadets', is a uniformed youth organisation whose aims are to encourage amongst young people a practical interest in Aviation and the Royal Air Force, to provide training which will be useful in both civilian life and in the services, to foster a spirit of adventure and to develop the qualities of leadership and good citizenship. Cadets are between the ages of 13 and 20 years old and have no obligation to join the RAF.

At last year's London Show the new Air Cadet Radio Training document was launched. The course will take Cadets about 30 hours to complete and includes Military style operating procedures, safety, basic electronics, plus 'hands-on' VHF and HF operating. Many of the Novice worksheets have also been included. Agreement has now been obtained for Cadets who have successfully completed the course to wear a Communicators badge which has been specially designed for wear on an Air Cadets uniform.

Cadets also have an opportunity to fly in both powered aircraft and gliders, take part in adventurous training and many sporting activities. Training is also given in such subjects as Principles of Flight, Airframes, Map Reading, Propulsions, and Advanced Radio and Satellite Communications.

For further information about Air Cadet Radio and how you can help, contact Sqn Ldr G. A. King, Headquarters Air Cadets, RAF College Cranwell, Near Sleaford, Lincs NG34 8HB, Tel. 01400 261201 ext: 7619



NEW HF/6M TRANSCEIVER FROM YAESU

First shown at the London Show, Yaesu are proud to announce their new FT-920 HF/6m transceiver which they say will become available to the UK market during April 1997.

The FT-920 includes an all new high performance 33 MIPS (Millions Instructions Per Second) Digital Signal Processor (DSP), for razor-sharp selectivity, increased average power output and voice pattern contouring. It also provides automatic seeking DSP Notch filtering and Noise reduction.

Additional features include a high-speed aerial tuner for receive and transmit, user friendly DSP Bandwidth controls for enhanced interference reduction and exclusive Shuttle Jog tuning controls for fine and rapid tuning. For further details please contact Yaesu UK, or your local Yaesu dealer, please mention Ham Radio Today magazine when enquiring.

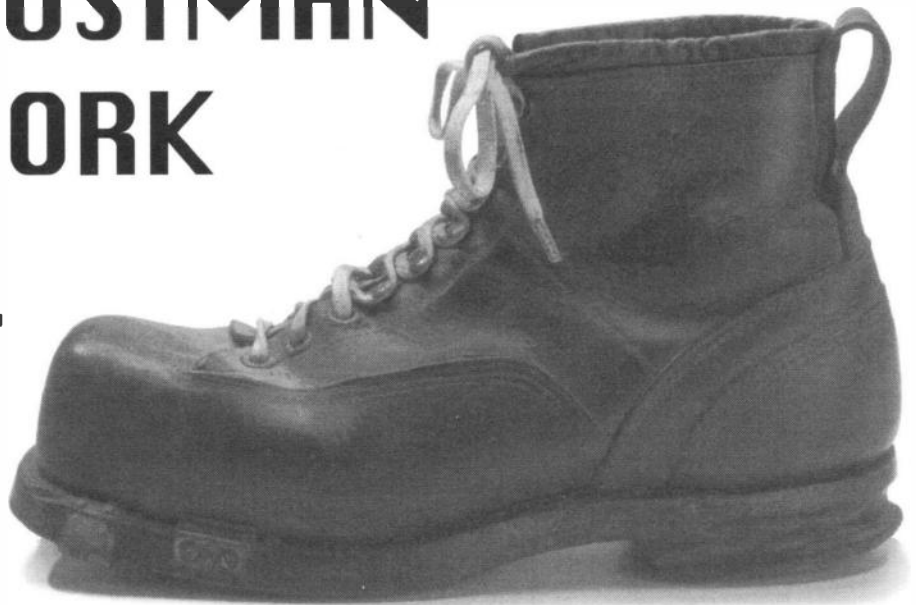


RSGB SPRING PUBLICATIONS SALE

The Radio Society of Great Britain are holding a spring sale. For a limited period only a number of RSGB publications are being made available to members at prices well below the 15% discount already offered to their members. Non-members can take advantage of this offer by joining the society before 31st May 1997. Full details of the RSGB's own products can be found on their Internet site at <http://www.rs.gb.org/books/bookmenu.htm> or contact Marcia Brimson on 01707 659015, Fax. 01707 645105

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CQ FROM G8IYA EDITORIAL

Summer is coming!

I must start off by saying a big 'thank you' to the many readers who came along to the Ham Radio Today stand at the London Show. I enjoyed chatting with many readers, and a lot of useful feedback resulted which I'll be working on in order to get the magazine even more 'intune' (no pun intended!) to the interests of readers. One of these is an increase in the number of 'feature articles', starting this issue in fact where you'll see how you can get going on 'simple' amateur satellites, on either VHF/UHF or HF, with equally simple gear such as a HF CW rig or a 2m/70cm FM handheld. I'm always 'all ears' of course, so if you didn't manage to come along and have a chat, then do drop me a line with your thoughts - I'll be pleased to hear from you.



Dayton in the US nowadays seems quite commonplace to some amateurs, others prefer to rummage amongst the 'goodies' on offer at smaller events.

The Drayton Manor rally in a few weeks time is very much one of the 'larger' events, but it's one I invariably try to get along to every year. With its park, zoo, and rides the venue offers plenty for all ages, whilst we radio amateurs go around the marquees and flea-market area on our traditional 'bargain hunting' expeditions!

Although rallies attract many such amateurs, there is also an unfortunate side to having such tempting bargains on offer. At the

London Show this year, over £7,000 worth of equipment was stolen overnight from one stand,

including many handheld scanners and an FT-1000 transceiver. It wasn't 'petty pilfering', it was an organised and planned affair. This has an adverse affect not just on the dealer, but on our hobby and of course the attendance of traders at future events with the subsequently increased insurance costs. We've always had crime, and undoubtedly it'll go on, but this is just one of the additional costs, besides staff overtime, travelling, accommodation and so on, that dealers have to bear. So if

you're buying from a 'car boot sale' or whatever, you could be well advised to check that any reasonably new-looking equipment on sale actually has a serial number label attached, and maybe even ask to see proof of initial purchase if the seller is an individual on an unnamed stand. Remember also that Ham Radio Today has a constantly updated list of stolen equipment, complete with serial numbers etc., available 24 hours a day on the automatic Fax-Back service. You'll find it on 01703 263429, it's not a 'premium rate' number or whatever, it's offered as a free national service to the amateur radio community, and I know that it's also used by a number of UK Police Forces as well as by many amateurs and dealers.

NEW COLUMNISTS

In line with the increasing use of software and computers in our hobby, I'm pleased to welcome two new columnists to Ham Radio Today. The first is Jeremy Boot G4NJH, who may already be a familiar name to some readers. Jeremy runs one of the foremost amateur radio Internet web sites, <http://www.innotts.co.uk/~asperges/> and has already had an introductory article detailing amateur radio topics, Internet style. Jeremy

also presented a well-attended lecture at this year's London Show on Amateur Radio and the Internet, and joined us on the Ham Radio Today stand at the show for a while with plenty of giveaway handouts on amateur radio 'links'. Jeremy will be contributing a 'Net Communication' column, his first detailing the use of IPhone and RepeaterLink in linking up to remote amateurs and 2m/70cm repeaters via digital net-based communication techniques. You can contact him by Email at asperges@innotts.co.uk, or I'll be happy to forward letters and faxes sent via the Editorial contact details.

The second is an amateur who may also be known to readers, Paul Simpson GORUR. Paul already helps may hobbyists in solving their computer and software problems, and already works well together with Jeremy as their respective talents complement each other nicely. From his bed (Paul is physically disabled and writes and works in 'horizontal mode', he's even run his own electronics repair workshop from his specially-adapted bed) he will be running a 'helping hands workshop' via these pages, so please feel free to write, fax, or Email your amateur radio computing problems, whether they are software or hardware based. Again I'll be happy to forward any queries sent via the Editorial contact points, or you can Email him directly at rur@innotts.co.uk. Paul will also be taking a regular look at some of the latest amateur radio software available, both shareware and commercial, which will I'm sure, also give plenty of additional information to complement our monthly software offer service to readers.

Jeremy and Paul will be writing bi-monthly columns, i.e. 'alternating' each month, and I hope readers will appreciate this format.

RALLIES

Summer is coming, the skies are getting clearer, and it'll soon be time for outdoor amateur activities like field days, rallies, aerial work, and so on. Lots of 'bargain hunting' goes on at traditional 'field-type' radio rallies, whether it's for component bits and pieces, reels of coax or aerial wire, surplus equipment, or the inevitable computer components which are making more and more of a presence at such events.

In the 'old days', one used to see many of the 'big name' dealers at such events, although now with so many rallies taking place

you'll typically find only local dealers attending, with some events resembling more of a 'car boot sale' than anything else. The other end of the scale is the large, often commercially-organised show, typically in several indoor halls to guard against the unpredictable effects of the weather. Nipping off to Friedrichshafen in Germany or

KENWOOD TM-V7E REVIEWED

Chris Lorek G4HCL finds Kenwood's latest dual bander can offer multiple personalities as well as a unique display

As soon as you set eyes on the TM-V7E, you can see it's different from the 'norm'. Despite being quite small for a high-power rig, it sports a large, smart, blue backlit display faceplate which, with a quick button press, can be detached and popped into your top pocket. An optional extension kit is also available so the panel and its controls can be remotely mounted from the set itself.

Besides giving operational information, the dot-matrix LCD panel is also used to good effect as a 'user guide' system, which besides letting you set the many functions of the transceiver to your own preferences, can also give you a useful text-based 'guide' to using many of the set's features, such as scanning, memory storage, and so on.

The transceiver has the usual dual-band mobile transceiver capabilities, and offers 50W maximum transmit power output on 2m and 35W maximum on 70cm, with selectable 'mid' and 'low' power levels of 10W and 5W. As well as giving simultaneous receive on VHF and UHF, the set can also simultaneously receive on two frequencies in the same band, or for the simple life, monoband operation can be selected.

TONES

CTCSS encode and decode, together with DTMF selective calling and paging facilities, are fitted as standard. CTCSS can be used in 'encode' mode for repeater access, as well as encode/decode for quiet monitoring of a channel for

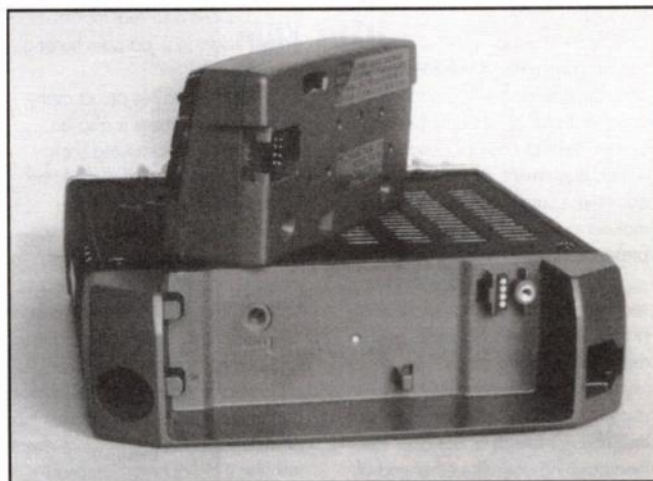


The TM-V7E is characterised by its large LCD panel

club use or similar. Three-digit DTMF selective calling is an alternative for quiet monitoring, here the receiver audio path is only opened after a specific three-digit DTMF sequence is received. The TM-V7E can also be set to give you an 'alert' when it's received such a preset code even when you're monitoring in 'open squelch' mode.

MEMORIES

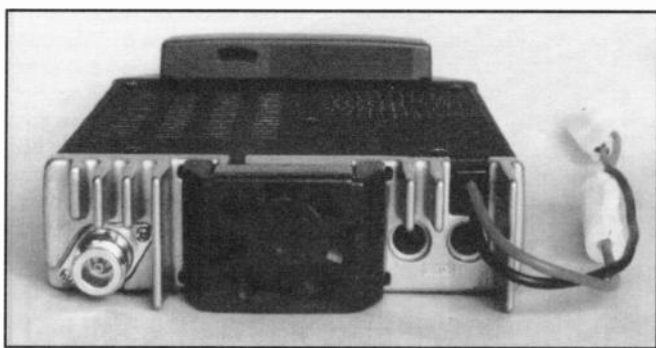
The set can store up to 280 memory channels, each of which can include independent transmit and receive frequencies, frequency step, tone frequency and so on. As an alternative to just displaying the frequency for each memory channel, the transceiver



The front panel can be detached when you leave the set in your car

can be programmed to indicate a short alphanumeric name of up to seven characters for each memory

channel. In this mode the total number of memory channels available is 180, still more than



A rear panel fan is used to keep the set cool on transmit

enough channels! The channels can be split between VHF and UHF in a number of ratios, you're not limited to a '50:50' split.

SCANNING

The TM-V7E offers typical 'full-feature' scanning modes, including full band, programmed band scan and 1MHz scan in VFO mode, plus memory scan and dual-watch 'call' scan in memory mode, with programmable time or carrier operated resume modes.

In repeater offset mode, an 'auto simplex checker' can be used to automatically check whether a simplex QSO is possible. This switches the receiver to the input frequency briefly every few seconds, the set's LCD flashing a small symbol when a squelch raises on the input frequency.

VISUAL SCAN

As an alternative check of band activity, the set can also perform a scan with a visual bargraph display

of activity, of either 25, 49, 73 or 147 channels. Another very useful facility of this rig is that you can store up to five differing 'personalities' (four user personalities plus a default mode) in terms of operating profiles, such as the display mode, scan type and so on. With this, you can use one mode in the shack, another for daytime mobile use, another for night-time use (i.e. with a different display illumination and contrast setting), and so on.

PACKET

With the ever-increasing use of packet radio by amateurs, the TM-V7E has a dedicated front-panel socket for connecting a packet terminal node controller. The 'menu' facility lets you set either 1200 baud or 9600 baud level parameters, and you can even set up separate bands for voice and data.

An internal speaker is fitted into the top lid, and round the back of the set's case two extension

The set offers a 'user guide' to remind you of some of the set's programmable features

speaker sockets are available. These can be used either for a single extension speaker, or for two speakers with separate audio from each band on each (either internal/external or external/external).

MICROPHONE

The supplied fist microphone is fitted with, beside the usual up/down and PTT buttons, four additional buttons on the microphone case front. These allow quick switching between VFO and memory channels, a 1750MHz toneburst for repeater access, plus a user-programmable function such as band-change, high/low power, etc. The supplied mic uses an 8 pin modular connector plug, an optional adapter is available for use with other microphones which are fitted with a 'traditional' type round plug.

MORE FACILITIES

An internal linking modification can allow the set to operate on wideband receive, with a coverage of 118-174, 300-470 and 800-1000MHz, with AM receive automatically switch in on the VHF airband range, the transmit coverage being limited to the amateur bands. A further linking modification also allows the set to operate as a cross-band repeater, either fixed band or 'floating' band,

i.e. 2m to 70cm and vice versa.

The set measures 140mm wide x 40mm high x 189mm deep, with the front panel height being 52mm. Despite the high transmit power level offered, the set's dimensions are kept small by the use of a rear panel fan with the air flow ducted through an internal heatsink, slots in the top panel being used as a 'hot air exhaust'. The fan starts when the PTT is pressed, automatically switching off a couple of minutes after the PTT is released.

At the time of writing the TM-V7E is priced, by Kenwood, at £649.95, although you should check Ham Radio Today ads for current dealer prices.

ON THE AIR

After having had a quick initial tune-around on air, I found that I similarly quickly got myself lost in trying to operate some of the set's features, like changing the 2m tuning step size to 25kHz, switching in the correct repeater shift on 70cm and so on. I soon decided I needed a good read of the 93 page user manual! A couple of hours later, and I was (almost) ready to go - I was still helped considerably by the 'guide' facility provided on the set's LCD to show me what to do next.

Each of the rotary knobs on the set's front panel also have a push-button function. For example, pressing the appropriate volume knob switched the PTT and control to that band, pushing the small button between the two knobs left the PTT on the last-selected band but changed all other controls to the other band.

'Soft key' functions are used for the four small control buttons beneath the display, the LCD indicating the functions of these at any time. Although I'm familiar with using such controls on test equipment and the like, I found it a little difficult at first to get used to these on a mobile rig. It was only after some time in familiarising myself with these, remembering what they did so that I could use them by 'touch' alone, that I dared to try to use them when I was operating mobile - squinting at a small display text indication when driving is certainly not what I'd recommend.

However, with the large number of available memory channels, coupled with the alpha-

numeric display facility on the set, I found the set's 'microphone button operation' mode to be quite OK for mobile use - leaving the many other 'bells and whistles' features for home use! The review transceiver I tested was equipped with the optional voice synthesizer unit (the VS-3 unit at £45.95) which gave me a variety of speech indications, such as frequency, memory channel and so on. I found this was often handy when I was on the move, although I invariably switched it off for home use.

The set's small size allowed me to fit it in many small spaces in the car I use, and the high transmit power coupled with what I found to be a nicely sensitive receiver, certainly gave me quite an impressive QSO 'range' when I was on the move. I found the small internal speaker, fitted to the upper lid, gave a respectable amount of audio, quite enough for 'round about town' driving although plugging in a larger external speaker made life a lot easier at motorway speeds. The reports I received on my transmitted audio were exceptionally good with plenty of 'punch', indeed one of my 'locals' told me it was the best audio he'd heard from me for some time - most impressive!

At home, with the set connected to my rooftop 2m/70cm collinear, again I found similarly good performance on transmit and receive. Only once did I suffer from intermodulation problems from strong signal overload - when my (very) local 2m news broadcast station came on air and subsequent mixing from paging transmitter meant I couldn't use a number of other 2m channels.

However, Kenwood have usefully catered for this, as there's a sub-menu facility to switch in an 'AIP', or 'Advanced Intercept Point' (which I presume switches out the front end preamp stage) on either or both bands. Although the receiver then went 'deaf' by about 10dB or so on that band, at least I could hear signals of reasonable strength and have a 'sensible' QSO without the dreaded interference!

Whilst operating from home, I found the 'visual scan' facility to be quite useful. This operates on a single band, and the scan function usefully doesn't interrupt the 'tuned-in' signal. When other signals appeared on the screen, a quick

twist of the tuning knob instantly allowed me to take a listen to what was going on.

The repeater 'input check' was a little different, where this *did* periodically interrupt the receive signal on the repeater output. Here, a quick press of the 'Rev' button when needed was rather more useful to check if I could 'go simplex' or not.

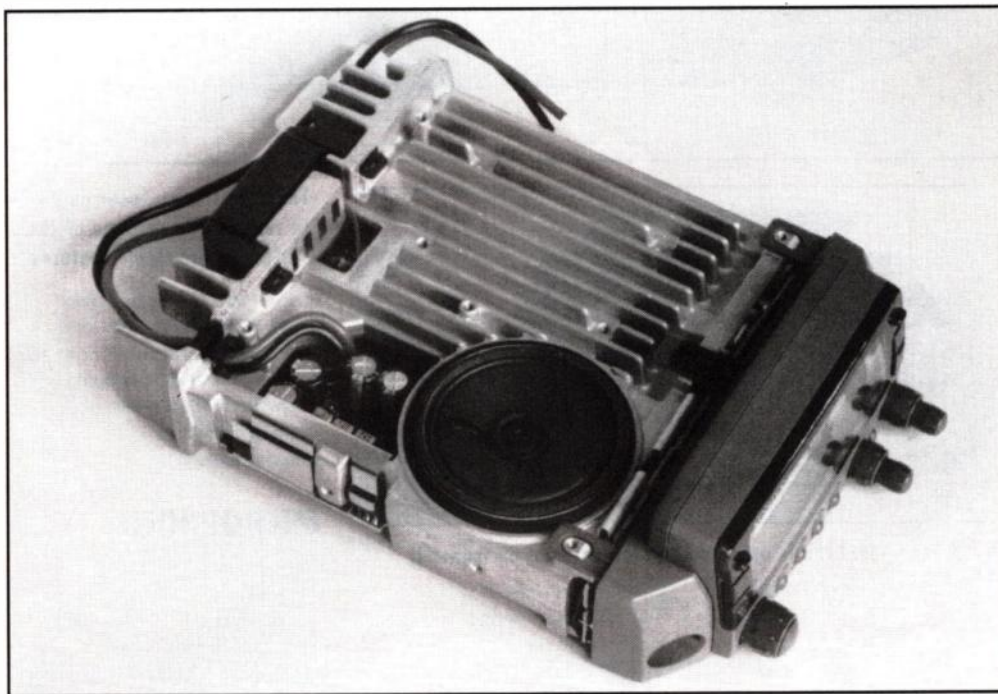
An unusual effect I found when using the review set was that the bargraph S-meter on either band, and the level display of the visual scan, was always either at

could quickly release the mic PTT key to overcome this limitation. With this, even during a long 'duplex' contact the set still didn't overheat when it was set to 'mid' power level, although trying to run on maximum power did (not unsurprisingly) cause the transceiver to get exceptionally hot after 20 minutes or so!

After a period of use during the review, I found the 'programmable user modes' very useful. Using this, rather than plough through the various menus to switch facilities in and out, I could select one mode

channel spacing, as we use right now, the 12.5kHz adjacent channel rejection may not be quite good enough for future use in busy areas, and a filter change could be needed when we all finally move to 12.5kHz spacing in Europe. It is of course 'early days' yet, and Kenwood tell me their engineers in Japan are currently working on possible modifications for their transceivers.

On transmit the set gave an adequate power level, even at a low supply voltage. The higher-order harmonics were well



Inside, a large finned heatsink is used

maximum reading (when the squelch was open) or zero (when the squelch was closed). This however was only a problem on the individual rig I tested, Kenwood UK kindly and very promptly faxed me the results of their tests which showed completely correct operation.

One weekend while I was using the set on 70cm for an extended QSO in cross-band duplex mode, I found the transmitter continually dekeyed after ten minutes of transmission. Checking the manual showed me that this was due to the automatic time-out timer facility, which could be set to 3, 5, or 10 minutes, but it could not be disabled. However, as long as I kept an eye on the display (the set would also give a quick 'beep' when it automatically dekeyed) I

for mobile use (i.e. with the voice synthesizer in and with memory-only operation), another for normal home use, a further for 'visual scan', and so on. This I feel is a very handy facility which Kenwood ought to be congratulated on, for incorporating into a set with so many features available from its front panel controls.

LAB TESTS

On receive the measured results revealed a good overall performance, with good receiver sensitivity coupled with equally good strong-signal rejection for a mobile rig. The image and 'half IF' rejection levels were excellent. Although the adjacent channel selectivity was fine for 25kHz

suppressed, and the frequency accuracy was excellent.

CONCLUSIONS

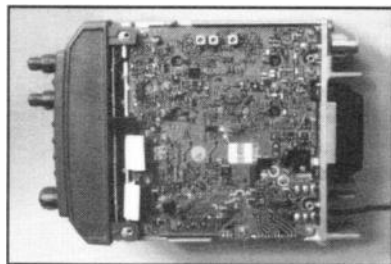
Kenwood's TM-V7E presents a 'new look' in today's world of 'run-of-the-mill' mobile rigs. Its large blue front panel display can be placed in various operation modes to suit individual use, there's also a number of programmable quick-access 'user modes' to cater for different operation modes. The set performed well on the air, both mobile and in the shack, and the removable front panel plus other facilities such as the dedicated data connector should usefully add to the overall versatility.

My thanks go to Kenwood UK for the loan of the review transceiver. Please mention *Ham Radio Today* when enquiring.

LABORATORY RESULTS:

All measurements taken using stabilized 13.8V DC power supply and supplied DC lead, high power TX, otherwise stated.

RECEIVER;



SENSITIVITY;

Input level required to give 12dB SINAD;

144MHz;	0.12μV pd
145MHz;	0.12μV pd
146MHz;	0.12μV pd
430MHz;	0.14μV pd
435MHz;	0.14μV pd
440MHz;	0.15μV 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
Half 1st IF	95.4dB	93.1dB
1st Image	>100dB	67.0dB
2nd Image	88.2dB	>100dB

SQUELCH SENSITIVITY;

45MHz

435MHz

Threshold;	<0.05μV pd (<2dB SINAD)	<0.05μV pd (<2dB SINAD)
Maximum;	0.55μV pd (32dB SINAD)	0.46μV pd (25dB SINAD)

S-METER LINEARITY

(see text)

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;	87.2dB	85.5dB
+1MHz;	92.1dB	93.8dB
+10MHz;	97.0dB	94.7dB

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;	67.4dB	67.6dB
50/100kHz spacing;	67.6dB	67.5dB

MAXIMUM AUDIO OUTPUT;

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

145MHz	435MHz
2.45W RMS	2.63W RMS

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;	34.2dB	29.8dB
-12.5kHz;	40.9dB	29.2dB
+25kHz;	77.1dB	72.6dB
-25kHz;	76.9dB	72.8dB

TRANSMITTER

TX POWER AND CURRENT CONSUMPTION;

Freq.	Power	10.8V Supply	13.2V Supply	15.6V Supply
145MHz	High	35.4W/7.40A	53.6W/8.90A	54.0W/9.00A
	Mid	13.3W/4.70A	13.3W/4.70A	13.4W/5.00A
	Low	5.35W/3.20A	5.35W/3.20A	5.45W/3.40A
435MHz	High	22.8W/5.80A	35.9W/7.00A	35.9W/7.00A
	Mid	12.3W/4.40A	12.4W/4.30A	12.5W/4.30A
	Low	5.15W/3.20A	5.20W/3.20A	5.20W/3.30A

HARMONICS;

	145MHz	435MHz
2nd Harmonic;	-81dBc	-69dBc
3rd Harmonic;	-79dBc	-85dBc
4th Harmonic;	-87dBc	<-90dBc
5th Harmonic;	<-90dBc	-
6th Harmonic;	-88dBc	-
7th Harmonic;	<-90dBc	-



SUBSCRIPTIONS AND
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PEAK DEVIATION;

145MHz	435MHz
4.58kHz	4.74kHz

FREQUENCY ACCURACY;

145MHz	435MHz
+20Hz	+65Hz

TONEBURST DEVIATION;

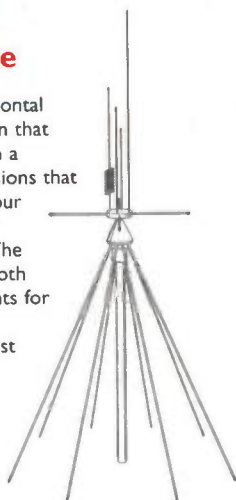
145MHz	435MHz
4.42kHz	4.11kHz

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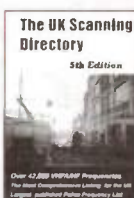
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ON TEST - ICOM IC-207H

Is it a single band rig, no it's a dual bander, and a high powered performer at that.
Chris Lorek G4HCL takes a close look

It's the set everyone seemed to be talking about at the London show, where a working prototype of the IC-207H was demonstrated on the Icom-UK stand. I was fortunate in receiving that very same rig a few days later to try out on air, quickly followed by a full production sample for review (thanks for the superb service Icom).

The information and specification sheet describes the IC-207H as having "Dual band features at a single band price". With that price being £439.00 (but see Ham Radio Today ads for current dealer prices) they could very well be right!

For your money you get a 50W 2m rig and a 35W 70cm rig 'squeezed into' the same box, a 'band' button switching between the two bands. The set's case measures a very small 140mm x 40 x 185mm, so you should be able to fit it in into the tiniest of available positions in a car.

CONTROLS

The transceiver's front panel offers a number of operating knobs and buttons, but from the accompanying photo you'll also see that the detachable mic cover reveals a fully-fledged remote control system for the set, with each button being backlit for night-time use. The mic control even offers up/down volume and squelch controls, as well as handy facilities such as a reverse repeater monitor and transmit power selection, it seems they've thought of nearly everything!



The IC-207H has easy-to-use controls

The front panel can be detached and optionally mounted remotely



SWITCHED BANDS

The IC-207H offers 'switched band' operation, i.e., one band at a time. So, you can use either 2m or 70cm but not simultaneous twin-band reception or crossband duplex operation, although few amateurs (in

my experience at least) want to do this while driving around in the car. Instead, it offers simple operation, very important in a mobile rig, and 150 memory channels plus extra 'call' channels and the like are available for frequency storage and one-touch scanning.

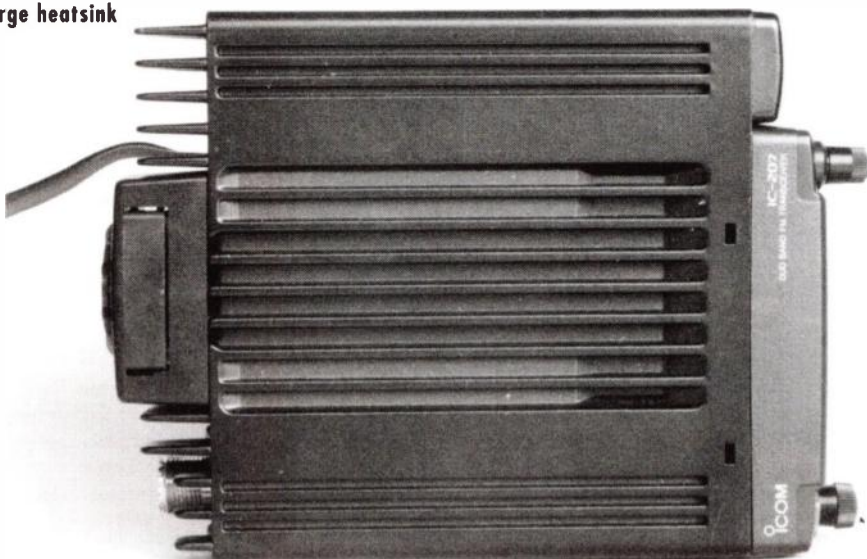
DISPLAY

A bright yellow backlit liquid crystal display is used, with the functions for the six push-buttons below the panel also being shown on the display. These buttons each have a dual



A removable panel on the microphone reveals a fully-featured array of buttons, including remote volume and squelch controls

The entire top panel is a large heatsink



function, and pressing the appropriate button for a couple of seconds in each case initiates the 'second function' shown on the LCD.

A useful facility is that the front panel unit can be very quickly removed, for example if you leave the set in your car, the small display and control panel being carried in your top pocket. Alternatively, a 'separation kit' is available for the panel, so the transceiver itself can be mounted remotely with just the small display fitted in a more easily-viewed position on your dashboard, to make mobile operation a little easier.

TONES

Besides having a 1750Hz toneburst facility from the microphone for repeater access, the IC-207H also has full CTCSS (sub tone) encode and decode built in as standard. A 'tone scan' facility lets you check which, if any, sub-tone is being used on an active channel, and the CTCSS decode can be used as a pager facility to let you know if you've been called in your absence. A DTMF encoder is also fitted (but not a DTMF decoder), together with 14 DTMF memories available for automatic transmission.

EXTRAS

For packet radio use, a 6 pin mini-DIN connector is fitted to the rear panel, and the transceiver accommodates both 1200 baud and 9600 baud speeds. Also on the rear panel there's a small fan to keep the transmitter PA heatsink cool, this automatically switching in when the set is in transmit mode - it can optionally be set to stay on permanently whenever the transceiver is switched on. The set's top panel is actually a large heatsink, with the airflow passed along this to dissipate the generated heat from the PA.

Although not programmed on the review set, wideband

receive on both VHF and UHF is also possible, with the set automatically switching to AM receive on the VHF airband range.

ON THE AIR

An initial 'play' with the set showed me that it was very easy to use, and within a few minutes of switching on I was having a QSO on my local repeater. I found the set's front panel controls were intuitively very simple to use, and it was only after some time that I decided I'd better sit down and read through the 74 page user manual!

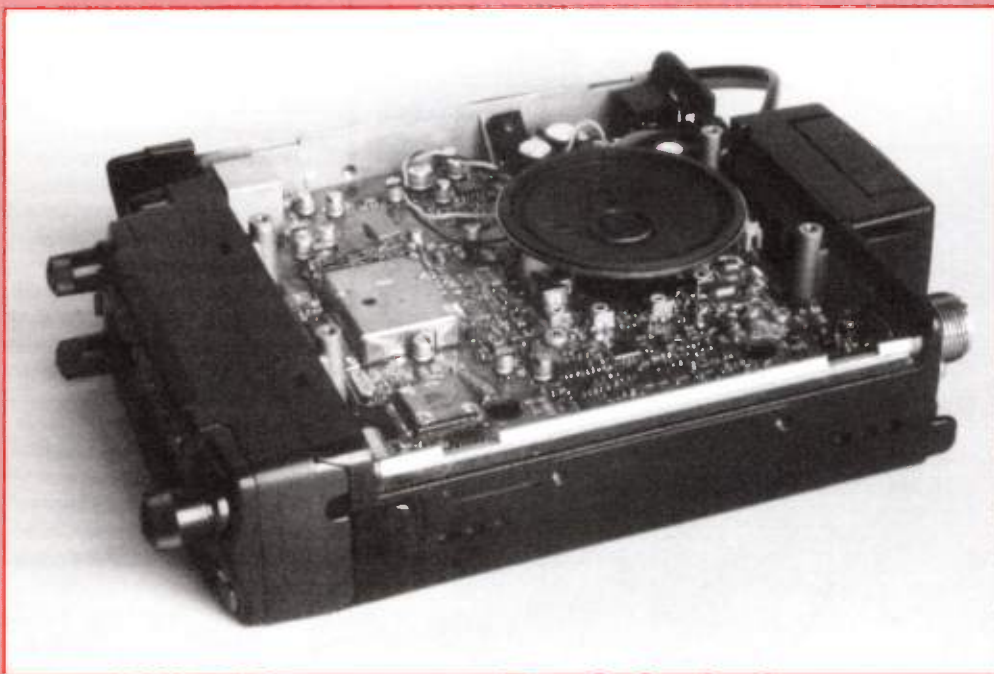
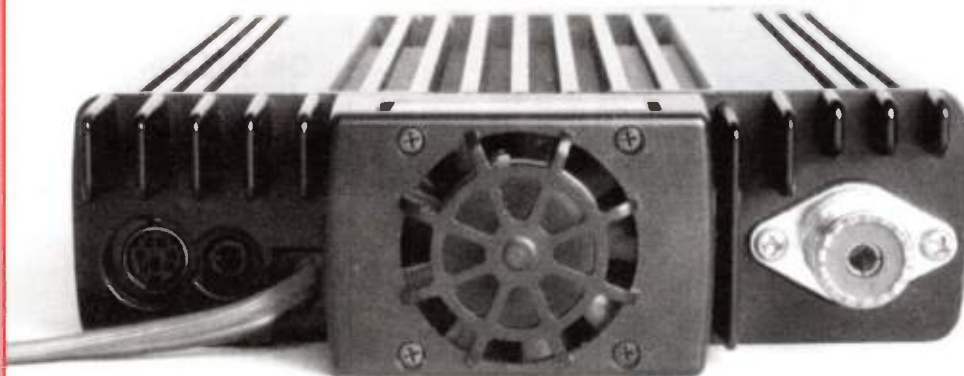
I'd soon programmed a number of the set's memory channels with all the 2m and 70cm FM simplex and repeater channels, together with a number of 'scan edge' channels in VFO mode (there are ten of these available). A press of the 'scan' button on the set's front panel or the 'up' button on the microphone for about a second or so in either mode then set the transceiver off, finding active channels.

With the plastic cover in place on the supplied microphone, it offers a smaller number of controls as you'd typically use for 'normal' operation, such as up/down frequency or channel change, VFO/memory switching, band switching, and so on. Two programmable user functions, F1 and F2 are also available, which as 'default' are (F1) transmit output power selection and (F2) tone function. You can change these to any other switch on the set's front panel using a power-on function.

About the only awkward operation mode I found with the set was that of generating a 1750Hz tone for initial repeater access. Unless I'd missed something, this needed the microphone plastic cover removed, with a sequential press of two different buttons beneath the cover. I found this a bit of a pain in use, although with the overall plan for 2m/70cm repeaters in the UK to be fitted with CTCSS access this hopefully shouldn't be a limitation for too long.

In using the set with its internal speaker, which is fitted on the lower case lid, I found the received audio to be slightly on the 'topy' side. Using the set in the car with it mounted beneath the dash also deflected the audio down to the

A cooling fan is fitted to the rear panel alongside the dedicated packet connector, external speaker socket, and aerial connector



car's carpet, which didn't help with readability either, I found plugging in an extension speaker was useful here. Reports on my transmitted audio were 'processed and topsey', although the audio was described as being very readable to 'cut through' mobile noise and the like.

Whilst tuning around using the VFO, I found a very handy facility incorporated was that of five 'scratch pad memories' for each band. Here, the set automatically memorizes the operating frequency every time the PTT is pressed, storing the last five frequencies (including repeater shifts) on each band into separate memory channels.

Recalling these just needs a quick press of the 'M/Call' button, the tuning knob then selecting between them - very useful and especially handy when on the move! A further nice touch was that the squelch delay can be set to either a short or long hang time - e.g. short for base station packet use, or long for normal or mobile use to prevent the squelch constantly opening and closing quickly when on the move.

Operating from home, with the set connected to my rooftop collinear, showed a good level of performance without a trace of the 'typical' intermodulation problems I've learned to expect

on 2m in my RF-congested location. Icom have also usefully incorporated an automatic attenuator in with the squelch control - turning this beyond around the mid-way point gradually adds up to around 10dB of front-end attenuation, to help guard against strong signal problems without a lot of button-pushing.

I found operating with the transmitter on high power for long 'ragchew' periods did cause the heatsink panel to get very hot, and I usually found I needed to drop down to the 'next lower' power level for this. However, programming the set to keep the fan on continually helped, as long as I didn't mind

the fan's constant low-level 'whirring' noise on receive. Four transmit power levels, of Low, Low-Mid, Mid-High, and High could usefully be selected, and I typically used the 'Low-Mid' setting for local QSOs, finding this to be more than adequate for most needs.

LAB TESTS

The overall measured receiver performance showed a good all-round performance, especially in terms of strong-signal handling performance. The transmitter gave a well-controlled level of transmitted power at each level, with well-suppressed harmonics.

The receiver's adjacent channel spacing for 25kHz operation was quite good, although future 12.5kHz operation in busy areas will probably need a filter change as well as a quick 'tweak' to the transmitter deviation.

Icom UK kindly offered to allow me to 'dive in' with my soldering iron to check 12.5kHz channel spacing performance, but unfortunately a source of 450kHz (as opposed to 455kHz) 2nd IF filters for 12.5kHz spacing wasn't quickly available at the time of review. However, Icom UK tell me that information on user modifications for 12.5kHz channel spacing will be available from them in the near future for Icom rig owners.

CONCLUSIONS

The IC-207H offers very good performance for a dual band set at an equally good selling price. It doesn't have facilities like simultaneous twin-band receive or DTMF selective calling, instead it provides easy-to-use operation and impressive technical performance at an economic price, combined with the availability of fully-featured remote operation using the supplied microphone controller whenever you wish.

My thanks go to Icom UK for the loan of the review equipment. The IC-207H is available from all Icom dealers, please mention *Ham Radio Today* magazine when enquiring.

LABORATORY RESULTS:

All measurements taken using stabilized 13.8V DC power supply and supplied DC lead, high power TX, otherwise stated. All measurements taken using stabilized 13.8V DC power supply and supplied DC lead, high power TX, otherwise stated.

RECEIVER;

SENSITIVITY;

Input level required to give 12dB SINAD;

144MHz;	0.14μV pd
145MHz;	0.12μV pd
146MHz;	0.13μV pd
430MHz;	0.15μV pd
435MHz;	0.15μV pd
440MHz;	0.16μV pd

MAXIMUM AUDIO OUTPUT;

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

45MHz	435MHz
2.46W RMS	2.43W RMS

IMAGE REJECTION;

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

	145MHz	435MHz
Half 1st IF	>100dB	99.3dB
1st Image	>100dB	69.2dB
2nd Image	>100dB	80.0dB

SQUELCH SENSITIVITY;

	145MHz	435MHz
Threshold;	0.09μV pd (6dB SINAD)	0.10μV pd (5dB SINAD)
Maximum;	0.64μV pd (22dB SINAD)	1.17μV pd (22dB SINAD)

S-METER LINEARITY

	145MHz		435MHz	
	Sig Level	Rel. Level	Sig. Level	Rel. level
S1	0.45μV pd	-11.4dB	0.54μV pd	-11.1dB
S3	0.60μV pd	-8.8dB	0.75μV pd	-8.3dB
S5	1.02μV pd	-4.2dB	1.23μV pd	-4.0dB
S7	1.27μV pd	-2.3dB	1.54μV pd	-2.0dB
S9	1.66μV pd	0dB ref.	1.95μV pd	0dB ref.
S9+	1.97μV pd	+1.5dB	2.32μV pd	+1.5dB
S9++	2.44μV pd	+3.3dB	3.02μV pd	+3.8dB

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;	31.8dB	29.9dB
-12.5kHz;	29.5dB	19.9dB
+25kHz;	70.9dB	63.9dB
-25kHz;	70.2dB	63.3dB

TRANSMITTER

TX POWER AND CURRENT CONSUMPTION;

Freq.	Power	10.8V Supply	13.2V Supply	15.6V Supply
145MHz	High	42.3W/8.90A	52.5W/9.70A	53.8W/9.80A
	High-Mid	19.3W/6.00A	19.5W/5.90A	19.5W/6.00A
	Mid-Low	10.5W/4.50A	10.6W/4.50A	10.6W/4.40A
	Low	5.25W/3.40A	5.30W/3.40A	5.30W/3.60A
435MHz	High	21.1W/5.90A	35.2W/7.40A	35.4W/7.30A
	High-Mid	19.3W/5.60A	19.7W/5.50A	19.7W/5.50A
	Mid-Low	9.70W/4.10A	9.75W/4.10A	9.80W/4.00A
	Low	4.75W/3.30A	4.69W/3.30A	4.75W/3.20A

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;	80.9dB	81.7dB
+1MHz;	86.1dB	90.1dB
+10MHz;	97.3dB	88.6dB

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;	72.5dB	64.0dB
50/100kHz spacing;	72.4dB	64.0dB

HARMONICS;

	145MHz	435MHz
2nd Harmonic;	-78dBc	-70dBc
3rd Harmonic;	-75dBc	-77dBc
4th Harmonic;	<-90dBc	<-90dBc
5th Harmonic;	<-90dBc	-
6th Harmonic;	<-90dBc	-
7th Harmonic;	<-90dBc	-

TONEBURST DEVIATION;

145MHz	435MHz
4.96kHz	4.37kHz

FREQUENCY ACCURACY;

145MHz	435MHz
-238Hz	-719Hz

PEAK DEVIATION;

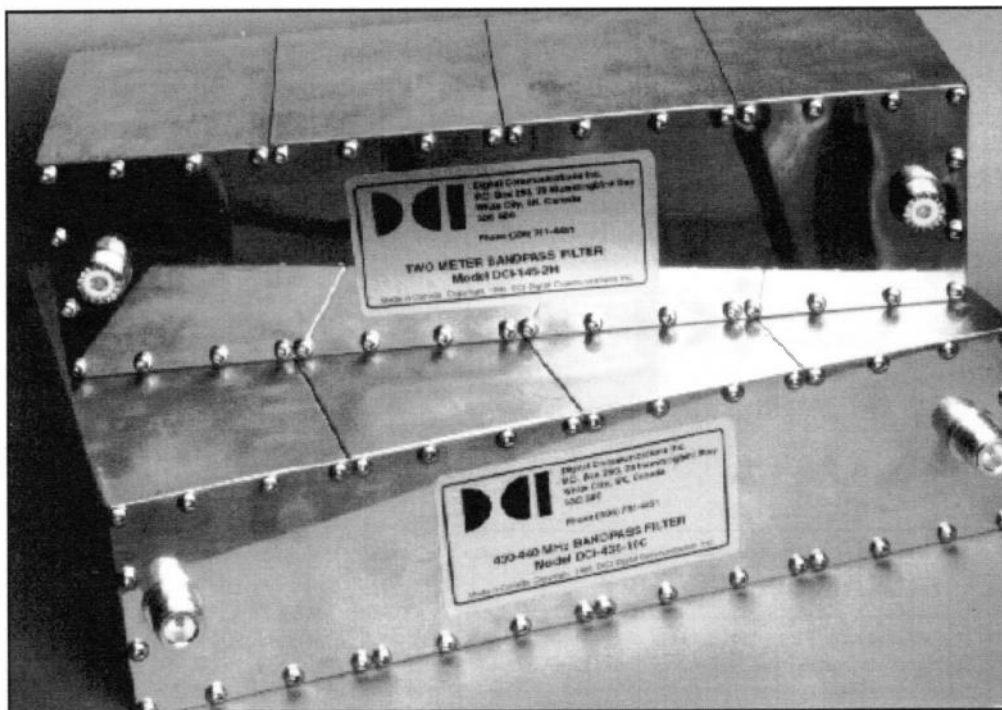
145MHz	435MHz
5.56kHz	5.34kHz

DCI FILTERS TESTED

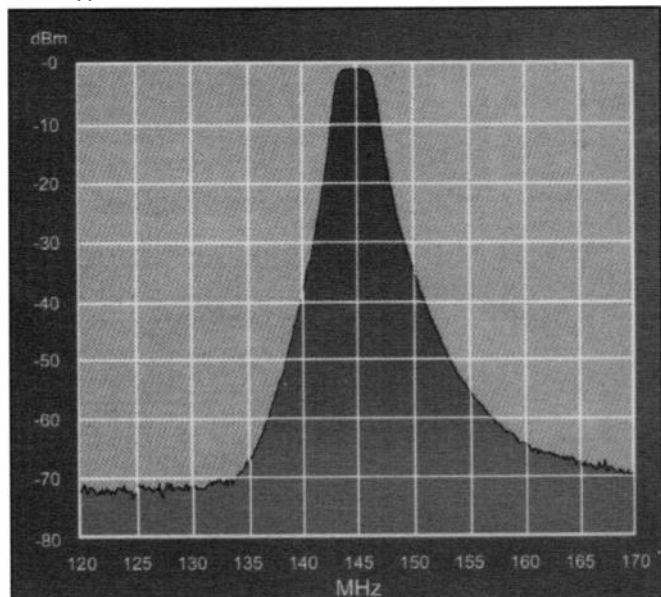
Our Consultant Technical Editor finds new life in his dual band rig by adding an in-line filter

From reviewing many 2m and 70cm rigs over recent years, I've found that whilst the features offered by the transceivers have increased in terms of 'bells and whistles', the RF performance hasn't usually kept up to the same pace. Indeed the VHF/UHF bands become more crowded, especially with the rapid rise in the number of high-power, well-sited, VHF and UHF paging transmitters. I often find that using a dual-band portable rig, or indeed some mobile rigs, from home with a rooftop aerial connected is sometimes a complete waste of time due to intermodulation, blocking, and image reception problems from such strong out-of-band signals.

Although I *do* live in such an 'RF congested' area (it's not even in a city centre!), I know of



Typical 2m response



The filters aren't small, but they certainly work!

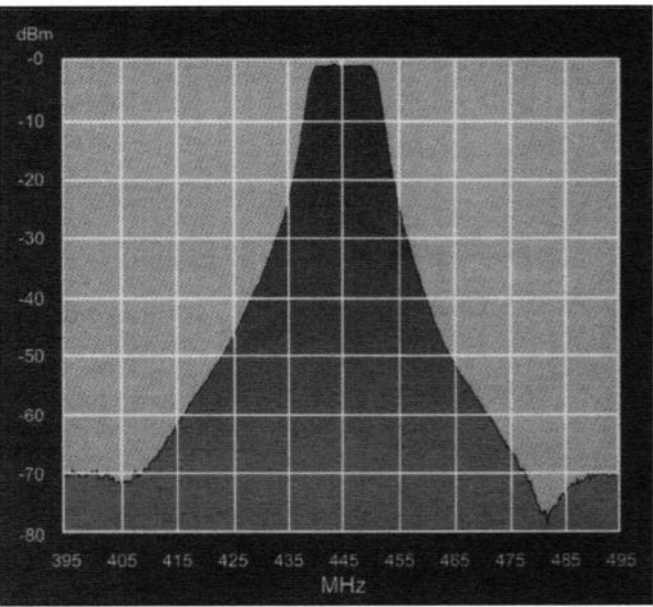
many amateurs who suffer even more, and I always check for this when testing such rigs in Ham Radio Today reviews.

Of course, as transceivers get smaller and smaller, there's less room for internal front-end filtering, and one solution to overcome such problems is by adding an external, in-line filter. To reject a single unwanted 'spot frequency', a tunable cavity notch filter can be used. Alternatively, an in-line bandpass filter can be used, to pass the required band (i.e. 2m or 70cm) and reject the unwanted out-of-band signals. The latter is exactly what's offered by the two filters I've tested here. They're manufactured by Digital

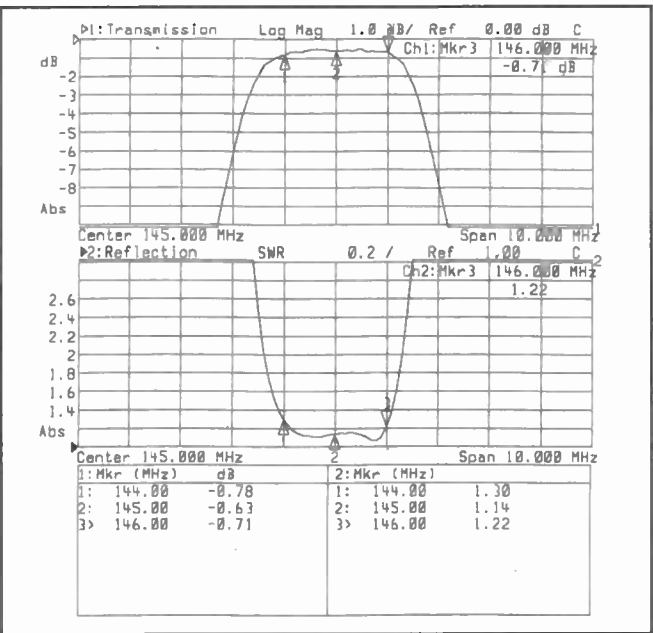
Communications Inc. in the USA, and imported to the UK by Waters and Stanton Electronics. After seeing them at the London Show, I came away with a pair to test for readers.

FILTERS

The 2m filter (DCI-145-2H) is a four-section filter using internal helical resonators, with internal apertures between the filter sections for coupling. It gives a 2MHz passband over 144-146MHz, with typical rejection of 138MHz pagers of over 40dB, 68dB at 135MHz, and 55dB at 155MHz. It isn't small, at 305mm x 76mm x 127mm, but then you need this size to



Typical 70cm response (the US version is shown here)



obtain the required 'Q' factor to give the selectivity.

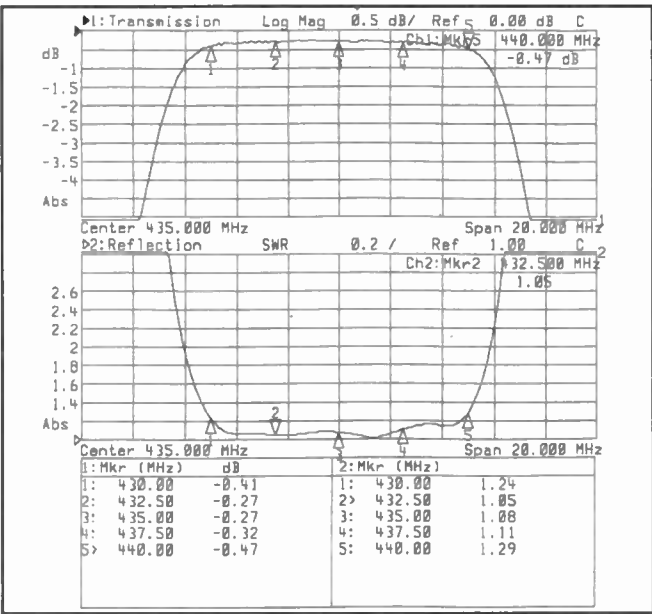
The 70cm filter (DCI-435-10C) is again a four-section filter with aperture coupling, but this time it uses full-size quarter wave resonators. It's the same height and width as the 2m filter, but the quarter wave size extends the depth to 190mm. The bandwidth is 10MHz, and the European version covers 430-440MHz (the US version covering 440-450MHz). Typical rejection +/-10MHz from the band edges is better than 35dB, with 55dB at +/-20MHz and 70dB at +/-30MHz.

Each filter is designed to be fitted in line with the aerial coax

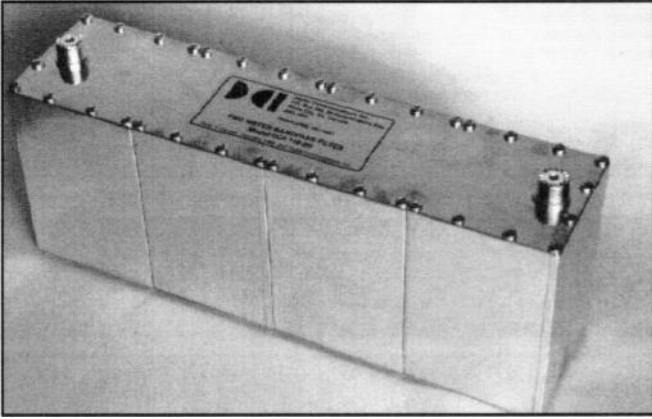
line to your rig, and has a maximum VSWR specification of 1.5:1 with a power handling capability of 200W. The insertion loss is quoted as 1dB maximum on 2m and 1dB typical on 70cm.

IN USE

It's easy for me to replicate intermod QRM in my shack, I just connect my 'early-generation' dual-band handheld to my rooftop 2m/70cm collinear and listen to all the horrible noises! Or, I go mobile with the rig connected to my car aerial and drive into my nearest city centre, suffer continual VHF paging



The filters come with actual measurement plots



breakthrough. Placing the 2m filter in-line totally eradicated these - I could at last use my handheld both from home and mobile! I don't usually suffer too many problems on 70cm, although I do get image breakthrough on one or two 'known' frequencies. Again, with the 70cm filter in line, these were completely eradicated.

Each filter came with individual printouts of the passband response and VSWR, on the review samples these showed 0.63-0.78dB insertion loss on 2m and 0.27-0.47dB on 70cm, both impressively low, with a maximum VSWR of around 1.3:1 in each case. I certainly didn't notice much difference in receiver sensitivity in use (instead I found I could actually hear signals!), and I needed a careful eye on the power meter to see any difference in my transmitted power.

CONCLUSIONS

The publicity leaflet says "Simply connect one of our bandpass filters between your VHF or UHF rig and antenna, then sit back and relax. Enjoy the experience of monitoring your favourite station in peace, without listening to the squawks and squeals of intermod". I couldn't disagree at all with this!

The filters aren't cheap, at £89 for the 2m version and £119 for the 70cm version, but I found, with the 2m filter at least, that it turned an otherwise unusable combination of an amateur handheld and add-on 30W PA into a station I could actually use on air without endless QRM.

My thanks go to Waters and Stanton Electronics (Tel. 01702 206835) for the loan of the filters for review. Please mention Ham Radio Today when enquiring.

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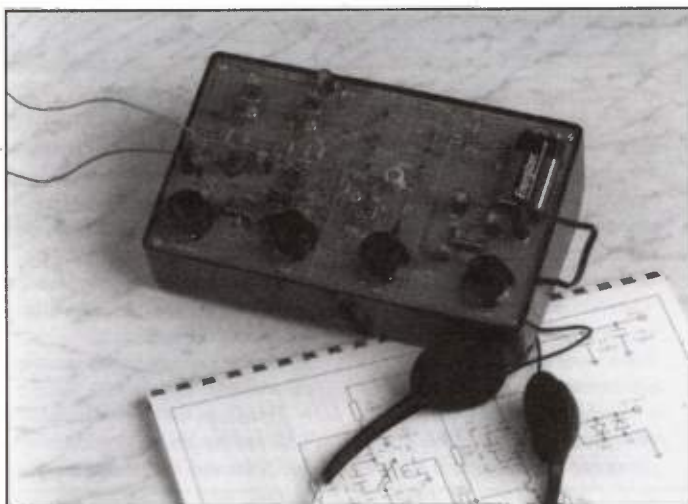
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SCANNERS

Bill Robertson tests a unit which decodes trunking system information

There's plenty of listener and scanner news this month, so without further ado here goes;

HF ON VHF RECEIVERS

A message from Nidge GONIG says he's been offered an FRG-9600 receiver, and he was wondering whether the HF conversion board for this was still available. The FRG-9600 was one of the earlier all-mode scanners, i.e. with SSB and CW as well as AM, FM and WFM, although it only covered the VHF/UHF range of 60-905MHz 'as standard'. An internal modification can extend the range above 905MHz, typically to around 950MHz, but with its all-mode facility a natural 'add-on' would be HF coverage.

This was provided in the UK by a dealer-fitted converter PCB, mounted inside the FRG-9600 case, with Raycom Ltd. in Warley, West Midlands, fitting these. But to the best of my knowledge, due to the wiring complexity, they were *not* available as a 'user fitted' PCB. However, a bit of detective work has revealed that an add-on unit, fitting externally to the FRG-9600, is also available for this set, it's also suitable for other VHF-only scanners to add HF coverage. Described simply as the 9600 'HF Converter', it's housed in a small screened box and plugs into the rear of the receiver. Although it's no longer in production by the manufacturers, I'm told that South Midlands Communications Ltd. in Hampshire (Tel. 01703 251549, ask for Dave Hawnt) still have one or two in stock if you're quick (please mention Ham Radio Today magazine when enquiring - Ed).

WATSON COUNTER

Mr. Davis in Lancaster has seen the Watson FC-128 frequency counter in the latest Maplin catalogue, which he says from a first glance looks like an Optoelectronics counter in a different case, and asks whether it is and what the performance is like.

The answer here is that they're not the same, the Watson counter is instead made in Taiwan although I'm told that it works quite well, they also differ as one uses a helical aerial whilst the other is supplied with a telescopic type. Lowe Electronics in Matlock are also importing them, under the manufacturers type number of MIC 10 C28.

SPEAKER PROBLEMS

John Liddell has a Realistic PROf62, which as he left it on charge one day his 7 year old youngster knocked it over, pulling out the charging jack. But then, undoubtedly wanting to be helpful, plugged the charging lead back in but instead into the earphone socket, which blew the internal speaker! John asks where can he get Realistic scanner parts in the UK, or alternatively where he can obtain a suitable very small replacement speaker.

Tandy tell me their stores can order any spare part for their equipment. They also offer a repair service, although in my opinion the cost for replacing a speaker will certainly be well above the cost of the spare itself. I'd suggest contacting Link Electronics in Peterborough (Tel. 01733 345731), who are Realistic distributors, and from my experience know what they're talking about in the scanner line and will be able to order the 'genuine' replacement part. Alternatively, if you don't mind a 'near replacement' then such small

speakers are also available from component retailers such as Maplin, Cirket etc, whose catalogues are on sale in W.H. Smith.

AIRBAND FREQUENCY GUIDE

There are a number of frequency guides available, but for the airband enthusiast Air Supply in Leeds have for some time serving their needs with a 'no-frills' frequency guide to VHF and UHF airband frequencies and their users around the UK. It's an easily-carried paperback, and best of all it's updated every six months or so.

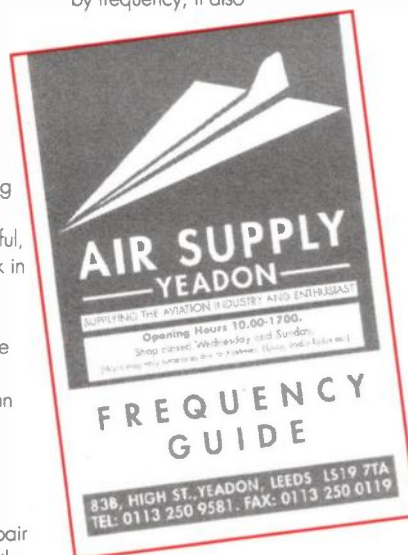
As well as containing a listing by frequency, it also

Supply also attend a number of airshows and rallies, and can supply a range of other 'goodies' for the airband enthusiast, their catalogue is available for £1.50.

'FTRUNK' TRUNKING MONITOR REVIEW

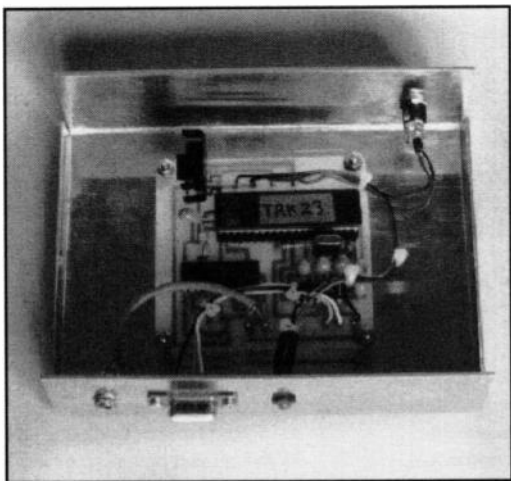
As I promised in my column last month, here's a review of *Ftrunk*, claimed to be the first piece of hobbyist equipment for decoding MPT1327 trunking data off-air. Although designed and built in Australia, primarily for monitoring the large VHF trunked radio system in Victoria, MPT1327 is also the most commonly used PMR trunking system in the UK and in many other European countries.

As well as the Victoria system, Ftrunk comes ready-programmed with parameters for a number of UK systems, as well as a 'numeric' display for unknown systems (remember that you will need appropriate permission if you intend to monitor UK services). The UK systems pre-programmed in the software are: Band III PMR networks which operate on 177.5 - 183.5 MHz and 201.5 - 206.5MHz, such as National Band 3, regional operators, plus bus and tram companies around the UK, *Power companies* such as British Gas and regional electricity companies, operating between 139.5 and 140.5 MHz. *Water companies* operating between 85MHz and 87MHz, *British Rail* which uses four trunked control channels, on 205.725, 205.8375, 206.100 and 206.250MHz. Here, the system can also audibly indicate via your PC speaker any emergency use of the BR system. *Securicor*, whose national trunked network uses 165.8625, 165.875, 165.8875, 165.9125, 165.9375, 165.9625, 165.975 and 165.9875MHz, you'll usually find control data on at least one of



has listings based on airfield/airport plus ops frequencies, making it a very easy-to-use guide. Enthusiasts are also encouraged to add their updates for the next edition with a tear-off slip inside the book.

You can get a copy for £4.99 inc p/p, direct from Air Supply in Leeds, Tel. 0113 250 9581, please mention Ham Radio Today magazine when enquiring. Air



The Ftrunk hardware, which is used between your scanner and PC, this is a prototype unit although production models should be available now

these frequencies, and RAC on 87.000, 87.0125, 87.025, 87.0375 and 87.050MHz.

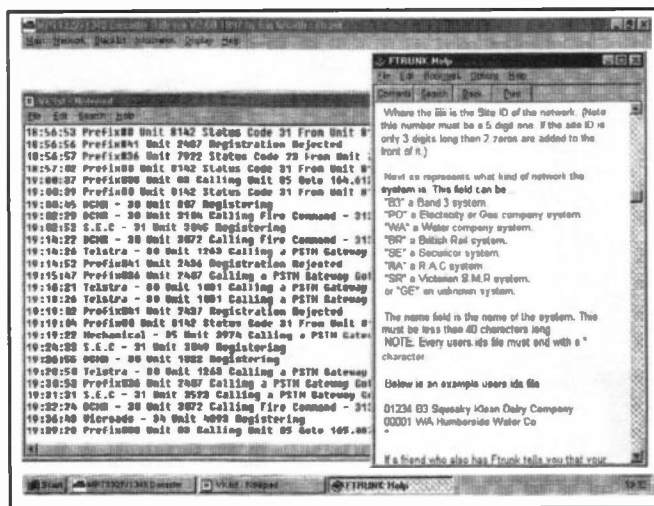
On each MPT1327 system, easily-identified 'control channels' continuously send data such as mobile registrations, 'go to channel' instructions, status messages and so on. Ftrunk allows these to be decoded on your PC, displaying and logging the relevant information on-screen, although the program cannot (at this time) automatically control your scanner to shift frequency to 'track' a conversation, you'll need to manually intervene for this.

HARDWARE

The heart of the system is the decoder

box, which is connected between the headphone output of a scanner which is tuned into the control channel of a trunked system and your PC's RS232 port, either COM1 or 2. The supplied program is used under Microsoft Windows, and comes with an online 'help' menu giving plenty of information, including an introduction to trunking systems. It also includes a number of useful 'WAV' files for use with a sound card, there's even a couple of sample 'control channel' files to help you know what a typical control channel actually sounds like.

When an instruction is sent over the control channel for a radio to tune to a voice channel, the decoder box intercepts this



Here's a typical Ftrunk 'Windows' display screen.

information and sends it to your PC, displaying this as; Prefix#23 Unit 8054 Calling Unit 8063 Goto 201.9500 MHz.

This means that radio 8054, calling radio 8063, and being instructed to go to 201.9500MHz. At this point if the receiver was manually tuned to that frequency it would be capable of monitoring the conversation.

MENUS

Various pop-up menu windows are used to control the program and to display the received information. One

such useful facility is the 'Frequencies Logged' window, which will display the frequencies of the voice channels which that control channel has sent radios to. If you are monitoring a busy system, then within a short time you should know every voice channel allocated to that control channel. Other options include ID tagging, user IDs, prefixes, idents and status files to transform received numbers into 'real text' displayed on screen.

The text shown here is an 'offair' example using Ftrunk, displaying a session of the Australian Victoria state system activity.

The Ftrunk system I tested was a prototype unit, as you'll probably see from the accompanying photo, production models should be available by the time this appears in print. The projected price in the UK is around £150, and you can get further information and ordering details from Michael Evans, Email; michael@tbsa.com.au. If you can think of any new features you think could be added to the Ftrunk software, or know of any more trunked networks you think it should support then contact Ian Wraith, Email; i.wraith@sheffield.ac.uk. If you don't have Email facilities I'll be happy to forward queries, sent to me by post or fax via. the Ham Radio Today Editor.

Bill Robertson is 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, that reception of some services may not be allowed unless you have appropriate permission. The RA's 'ReceiveOnly, Scanners' Information Sheet provides more information for UK listeners, you can obtain this free of charge from the Radiocommunications Agency.

FTRUNK GIVES YOU FULL DETAILS ON THE MPT1327 CONTROL CHANNEL ACTIVITY, WHICH YOU CAN ALSO LOG TO YOUR DISK DRIVE

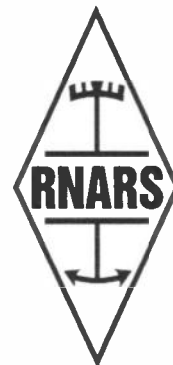
Victorian S.M.R network located at 101 Collins St Melbourne
18:56:53 Prefix#0 Unit 8142 Status Code 31 From Unit 8145
18:56:56 Prefix#41 Unit 2437 Registration Rejected
18:56:57 Prefix#36 Unit 7922 Status Code 23 From Unit 7927
18:57:02 Prefix#0 Unit 8142 Status Code 31 From Unit 8145
19:00:37 Prefix#38 Unit 83 Calling Unit 85 Goto 164.6125 MHz
19:00:39 Prefix#0 Unit 8142 Status Code 31 From Unit 8145
19:00:45 DCNR - 30 Unit 807 Registering
19:02:29 DCNR - 30 Unit 3104 Calling Fire Command - 3133 Goto 164.7625 MHz
19:02:52 S.E.C - 31 Unit 3045 Registering
19:14:22 DCNR - 30 Unit 3072 Calling Fire Command - 3133 Goto 164.3250 MHz
19:14:26 Telstra - 80 Unit 1263 Calling a PSTN Gateway Goto 165.0875 MHz
19:14:52 Prefix#41 Unit 2436 Registration Rejected
19:15:47 Prefix#36 Unit 2407 Calling a PSTN Gateway Goto 165.0500 MHz
19:16:21 Telstra - 80 Unit 1081 Calling a PSTN Gateway Goto 164.8375 MHz
19:18:26 Telstra - 80 Unit 1081 Calling a PSTN Gateway Goto 164.2125 MHz
19:19:02 Prefix#41 Unit 2437 Registration Rejected
19:19:04 Prefix#0 Unit 8142 Status Code 31 From Unit 8145
19:19:22 Mechanical - 35 Unit 3974 Calling a PSTN Gateway Goto 164.1750 MHz
19:24:33 S.E.C - 31 Unit 3049 Registering
19:26:55 DCNR - 30 Unit 1322 Registering
19:28:50 Telstra - 80 Unit 1263 Calling a PSTN Gateway Goto 164.4375 MHz
19:30:53 Prefix#36 Unit 2407 Calling a PSTN Gateway Goto 164.2125 MHz
19:31:31 S.E.C - 31 Unit 3523 Calling a PSTN Gateway Goto 164.8375 MHz
19:32:24 DCNR - 30 Unit 3072 Calling Fire Command - 3133 Goto 164.1000 MHz
19:36:43 Vicroads - 34 Unit 4893 Registering
19:39:28 Prefix#38 Unit 83 Calling Unit 85 Goto 165.0875 MHz



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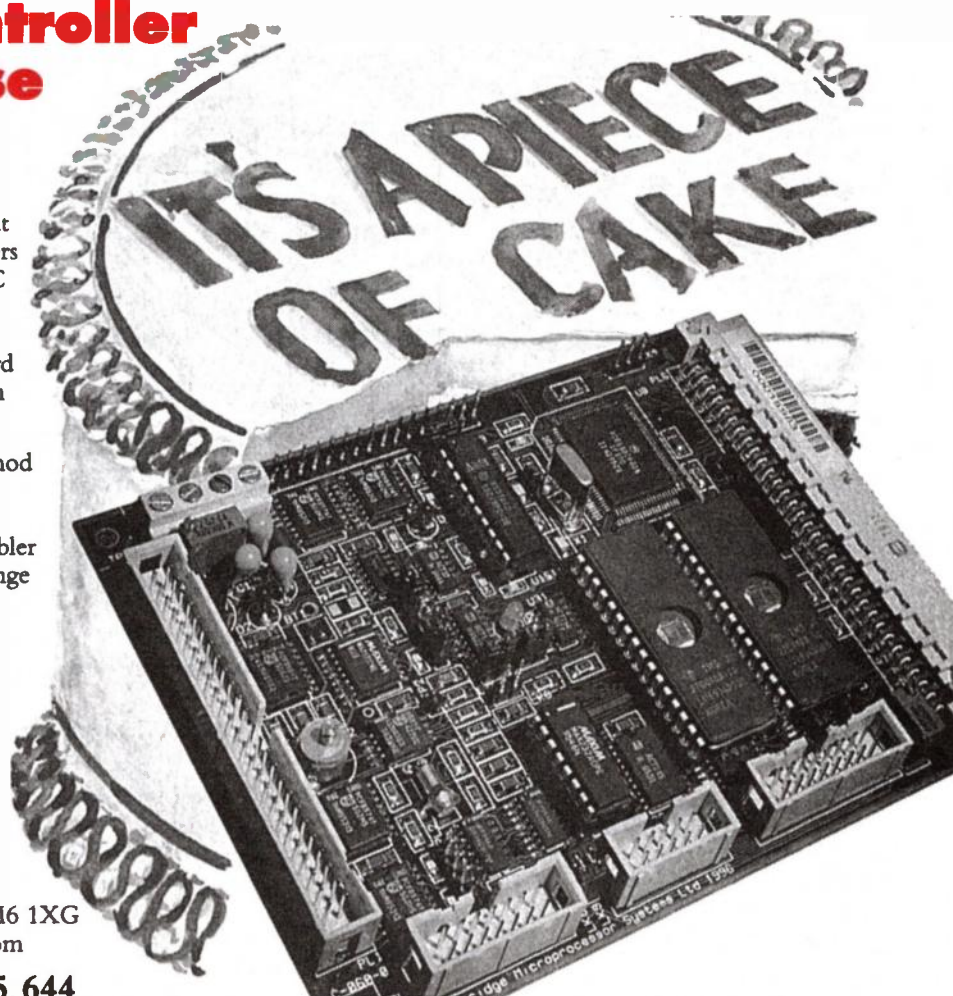
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AERIAL MATCHING UNIT FOR GENERAL COVERAGE RECEIVERS-PART 1

Raymond Haigh says this easily constructed unit will optimize the matching between aerial and receiver over a 550kHz to 30MHz frequency range, Part 2 in next month's issue concludes the project

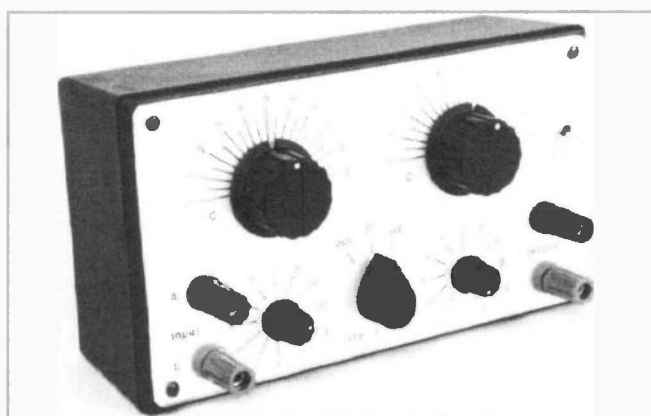
Most listeners who browse over the medium and short wave bands use a random length of wire as an aerial. The impedance presented to the receiver by such an aerial depends on its length in relation to the reception frequency, the point where the downlead is connected to it, whether or not the receiver is connected to earth and, to a lesser extent, the layout of the aerial and its downlead.

With such a range of variables, the chance of a random length of wire being correctly matched to the receiver is probably not much greater than a win on the National Lottery. The unit described in this article should shorten the odds (on achieving a good aerial match, not a win on the lottery!)

BACK TO BASICS

Random lengths of wire are often referred to as long-wire aerials. This is very much a misnomer. True long-wire aerials are at least two wavelengths long and, at 500kHz, this means more than a kilometre of wire. Not many back gardens are that roomy.

Resonant aerials, on the other hand, are usually half a



Build this aerial matching unit to optimize the matching between your aerial and receiver

wavelength long. At resonance, the impedance is purely resistive, and has a value of around 75 ohms at the centre and 2400 ohms at the ends. Off resonance, these values change, and the impedance is made up of a mixture of resistance plus either capacitive or inductive reactance. (The resistance portion relates to the radiation resistance of the aerial, not the actual resistance of the wire).

Marconi discovered that a shorter, quarter-wave aerial could be made to simulate a half-wave radiator or receptor by connecting the transmitter or receiver to earth. Here, an

'electrical image' of the other half of the dipole is formed beneath the ground. Thus, by the simple expedient of connecting the receiver to earth, the point of coupling the receiver to the aerial is moved to its electrical centre with a consequent reduction in impedance.

So much for this brief and simplistic excursion into aerial theory. In practice, the quality of the earth and the length of the connection to it, together with the actual arrangement of the aerial wire and its proximity to earth, all have a bearing on the impedance the signal pick-up system presents to the receiver.

IMPEDANCE MATCHING CIRCUITS

The basic networks used for aerial matching are illustrated in Fig. 1. Most take their names from the letters formed by the arrangement of the components in a theoretical circuit.

In Fig. 1a, an inductor and capacitor are arranged in an 'L' network; alternative 'T' networks are given in Figs. 1b and 1c; and the familiar 'Pi' (Greek letter π) network is shown in Fig. 1d. The simple parallel circuit depicted in Fig. 1e can function as an impedance matching network and as a resonant wave trap to block out an unwanted signal.

All of the networks involve different arrangements of no more than three components, an inductor and one or two capacitors, and it is a good idea to wire up the circuits on the bench and try them out before making a choice. I found that with some receivers, only a small improvement could be obtained. With others, the insertion of a matching unit was almost the equivalent of an additional RF amplifier stage at some frequencies. In my case, results with the two 'T' networks were not worth the bother or expense, and the popular 'Pi' circuit and the parallel arrangement were

combined in a single matching unit. Setting the vanes of one of the capacitors in the 'Pi' circuit fully open will, of course, provide an 'L' network also.

HOW THE 'PI' CIRCUIT WORKS

The 'Pi' network functions as an impedance matching auto transformer with the tapping point formed and shifted electrically by variable capacitors. The circuit is redrawn in Fig.2 to make the action clear. L1 is connected to earth via a tapping simulated by the two variable capacitors, C1 and C2. Setting C1 to a high value of capacitance and C2 to a low value, shifts the electrical tapping towards the aerial end of the coil. In this condition, a low impedance aerial is matched to a higher impedance at the receiver. With C1 set low and C2 high, the tapping is moved towards the receiver end, and a relatively high impedance aerial can be matched to a lower impedance receiver input.

In practice, provision is made for the value of L1 to be varied also. This permits the amount of inductance as well as the capacitance in the network to be adjusted to compensate for the inductive or capacitive reactance present in the aerial impedance, thereby optimizing the match to the receiver.

CIRCUITRY

The circuit of the unit is given in Fig.3.

where L1 together with C1A and B and C2A and B form the 'Pi' matching network. L1 is physically tapped at every turn for the first twelve turns, and the progressive shorting of this section of the coil is controlled by S2. The remaining 132 turns are tapped at every twelfth turn and these sections of the winding can be shorted by S3. With this arrangement, any winding length, from one to 144 turns, can be selected in one-turn steps.

Fairly high value variable capacitors are required, and both sections of two-gang units are connected in parallel. The setting of the capacitor at the receiver end can be critical, and provision is made for switching one of its gangs out of circuit to make tuning easier at low capacitance settings.

S1 isolates the unit and makes a direct connection between aerial and receiver so that rapid performance comparisons can be made. S1 also connects C2 directly across L2 and disconnects C1 so that the unit can be operated in the alternative parallel mode, and as a wave trap.

COMPONENTS

Many constructors will be able to assemble the unit from their spares box. Two-gang capacitors salvaged from older valve and transistor radios are ideal for C1 and C2. If salvaged components are used, check that the vanes don't short when the spindle is rotated and remove any trimmers attached to the metal frame. Solid dielectric capacitors obtained from small transistor radios are not likely to be suitable, as the combined capacitance of both gangs is usually less than 350pF.

If capacitors need to be purchased, the Toko Polyvaricons retailed by Cirkitt will be satisfactory, and Cirkitt also supply spindle extenders so that a decent control knob can be fitted. These units have two AM and two FM gangs. Wiring the AM and FM sections in parallel produces a combined capacitance of 730pF per unit (a little less than the sum of the values quoted in the Cirkitt catalogue). The FM sections of some manufacturer's capacitors

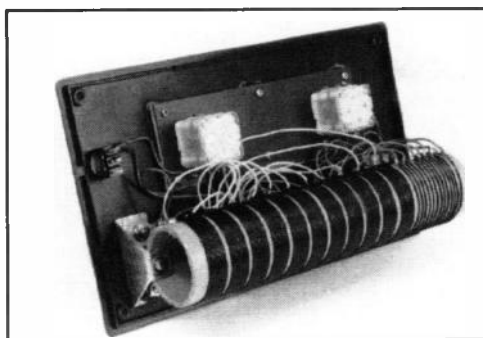
decrease as the AM sections increase. If solid dielectric capacitors other than those specified are used, this should be checked before wiring the FM sections into circuit.

The three rotary switches fitted in the prototype unit were inexpensive Lorlin components retailed by Cirkitt and Maplin.

The coil is wound on a short length of 35mm outside diameter PVC waste pipe which can be obtained from most do-it-yourself stores. The gauge of the enamelled copper wire is not critical, but wire thicker than 20SWG cannot be accommodated on the 165mm long former, and wire much thinner than 26SWG will be more difficult to tap in the recommended manner. Constructors using salvaged wire should note that a 16 metre length is required to produce a continuous winding. If new wire is being purchased, a 50 gram reel of 24SWG wire contains approximately 22 metres. If thicker wire is chosen, a 50 gram reel will not provide sufficient material.

Built with the specified components, the unit is only suitable for use with receivers. It should not be used with transmitters. This more stringent application calls for high-voltage capacitors and a much more robust electrical and mechanical construction.

In next month's issue, Raymond Haigh concludes the project with coil winding details, construction and testing information and hints on use.



Inside the unit showing the coil arrangement

COMPONENTS:

Capacitors;

C1A and B Toko solid dielectric variable capacitors,
C2A and B 355pF + 355pF + 20pF + 20pF AM/FM two-gang units.

Inductor;

L1 See text.

Switches;

S1 and S2 1 pole, 12 way, Lorlin type rotary switches.
S3 4 pole, 3 way, Lorlin type rotary switch.
S4 Miniature on/off toggle switch.

Sundry Items;

165mm length of 35mm outside diameter plastic waste pipe and enamelled copper wire for coil, solder tags, terminals, control knobs, spindle extenders for variable capacitors, PCB materials, hook-up wire, materials for front panel, scrap aluminium for coil brackets, nuts and bolts, small self-tapping screws, scrap plywood for standoffs, superglue, plastic box 191 x 106 x 52mm internal dimensions.

See Ham Radio Today display and classified ads for details of component suppliers, please mention the magazine when enquiring

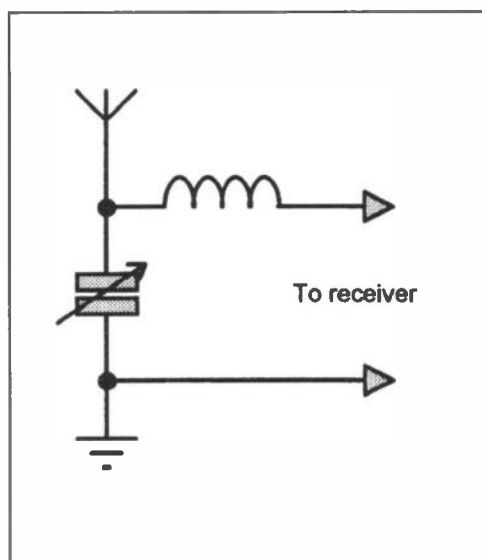


Fig.1a, an 'L' network

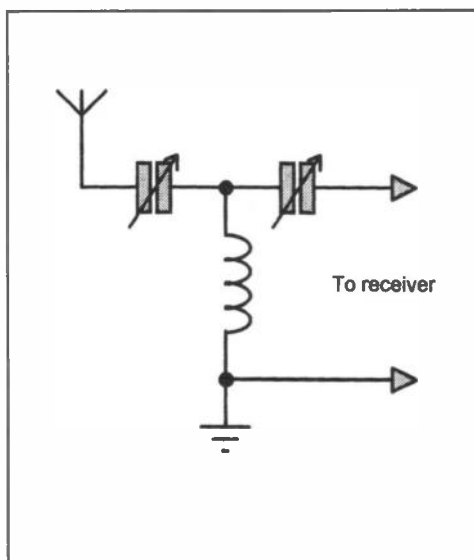


Fig.1b, a 'T' network

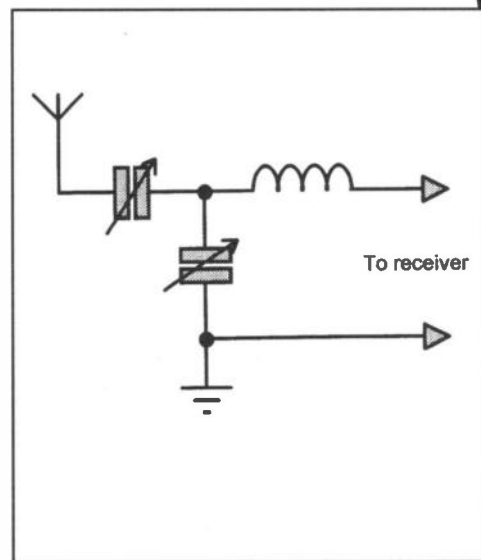


Fig.1c, another 'T' network

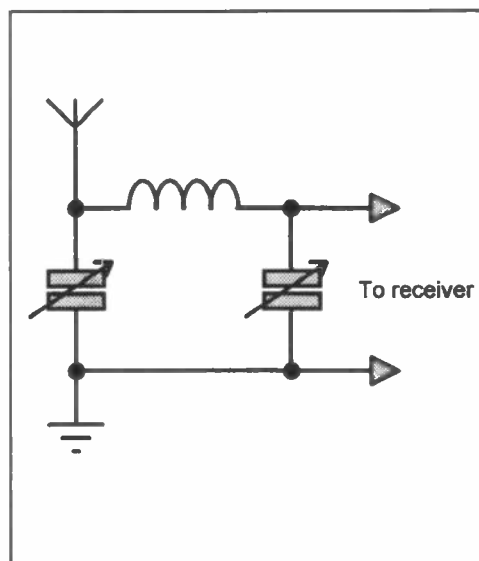


Fig.1d, a 'Pi' network

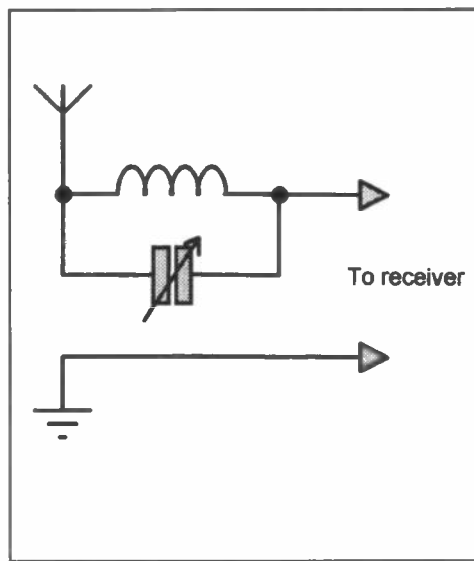


Fig.1e, a parallel network

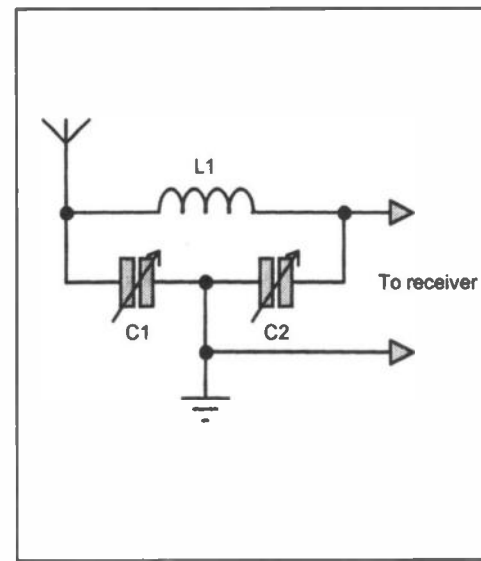


Fig.2, the 'Pi' circuit with a capacitive tapped autotransformer action

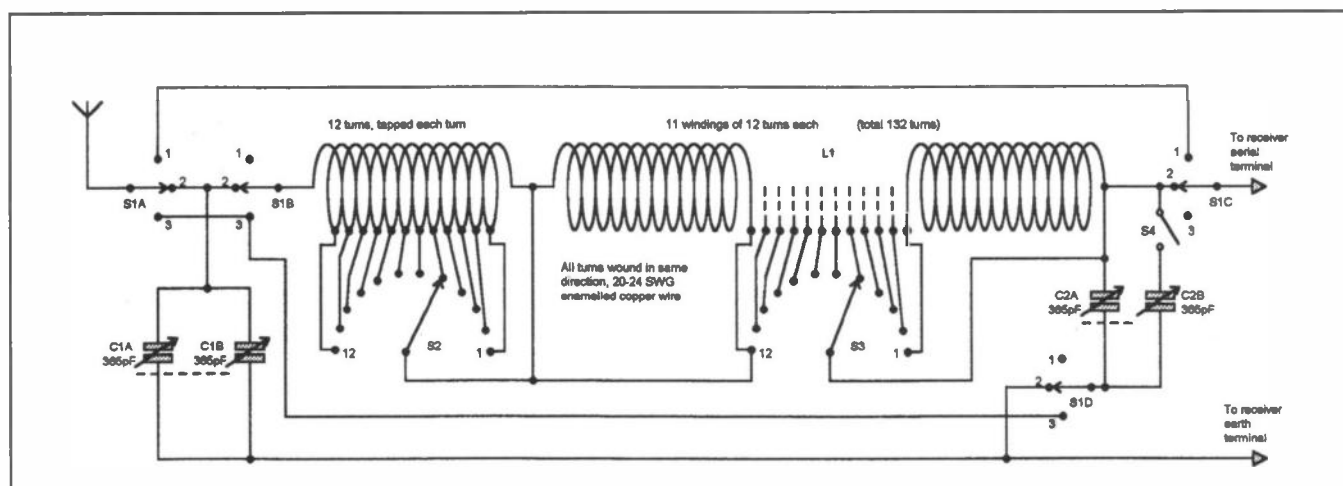


Fig.3. Circuit diagram

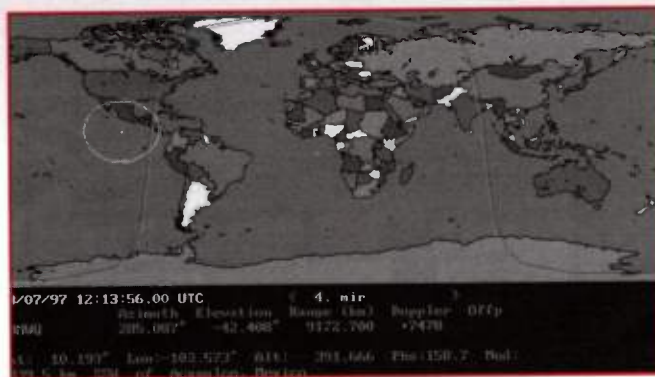
A PRACTICAL GUIDE TO SATELLITE WORKING FOR THE BEGINNER

Peter Groves B.Sc. M.R.Pharm.S., G3MWQ, gives a guide to getting started on the 'easy to work' satellites including those you can use with your FM handheld

After having retired from full time employment, I have had more time to operate my amateur radio station, and in particular, indulge myself with more operation on the amateur satellites than I had hitherto had the time for. It did strike me recently, however, that there seemed to be more and more complicated satellites appearing, and that there might be a place for an article to explain to the beginner in satellite operation, the technique of interacting with satellites. In other words, how to actually *do something* with them in practice. In this article, therefore, I have confined myself to the easier of the amateur satellites, and should success with these wet the appetite for the more complicated, then there are more satellites up there to play with!

The first thing to say, is that everyone, I am sure, knows that satellites circle the Earth. However, the first thing to understand is that they do not necessarily all circle it at the same angle, or the same speed of revolution, or indeed in a perfect circle. Which brings me to my first and perhaps most important point, namely the need for *information*.

The first essential, therefore, is a timetable of when and where the satellite will appear. This timetable is best provided by a computer, and there is a great deal of software available, either



Your PC can show you when each satellite is in range, this is a typical Itrack display

from AMSAT UK, Bulletin Boards, or the Internet, to support many platforms. I personally use one called 'Itrack' which is for the PC.

The essential mathematical information that the computer needs, is a set of parameters called *Keplerian Elements*. These 'Keps' are available on Packet Radio, The Internet, the fax-back service run by this magazine, and sometimes less usefully (because they are old) published in various other magazines.

Keplerian Elements are published in two formats: 1) NASA and 2) AMSAT. The AMSAT format is quite verbose, with a description of each element, whilst the NASA format consists of two lines of numbers. Either way, the software is usually quite happy to accept either automatically. Usually, they do not need updating too often, although the Mir Space

Station does alter its orbit quite often, as it is in a low orbit. From time to time, it will have a 'burn' to maintain its orbit, and the information on this from FB1RCI on packet radio is useful, and up-to-date.

Armed with the information produced by your 'number cruncher', you should be in a position to know when, at what angle to the horizontal, and in what point of the compass the satellite will be appearing. Furthermore, and this is important for one satellite, (namely AO-27) if you are lucky, the software will also tell you if the sun is shining on the satellite.

DOPPLER SHIFT

If you enter in the tracking software an operating frequency for the satellite, most software programmes will produce a figure for Doppler Shift for you.

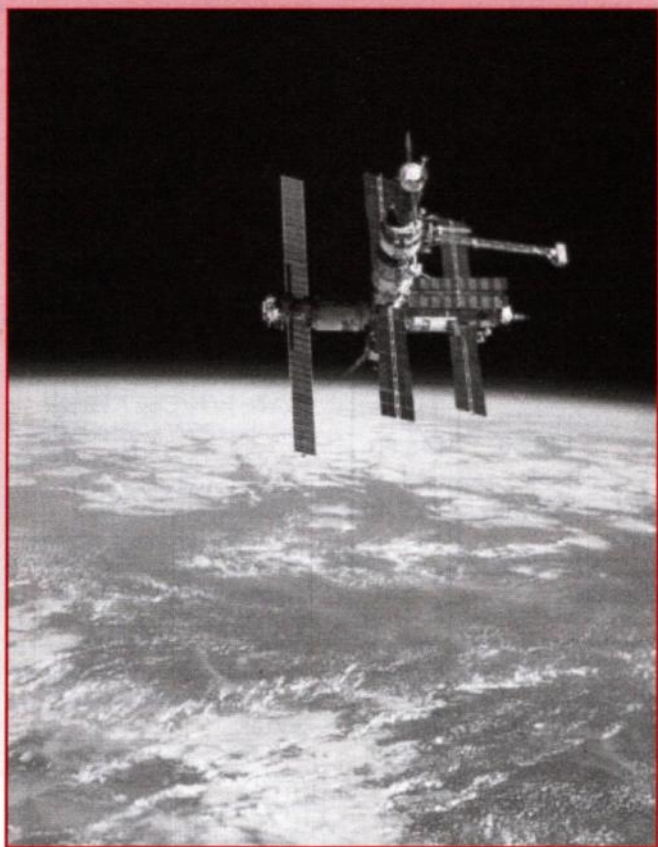
Doppler Shift is important, and has a greater effect on operating the higher the frequency at which you operate.

Doppler Shift is the apparent change in frequency when a radio signal passes between two stations who are moving relative to one another. For instance, if a station transmits on a frequency of, say, 430MHz, then if there is no movement between the transmitter and the receiver, the receiver hears 430MHz. If, however, the transmitter is moving *towards* the receiver, the receiver receives more wavefronts, and hence the received frequency is higher.

The converse is true when the transmitter is moving away, and in this case the received frequency is lower. In practice, on 70cm as an example, this results in the transmitted signal appearing about 10kHz high when a satellite directly approaches you, and about 10kHz low as it moves away. The effect is less pronounced on a tangential pass, and also at lower frequencies. It does, however, have implications as we shall see later.

WHAT SATELLITES ARE AVAILABLE?

Mir: This is the space station originally launched by the former Soviet Union. It is in a low Earth Orbit, and is inclined to the equator by about 50 degrees. This means that it does not travel



The Mir Space Station (photo courtesy NASA)

further from the equator than about 52 degrees of latitude. However, the area of the Earth's surface that it can 'see' (its footprint) extends into the Arctic. This inclination, and its relatively small footprint, however, means that even the most favourable pass will last no longer than about 10 minutes in the Midlands of the UK. One can see, therefore, that if a QSO is to be had, then it is not a time to dally with trivial

Mir is currently carrying two cosmonauts who would give you an FM QSO, Valery Korzan (ROMIR) and Jerry Linenger, KC5HBR. Jerry is due to spend about four months on board from mid-January. Whether they are active, will depend upon their work schedule, and the time of day. 2000 GMT gave me a QSO. The current mode of operation is split frequency, with 145.200 MHz as the uplink, and 145.800 MHz as the downlink. The technique is to be ready with the beam (if you have one) pointing in the direction of approach, and be brief, as you are one of a large queue extending into Europe!

You may, however, hear bursts of Packet while listening on

145.800 MHz, if this is the case it will be the packet mailbox on Mir. This operates on 145.800 MHz with the callsign ROMIR-1 at 1200 baud. However, the input is on 145.200 MHz, just the same as the phone link, and is intended for messages to the crew, and not as an orbiting mailbox. Whether you get a reply to a message to the crew will depend upon their availability of spare time. It is also possible to digipeat through ROMIR, although I am told that this is frowned upon, but the cosmonauts have the ability to switch it off if they wish! For a connection with the mailbox the technique is the same, but in each case if a beam is used, then do track the satellite as it transits.

If you do get a connection a 'J' command and a 'B' to disconnect is enough for a QSL card. Do remember, however, that there is a queue, and you will not get in if you see connected packets. So the technique is to either be first, pick a quiet time (like the wee small hours!), or watch for a disconnect packet, and then be first in.

There is a small problem on 2m with Doppler Shift, which means that ideally, it would be a good idea to transmit low, and receive

high, as the satellite approaches, and receive low, and transmit high, as it moves away. The worst case of this is about a 6kHz split, but watch the tracking PC in real time for the correct value. The ability to use this technique, may of course be limited by the sophistication of your rig.

Finally, a beam is better than a simple aerial, and 100W better than 10W, but do not let these limitations stop you trying.

Dave Larsen, N6JLH, is the US Mir QSL manager for contacts made with Mir crew members. QSL cards must include date, time, and mode of contact. Cards for SWL reports will not be handled by Dave. If a contact is made with the Mir packet radio personal message system (PMS), then the message number issued by the PMS should be included on the QSL card. QSLs must be sent along with a business-sized self-addressed stamped envelope (the card will not fit in a regular-sized envelope) to: David G. Larsen, N6JLH, PO Box 1501, Pine Grove, CA 95665, USA. *(UK readers will need to send IRCs, as British stamps would not be valid for return postage from the USA - Ed).*

THE SAFEX REPEATER ON MIR

The Mir space Station also carries an FM repeater, callsign RR0DL, which has an input on 435.750MHz, the output being on 437.950MHz. To access the repeater, a CTCSS sub-tone of 141.3Hz is needed on the carrier. Once the repeater is accessed, the carrier can be held on by the responding station without a sub-tone, but beware, the carrier only hangs on for about one second after loss of input signal, so be swift with the response. There is, however, no sub-tone on the output signal, so don't use CTCSS squelch!

The Doppler Shift involved on this repeater is very pronounced, and in order to gain maximum time during a satellite pass, it is necessary to use the technique of transmitting low, and receiving high on satellite approach, and the converse setup as it moves away. This is best achieved if you have a rig with multiple memory channels that are programmable with a non-standard frequency

shift, and setting up according to Table.2, or at least as near that you can get to it as possible, and then switching from one channel to the other during the pass.

The output signal from SAFEX is said to be audible on a handheld, but I personally have only used my base station with 25W and a vertical beam, but I am sure that it is well worth doing the best you can with what is available.

From time to time, there are other modes in which SAFEX is used (the repeater being Mode 1), these are:-

Mode 2: 9600 Baud (G3RUH compatible) Packet Operation.
Downlink 437.975 MHz
Uplink 435.775 MHz
No CTCSS

Mode 3: Pre-recorded digital voice beacon, and may be used for contacts with the MIR crew.
Downlink 437.925 MHz
Uplink 435.725 MHz
CTCSS 151.4 Hz.

In February 1997, Dr. Reinhold Ewald (DL2MIR) joined the Mir crew, and there was use of the SAFEX experiment in 'QSO' mode, and as a digital voice beacon. A special QSL card will be distributed to operators with SAFEX, either for a listening report of the digital voice recorder or a QSO via SAFEX (Repeater/Packet mode). To prove the voice transmission or a radio connection via SAFEX, the operator has to send his own QSL card including a computer WAV file on 3.5in disk of the voice recording. Both must be mailed to; DFOVR, Ham Radio Group at DLR, Oberpfaffenhofen, Postfach 1116, D-82230 Wessling, Germany.

Non amateur activity; The crew have a frequency of 143.625 MHz as a talkback link to their control station. Conversations are in Russian, German, or English, depending upon the crew member talking.

Finally, do remember that a 70cm or 2m aerial is relatively small with regard to the size of large, metallic Mir, and that the aerial at which you are aiming your hard-won RF, might well be around the far side of the spacecraft and shielded from you, so don't give up. Try it again, next time round (from time to time they

do a space walk, and nearly kicked the thing off once!).

AO-27

This satellite carries an FM repeater, with an input on 145.850 MHz and a downlink on 436.800 MHz. The Doppler shift involved is about plus and minus 10 kHz on its 70cm downlink, but perhaps only about 3 kHz on its 2m uplink, so there is a need for a similar 'memory hopping' technique as for Mir, or judicious use of the VFO. I use a vertical HB9CV with 30W on the uplink, and a vertical 19 element beam on the downlink. The FM repeater on this satellite is not in operation during the whole of its orbit, and for us in the UK, it switches on about eight minutes after it comes into sunlight on a descending orbit from the Arctic into more southerly latitudes, and switches off 18 minutes later.

If your software does not show where there is sunlight, then a rule of thumb is to listen for it when it reaches about 65 degrees latitude. This latitude, however, will increase as the year progresses, and sunlight comes earlier to the Northern Hemisphere. It is probable that the satellite controller, N4USI, will change this schedule later in the year, so the information bulletins on packet will need to be watched for change.

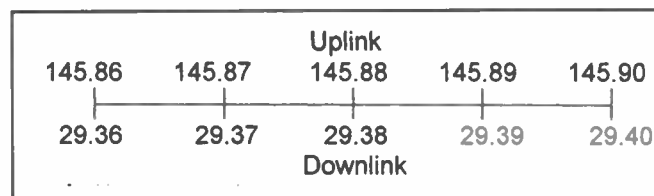
I am lucky, in that I have a dual band FM rig which allows me to work duplex 2m to 70cm and vice-versa. Thus, I can hear myself coming back through the repeater, and of course any other station who may be overriding me, and, in addition, finely adjust my frequency to take account of Doppler Shift, which is very necessary on the downlink, as the satellite passes by.

THE RS SERIES

There are four of these at the present time, namely RS 10/11, RS 12/13, RS15 and RS16. They were all launched by the former Soviet Union, and have similar, but different characteristics. At the time of writing, RS16 has just been launched, and developments are awaited.

RS-10

This satellite carries a transponder, which transverts signals from 2m to 10m. The mode of operation is either SSB or CW, and is non-inverting. Thus, USB on 2m appears as USB on 10m. It has a beacon on 29.357 MHz, and with input of about 10W to a ground plane will produce a respectable signal on 10m, if the satellite is near overhead, according to the



RS-10 Transponder chart

accompanying transponder chart.

The technique for this satellite is firstly to find the beacon on 29.357 MHz, plus or minus a very small amount of Doppler Shift. It transmits CW telemetry continuously, and if you can copy CW perfectly, you may type the results of your labours into a small piece of software to arrive at a résumé of the state of the satellite (If this takes your fancy)

However, in order to work through the satellite, having identified the beacon, and using the CW key on your 2m transmitter, hold it down, and try to find your downlink signal at the spot on the 10m downlink, corresponding with the input frequency on 2m. You may well hear several likely candidate carriers around your calculated spot, and do bear in mind Doppler Shift, which at the very most could be 5 kHz. Lift the key to check that it is you, and also bear in mind the possibility of 'birdies' which can be eliminated if the satellite is not in view. When you think you have identified yourself coming back down, then is the time for a CQ, or a net onto a caller for the first QSO.

This is easier with CW than USB, which will require a bit of 'humming, and erring' to get speech resolved. When you get experienced at this it will be easier, but perhaps initially it is better to let someone net on to you. If you do not succeed, try a beam on 2m, or a little more power, but try not to be excessive, as you will block other stations. A

wide area is covered by this satellite, and QSOs range from North America to Central Asia.

RS-15

The technique for this satellite is similar to RS-10. However, its footprint is much wider, and it is in view for longer. Its beacon is on 29.352 MHz, but on the downside, it is weaker, and SSB contacts are harder to

come by, it is perhaps better to operate CW. It does, however have the same transponder setup as RS-10. Furthermore, its battery is not very happy, and prolonged periods without sunlight will result in a protective switch off.

RS-16

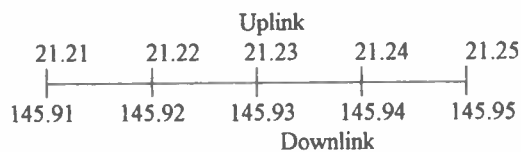
This satellite was launched a few days before the finalisation of this article, and is currently transmitting a very strong beacon on 29.408 MHz as it passes over Europe. Shortly, one would expect the transponder to be switched on, if all is well, and may well be in full action by the time that you read this. The proposed transponder band should be 145.915 MHz to 145.948 MHz uplink, corresponding to 29.415 MHz to 29.448 MHz downlink. The technique should be much the same as for RS-10.

RS-12

This satellite is currently in K and T modes. This means that for an input on 15m, there is a downlink on 10m, and also 2m. I personally use mode T for the very simple reason that I have no gear to operate on both 10m and 15m simultaneously. However, if you can transmit on 15m, and receive simultaneously on 10m, then there is no reason why you should not use mode K. Due to the HF-only frequencies used for the uplinks, this is a satellite for the Class A licensee only. About 30W to a dipole on 15m is about right, and a very simple aerial on 2m will suffice, as the downlink signal is of excellent strength. The technique is as before, first find the beacon on 145.912 MHz, or 29.408 MHz, (plus or minus Doppler Shift of about 3 kHz.) transmit a carrier on 15m in the appropriate passband, and find your signal on 2m or 10m as the case may be.

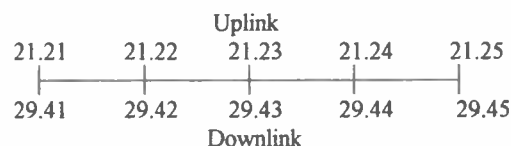
QSOs are fairly easy on this satellite, either USB or CW. There is, however, a problem to be considered. Do remember that not only are you audible via the satellite, but you are also audible to stations within the normal terrestrial skip range, and they may well be audible to you via the satellite. There is therefore the possibility, that while you may be having a QSO via the satellite, your correspondent may be blissfully unaware of this situation, and may be happily having a QSO via terrestrial skip. If this is the case, he may well wonder why you are so brusque, and unable to understand your termination of the QSO as the satellite sails over the horizon! It has happened to me more than once, so do keep an eye on the input frequency, and of course be kind to your QSO partner, if he errs (that is if you have thought to check on the input!).

Mode T:-



RS-12 Input/output frequencies

Mode K:-



**TABLE 2: MIR/SAFEX 70CM
DOPPLER CORRECTION**

Downlink (MHz)	Uplink (MHz)	Offset (MHz)
437.958	435.742	2.216
437.956	435.744	2.212
437.954	435.746	2.208
437.952	435.748	2.204
437.950	435.750	2.200
437.948	435.752	2.196
437.946	435.754	2.192
437.944	435.756	2.188
435.942	435.758	2.184

MIR PACKET MAILBOX CONNECTION MENU

Logged on to ROMIR's Personal Message System
CMD[B/H/J/K/KM/L/M/R/S/SR/V/?]>

These commands mean:

B(ye) B (Enter) disconnects you from PMS.
H(elp) H (Enter) or ? (Enter) displays this help file
J(log) J (Enter) displays a list of callsigns heard (optional date/time)
K(ill) K n (Enter) deletes message number n (only to/from your callsign).
KM(ine) KM (Enter) deletes all READ messages addressed to your callsign.
L(ist) L (Enter) lists the 10 latest messages.
M(ine) M (Enter) lists the 10 latest messages to/from your callsign.
R(ead) R n (Enter) reads message number n.
S(end) S (callsign) (Enter) begins a message addressed to (callsign).
Subject: ending with (Enter)
Text: End each line with (Enter). End message by
typing /ex (Enter) or CTRL-Z (Enter)
at the beginning of a new line.
SR(eply) SR n (Enter) Sends a reply to message n prompting only for text.
V(ersion) V (Enter) displays the software version of the PMS system.

**QSL cards
from satellite
contacts**

**ROBOT MODE
ON RS12**

There is one other alleyway of amusement on RS12, and that is a QSO with its automated Robot. The Robot on RS12 transmits on 145.959 MHz and sends the following text at about

12WPM CW; "CQ CQ CQ de RS12 QSU FQ 145959 Hz K".

You are expected to reply on 21.129 MHz CW, at between 12 and 20 WPM with the text exactly as follows (except for your callsign): "RS12 de G3MWQ AR K". There must be no mistake in this text, in particular, the 'AR' must be sent as one character, not as two letters. There is also a wide area for error due to co-channel QRM with another station doing the same thing, and also the satellite QSB distorting, or missing, parts of your transmission.

If, however, all is well, and Robot receives a perfect transmission, you will get a reply thus: "G3MWQ de RS12 QSL No 12345 OP ROBOT".

When the Soviet Union existed, it was possible to get a QSL card for this. I am not sure, however, what the present situation is. When no perfect copy is received by Robot, after about 50 seconds, it repeats its CQ call. One thing is certain, however, after a few successful QSOs with Robot, you will find that the novelty wears off, and you will seek entertainment with more variety!

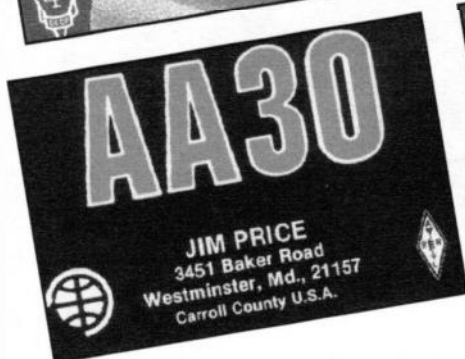
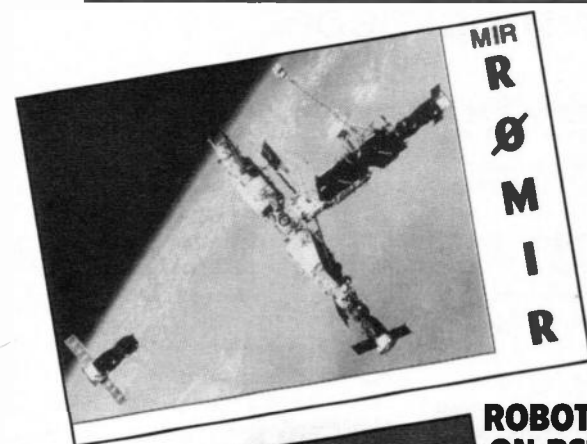
There is another possible use for Robot, and

that is its use as a single channel CW repeater. If it is not commanded on (or indeed sometimes if it is!) it can be used for a single channel CW QSO, if the channel is active.

CONCLUSION

I hope that you are encouraged to try out the satellites as a result of this article, and I must say that it has been intended to be practical rather than technical. There are many more things to try out in the world of amateur satellites, perhaps more technical, and a lot of scope for packet radio operation. Hopefully there will be a new elliptical orbiting satellite similar to the current moribund Oscar-10 in the near future, which will give worldwide coverage from the UK.

For more information on the subject, I can only advise the reader to follow the information provided by Richard Limebear G3RVL in his regular AMSAT News column 'Satellite Rendezvous' in Ham Radio Today magazine, or the regular bulletins on Packet Radio from GM4IHJ. In particular, if you have Internet access, there is a wealth of information, and software to be obtained there. There is also regular information to be had if one is a member of AMSAT UK, and this will furthermore assist the financing of satellite activity. The real aim of the article is, however, to encourage you to have a go!



ALL IN A DAY'S WORK

Harry Leeming G3LLL continues his series on a day in the life of a radio repair shopkeeper

Masthead preamplifiers are technically a great idea for VHF and UHF operation, but perhaps not always desirable from a practical point of view. They boost the incoming signal before the coaxial cable can introduce losses or pickup interference, but (particularly here in Lancashire) they have one great enemy - water!

Thomas had had quite a bit of trouble on this account, and had paid two repair bills, due to the damage done to his masthead preamp by rain water. This time he wasn't going to be caught, he would have the best of both worlds. He installed his preamp in the loft, connected it with a short length of very low loss coax to his aerial and extended it with a further length of good quality coax to his shack, which was downstairs. Six months later he was back in the shop with his preamp again, "Well you can't blame it on water this time Harry, but it's as deaf as a post".

However he was wrong, as later when I took the top off, it was soaking wet. This time the low loss coax had acted like a hose pipe, it had funnelled the rain into the loft via the SO259 socket into the preamp. Sometimes you just can't win! Once again I had to dry it out, clean the relay and patch up a bit of the printed circuit board that had corroded. I suggested to Thomas that, as even in Lancashire, water did not flow uphill. In future he should take a few centimetres of coax in an upward loop before bringing it downwards from his aerial.

JAMMED UP YAESU TUNING

Jill had had her FT-757 for quite a few years when she brought it into me and complained; "The tuning knob became stiff, and now whilst the knob will still just about turn, I can only alter the frequency by using the Up/Down buttons on the mic".



Jill had had her FT-757 for quite a few years when she brought it into me and complained; "The tuning knob became stiff, and now whilst the knob will still just about turn, I can only alter the frequency by using the Up/Down buttons on the mic".

This is quite a common fault on all Yaesu equipment that uses photo interrupter tuning. I first came across it on the external VFO for the FT-902. The bearing on the interrupter consists of a steel shaft going through a brass bush, why it seizes up I have no idea, but the best cure is to get a little lubrication into the bearing before it seizes up completely solid. In Jill's case the knob was actually rotating on the shaft, leaving the spindle stationary.

I first of all removed the knob

(no mean feat as these, whilst only a push fit, seem to stick like glue) and then attacked the spindle with a Mole wrench. Fortunately it was just possible to move the spindle, so with the set on its back, I ran a little WD40 down the spindle and kept easing it to and fro until it started to free a little. For the final cure, I gripped the spindle in the chuck of a hand brace (not a

electric drill unless you want to wreck it) and then kept applying more WD40 and turning, pushing and pulling at the spindle until it ran free. It only then remained to wipe the mess off the front panel, and Jill's rig was as good as new.

If your tuning does start to get stiff, you will save yourself a lot of trouble if you apply the WD40 before it seizes up solid.

HAVING A SMASHING TIME

Peter had been on the lookout for an FT-101 Mk3 for some time, when he spotted a private advertisement for one. Unfortunately it was at the opposite end of the country, but after a phone call, arrangements were made and cheque sent, a day or two later one of the large carrier companies stopped outside his door. Unable to contain his excitement, he ran out of the house and was just in time to see the driver throw a large parcel from the top of a pile at the front of the wagon to the rear. Peter's immediate thought was "I hope that's not my 101", but



Peter had been on the lookout for an FT-101 Mk3 for some time, when he spotted a private advertisement for one.

unfortunately it was.

The net result was (after some harsh words with the driver and the intervention of a neighbour), that the parcel was examined and found to contain a very sick rig, with several of the controls snapped off. Of course when an approach was made to the carriers for compensation for wrecking a £350 rig, the usual small print was pointed to. It was only after a great deal of trouble and visits to a solicitor, that satisfaction was obtained.

The moral? My recommendation is, if possible, never send any of the older valve rigs via carriers, but if you must, try this test. Pack the equipment up and then hold it at head height, now, could you safely throw it onto a concrete floor? If you couldn't safely do so, you simply haven't packed it well enough. Also check what insurance cover the carriers offer. With some, the standard is £50, if they lose your FT-1000 that's all you will get. Incidentally regarding carriers, remember that no firm is better than its employees. The company I now use, Amtrak, is a franchise arrangement, so that most of the drivers are working for themselves, if they damage goods they are damaging their own business. It seems to work, and up to now I haven't had any trouble, but I still make sure that everything I send is well packed and fully insured.

LOW MIC GAIN

Alex wanted good performance on the 2m band and all modes, but he didn't want to spend a lot of money. 'Bells and whistles' were definitely not required, so he was more than happy when I found him a mint FT-221R base station ex a 'silent key'. No digital display, but as Alex said; "What I want is results, if I'm too thick to read an analogue dial, I would have found something else to do for a hobby".

All was well until a few days before the three month guarantee ran out, when Alex was back complaining of low mic gain on FM and SSB. A quick check with another mic showed that this was the cause of the trouble, but why? Moving coil mics are usually right or wrong, they don't normally fall off in gain. I dismantled the case and at first couldn't see anything to worry about, until - what's that



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behind the mic diaphragm? A bubble! Further inspection showed that the entire space behind the mic diaphragm was filled with what appeared to be water. There was no way out to drain it, so, I very carefully pricked the diaphragm with a pin, drained it and then left the mic on a radiator for a day. Tests then showed that the mic was fully up to specification. Alex later explained that he normally left the mic with his rig in an outside shack, and it had been getting very cold. The water was condensation from his breath. I pointed out that these conditions couldn't be doing his equipment much good, so he decided to leave the rig and mic in the house in future.

LOW MIC GAIN NO.2

Never one to buy the cheapest, Joe went for the 'best' hand microphone, on the assumption that it would drive his rig better. He found that it did not seem to work well at all, he couldn't get much audio unless he held it very close to his mouth. Having not been able to get much sense out of his supplier, he brought it in to me to have a look at. The problem was that unknowingly Joe had purchased a noise cancelling microphone, designed for use in noisy environments such as mobile use. These microphones have two identical mic inserts fitted, one, the noise cancelling insert, wired in reverse so as to cancel out any sound that falls equally on this, as well as the main insert. The only way one can get good results from noise cancelling mics, is to speak very close the main insert so that one's voice does not fall on the noise cancelling insert. As for Joe, I suggested that either he took the mic back where he got it from, or that he disconnected the noise cancelling insert.

JUMPING IN FREQUENCY

Ronald rather liked his FT-101ZD. Several times he had borrowed his friends' later models, but he wasn't convinced they were better in any respect except for frequency stability. This latter point was starting to worry him as he found it embarrassing when his friends on the net made comments like "Ron's wandered off again". "Can anything be done?" he asked me. Well VFO drift can be extremely simple to cure, or it can be very time consuming and expensive. It all depends on whether or not the actual fault is with the VFO unit, or with its supplies. Sometimes the best approach with an older piece of

switches isn't that simple, as lots of oily deposits left around switches attract dust, can lead to insulation breakdown, and doesn't do anything for long term reliability.

First I cleaned all the rotary potentiometers with Electrolube lubricant, here I prefer the liquid in a bottle rather than the spray type. Next I cleaned all the rotary switches with an electronic cleaning fluid that contains no lubricant, following this with the application of a small amount of spray cleaner with lubricant. I then cleaned the push buttons and slide switches with WD40. I don't know why, but over the years I have found that this vastly outperforms 'switch cleaning fluid' on this type of switch, particularly on the Yaesu push button types. The next job was cleaning the clarifier relay with electronic cleaning fluid (once again without any lubricant, this is most important as lubricant must only be used on wiping or rubbing contacts). Next I went through all the bands checking that the preselector peaked at the same point on TX and RX, touching up the alignment as necessary, then checking the power output and receiver performance, and all seemed well.

Now was the time of truth, finding a fault inside a VFO can be quite a problem. The tools required



Ronald rather liked his FT-101ZD. Several times he had borrowed his friends' later models, but he wasn't convinced they were better in any respect except for frequency stability.

equipment (as it often is with illusive faults in cars) is to give it a good service and clean-up and see what happens. Ron agreed that nothing had been done with his rig service-wise for many years, and so he arranged to bring it in.

As soon as I tested the rig, it was obvious that the dust and grime of many years had taken its toll. Most of the switches and controls were noisy, and touching the VFO's Int/Ext switch, or the clarifier switches, produced a marked change of frequency. Cleaning controls and

include freezing fluid and a hair dryer, but the main requirement is patience and loads of time. This time I was lucky, I tuned the rig to produce a low beat note from its calibrator, and left it running for a few hours. After half an hour's warm-up the drift was less than 100Hz per hour, and so Ronald took it away and was more than happy. The drift he had been troubled with, had obviously been caused by varying contact resistance on switches, which had been long due for a clean.

SOFTWARE OFFER

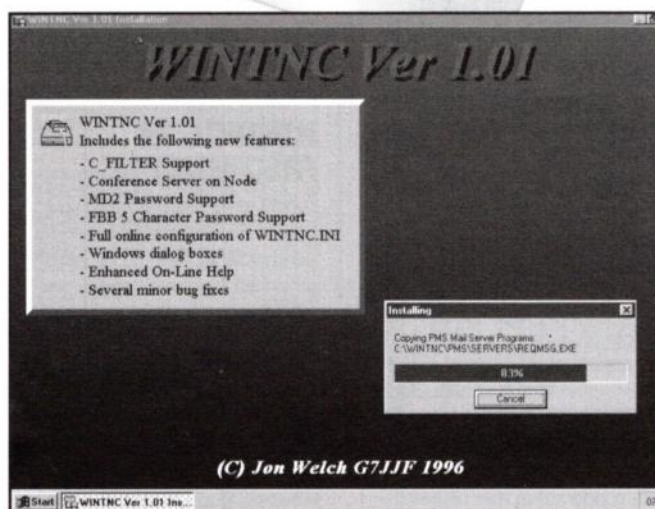
Another superb collection, exclusively for Ham Radio Today readers

A This month we've another bumper selection of the very latest ham radio PC software for you. Each selection is exclusive to Ham Radio Today readers, and is offered on a cost-only basis as a 'thank you' for buying the magazine.

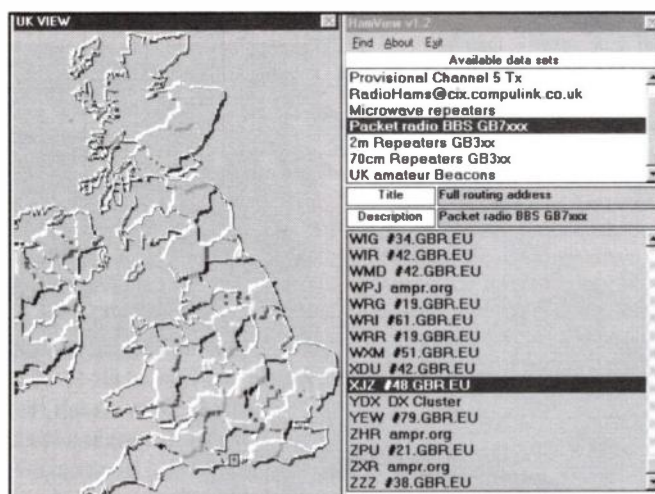
WINTNC Ver 1.01 by Jon G7JJF is a superb Windows-based shareware program for use with a BayCom packet modem or for KISS mode TNCs. It's a multi-tasking program and can handle multiple users. Full on-line help and documentation is available, and there are several text files which you can customise for personal welcome messages, help files, station information etc.

Ham Log V4.88 by Jochanan HB9CQV is a freeware program for amateur radio logging and QSL management. It will also handle QSO statistics, with print, export, and import individual information on any call. It also offers a 'Contest counter', with lists for awards and info, and can export and import log information to and from a number of other programs, such as N8BA's ACUTERM (0.456 and later) DL1EHV's PTC-RTTY (0.88 and later), and import logs from V2.5 of KF7XP and W0NIFU's XPCOM and XPLOG. It comes with complete databases including prefix, WAE, WAS and DXCC lists, aerial bearings from Europe, and example QSL label wordprocessor 'macro' files.

HAMVIEW is a Windows program to display information on a number of UK amateur radio repeaters, beacons etc. The overlays supplied with the program include 2m repeaters, 70cm repeaters, UK beacons at 50MHz and above, ATV repeaters, microwave repeaters, packet BBSs, even Channel 5 TV transmitters. There's also a handy 'Find'



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command, for example entering 'DX' on the packet BBS listing will give information on DX clusters.

IFICW2 is the latest version of the easy-to-use CWV tutor program by Perry G0IFI. It has a simple three-option menu, and as well as a 'type and enter' option it can

also send up to 1000 random characters in 'test mode'.

Coil V2.00 is a handy program to calculate inductance for many amateur radio coils and loops, including those used in aerial traps and receiver/transmitter circuits. It also calculates LC

parameters such as inductance, capacitance, frequency and impedance at resonance.

SELCALL is a small and simple program to translate maritime SITOR selcalls. The maritime mobile service (MMS) uses 4 and 5 digit selective call numbers, which are internationally assigned to coast stations and ship stations on a world wide basis. If a selcall number matches the selcall ID of a known coast station, the program will show this and report the coast station's name. A useful appendix also gives the tables of blocks of selective call numbers for both ship and coast stations, together with a listing of international coast stations in the order of their selcall number

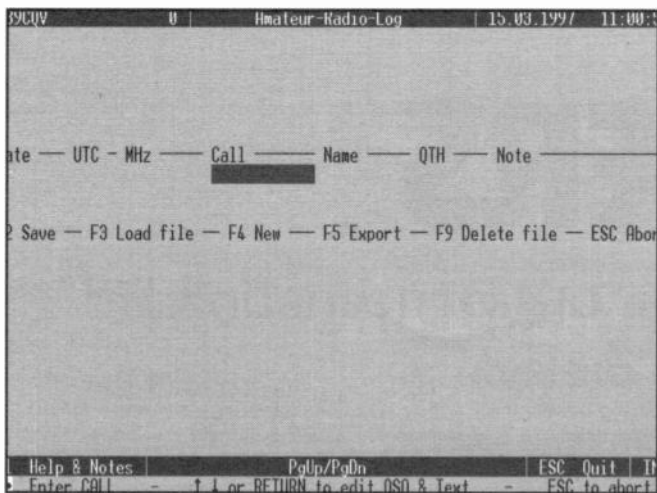
Finally, **Year2000.EXE** is a small resident program for DOS and Windows, see this month's 'Data Connection'. It fixes the year 1999 to 2000 date change flaw of the CMOS RTC in AT-class PCs and PS/2s, 286 through Pentium and clones. It works, and it's a free-to-use program for personal use. It's been reported that virtually 100% of the PCs in use at this time will fail to advance the date to year 2000, this program should help those machines to survive the changeover.

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.

ORDERING

Ham Radio Today Software Collections are supplied on 1.44Mb PC disk format. This month's disk, **HRT Vol.15 No.5**,



Ham Log V4.88 by Jochanan HB9CQV is a freeware program for amateur radio logging and QSL management.

is 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, orders can be combined with past month's offers within the validity dates), 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 DISK

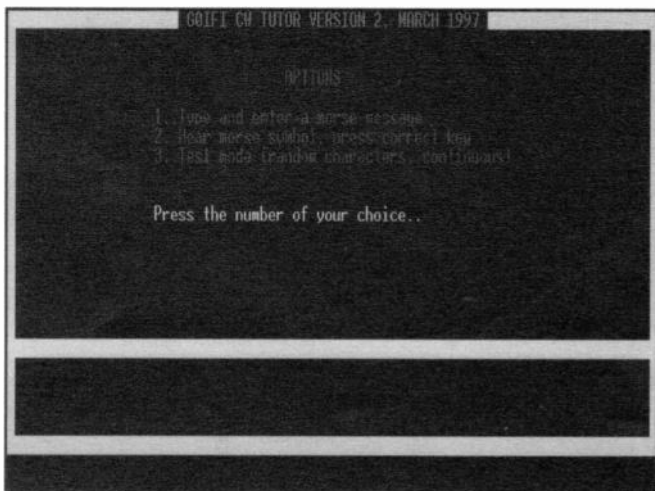
Simply send a cheque or Postal Order (or as above for outside UK) payable to **S. LOREK**, together with your completed coupon to; Software Offer, PO Box 400, Eastleigh SO53 4ZF England. If

you don't wish to cut out 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.

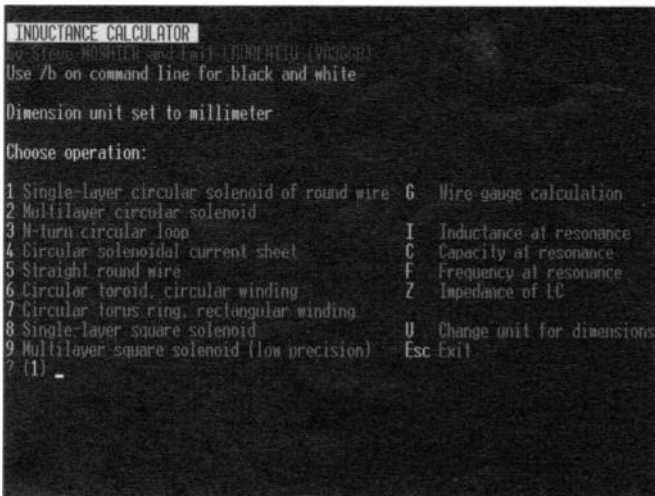
Important notes: Please do not make your cheque or Postal Order payable to any other individual or any company (note that 'Mr. S. Lorek' is not acceptable), if you do, your order cannot be processed and will be 'held' awaiting an SAE from you. Other payment methods, such as foreign currency, unfortunately can't be accepted. Orders for this month's offer will be accepted up to 31st July 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. Disks are usually placed in the post within 48 hours of the receipt of



IFICW2 is the latest version of the easy-to-use CW tutor program by Perry GOIFI



Coil V2.00 is a handy program to calculate inductance for many amateur radio coils and loops.

HAM RADIO TODAY SOFTWARE OFFER VOL 15 NO. 5

Please send me; Qty_____ of this month's disk (HRT Vol. 15 No.5), Cheques/POs payable to S. Lorek (please not "Mr." nor any other individual or company). Disks at £2.00 per disk inclusive of disk and UK p/p, outside UK at £2.50 per disk inclusive of disk and airmail p/p. This month's offer is valid only until 31st May 1997. If you don't wish to cut this coupon, just use a separate piece of paper and include the corner flash from this page.

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Please note this is a post only service, telephone orders and enquiries cannot be accepted. Any queries or faulty disk returns must be accompanied by an SAE for reply.

LETTERS

THANK YOU YAESU UK

DEAR HRT,

I have attended all of the London Shows held at Picketts Lock and enjoyed them all immensely.

For the past few years I

have arranged a mini-bus on behalf of the Bournemouth Radio Society to take members to the show. Each year members attending have taken part in the popular draws offered by Yaesu UK.

Imagine my great surprise, having obtained my draw ticket within the first couple of minutes of the opening of the show, to then have my ticket drawn, making me the winner of the noon draw.

My thanks go to Yaesu UK for my prize, the Yaesu FT-4DR UHF handheld transceiver which I have already received great pleasure operating.

Clive J. King

LETTER OF THE MONTH

May I attempt to take at least a small amount of space in your 'Letters' page to express my thanks for the many ex-PMR conversion articles you publish. As a professional electronics technician, I know very well the amount of time, and knowledge, it must take to put together such information, and then publish it for the good of newcomers to our hobby. Not everyone can afford to buy the latest Japanese black box to get on the air, and why should they? For just a few pounds, one can obtain an ex-professional transceiver that can easily out perform such amateur rigs, especially when strong interfering signals are nearby.

I also understand that the whole of Europe will be moving to 12.5kHz channel spacing on 2m and 70cm, and that Japanese transceivers will need to be modified with filter changes

to cope with this. The lucky person with his or her surplus PMR transceiver will no doubt find it already conforms very nicely to 12.5kHz channel spacing, with no modifications or expensive crystal filter changes required!

Once again, thank you, it's significant that other publications haven't yet chosen to follow your lead in helping others.

Ray Billington, West Yorkshire, currently awaiting my 'B' licence!

Editorial comment:

Well Ray, what can we say! Ham Radio Today has been publishing ex-PMR conversions for many, many years, and there's plenty more waiting here 'in the pipeline' to go into future issues of the magazine.

SOFTWARE HELP

DEAR HRT,

I have a Pentium computer, and I would like to start to use some of the programs that you have on disk with your magazine (i.e. the software offer), but I do not know what I need, where to buy it, or how to use my computer with radio. Most of the people I speak to don't know either. Could you put some sort of pictures or diagrams in your magazine to show myself and many other beginners how to use my computer for radio, i.e. short wave radio, packet radio and what you would need to communicate with Russian satellites?

Derek Woodley

Editorial comment:

Ok, you've got it! We plan to publish a new bi-monthly 'Computer Workshop' column, written by Paul Simpson, GORUR, who will do his very best to answer readers' computing questions through his column. If anyone has any questions or suggestions they would like Paul to cover in his new column, please do get in touch. Paul can be contacted via the Ham Radio Today contact details, or directly by Email; rur@innotts.co.uk. We also have another new columnist, Jeremy Boal G4NJI, who is writing a bi-monthly column on the Internet and Amateur Radio entitled 'Net Communication'. Jeremy can also be contacted via the Ham Radio Today contact points, or direct by Email; asperges@innotts.co.uk. These two columns nicely complement each other and are currently planned to be published in alternate issues of Ham Radio Today magazine.

£10 FOR LETTER OF THE MONTH

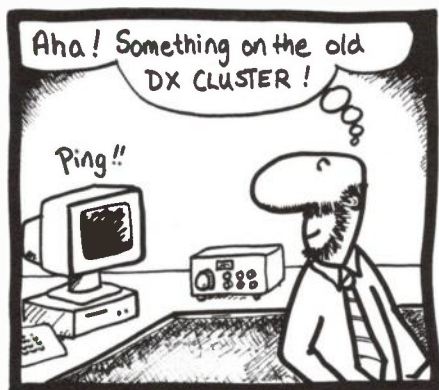
Do you have something constructive to say on the state of Amateur Radio today? Perhaps you'd like to put your viewpoint to the readers, get some discussion going, or give an answer to one of the issues raised? We'll pay £10 for the best letter we publish each month (paid during the month following publication). So write in or Email with your views, to; Letters Column, Ham Radio Today, Nexus, Nexus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST, or fax your letter direct to the Editor's desk on 01703 263429 (fax letters for

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.**

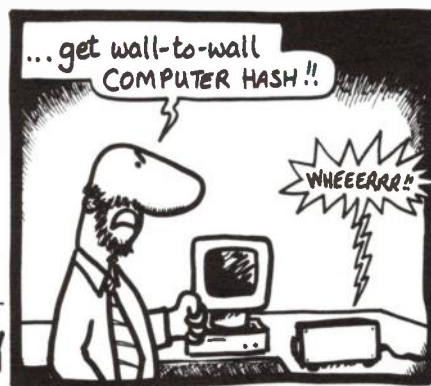
"TONE" BURST



by GMBMEN



XT- Burkina Faso - on 20!!
Great, I'll switch on the HF rig
and.....



INTERNET COSTS

DEAR HRT,

After reading Jeremy Boot's article (Internet and Amateur Radio) in the Vol.15 No.1 issue of Ham Radio Today and, I might add, had a previous letter published in Ham Radio Today regarding the pro's and con's of the Internet for amateur radio, I feel that Mr Boot's article, although being basically correct, it, along with many of the other millions of words written about this electronic paradigm known colloquially as the 'Information Highway', fails to address a few pertinent points.

The most important of which, is the implied assumption that universal access to the virtual community is guaranteed. Unfortunately, and this is where most people who write about it pull the blinds down, only if you can afford to pay the fare!

You see, notwithstanding the obvious fact that millions of potential cybernauts are prevented from entering the gates of cyberspace because they lack the necessary financial clout, and even though some of them may be amateur radio enthusiasts and are perceived to be

technically adept, what really stops many from entering this technocratic playground is the lie that going online is 'easy' and accessible (yes, even for radio amateurs) when the opposite is true - that at the current time, it is a culture of exclusion. Online systems present the user with a multitude of choices, hundreds of miscellaneous icons beckon the user to navigate through a virtual maze of options - overload and mind-numbing lockup ensues. On the contrary, amateur radio by virtue of its operational simplicity and relatively little cash outlay, confers easy access to something similar to the Internet - dialog and 'information'.

The Novice licence has been instrumental in tempting more youngsters into our common hobby but, even more, lots more, are falling over themselves to sign up and get connected to the Internet. Many of them are literally having the time of their lives instead of yapping about the weather on 80m, or chasing DX when and if the bands permit. However, the whole concept of how we communicate via computer is I believe a weak link in the

virtual chain.

Mr Boot, along with some other commentators, fails to point out that most if not all of the crucial interactions in society come about as a consequence of people talking to people - not between computers! No, this idea that a technological solution, be it access to a virtual computerized world of information or not, might somehow make a person more inclined to embrace amateur radio as a hobby, is, with respect, flawed. It presumes an interest in computers and the Internet and by implication, he or she has the necessary cash to spend - many haven't.

This is where amateur radio differs so dramatically from the Internet, it is far cheaper, people talk to people (even though it may be about the weather) not computers and it's easily accessible - just obtain a licence. No monthly online charges, no astronomical phone bills and no frustrating tech-support calls etc. This is what should be rammed home, not the premise that the Internet could or might encourage more people to become amateur radio enthusiasts. Besides,

computer skills are in a constant flux - once you've mastered one skill it's immediately obsolete. Once ensnared by computers, you're continually chasing your tail. Amateur Radio on the other hand, is a skill easily learnt - basic RF knowledge doesn't change every five minutes either just for the sake of it, unlike computers.

The Internet is popular by default. But let's exploit this medium for the betterment of amateur radio and insist that organizations like the RSGB do something constructive with regard to removing this cuckoo in the nest of amateur radio. Jeremy Boot's fascination with the Internet is quite evident, but I'm not quite sure whether his assimilation with it is a portent of things to come?

Ray J. Howes, G4OWY

*Editorial comment;
Right then, what say other readers?*

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

QRP CORNER

Dick Pascoe GOBPS shows how to make an easy-to-build switched attenuator

Last month I discussed the use of an attenuator with those rigs that cannot be brought down to the power levels we may require. Many modern HF radios will easily drop down to the ten watt level, but not many will go much lower.

There have been many notes promulgated on packet and the Internet to modify various rigs for lower power. This frequently requires the owner to get into the rig and carry out these modifications, which will also often invalidate any guarantee.

The easiest way to lower the output power is to use an outboard attenuator made up of a series of switched resistors. Don't be tempted to use those large wire wound resistors often found cheaply at rallies, instead buy good quality carbon film resistors. Why not the wire wound? Think of the inductance in these!

Fig. 1 shows a simple inductor that can be built for a few pounds. The two watt resistors are available from Maplin, Cirkit etc. who's addresses I gave last month.

With this attenuator, up to a total 81dB can be attained, and of course any level required in between 1 to 81dB. If a power meter is connected to the feeder after



the attenuator, then the exact power out can be seen.

As these resistors have a typical accuracy of 5% then reasonable accuracy will be obtained, but if 200mW is required with these the actual power out may be anything from 190 - 210mW. It will be obvious that with the attenuator in line, both the transmit and the receive signal will be reduced, here the circuit given in last month's column will assist in switching this path between receive and transmit. But don't forget that some rigs have a separate receive input to the rig.

The whole network of resistors should be mounted in a metal box and each section controlled by a two pole switch. Each switch will bring

in one section of the attenuator. So by switching in just the first three sections will bring in 6dB of attenuation. The beauty of this circuit is that you can select the exact amount of attenuation you want. If you need say 27dB, switch in the 2dB, the 5dB and one 20dB. The whole will add up to the required 27dB. Quite a versatile piece of equipment that will find many uses in the shack.

Like all good amateurs, I am sure that all users of this attenuator would never dream of testing their power out on the air. We all have and use a dummy load don't we?

For the odd individual who may not have one, I offer the termination wattmeter. A simple network of resistors,

again two watt, 1k ohm are required. A couple of 10nF capacitors a 100 ohm resistor and the diode. The sensitivity of the device is controlled by the variable pot which can be any value 47k ohm upwards. The meter used can be any value from 50µA upwards. Mine uses a 200µA and is suitable for power levels above the 500mW level.

This unit can be built on Veroboard, or 'ugly' style, or you can even make your own PCB. The setting up is very simple and just requires a known power level source to set the scale.

The resistor network supplies the load and the power is sampled and fed to the diode and the 100 ohm resistor. The signal is fed to the meter via the pot. The two capacitors are used to decouple the line.

THROWING WIRES

There was mention recently in the qrp-l group on the Internet, of one operator who was throwing a wire over the roof of his house. He described how he used a fishing weight of about 140g. I threw my hands up in horror on hearing this. Unless extreme care is taken this can be very dangerous. Why not

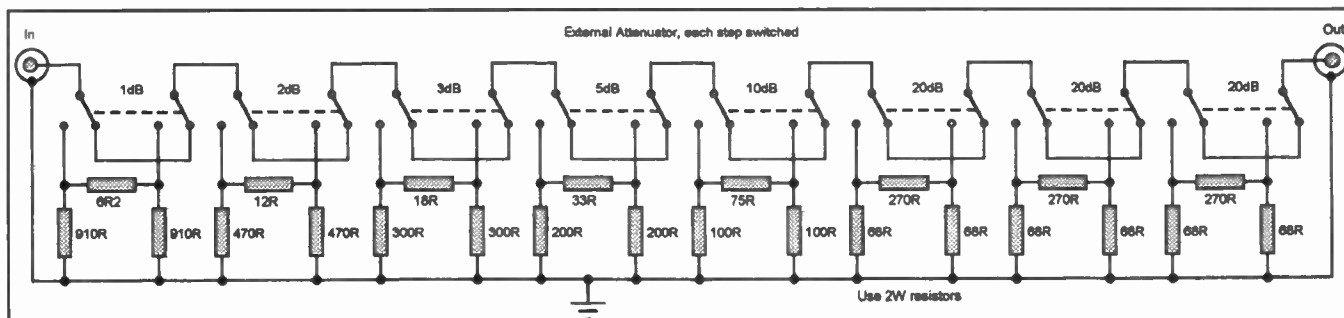


Fig.1 External Attenuator, each step switched.

use something of about the same weight but soft.

I used to assist the Dover Radio club in their demonstration stations and often had the job of getting the aerial wire over the high trees. Often these trees would be about the 30m level and these are not easy to throw a weight over. Our (not so) secret was to use a short fishing rod with the fishing line attached to an apple. With even a little practice we could get the apple and fishing line over even the smallest of branches. Of course with this method, if the apple did hit anyone no great damage will be done.

Remember to cast the line towards the rig, as we used the fishing line to pull the wire over the tree. We have put up over a kilometre of wire some years ago on top band using this method for a JOTA station.

You may of course throw the line over the required branch, but accurate throwing is another art I have not mastered. I really do prefer the fishing rod, especially since I was with one amateur, who threw a fine wire over a tree and held on to the wire as it ran through his fingers. The doctor who stitched up the resultant deep cut in his hand was not impressed.

Finally, a reminder about the QRP contest on the 15th June, I shall once again be entering from home as the Dragonslayers QRP Club, with friends from Holland and

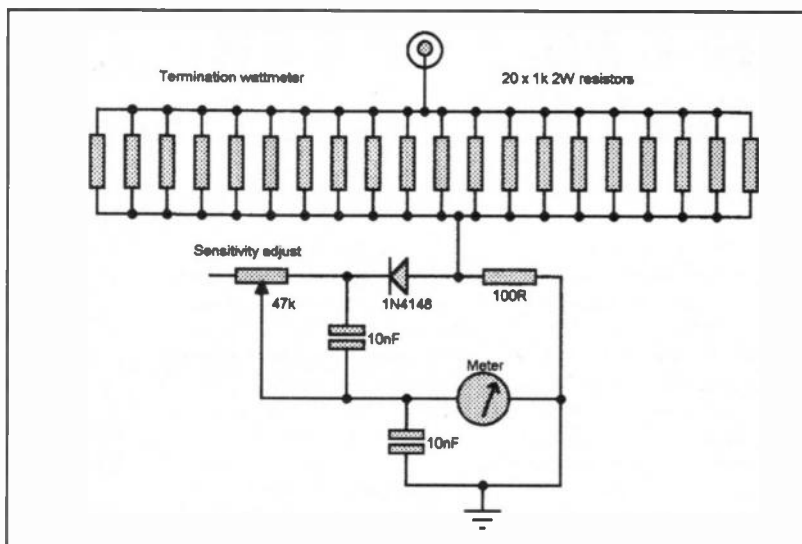


Fig.2 Termination wattmeter

(perhaps) Germany coming over as last year. We hope to better last year's position of 9th place, leading fixed station and highest placed station in JO01. So, please listen out for GOBPS and give us a few points.

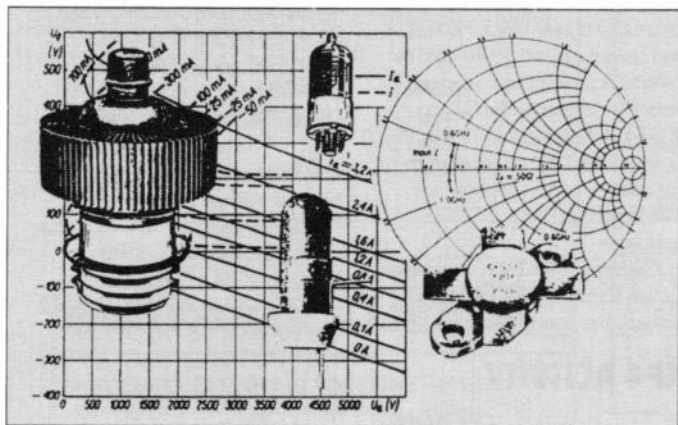
That's it for this month, news and views to me via the Editor, via packet to GB7RMS, Email to; Dick@kanga.demon.co.uk or snail mail to Seaview House, Crete Road east, Folkestone CT18 7EG.



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VHF/UHF MESSAGE

Geoff Brown GJ4ICD brings information on the CY9AA expedition

The CY9AA expedition is planned for June 1997. On this, Mike VE9AA writes:

"We will probably be going to the North Island. It is for all intents and purposes deserted, with an automatic lighthouse that we will not have access to. No power, water, shower, food, trees, although there is some shelter however. There are two buildings, one resembling a house and 3m x 3m shed. One VLF beacon tower could be used for 160m and to hang other aerials off it."

"Therefore, we must take everything we need including food, water, first aid etc. There is no phone, TV, radio, power, or anything there. The North Island was manned until 1991, so the two buildings are in good repair according to our contact in the Coast Guard Maintenance Service. St. Paul is known to be the second most dangerous island in northeast Canada, possibly all of northeast North America. Its nickname is 'The Graveyard of the Gulf'. Its layout is the complete opposite of Sable Island, being composed completely of jagged rocks. It rises steeply out of the frigid waters to a small plateau area that is scarcely 100m x 100m."

"The South Island of St. Paul is much larger, but the buildings there are in a bad state of repair, having not been manned since the 1960s. Also the two safest landing spots that have buildings are both in sheltered coves, blocking the shot to Europe or USA by 175-200 foot mountains. The North Island is out in the open, 125 feet or so above the ocean surface. The island has slightly rounded top no trees or mountains"....thanks UK Six Metre Group.

Donations are welcome and can be sent to VE9AA who's address is: Mike Smith, 271 Smith Rd. (Geary), Waterville, Sunbury Co. N.B. Canada, E2V 3V6

3CX800 50MHz AMPLIFIER UPDATE

There was a slight mistake in the cathode circuitry on the 3CX800 50MHz amplifier article, RFC 1 should be 40 turns of 22 swg and not 80 as quoted. Also the circuit (not drawn by myself) indicates that the equalising resistors across the power supply electrolytics are 220 ohms, in fact the component listing lists them as 220k ohms which is correct. I have had

several phone calls requesting help with the amplifier, and I am pleased to hear that several of the units are functioning well, even on 70MHz with a slight modification to the grid/anode circuitry.

3CX800 tubes are expensive to buy new if you cannot obtain 'pullouts', and so,

another approach has been made in trying to produce a cheaper high power 50MHz amplifier. More details will be available later, but I will give you a clue - it uses a 3-500Z tube available new for about £65!

GENERAL VHF SNIPPETS

Chris GM3WOJ received the first 50MHz DXCC in GMland in January, [No. 219]. This took him 13 years to achieve, and includes many QSOs which were 'firsts' from GM. The best DX was KG6DX although Chris's signals were heard in VK7. This was achieved from IO77WS in the North of Scotland, which should encourage all other GMs to try when the band opens again. A real test of operating skill were the four openings by 'sidescatter' from GM to JA - could only work stations in two of the openings, and in the other two signals were peaking S2-S5 on a beam heading of 090 degrees, with rapid QSB and QRM. Attempts to work split frequency failed and only 19 JA stations in all were worked in a total of 30 minutes in the two openings. On several occasions QSOs were made via a mixture of Aurora and F2 (from GM to CX and GM to ZS).

Ken SM7CMV received a direct QSL-card from 4K6D in Azerbaijan for a QSO in June 1995. He had tried several ways to get the card but it seems that my first letter reached Vlad. The address on the QSL card is: Vlad Shcherbako, Mir Djalala 99, Kv 95, Baku 370147, Azerbaijan. The address on the envelope was: P.O. Box 172, BAKU 370000, Azerbaijan.

Grid square KP42 is now active on Six with OH4YA, this is the first time anybody has operated from this grid.

KP4 ACTIVITY

Ed WVP4O is currently active in Puerto Rico on 6 metres. He is located on the north west corner of the island about 106m above sea level looking out to the ocean. His grid square is FK68 and he is currently running an FT-736R and a 300W amplifier on six metres with a two element quad up at 8.5m. Ed will be in KP4 until

November 1999. Look out for him during next month as KP4ET and others were worked by many in Europe last year.

IRAQ ON VHF

It is certainly possible that Y1 (Iraq) will be active on 50MHz this summer. Information has been passed of possible operation from the UNCR HQ in Baghdad, keep a look out in that direction during June/July as this will be another new country for everybody in Europe.

MS AND ES

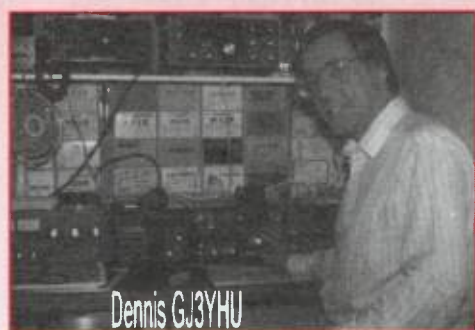
Bo SM7FJE reported working LA5SAA in rare grid JO39 on 19th February via MS on 50MHz.

Bob ZL3TY Emailed this ES opening on the 23rd Feb: 46.24/51.74MHz TV strong 02:00z to 03:40 then in and out for 3 hours. 25 Feb: 04:25z 46.17, 46.24, 51.74 MHz TV weak, 50.13 worked VK4GPS and VK4DLA and TV audible to 09:20z. 26 Feb: 04:25 46.17/51.67 MHz weak, VK4FNQ heard.

March 2nd produced a nice 50MHz opening from Japan to VK4. The following was sent in by JA3EGE. 2/3/97: JA to VK4 Opening: 03:12 46.170 VK4 TV QO S7, 04:42 50.115 VK4JH SSB 59 04:52 50.160 VK4BKM SSB 59, 04:59 50.179 VK4FNQ SSB 58, 05:00 50.117 VK4WVN SSB 55.

John GM4ANB has updated the Region 1 DX records and to start off with here are the top five 50MHz F2 contacts claimed so far with GW3MFY taking the honours for the British Isles. ZS6LN KG46RC KH6IAA BK29LA SSB 79-04-15 19305 EL2AV IJ46 H44PT RIOOAO SSB 82-04-04 18996 GW3MFY IO81FL VK3OT QF12AG CW 91-02-19 16927 G4UPS IO8QJV VK3OT QF12AG ? 91-02-19 16922 GJ4ICD IN89WF VK5NC QF02XB CW 91-10-18 16895.

Well, that's all for this month, news and views please to: Geoff Brown, TV Shop, Belmont Rd. St Helier, Jersey. C.I. JE2 4SA, or via phone/fax 01534 877067, Email: equinox@titl.net



Dennis GJ3YHU



Cedric CT3FT

NEW EUROPEAN 144MHz BEACON LISTING

Freq	Call	Location	Loc	Aerial	Heading	ERP W	Freq	Call	Location	Loc	Aerial	Heading	ERP W
144.400	Transatlantic beacon						144.444	DBOKI	Bayreuth	JO50WC	Vertical	Omni	5
144.402	EA8VHF	Canary Is	IL28GC		Omni	10	144.445	GB3LER	Lerwick	IP90JD	2 x 6 el Yagi	NE/SE	500/500
144.402	OY6VHF	Faroe Islands	IP62OA	2 x 4 el	NE/SE	50/50	144.446	OKOEB	Ceske+C18	JN78DU	3 x Dipole	Omni	0.07/0.007
144.403	EI2VVRB	Portlao	IO62IG	5 el Yagi	95o	200	144.447	SK1VHF	Klinthehamn	JO97CE	2 x Cloverleaf	Omni	20
144.404	EA1VHF	Curtis	IN53UG	5 el Yagi	NE	150	144.448	HB9HB	Biel	JN37OE	3 el Yagi	345o	120
144.406	Transatlantic beacon						144.449	IT9G	Mandello PA	JM68QE	5 el Yagi	N	35
144.408	GB3NGI	Ballymena	IO65VB	2 x 4 el Yagi	NE/SE	120/120	144.450	DL0UB	Trebbin	JO62KK	4 x Dipole	Omni	5
144.409	FX3THF	Lannion	IN88GS	9 el Yagi	E	50	144.451	LA7VHF	Tromso	JP99LO	10 el Yagi	190o	500
144.410	DBOSI	Schwerin	JO53QP	2 x Big wheel	Omni	10	144.452	OKOEC	As	JO60CF	3 el Yagi	E	0.7
144.411	IOA	P.Mintaro RI	JN62IG	2 x Big wheel	Omni	10	144.453	GB3ANG	Dundee	IO86MN	4 el Yagi	160o	20
144.412	SK4MPI	Borlaerge	JP70NJ	4 x 6 el Yagi	NW/NE	1500	144.454	I2M	Cremona	JN55AD	Big wheel	Omni	10
144.413	3A2B	Monaco	JN33RR	Yagi	E	50	144.455	OH5ADB	Hamina	KP30NN	Dipole	NW/SE	0.1
144.414	DBQJW	Wurselen	JO30DU	10 el Yagi	22o	50	144.456	DBOGD	Rhoen	JO50AL	Vertical	Omni	1
144.415	IOG	Foligno PG	JN63IB	4 x dipole	Omni	10	144.457	SK2VHF	Vindeln	JP94TF	2 x 10 el Yagi	N/SW	100
144.416	PI7CIS	Delft	JO22DC	Omni	Omni	50	144.457	EA2VHF	IN91DJ			Omni	18
144.417	OH2VHF	Nuummi	KP10VJ	9 el yagi	N	150	144.458	IT9S	Zafferana CT	JM77NO	2 x Big wheel	Omni	3
144.418	ON4VHF	Louvain	JO20HP	Big Wheel	Omni	15	144.459	IA5VHF	Bodo	JP77KI	2 x 6 el Quad	15/180	100
144.419	I7A	Bari	JN81EC	Big wheel	Omni	8	144.459	FX4VHF	Brive	JN05VE	Big wheel 6dB	Omni	25
144.420	DBORTL		JN48OM				144.460	HG1BVA	Szentgotthard	JN86CW	Hybrid Quad	80o	40
144.421	OZ7IGY	Tollose	JO55VO	Big wheel	Omni	25	144.461	SK7VHF	Falsterbo	JO65JK	2 x Cloverleaf	Omni	10
144.422	DBOTAU		JO40HG				144.462	IN3A	Trento	JN56NB	Ground plane	Omni	0.1
144.423	PI7FHY		JO33WW	Halo	Omni	10	144.463	IA2VHF	Melhus	JP53EG	10 el Yagi	15o	500
144.424	IBA	Reggio C.	JM78WD	Sqlo	Omni	8	144.464	I1M	Bordighera IM	JN33UT	Big wheel	Omni	20
144.425	FX2VHF	Le Croquet	JO10EQ	Big wheel	Omni	14	144.465	DFOANN		JN59PL			
144.426	EA6VHF	San Jose, Ibiza	JM08PV		Omni	20	144.466	OZ3VHF		JO55HL	Clover leaf	Omni	0.5
144.427	PI7PRO	Nieuwegein	JO22NC	Halo	Omni	10	144.467	HB9RR	Zurich	JN47FI			
144.428	DBQJT	Oberndorf	JN67JT	8 x Dipole	270/33730		144.467	ISOA	Olbia SS	JN40QW	Turnstile	Omni	1
144.429	IT9A	Alcamo TP	JM67IX	2 x Big wheel	Omni	10	144.468	IA6VHF	Kirkenes	KP59AL	14 el Yagi	210o	250
144.430	DIOPR	Garding	JO44HX	4 x 6 el Yagi	N/S	1000	144.469	GB3MCB	St Austell	IO700J	3 el Yagi	NE	40
144.431	9A0BVH		JN85JO	V Dipole	Omni	1	144.469	I3Z	Verona	JN55OL	Yagi	S	50
144.432	9H1A	Malta	JM75FV	Turnstile	Omni	1.5	144.470	OH2VAN	Vantaa	KP20	Omni		
144.433	GB3VHF	Wrotham, Kent	JO01DH	2 x 3 el Yagi	NW	40	144.471	DBOFAL	Langerringn	JN58IC	16 el Yagi	305o	1000
144.434	DBOLBV		JO61EH				144.472	IA6A	Orlona CH	JN72FH	2 x 5 el Yagi	340/180	24
144.435	HB9H	Locarno	JN46KE				144.473	SK2VHH	Lycksele	JP94	Horizontal	NNE	15000
144.435	SK2VHG	Swappavara	KP07MV	16 el Yagi	S	800	144.474	EA3VHF	Soria	JN11MV	Halo	Omni	1
144.436	PI7NYV		JO32	Halo	Omni	1	144.474	OKOEL	Vrchlabi	JO70SG	Dipole		0.004
144.437	IA1VHF	Oslo	JO49GT	Turnstile	Omni	12	144.475	DI0SG		JN69KA			
144.438	IXOVHF	Wallerdange	JN39BP	Big wheel	Omni	10	144.476	FX9VHB	Pic Neulos	JN12IL	Halo	Omni	0.1/10
144.439	SK3VHF	Oestersund	JP73HF	Horizontal	Yagi S	500	144.477	DBOABG		JN59WI	Big Wheel	Omni	4
144.440	DI0UH	Melsungen	JO41RD	V Dipole	Omni	1	144.478	IA3VHF	Mandal	JO38RA	16 el Yagi	S	100
144.441	IA4VHF	Bergen	JP20LG	2 x 8 el Yagi	N	380	144.478	S55ZRS	Kum	JN76MC	Dipole	Omni	1
144.442	I1G	La Spezia	JN44VC	4 el Yagi	SE	4	144.479	SR5VHF	Wesola	KO02OF	Turnstile	Omni	0.75
144.443	OH9VHF	Pirttikoski	KP36OI	10 dBd gain	200o	200	144.479	IV3A	Manzano UD	JN65QX	Ground plane	Omni	1

UPDATED 50MHz BEACON LIST

Freq	Call	Grid	Power	Aerial	Freq	Call	Grid	Power	Aerial	Freq	Call	Grid	Power	Aerial	
50.000	GB3BUK	IO93	15	TURNSTILE	50.047	4N1SIX	KN04	10	VEE	50.070	SK35IK	JP71	10	DIPLOE	
50.001	VE1SML	FN84	25	3 EL YAGI EAST	50.047	JW75IX	JO78	10	4 EL YAGI	50.070	W7AWKR	B CN87	10	BEAM	
50.001	BW2FG	PI05	3	5/8 VERTICAL (QRT SUNDAYS)	50.048	VEBBY	FP53	30		50.070	ZJ1SES		2222		
50.003	7G7SIX	KH74	5		50.049	VA3BCN	FN03	2	D/POLE	50.070	EA3VHF	JN01	25	VERTICAL	
50.004	HV35J	JN61	10	5-el at 315 degrees	50.050	Z56DN	KG44	100	SEL	50.071	VVB5LUA	EM12	1.5	HALO	
50.004	PI25IK	FK52	22	4 * D/P HORIZ/OMNI	50.050	SW11WS	AH46	10	SEL	50.071	KX5BTP	EM40	22	2222	
50.005	Z525IK	KF25	25	DIPLOE	50.050	GB3NHQ	IO91	15	TURNSTILE	50.072	KS2T	FM29	10	G/PLANE	
50.008	VE85IK	CP38	85	ELE	50.051	LA75IX	JP99	30	4 EL BEAMING 190	50.072	WV4IO	EM81	1	M2 HALO	
50.008	HI0VHF	FK58	22	222	50.052	PA3FYM	JO22	9	DIPLOE N/S	50.072	KIA2T	FN13	5	SQUALO	
50.008	XE2HVB/bdL44		5	6 EL BEAM	50.052	Z215IX	KH52	08	1/4 G/PLANE	50.073	WVB4WTC/bFM06		10	2 LOOPS	
50.0095	PY25FY/BGG77GA		4	WATTS	50.053	VK35IX	QF02	15	9 EL	50.073	WV7T/b	CN87	10	HALO	
50.010	SV95IK	KM25	30	VERTICAL DIPLOE	50.0555	V44K	FK87	03	5/8 VERTICAL	50.073	N5EAD	EM10	4	5/8 VERTICAL	
50.010	JA2IGY	PM84	10	5/8 G/PLANE	50.0565	J3EOC	FK	1.6	HALO	50.073	ES65K	KO37	1	G/PLANE	
50.013	CU3URA	HM68	05	5/8 VERTICAL	50.057	VK7RAE	QE38	20	X/DIPOLES	50.073	NIN7K	DM09	1	RINGO RANGER	
50.013	S55ZRS	JN76	8	G/PLANE	50.057	VK8VF	PH57	100	1/4 VERTICAL	50.075	W65K/C	DM41	5	HALO	
50.0155	LU9EHF	FF95	15	DIPLOE	50.058	VK4RGG	QG62	06	TURNSTILE	50.075	WV23IK	CL72	7	G/PLANE	
50.017	JA6YBR	PM51	50	TURNSTILE	50.058	VE3UBL	FN03	10	TURNSTILE	50.075	W77MA/2	2FM20	1		
50.018	VS1VHF	JG87	60	5/8 VERTICAL	50.059	PY2AA	GG66	5	GROUND PLANE	50.076	KL7QK/C3	RM18	4	OMNI	
50.019	CK1CCC	GF15	05	G/PLANE	50.059	JHOZPI	PM96	10	22	50.076	KD4HIG	16EM73	10	AB7 ANT	
50.021	OZ7IGY	JO55	30	TURNSTILE	50.060	KASFY	EM10	22	22	50.077	VE3DR	2222	22	22	
50.0215	FR55IK	LG78	02	HALO	50.060	WV5VAS	EM40	50	SQUALO	50.077	NOL	EM09	21	2 * HALO S	
50.0225	XE1KK/B EK09		20	OMNI	50.060	GB3RMC	IO77	40	DIPLOE @ 240M	50.077	WIB2CUS	EL98	1	LOOP	
50.023	IK05IK	JN39	10	DIPLOE	50.060	K4TOR/b	EM63	03	D/POLE	50.0775	VK4BRG	QG48	5	TURNSTILE	
50.0235	ZP5AA	GG14	05	VERTICAL	50.061	W1VHF/b		25	VERTICAL	50.078	KE45IK	EM83	5	5/8 VERTICAL	
50.025	OH1SIX	KP11	40	8 * D/P HORIZ/OMNI	50.061	KH6HME/b	BBK29	20	DIPLOE	50.078	JO55IK	KM474	8	1/4 VERTICAL	
50.025	VY4AB	FK50	15	RINGO	50.061	KE7NS/b	DN31	2	Squalo, info de KE7NS	50.079	JP7DFA	IG50	10	SEL YAGI	
50.025	9H1SIX	JM75	07	5/8 G/PLANE	50.061	WV80RAO	EN10	50	SQUALO	50.079	TD9HA	EL79	20	DIPLOE	
50.027	JA7ZMA	QM07	50	2 TURNSTILE	50.062	WABR/b	EM79	1	HALO	50.080	ZJ1SES	JP96	10	HALO	
50.028	SR65IK	JO81	10	G/PLANE	50.062	W17HAH	DN28	25	HALO	50.082	CO2PRC	EL83	2	D/POLE	
50.028	XE2UZL/bDM10		25	2 SQ/LOOPS	50.062	K8UK/b	EN82	2	OMNI	50.083	WV1SIX	KN12	22	2222	
50.030	CS1ASP				50.062	KADONNO	EM24	8	HALO	50.086	WV9WAO	FK86	10	6 EL YAGI 2222 ON AIR	
50.030	CT0VVV	IN61	40	DIPLOE 700M	50.064	AA5ZD	EM12	22	22	50.087	PRCAIN	JO22	22	222	
50.031	VE6KIS	DO21	25	4 EL YAGI 1000m off at 1700/2100	50.064	GB3LER	IP90	30	BEAM	50.0873	WV1SIX	KN03	15	DIPLOE	
50.032	JROYEE	PM07	02	LOOP	50.065	AB5L	EM13	200mw	DIPLOE	50.087	VERMS/b	FM65	10	2 1/4 LOOPS	
50.0325	ZD8VHF	II22	50	5/8 JVL	50.065	V0AIR	DM79	20	2 RING HALO	50.089	VE2TWO	FO13	15	DIPLOE (Carrier, no keyer)	
50.035	ZB2VHF	IM76	30	5 EL	50.065	KH6HL/b	BL01	15	ARM OMNI	50.095	PH5KK	GG54	50	D/POLE	
50.036	VE4VHF	EN19	35	VERTICAL OMNI	50.065	W3VD	FM19	7	TURNSTILE	50.162	IS02IK	JM49	1	DIPLOE	
50.037	JR6YAG	PL36	10	6 ELEMENT	50.065	W0MTK	DM59	2	SQUALO	50.230	FM23B	JN35			
50.037	ES05IK	KO18	15	X/DIPOLES	50.065	GB3IOJ	IN89	10	4 VEE/D/POLES	50.291	VK2RCB			ONLY PROPOSED	
50.037	FY7THF	GJ35	100	G/PLANE	50.066	V5OZI	DM90	20	VERTICAL	50.306	VK4RBJ	OF76	100	25 degrees / 10W 080 degree - 3 el Yagi	
50.039	VO1ZA	GN37	1	1/4 WAVE	50.066	VK6RPH	OF88	10	DIPLOE	50.315	FR45IK	JN06	25	3/4 DIPOLES @ 160M AS	
50.040	ZL3SIX	RE66	20	N/W N/E	50.066	WAO1JB	FN54	30	U/D/POLE	50.480	JH8END/bG		N02	10	G/PLANE
50.040	SV1SIX	KM17	25	VERTICAL DIPLOE	50.067	KQ4E	EM86	10	2 EL COLINEAR/EAST	50.485	JPH9P	PM86	2/10	N/D/P	
50.041	VE6EMU	DO33	35	4EL NINE	50.067	W4RFR	EM66	2	2222	50.490	JP12GVW	PM95	10	DIPLOE	
50.042	GB3MCB	IO70	40		50.067	OH49R	EM66	2		50.499	SB4CY	KM64	15	1/4 GP	
50.042	YB0ZZ	O133	15	GROUND PLANE	50.067	1/2 DIPLOE	KP36	35	4 * D/P HORIZ/OMNI	50.521	SZ2DP	KM25	1000	4 * 16E QTF330/EL30	
50.043	YO2S	KN05	2	DIPLOE	50.068	V33HH	EN90	10	LOOP	51.029	ZL2MHB	RF80	1/10	1/2 VERTICAL	
50.044	VE6ARC	DO05	25	V/G/P	50.068	NBPUM	EN65	1	DIPLOE	52.345	VK4ABP	QG26	4	1/4 VERTICAL 1st Jly 96	
50.044	Z56VHF/bKG46		30	6 EL Beaming north from 1/3/96	50.068	W7US	DM42	50	4 EL	52.420	VK2R5Y	GF56	25	TURNSTILE	
50.046	VK8RAS	PG66	15	X/DIPLOE	50.069	K6VF	CM87	10	2222	52.450	VK5VF	RF05	10	DELTA LOOP	
50.047	TROA	JL40	15	5 el beam North	50.070	W1RA/b	FN41	15	V/DIPLOE	52.510	ZL2MHF	RE78	4	D/POLE	

DATA CONNECTION

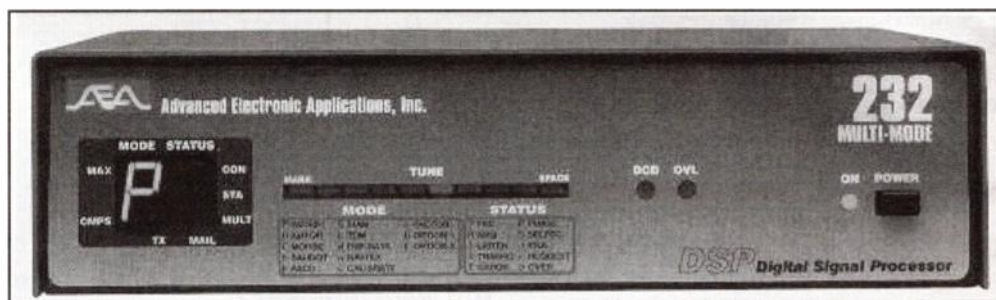
Ham Radio Today's resident data SysOp looks at APRS map updates and a new radio datamodes gateway system

Colin G1VVG, who's currently residing in Barcelona, says he's been using the POCSAG Encoder program 'PE' version 2.00, as I recently featured in this column. He's made the interface and can make his message pager bleep, but says the message is not readable. He's adjusted the transmit audio of his radio but with no better results. Has anyone had better luck with this, in particular setting the Sync code value? You can contact Colin by packet with a message to G1VVG @ EA3MM.EAB.ESP.EU. Colin phoned me from Spain last week as he was having problems with his MX294 ex-PMR rig, hopefully by now he'll have cured the problem and will be active on 2m with the rig.

APRS NEWS

Following my comments on the availability of APRS (Amateur Packet Reporting System) maps for the UK, together with the small collection of these I'd made, G3XGZ in Abingdon kindly sent me a number of further updated maps, for Berkshire, Central UK, Abingdon and the whole of Great Britain. I've now added these to the APRS disk collection (available from the Ham Radio Today Software Offer service), any readers requests for the APRS collection received on March 17th or later will have had these included.

Dave GODJA says he's interested in using APRS as a propagation investigation tool, adding that he can see a use for the system being used on a chain of stations all on particular frequencies and looking for each other on a regular basis, then plotting



The AEA DSP232 will continue to be manufactured but now by Timewave in the US.

the results of heard/not heard against expected variations and compared with propagation predictions and variables such as temperature, time of day, input from the sun etc.

Dave has been using the DOS version of APRS with his Toshiba Tecra 130MHz Pentium PC, but finds that the map does not cover the whole screen, just a smaller square in the middle. He asks is this normal? Dave is also having problems with the Windows version, where double clicking on the WINAPRS.EXE file in File Manager makes the screen blank briefly then the program seems to stop and he's back in File Manager again. The files on the disk were fully complete, and anything 'missing' was also missing from the program supplier's Internet site, so the only answer here is to check with the program author unless any other reader can help. I'll be glad to pass on advice through this column.

Finally, Dave says he is looking for a West Yorkshire or North-West area map, can anyone help? Unfortunately Dave isn't active on packet transceive yet, although by the time this is printed he probably will be (you can check using the

'white pages' facility on your local BBS), alternatively his Email address is dave.ackrill@pgen.com

A letter from George Brown G1VCY tells me that he's disappointed with the documentation on APRS software disk collection, as he wanted to learn a little more about APRS, but could not find the 'APRS.DOC' information file on the disk as detailed in the information. I checked on this, and it looks like the APRS software author has made a slight documentation mistake. The information file is actually called APRS.TXT, and it does indeed contain a comprehensive guide to what APRS is about. I hope this will be of use to other readers who might also have been looking for the file on the uncompressed data.

WINPACK UPDATES ON-LINE

A message from WinPack software author Roger G4IDE says that any WinPack users may be interested to know that he's put together a very simple WinPack web page, it is www.peaksys.demon.co.uk. Roger says that in future, all updates will be initially made available via this page.

I'll regularly be keeping an eye on it!

RIG ADVERTS ON PACKET RADIO?

The Radiocommunications Agency are currently looking into the possibility of relaxing the rules of packet in the UK to allow the sale of amateur radio equipment by individuals. The Agency however also say they have concerns about allowing this in view of the potential abuse of such a relaxation by commercial operators, adding that if details of advertising are provided to the Agency, they would pursue the matter as best they can.

In the 'early days' of packet (when virtually everything was unregulated as packet BBSs weren't officially allowed under our licence, even though many existed!) such ads were the 'norm', and were enjoyed by many. At that time I never saw any examples of commercial abuse, but then packet was rather in its infancy. Nowadays I believe that BBS SysOps could be rather careful in holding such locally-entered bulletins to review them for content. Looking at the UK radio amateur Internet discussion group, I see that

only around 1% of messages are 'for sale' or 'wanted' ads, so I'd presume the same would go for packet. But what do readers think?

The RA also say they're in the early stages of discussing the principle of connections between amateur radio and the PSTN (e.g. the Internet). I wonder who's going to pay the phone bill?

NEW REMOTE PACKET-TOR GATEWAY PROGRAM

A new freeware program is available for amateur data modes, to provide control of a multimode/crossband VHF/HF gateway. It's SYNAPSE 0.43 and has been written by Steinar LA7XQ.

SYNAPSE allows users to remotely control a Kantronics KAM TNC, coupled to a HF (or VHF) radio on a fixed or variable HF frequency from the VHF/UHF packet radio network, either local or via node-hopping. Once connected, e.g. via 2m or 70cm, you're then acting as a SYNAPSE 'client' and the remote KAM is your 'host'. Depending upon the remote configuration, you'll be able to then use the digital HF modes supported by the KAM such as AMTOR, PACTOR and GTOR, in both listen and transceive modes. It also offers remote control of the transceiver frequency, mode etc. as well as external accessories such as aerial switches etc., and at any time you can request 'help' commands or link information such as outstanding data, link quality, speed, and so on. I'm sure readers can imagine the possibilities, especially for emergency communication.

I'm told that future versions of SYNAPSE may also incorporate possibility for a HF PACTOR or GTOR station to link to SYNAPSE from the HF port and then connect on to the local VHF/UHF packet network. At the time I'm putting this together, SYNAPSE 0.43 is available for Internet download at the following URL:

<http://home.sol.no/stwe>

If you've any comments or suggestions on the program you can send a message by packet to Steinar LA7XQ @ LA4O.OSLA.NOR.EU or by Email to swe@dolphinics.no.

AEA PRODUCTS

You may have heard that AEA products were recently in danger of being discontinued. The good news

is that, on the packet front, Timewave Technology have bought the right to manufacture their TNCs (Tempo have bought the rights for their aerial related products). You can get up-to-date information on their packet products from Timewave via their web site at www.timewave.com, Email dsp@timewave.com, or phone +1 612 452 5939.

NODE AND BBS NEWS

The **GB7DXW** DX Cluster (DX Wessex), operated by Colin G3PSM from his home in Totton in Hampshire, has now been licensed and is fully operational. This new cluster takes the place of GB7SMC, and is available on 70.325, 144.675 and 433.675MHz, as well via nodes in the local area. Colin is a keen DXer as well as being a member of the RSGB's HF Committee, and I know he'll be putting a lot of effort into running the system.

The **GB7XJZ** BBS 70cm user port on 432.650MHz has now been upgraded to 9600baud operation, I've used this successfully myself over the last few days. You can get further information from the SysOp Ricky GOSBV @ GB7XJZ, although users who need to continue accessing GB7XJZ on 70cm using 1200 baud can connect to the IOVV node (Chillerton Down, Isle of Wight) on 432.675MHz and then subsequently connect on to GB7XJZ.

GB7RS:ARMY; this node, which is operated by the RSARS Blandford, has returned to normal operation following mains failures (due to rodents!) but is at present experiencing difficulties with the 6m link to the GB7SIG AX25 BBS nearby. You can get more information regarding the node/TCPIP from Nigel G7CAW, or for the BBS from Sandy G7MZR, both @ GB7SIG. My thanks go to SUNPAC for the above information.

YEAR 2000 PROBLEMS?

There's been a lot of speculative (and potentially rather worrying!) publicity in the media recently regarding possible problems to personal computers with the coming of the year 2000.

One way in which to test whether or not your computer will handle the year 2000 problem is to change the date to 31-12-1999

and time to 23:59 in either 'DOS' mode on your PC, or under Windows. Then, switch your PC off (or quickly shut it down under Windows), and wait a minute or so. Then when it reboots, check the date and time shown. I'm told that some computers go back to 4 Jan 1980 (mine does - oh dear!). But if your's reverts to 1 Jan 2000 then you obviously have no problem. I'm informed that if not, you need to look for a small program called **YEAR2000.EXE**, which I'm told will correct the problem for the next 50 years. A hint to readers - I've downloaded YEAR2000.ZIP from Finnish FTP site (<ftp://ftp.funet.fi/misc>), but this is *not* the program, instead it's a collection of text files describing the problem.

PACTOR II CONTROLLER

A recent bulletin message on packet asked about the SCS Pactor II controller, and where information on it could be obtained. I've covered this controller in these pages in the past, and I've very successfully used two of these controllers on HF over the last year. SCS have an excellent Internet web page (a web search for 'SCS' or 'PACTOR' quickly gets you there), and the units are available in the UK via either Waters and Stanton Electronics or Siskin Electronics.

The Pactor II controller uses DSP techniques to obtain 100% error-free data communication down to -26dB signal to noise conditions (that's minus 26dB!). If you'd like to hear more, come along to the RSGB's International HF and IOTA Convention later this year, where you'll be able to attend an audio-visual presentation on data modes as well as a proposed 'rig check' facility. Yes, they've twisted my arm again!

GB7YDX CONVENTION

Just as this issue appears, the GB7YDX Yorkshire Cluster Support Group DX Convention will be about to take place, on Saturday 26th April at the Forte Post House, Tadcaster Road, York. The hotel is located close to the York Racecourse on the A64 towards Leeds, around three miles west of the city centre of York.

This year, I'm told the organising

committee have laid on an excellent programme including a talk by well-known DXers G3SXW and GM3YTS on "To go to Togo" which details the Voodoo Contest Group's 1996 CQWWW DX CW contest effort from 5V7A. Andy G4ZVJ will also be describing his April 1996 DXpedition to St. Helena (ZD7). The days starts at 1.15pm but an optional buffet lunch is available just after midday, and a DX dinner at the hotel will commence at 8.00pm.

The organisers invite amateurs to come along and join them on the 26th April, adding that there will be something for everyone as York has plenty of attractions for the family.

BAYCOM WITH A NEW PC

News from MAXPAK is that there have been a number of queries from people who cannot get their PCs to function correctly when using BayCom software via the PC serial ports. MAXPAK say that a recent message received from DG3RBU of the BayCom team offers a solution to this; "The problem would seem to be due to some fast 16550 chips which are now being used". The BayCom team are aware of this difficulty and suggest the following as a temporary solution; "Install a simple serial port card using 8250 UARTs and configure as COM3/4".

MAXPAK are the Midlands packet group, and can supply licensed BayCom software as well as kits for BayCom 9600 baud and 1200 baud packet modems. You can check availability and prices (discounts are available for group members) from their Membership Secretary and Treasurer, Richard G1NZZ, Tel. 0973 262287 19.00-22.00 Mon-Fri and 10.00-22.00 Sat/Sun, or see them at the MAXPAK stand at the Drayton Manor Rally on 11th May where they'll have a working 9600 baud BayCom modem demonstration station.

CTRL-Z, END OF MESSAGE

I'm very happy to cover topics of interest to readers in this column, so please do get in touch and let me know what your interests are. You can contact me via the Ham Radio Today Editorial mail, Email, fax and voicebank systems, or by packet with a message to G4HCL @ GB7XJZ.#48.GBR.EU

HF HAPPENINGS

Don Field G3XTT gives a few useful hints for catching that needed DX station

Every time I start to think HF conditions are beginning to improve, they seem to take a dive once again, and this was the case in late February. Although there was some interesting DX about, whether you are an island chaser, an RTTY (teletype) specialist or whatever, signals on all bands were weak and it helped enormously if you had some sort of gain aerial such as a Yagi or phased verticals. Roll on those sunspots! The February gales didn't help either. Many of us with telescopic aerial masts had them nested at minimum height to avoid damage.

However, there were certainly some bright patches. Just as VHF operators look for an aurora 27 days after the previous one (because that's how long it takes for the sun to rotate on its axis), so the same is true of LF propagation. A quiet period, with low A and K indices, which is usually indicative of good low band conditions, often comes round again 27 days later. This is exactly what happened in early March after a spell of disturbed lowband conditions, when an early February quiet patch reappeared. In just one evening, G3SED tells me he worked BV4ME (Taiwan), JY9QJ (Jordan) and no less than 26 Japanese stations on 160 metres. Can't be bad!

The earlier spell of good conditions had fortunately coincided with the German S21XX expedition from Bangladesh, and the operation by a couple of US amateurs from V5 (Namibia). Both operations were relatively easy to work from the UK, both on 80 and 160 metres, and I was particularly struck by the consistently strong signals from the Namibian operators, who were audible night after night from mid-evening through until their sunrise. In total they made 1288 contacts on 160 metres, which is good going considering that apart from a few African hams, most of these contacts were over paths of several thousand miles. The key to their success was an

inverted-vee dipole suspended at about 80m from the top of a lighthouse at Luderitz. It has been observed in the past that high horizontal or inverted-vee aerials can be very effective on the low bands when at a decent height, and this was certainly an imposing demonstration of the fact. Of course, getting access to such an effective aerial support isn't always easy!

While not wanting to dwell too much on the low bands, there was one evening in February when 160 metres really did look like 20 metres on a good day. During the period from dusk to dawn, the following topband spots appeared on my local PacketCluster: S21XX (Bangladesh), XV7SW and 3W5FM (Vietnam), KP2J (US Virgin Is.), V47KP (St.Kitts), ZB2/G4ZVJ (Gibraltar), V5/VV8UVZ (Namibia), 5X4F (Uganda), 9X4VVV (Rwanda), ZD8Z (Ascension Is.), N6TV/6Y5 (Jamaica), VP5/K8JP (Turks & Caicos Is.), V26CW (Antigua), EK6GC (Armenia), PJ9/VV1WVF (Curacao) and various Japanese stations. In my early days on topband in the late 1960's it would typically have taken the best part of a year to work as much DX as that!

There was a particular surprise in late February when Kaare IA2GV appeared briefly on 18MHz signing 3Y2GV from Bouvet Island. My natural reaction to this unannounced operation was to assume it was a pirate, and I didn't even bother to work it. I was therefore horrified to read in the following week's DX News Sheet that Kaare was indeed on Bouvet, having been travelling as a crew member on a Norwegian Antarctic vessel, and having had an opportunity to make a brief trip ashore. Fortunately plans are still firm for a major DXpedition to Bouvet next January by a multinational team, so hopefully I will be able to make good my slip-up. As they say, WFFVL (work first and worry later).

OTHER NEWS

It looks as though it's all systems go for the BS7H operation from Scarborough Reef between 30th April and 7th May. This will be a multinational effort, and will cover all bands, but with the primary objective of giving as many people as possible at least one contact with this rare DXCC counter. Updates on the operation will appear at <http://www.iglu.com/n4gn/sr/> on the Web. However, another group who were hoping to operate from Pratas Island (BV9) have been refused permission by the Taiwanese authorities, for reasons of military security.

The planned CY9AA operation from St.Paul Island from 13th to 21st June is still 'all systems go'. I'm sure this will be covered in Geoff's VHF/UHF column, but the group will also be active on the HF bands, and making a special effort on 160 metres which, while a tough one during the summer season, should certainly be workable.

PILE-UP TIPS

Following one of the recent DXpeditions, there was some controversy on the Topband Reflector on Internet about the poor operating practices that had been noted, especially those who called incessantly, even when the DX station clearly indicated who he was responding to. Rather than prolong the controversy, Bill VV4ZV posted his 'top ten' tips for success in pile-ups. XV7SW, ZS6EZ and 4S7RPG then added a few more. All are worth including here, as they really do make sense and will increase your success in DX chasing. They are aimed primarily at 160 metre CW DX chasing, but are more generally applicable.

Rule 1: When the DX answers, listen, do not call. Instead try to find where he is listening. Most good operators spread the pileup over at least 1-2 kHz. If you listen for the

station he is working, you will maximise your probability of being heard since you will know where he is listening. You may also begin to recognise the pattern the operator uses. For example, is he slowly moving up in frequency, down in frequency or alternately picking stations to either side of the pileup. You will also know when to transmit (i.e., when he is listening). It's very hard for him to hear you calling while he is transmitting!

Rule 2: Listen! He may change his listening frequency or move frequency himself. If you're calling continuously, you will never know it. I can't tell you all the good stuff I've worked easily because I was one of the first on a new listening frequency. If you're transmitting continuously, you'll be one of the last to know. For those of you with break-in capability, you have an advantage here. If you don't, use a footswitch so that you can listen between calls and stop sending when he starts.

Rule 3: Do not transmit on the station answering. Why? Because a good operator will stay with that station until he finishes the QSO and repeats caused by QRM just reduces the amount of time you have to work him before propagation goes out. The name of the game is for the DX to work as many stations as quickly as possible. Continuously calling only slows down the whole process and reduces your probability of a QSO. It might also encourage some DX operators to make a mental note in their head to never 'hear' you again!

Rule 4: Learn your equipment so you know how to exactly place your transmit signal (no, not zero beat on the last listening frequency where all the other idiots are!). Offset by a few hundred Hz based on which way you think the DX is tuning (see Rule 1 above). Also please learn to use your equipment so you don't transmit on the DX frequency.

Rule 5: If you have limited resources on 160, focus on your receive capability. You will work far more 160m DX with good ears than with a big mouth (i.e., an alligator).

Rules 6-10: Listen...listen...Listen!

Rule 11: Send your full call sign, not just part of it, like "XYZ k", expecting the DX to know that it's you. If the DX has to ask "XYZ?" - and several times at that - you are wasting everybody's time, including your own.

Rule 12: Never, never, never screw up the spacing in your call. If you use standard Morse spacing, the receiving station can often recover dits that are inaudible, by listening to the timing of the characters. For some reason, people think the call is easier to copy if they leave exaggerated spaces between letters.

Rule 13: Depending on the situation and conditions, give the call of the station you are calling. It may seem irrelevant but some contacts on 160m are not like handshaking break-in operation on 20 metres. e.g. If I am on 1824 and QSX up 2 and I hear AB1CD is he calling me or calling a JA who is also QSX 26.

Rule 14: Listen to what reports the DX is giving. If they are usually Readability 3 and 4 for Strength 5 and upwards then he has a high noise level to contend with and rules 11, 12, and 13 apply!!

EXPEDITIONING?

With summer approaching, you may well be considering taking along some radio gear for your summer holiday (spouse permitting). Most European destinations are now covered by the European licensing agreement, and many holiday destinations are also useful counters for the IOTA (Islands on the Air) programme. Modern compact HF transceivers take up very little space, and can be operated from a car battery (easy if you plan to have a hire car while on holiday) or a compact switched mode power supply. A microphone and/or Morse key, a suitable length of coaxial cable, and an aerial, and you're away.

Aerials are often the greatest source of anxiety in this situation, but can be very simple. Precut dipoles for, say, 20 and 30 metres, are extremely lightweight and can be hung from a suitable tree or a hotel balcony. Alternatively, a simple vertical aerial can be fashioned out of a telescopic fishing pole (I have a 9m fibreglass roach pole which weighs only a matter of grammes and telescopes down small enough to go into a suitcase), with a piece of wire taped along its length.

It is always advisable, if you have space in your luggage, to pack a few extras of course, such as insulating tape, an SWR meter, some cutters and a small soldering iron, because Murphy will invariably accompany you on your trip. Although much of this gear can be packed into the family

luggage, it is even better if you can get hold of a more substantial carrying case and fashion internal compartments out of expanded polystyrene or foam rubber so that your radio equipment is well protected. If you are travelling en famille, then the other family members can use their luggage allowance to take those less important items like your clothes and shaving kit! Have fun.

GO-LIST

The GO-LIST, a monthly listing of QSL managers for DX stations, contest operations and expeditions, started some years ago by W6GO, is now in the hands of WB4RRK. It is available in paper form, on disk, or by downloading from the GO-LIST BBS. Subscription details are available from the GO-LIST Web page <http://www.datawise.net/~prosoft/golist.htm>

AWARDS

The Worked All Italian Provinces 70X70 award commemorates the 70th anniversary of the Italian national amateur radio organisation 'ARI'. Work at least 70 different Italian provinces during the calendar year 1997. Cards aren't necessary, your written certification that you made the contacts according to the rules and limitations of your licence will be enough. Send your application with a fee of \$US5, £3, or 7000 Lire to Award Manager ARI, Via Scarlatti 31, I-20124 Milano,

Italy. I found this information on the K1BV Home Page on Internet, which I have mentioned here before. To remind you, the URL is <http://iop.monad.net/~k1bv/>

Whilst on the subject of awards, the DXCC programme now has a Web page containing DXCC rules, current country list and other related information. Point your browser at: <http://www.arrl.org/awards/dxcc/>

Yes, I know there have been a number of WWW references in this month's column and I apologise to those of you who are unable to access the Internet. But there really is a lot of very relevant ham radio information on there these days, not least for HF enthusiasts. Indeed, I am going to give you a final reference this month, to *Toplist*, which is an Italian-run awards programme for countries confirmed on the nine HF bands. Certificates are available, but the real interest is that the list is updated regularly and carried on one of the 425 DX Group pages at <http://www.dcx.deis.unibo.it/htcdx/>

For those of you without access, see the table for the top 25 scores in the March version of the list (there are over 300 entries in all). Good hunting, Don.

Please send your HF related news, views and photos to Don at 105 Shiplake Bottom, Peppard Common, Henley on Thames, Oxon RG9 5HJ. Or contact him via Email at: 100646.2344@compuserve.com - Ed

TOP 25 SCORES IN THE MARCH VERSION OF THE DXCC LIST

POS	Call	10	12	15	17	20	30	40	80	160	Total
1	OH1XX	320	298	328	318	328	302	327	316	259	2796
2	W4DR	324	300	325	306	328	295	326	320	267	2791
3	W1NG	324	306	326	310	328	303	323	321	248	2789
4	K2TQC	324	305	324	310	328	299	325	323	190	2728
5	N4KG	320	294	324	308	328	287	325	306	225	2717
6	OM3EY	318	277	325	296	327	287	321	306	225	2682
7	N4VZ	320	312	321	314	327	277	317	294	190	2672
8	OH3SR	321	286	328	313	328	289	327	305	173	2670
9	W1JR	311	285	318	301	328	277	320	293	214	2647
10	I4EAT	319	267	328	296	328	269	322	298	190	2617
11	OH3ES	316	295	324	312	328	287	319	258	176	2615
12	W8AH	319	258	324	268	328	230	324	314	247	2612
13	OZ8ABE	296	290	312	312	325	287	303	278	198	2601
14	SP5EWY	312	255	326	279	328	275	318	285	222	2600
15	DJ2YA	309	274	324	303	328	276	308	280	178	2580
16	OM7DX	309	252	323	283	326	266	314	289	199	2561
17	OH3YI	320	215	327	291	329	286	325	313	154	2560
18	OM3PC	309	271	324	301	325	263	306	261	184	2544
19	W3GG	307	220	321	282	327	253	322	280	180	2492
20	OH2BU	313	155	326	281	328	243	325	307	182	2460
21	K1ST	304	246	314	274	327	216	309	269	192	2451
22	N5JR	304	265	319	294	327	224	318	262	135	2448
23	OH8KN	286	251	312	287	320	270	287	262	163	2438
24	G3XTT	293	229	314	269	325	230	300	258	207	2425
25	W1VWAI	294	254	307	271	323	223	302	254	179	2407

SATELLITE RENDEZVOUS

Richard Limebear G3RWL gives advice on working Oscar 10 in this month's AMSAT-UK news collation

We'll start off with information on Oscar 10 this month. As usual, it's still operational in Mode-B, and is currently available when in view but *please do not* attempt to use it if you hear the beacon or the transponder signals FMing. Generally, once AO-10 hits darkness, it shuts down.

OSCAR 10 KEPLERS

There are no new official Keplers for AO-10. NORAD says that the satellite is in an orbit that is difficult to track with their optical/video trackers (GEODSS), and it won't be until spring or early summer before it is visible at these sites in the night sky (they can't track during the day with this technique). Efforts are being made to persuade them to track it with other techniques (long range radar) or from other sites, but so far no results from that direction.

However, W4SM reports two short-term fixes that may be used with the last NORAD Keplers; the 1996/day 299 set says the decay is a negative term, which means orbital energy was apparently increasing while mean motion was apparently decreasing. Negative decays are usually short-term blips due in part to NORAD's short-term fitting/fudging of vector data. Apparent negative decays don't last very long, and disappear if one smooths over a large set of elements; after all, energy isn't really flowing into the orbit.

The fact that the last rather old set of AO-10 keps includes one of these negative decay 'blips' that has gone unrevised for quite a

while is the source of the current problem with tracking AO-10.

W4SM had previously found that subtracting 0.02 days from the epoch time gave Keplers that worked pretty well. Then he heard from Ian Ashley and others in New Zealand who did some ranging measurements on AO-10 and determined that changing the Decay (drag) value to 0.0000001 (+1.0 e-07) resulted in elements that were very close to their ranging values. So this is probably the easiest and best change to make; leave the Epoch Time alone and change the old decay of -3.05e-06 to +1.0 e-07. Some tracking programs won't go to the precision of e-07 and will treat decay as 0, that's fine and still much better than the old value.

Someone else did do some optical tracking and came up with the following unofficial element set (see Table. 1).

RS-16

As this text is being prepared, rumours of an imminent launch of RS-16 continue to circulate. The hoped-for January launch was apparently delayed because the rocket is to be used for a US commercial remote sensing payload instead, since RS-16 was not ready. Information received is that RS-16 will have only beacons on 435 MHz; no transponders.

Once launched, the expected orbital altitude is 500-600 kilometres with an orbital inclination of 97.2 degrees. The following frequencies will be used:
Uplink = 145.915 - 145.948 MHz
Downlink = 29.415 - 29.448 MHz

Beacons; 29.408, 29.451 MHz
Power 29 MHz down; 1.2 W / 4 W

Beacon 1; 435.504 MHz
Beacon 2; 435.548 MHz
Power 435 MHz Beacons;
1.6 W

DIGITAL/MICROSATS

Amateur satellites UoSAT-OSCAR-14, UoSAT-OSCAR-15, PACSAT-OSCAR-16, DOVE-OSCAR-17, WEBERSAT-OSCAR-18, and LUSAT-OSCAR-19 were launched together from Kourou, French Guiana on 22nd Jan 1990. UoSAT-OSCAR-15 experienced a hardware failure shortly after its first day in orbit, and DOVE-OSCAR-17 suffers from low modulation on its S-band downlink, but by and large, these satellites are performing well after seven years of use in space. PACSAT-OSCAR-16, for example, has been operating flawlessly for over 850 days since its last OBC reload.

WeberSat has crashed again and went into MBL mode.

Command stations are in the process of reloading DO-17 again using some new ground software that has some improvements. They hope Dove should be back in normal mode in a few days; S-band is ON and the telemetry interval has been set to 30 seconds.

IK2XRO at the ITAMSAT Control Station reported on 28-Jan-97 that IO-26 was in MBL mode in preparation for the new code upload. The transmitter was off.

PHASE 3D LAUNCH DATE

The official P3D launch date provided by ESA is still the July 08. Projected groundstation uplink

and downlink requirements have been published (see Table. 2).

TRAKBOX UPDATE

Trakbox users may be interested to hear that a new software version has just become available, version 3.40a. This features year 2000 support; CAT control timing tuning for ICOM IC-821 and configuration of rotator error timeout value.

LAUNCH SITE EXPLOSION

In the aftermath of the Jan 17th explosion of a Delta II rocket at Cape Canaveral, base officials have made a preliminary visual assessment of damage, with cost estimates not yet available. Damage to the pad area can best be described as fragmented - some areas impacted worse than others, with some areas untouched.

Of the 30 or so cars in the parking lot, about 20 cars sustained varying levels of damage with some completely destroyed. The Horizontal Processing Facility sustained some damage with the rocket segment inside untouched.

Of the 20 to 30 administrative trailers in the pad area, four were completely destroyed from fire. The main squadron administrative building made of cinder block sustained some damage from flying debris and overpressure from the blast.

The blockhouse that houses personnel critical to the launch, sustained some damage. The concrete building, with its thick walls buffeted with sand bags,

successfully protected the 73 personnel inside from flying debris. Some smoke seeped into the blockhouse probably from damaged cable from the launch pad; however, personnel were equipped with portable breathing apparatus and are fully trained to use these items in the event of an emergency anywhere, anytime they are on the launch complex.

No fuel storage vessels were seriously damaged.

The launch pad/tower area did not appear to have any substantial damage; however, there was more obvious damage to the fibre optic cables that run from the launch pad to the blockhouse in a ground level cable-way. There is minimal damage to the nearby Space and Missile Museum and no apparent damage to exhibits.

The inactive blockhouse nearby at complex 18 was impacted by debris and the full extent of damage has not been determined. Most debris flew from the launch pad toward the ocean. The Delta launch pads are located at what may be considered the tip of the cape.

ASTRONAUT CONTACTS

US astronaut Jerry Linenger, KC5HBR, has been granted permission for general QSOs and scheduled school radio contacts with unlicensed students and a control operator. Getting permission involved approval by authorities in the US, Russia and Germany. Because Mir crews now include a US astronaut, SAREX and MIREX have begun to work together. Currently the SAREX program has about 80 schools on its waiting list. To get a Mir school QSO application, send a self-addressed, stamped envelope to Educational Activities Department, ARRL, 225 Main St., Newington CT 06111, USA.

A word on random QSOs with the Mir space station: Mir crews make random voice QSOs only during 'off' hours. Do not ask the crew to schedule QSOs, as they do not have the long-term calendar.

SOFTWARE

There is a more recent RR.DLL

(version 1.13) and RR.INI file for users of WiSP32 for Windows 95. This file has also been posted as RRDLL113.ZIP on the AMSAT ftp site:

<ftp://ftp.amsat.org/amsat/softwa re/win32/wisp>

The latest beta version of 'The Station Program' is also now available. The new version fixes a number of reported bugs, and adds support for the AEA ST-1 Tracker and older Icom (CHV via UX-14/CT-17), radios. The Station Program is a complete ground-station control program, for Windows 3.1, WFW 3.11 & Windows 95. Currently it is optimized for the analogue birds, it is *not* the same as WiSP! The Station Program is distributed by AMSAT-UK, and all proceeds are donated to the AMSAT Phase-3D fund.

SATELLITE DIPLOMA

The W A S (Worked all analogue satellites) diploma is given to those who have worked through particular analogue spacecraft between 1st Jan and 1st July 1997. All claims must be in by 30 December 1997 and include £2.00 or US \$3.00 to defray costs; QSL cards are necessary for proof. There are two classes; the Class-II award is for contacts through AO-10, AO-27, RS-10, RS-15, FO-20, FO-29, and Mir (presumably SAFEX), and the Class-I award adds RS-12 as well for a total of eight satellites. You can get more information from the Award Manager, OE3JIS Josef Maier, PO Box 116, A-1172, Vienna, Austria.

STRAIGHT KEY NIGHT

Activity in AMSAT-NA's 25th annual Straight Key Night on OSCAR was good, despite the loss of AO-13. RS-10 and RS-12 were especially active, with some SKN stations logged on AO-10, RS-15 and FO-20 as well. For the second year in a row, the Grand Prize winner was NM1K. Other 'Best Fist' winners, each for the first time, included K8NQC, OE2SNL, VE3PYG and W2FB.

1997 SYMPOSIUM

The 1997 AMSAT-NA annual meeting and space symposium will be held on Oct 17-19, at the Airport Delta Hotel in Toronto, Canada. This is the first call for papers to authors who wish to present papers at this event. Topics for all amateur satellite disciplines are sought from the AMSAT community. Abstracts are due by June 1st, and final versions are due by August 1st. They also encourage those not able to attend to consider a paper for publication in the Proceedings of the symposium. Submissions and enquiries should be made to: Wayne Chandler, VE3VHC, By internet: ve3vhc@amsat.org, By mail: W.H.Chandler, Box.6, Carlisle, Ont., L0R1H0, Canada.

AMSAT-UK

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

LATEST KEPLERS

AMSAT-UK Keplers are put out on packet weekly sent to KEPLER @ GBR. The latest satellite Keplers as provided to the magazine by AMSAT-UK are also available as a service to readers by automatic fax retrieval from the 24hr Ham Radio Today fax-back line, 01703 263429 [use with a personal DTMF, i.e. 'touch-tone', phone/fax keypad - follow the voice menu], request fax document 9 from the satellite voice sub-menu for this month's.

PROJECTED P3D GROUNDSTATION UPLINK AND DOWNLINK REQUIREMENTS:

Uplink:

Band	EIRPc	Tx Power	Aerial
146	20dBW	10W	7x7-el cross-yagi
146		50W	Crossed dipoles over plane reflector
435	21dBW	10W	10x10-el cross-yagi
435		40W	Crossed dipoles over plane reflector
1270	23dBW	10W	12 turn helix
2400	27dBW	5W	60 cm parabolic dish
5670	34dBW	10W	60 cm dish

Downlink:

Band	Signal Strength	Aerial	S/N
146	-155dBW	7x7-el cross-yagi Crossed dipoles over reflector	23dB 16dB
435	-157dBW	10x10-el cross-yagi Crossed dipoles over reflector	24dB 13dB
2400	-167dBW	60 cm parabolic dish 14 turn helix	26dB 18dB
10450	-184dBW	60 cm dish	24dB
24G	-197dBW	60 cm dish	13dB

AO-10 UNOFFICIAL ELEMENT SET:

Satellite:	Oscar 10
Catalog number:	14129
Epoch time:	97041.93530000
Element set:	0
Inclination:	25.7730 deg
RA of node:	164.4470 deg
Eccentricity:	0.6061400
Arg of perigee:	91.2180 deg
Mean anomaly:	0.0000 deg
Mean motion:	2.05882300 rev/day
Decay rate:	1E-08 rev/day^2
Epoch rev:	0

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 20th JUNE MUST REACH US BY THE 9th MAY LATEST (some clubs are being missed out because their details arrive too late) addressed to: The Editor, Ham Radio Today (Club News), Nexus Special Interests Ltd., Nexus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST, or direct to the Editor's desk by fax on 01703 263429 or by Email to hrt@netlink.co.uk

Appledore & District ARC meet on the third Monday each month, 7.30pm, at Appledore Football Clubroom, Devon. Club CW net: 8.00pm - 8.30pm every Wednesday on 28.350MHz, 8.30pm - 9.00pm SSB. Morse speed adjusted to the slowest sender. 2m FM every Tuesday 145.475 at 8.00pm. Planned club events/talks; May 19th - The Phase 3D satellite, by Dennis GOFCL. For further details contact Dave Brierley G3YGL, Tel. 01237 476124

Bristol (South) ARC meet every Wednesday at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol. Club diary of events/talks; May 7th - 20m activity evening May 14th - Calibration evening, bring your gear, G0NQG May 21st - 4th evening building a basic receiver, G0TDS May 28th - VHF workshop for newcomers, G0DRX For more information and meeting times, Tel. 01275 834282 24hr. Answerphone.

RSGB Bristol Group meet on the last Tuesday in the month, 7.00pm for 7.30pm, at New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. All welcome, no need to belong to RSGB. Club diary of events/talks; May 20th - EMC, by Hilary Clayton Smith G4JKS 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; May 20th - Construction contest - Wavemeter Jun 17th - Direction Finding hunt Jul 15th - Mast erection, Andy Brooker & John Stockley 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. The club run regular Night on the air/construction evenings. Planned diary of events/talks; May 13th - AGM May 27th - DF hunt (on foot) Jun 24th - Talk by Dave G4EIX, RSGB Zone Rep. Jul 8th - DF hunt (mobile) Further details from Barry Taylor G0TPG, Tel. 01527 542266

Buxton ARC meet at the Lee Wood Hotel, Buxton, at 8.00pm on the second and fourth Tuesdays each month. Club diary of events/talks; May 13th - Quiz night May 27th - Why don't you answer CQ calls? Jun 10th - Live radio at the Lee Wood Jun 24th - Junk night For further information contact Derek Carson G4IHO, Tel. 01298 25550, 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;

May 2nd - Simple Amateur Test Equipment, by G3EKD For further details contact the Club Secretary, Mrs P.M. Thom G1NKS, Southern House, 9 Southern Rd, Cheltenham, Glos GL53 9AW, Tel. 01242 241099

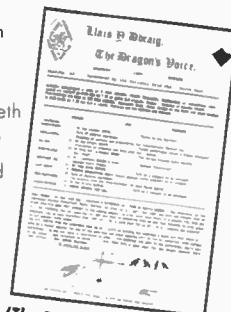
Mid Cheshire ARS meet every Wednesday, 8.00pm, at Cotebrook Village Hall, North of Tarporley, Cheshire on A49. The club hold regular on air/construction evenings. RAE and CVW courses available. Visitors and new members welcome. Planned club events/talks; May 5th - Club rally May 7th - Natter night May 14th - Short quiz & HF on air May 21st - Talk: Backpacker radio (proposed) For further details contact Ted Bannister, G0RBA, Tel. 01606 592207, or via G87PMB

Cornish RAC meet on the first Thursday each month, 7.30pm, at Perranwell Village Hall, near Truro. Planned club events/talks; May 1st - Radio activity down-under, by Les Jun 5th - Night on the air Jul 3rd - Rally preparation Jul 12th - Club radio rally & computer fair For further details contact Robin GOMYR, Tel. 01209 820118

Cray Valley RS meet on the first and third Thursday of each month, 8.00pm at the Progress Hall, Admiral Seymour Road, Eltham SE9. Planned club diary; May 1st - Surplus equipment sale May 15th - GX3RCV QRV Jun 5th - Howes Comms. evening, G4KQH (tbc) Jun 19th - Annual DF hunt 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. The club is a C&G examination centre for the RAE and NRAE, Morse & Navice training classes are held between 7.00 & 8.00pm at the school. 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; Apr 30th - The origins of Icom, by Paul G3VJF May 14th - Experimentation, by Dr. K. Smith, G3JIX Jun 11th - Aerials in small gardens, by Ian G3ROO For further details contact Brian Hancock G4NPM, Tel. 01304 821007, packet via G87YUH, Email: Brian@Kentnet.co.uk

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.



'The Dragon's Voice' monthly newsletter of the Dragon Amateur Radio Society

World Radio History

Club diary of events/talks; May 5th - Discussion on new 2m band plan May 19th - The UKRS, by Greg GOMAM Jun 2nd - Quiz night Jun 16th - ATV, by GW3JGA & team Further details from the Secretary Tony Rees GW0FMQ, Tel. 01248 600963

Felixstowe & District ARS meet, 8.00pm, at Orwell Park School, Nacton, Ipswich. For club visits/meals etc., names must be given to Paul G4YQC at least a week in advance. Visitors welcome to attend any meeting. Planned club events/talks; May 12th - RAE Examination May 17/18th - VHF 24hr Fixed Contest May 19th - ESWR Planning (provisional) May 25th - East Suffolk Wireless Revival (provisional) Jun 9th - Novice RAE Exam Jun 16th - Visit to Walton-on-the-Naze Coastguard 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; May 20th - Early Radar, G1FDL Jun 17th - QRP and BBQ at Rishworth School, G3RJV Jun 15th - Ron G3OTE 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; May 21st - Herstonceux Castle, by Chas Parker Jun 18th - History of TV in the 1950's, P. Marsh Jun 16th - Auction For further details contact Reg Kemp G3YFF, Tel. 01424 830454

Hoddesdon Radio Club meet alternate Thursdays at the Conservative Club, Rye Road, Hoddesdon from 8.00pm. SVLs and visitors very welcome. The club run Morse training classes. Club diary of talks/events; May 8th - Club visit to the Martin Lynch open evening For more information contact Don G3JNJ, Tel. 0181 292 3678. Email: gx0tsa@aol.com Internet WWW: <http://members.aol.com/gx0tsn>



Hordean 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; May 27th - The radio interface in GSM, how it works, by Nigel G7CAW

Jun 24th - Slow scan TV, how to get started, by Tom G4CMG and Bill G7PVZ
Jul 22nd - American supper
 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;
 May 1st - Interclub quiz between Horsham and Crawley Radio Clubs
 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).

Ichen 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;
 Apr 25th - Development of amateur radio, G7CAW
 Further details from Sheila G0VNI, 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;
 May 15th - Computer simulations
 May 29th - Cable TV, by G4RCH
 Jun 26th - HF propagation, G3SDY
 Jul 10th - Fox hunt
 Further details from Jack Birse, G4ZVD, 178 Long Lee Lane, Keighley, W. Yorks BD21 4TT, Tel. 01535 212985

Leicester RS meet every Monday, 7.30pm, at The Chantry, Gilroes Cottage, Groby Road, Leicester. The HF and VHF 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;
 Apr 28th - LRS junk sale: donated items, proceeds to LRS

May 19th - Under a tenner & constructors competitions
 Jun 2nd - Northampton & Loughton Railway, B. Wright
 Jun 23rd - Pizzas & Italy: Eat the food, contact the country!
 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;
 Apr 29th - Surplus sale
 For further details contact Ian Mant G4VWVX, Tel. 0151 722 1178.

Loughborough and District ARC meet every Tuesday (term time), 7.45pm, at Hindleys Community College, Shepshed, Leicestershire. The club have an 'On the air' evening on the first Tuesday each month. Planned club events/talks;
 Apr 29th - Junk Sale
 May 13th - Basic faults - video recorders
 May 20th - Second 2m DF - Top Band
 May 27th - In flight radio, by Brian G8BUB
 Jun 10th - G3RAL 40th anniversary party
 Jun 17th - Third 2m DF - Top Band
 Jun 24th - Vintage radio night, bring your old gear
 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. GB2CVW is on Sundays, 8.30pm, 144.250MHz USB/CVV, club net on same frequency at 9.05pm. Planned club events/talks;
 May 3rd - RSGB Morse tests
 May 25th - Club mobile rally
 Jun 6th - Construction competition
 Jun 13th - AGM
 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;
 May 13th - Construction contest
 Jun 10th - Evening on the air - Malvern Common
 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;
 May 5th - A practical comparison of the Tiny2 and the PK232 TNCs
 Jun 2nd - Portable packet operation
 Jul 7th - RAYNET and packet radio, all RAYNET groups welcome
 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;
 May 28th - Aerial circus, by Dick G3VLM
 Jun 7/8th - HF National Field Day
 Jun 25th - Visit by Dave Chislett, G4XDU, RLO
 Jul 5/6th - VHF NFD, Walbury Hill
 For further details contact the club secretary, Tel. 01635 863310

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;
 May 8th - Junk sale
 May 22nd - 2m Fox Hunt
 Jun 5th - Open evening, all welcome
 Jun 19th - 2m Fox Hunt
 Jul 5/6th - VHF NFD, the Annual SARS Camp with a little radio thrown in!
 For further details contact Ian G7SBD, 56 Raselwyn, Harlescott, Shrewsbury SY1 4LP, or @ GB7PMB
 Internet: <http://www.clematv.demon.co.uk/>

Sheffield ARC meet every Monday (except bank holidays), 7.30pm, at the 197 Club, Brook Hill, Sheffield (this is the lecturer's social club opposite the main buildings of Sheffield University). The club also run RAE and Novice courses. Planned club diary;
 May 12th - Fox hunt
 For further details contact Brian G7WBV, c/o 158 Skinnerthorpe Rd, Sheffield S4 8GH, via packet @ GB7WRG, or Email: brian.i@virgin.net

West Somerset ARC meet on the first Tuesday each month, 7.30pm, in Room GB7, Gibbs Block, West Somerset Community College, Minehead, Somerset. RAE and Morse instruction available. All visitors are welcome. Planned club events/talks;
 May 6th - Radar, invited speaker
 Jun 3rd - Fox hunt, all invited
 Jul 1st - Video evening
 For further details contact Alan. C. Elliott, MOAOJ, Tel. 01643 707207

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;
 May 19th - RAYNET, by Bill G3T2M
 Jul 7th - Portable evening at the Sheepwalks, Kinvor
 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;
 Apr 28th - Top Band direction finding competition
 May 12th - Visit to the Technical Operations Centre, BBC Transmissions, Warwick (numbers limited)
 May 26th - Bank holiday, discussion night
 Jun 9th - 2m direction finding competition
 Jun 23rd - Tecknow evening
 Further details from Club Secretary Jeff Porter G4OHJ, Tel. 01789 773286

Mid Sussex ARS meet on the first and third Fridays each month, 7.45pm, at Marle Place Further 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 G0OIO, 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 70cm Novice net on GB3HY. Planned club events/talks;
 Apr 25th - Quiz night
 Apr 27th - 2m Foxhunt, 10.30 at Ditchling Common car park
 Further details from Mike G0GNV, 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;
 May 15th - AGM
 Jun 19th - Junk sale
 For further details, Tel. 0181 644 9945

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;
 May 17/18th - 2m contest from Mardon Down
 May 23rd - Flight simulation, by South Devon RC
 May 28th - Torbay hospital fair (TBC)
 Jun 7/8th - HF NFD from Centrax Field
 Jun 20th - Scotland - the pictures, by G4VFG
 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;
 May 7th - QRP operating and construction, G0FUW
 Jun 4th - Fox hunt (G4YXS) from Southwick
 Jun 29th - Longleat Rally talk-in
 Jul 2nd - Treasure hunt, or similar
 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 Marlborough 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;
 May 27th - GB3BH design, installation and operation, by Dave G7LXP and Dave G8ADM
 Jun 24th - New problems in fire safety, Stan G4AOV
 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, they also have regular 'on air' evenings. The club net is on 2m FM on Mondays. Club diary events/talks;
 Apr 30th - Visit to WY Police Driving School
 May 13th - 'August 8th, 1988', by Roe G4JMT
 May 20th - A practical encounter with SMDs, lan G8OHV

For further details contact Bob Firth G3VWWF, 6 Eastfield Drive, Woodlesford, Leeds LS26 8SQ, Tel. 0113 282 5519, or via packet G3VWWF @ GB7VWRG

Weston-super-Mare RS, normally meet on the first and third Mondays each month, at the Woodspring Inn, High Street, Worle, Weston Super Mare (2 mins from junc. 21 M5). The third Mondays are usually 'Workshop' evenings. Planned events/talks;
May 12th - Using the GDO, by G3YOL
May 17/18th - GB100BD Marconi Bristol Channel Centenary station on Brean Down - awards with GB100FI & GB100LP week preceeding
Jun 2nd - Radio Experiences in the Far East, by Walter Titmuss
For further details contact Graham Pinder GB8VAR, Tel. 01934 415700

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;
May 9th - Switch Mode PSUs, by G8PYE
Jun 13th - Desert Island Radio, by G4ZXO
Jul 11th - Aerial Erection Techniques, by G4WYJ
For further details contact J. Gale G4WYJ, Tel. 01737 356745

Wirral and District ARC meet at 8.00pm, at the Irby Cricket Club, Mill Hill Road, Irby, Wirral, every second and fourth Wednesday each month, and have regular D&W evenings every first and third Wednesdays at various other locations. Planned club events/talks;
May 14th - Complimentary therapy, Elaine & Sue
May 28th - Practice DF, Heswall lay-bye
Jun 11th - 70cm UHF DF
Jun 25th - Eileen Medley
Jul 9th - Treasure hunt, 7.30 at the club
For further details contact Phil G0JSB, Tel. 0151 677 1947, or SP G0JSB @ GB7OAR

NATIONAL AND INTERNATIONAL

British Amateur Radio Teledata Group (BARTG) have a quarterly magazine, '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 GB7VWRG
Internet: <http://www.bartg.demon.co.uk>

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

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

International Short Wave League who as well as running an International QSL bureau for amateurs and SWLs, have a monthly magazine and regular get-togethers at their rally stands

plus several on-air nets on HF and VHF. For more details send an A4 sized SAE to: ISWL HQ, 3 Bromyard Drive, Chellaston, Derby DE73 1PF.
Internet: <http://www.aber.ac.uk/~srj5/iswl.html>

The Irish Radio Transmitters Society publish regular newsletters giving details of local activities, and the yearly IRTS Callbook, they also have a video library. For further details contact Dave Moore EI4BZ, 12 Castle Ave, Carrigtwohill, 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@donsun.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 Lombard 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, CV8 1FA. Tel. 01606 783270, or 0115 925 6597. Via Packet RADSOC@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 Fax-back line, Tel. 01703 263429. Rally organisers - if you have any good quality photos of your rallies to include in this feature we would be pleased to receive them.

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

Mid Cheshire Amateur Radio Society is holding their rally at Winsford Civic Hall, Town Centre Winsford. Featuring, traders and bring & buy stand. Bar and catering services available. Ample parking. Talk-in on 2m. Fully signposted. Doors open 11am (10.30am for disabled visitors). Admission £1.00, under 14's free with adults. For further details contact David G4XUV, Tel. 01606 77787

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.

Mid-Ulster ARC Annual Rally and Bring & Buy, takes place at the Silverwood Hotel, Lurgan (1/2 a mile from M1 motorway). Doors open from 12.00 noon, with buffet, bar and car parking facilities available in hotel. For further details contact Club Secretary Mr. R. Todd, G10STS, Tel. 01762 324383, or via packet: G10STS@GB7VRI.#61.GBR.EU

Yeovil ARC 13th QRP Convention, Digby Hall, Hound Street, Sherborne. Featuring lecture programme, trade stands, bring & buy, prize draws, Morse tests on-demand (two passport sized photos needed), plus the ubiquitous 'Constructors Challenge' (lets see some more entries this year). 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 YXL. 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, in conjunction with The Royal Naval Brickwoods Field Gun Competition and HMS Collingwood Open Day. We're told this year's event will be bigger and better than ever! Featuring Radio traders, displays, raffles, club stands and fairground attractions. Refreshments will be available, talk-in on PC and PH. For further details contact Rally Organiser, Mike Mathews G3JFF, 127 Drift Rd, Clanfield, Waterlooville, Hants PO8 0PD

JUNE 22ND

Bangor & District ARS Rally is to be held at Clondeboy Lodge Hotel, Bangor, Co. Down. Attractions include official Morse test for aspiring A licensees, demonstrations, packet radio, amateur television, bring & buy, local and mainland traders. We're told there's something for all the family and not to miss it. For further details contact Stewart G14OCK, Tel. 01247 454049, or Norman G13YMY, Tel. 01247 466557

Bridgend & District ARC Mid-Summer Radio & Computer Rally. For further details contact Maurice GW0JZN, 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 Knavesmire Building, York Racecourse, York. Doors open 10.30am. Admission £1.50. Children accompanied by adult free. Ample free parking. Featuring amateur radio, electronics and computers, Morse tests and repeater groups. Refreshments and licensed bar. Talk-in on S22. For further details contact Pat Trask G0DRF, Tel. 01904 628036

JULY 13TH

Three Counties Radio and Computer Rally. The rally has moved from Malvern, to the Perdiswell Leisure Centre, Bilford Road, Worcester (near to junction 6 of M5). Featuring amateur radio, computer and electronic component traders, bring & buy, Morse tests (please book on arrival and remember two passport photos will be required), restaurant and licensed bar. Free car parking. Doors open 10.30am - 5.00pm. Admission £1.50. The Leisure centre is situated very close to the city centre of Worcester. For further details contact Eddie G4PQZ, Tel/Fax. 01905 773181 (sociable hours please, Eddie says he is now 74 and needs his beauty sleep!)

JULY 20TH

1997 McMichael Rally, run by the Burnham Beeches, the Maidenhead and Reading radio clubs, will take place at The Haymill Community Centre, 112 Burnham Lane, Slough. Doors open 10.00am featuring computer and amateur radio traders, large outdoor car boot sale, Morse tests on demand and free parking. Refreshments will be available, with talk-in on 2m. There will also be many local clubs and other radio groups in attendance. For further details contact Dave Chislett, G4XDU, Tel/Fax. 01628



The Drayton Manor Radio and Computer Rally, due to take place on May 11th, is situated in Drayton Manor Park, featuring four large marquees, outdoor flea market, fairground attractions and lots more

25720. Email: g4xdu@amsat.org Packet: g4xdu@gb7xdu #42.gbr

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

AUGUST 17TH

Cardiff Amateur Radio and Computer Rally, the Star Sports and Recreation Centre, Splott, Cardiff. Doors open from 10.30am to 3.00pm. Further details available from Stuart Robinson, GW0WMT, Tel. 01222 613070

AUGUST 27TH

8th Great Easter Computer and Radio Rally, by Kings Lynn Amateur Radio Club at a new venue, Wallington Hall, between Kings Lynn and Downham Market, Norfolk. Features spacious indoor area with major exhibitors, outdoor car boot area (unlimited space available), Bring and Buy, free parking, talk-in on S22 and SU22, refreshments available, easy access for disabled. Opens 10.00am (9.45am for disabled visitors). For bookings or more info call Ian, G0BMS on 01553 765614 or packet @ GB7OPC or Email ian@g0bms.demon.co.uk.

SEPTEMBER 6TH

The 3rd Northampton Radio Rally & Car Boot Sale, takes place in the heart of the Shires Shopping Village Showground on the A5, 2 miles north of Vvedon. The organisers say: "bring the family, as

they can spend the day in the alde worlde shopping village". Refreshments and toilets are on-site, car parking 50p. Car boot plot prices are: Cars: £7.00 pre-booked or £9.00 on the day. Vans: £9.00 pre-booked or £11.00 on the day. For further details contact Steve MOARZ, or Paul G0HWC, Tel. 01604 32478

SEPTEMBER 7TH

The Lincoln Hamfest will be held at the Lincolnshire Showground four miles north of Lincoln on the A15. Featuring trade stands, bring & buy, Morse tests (bring two passport sized photos), refreshments, bar and ample free parking. Overnight caravan parking available for Saturday 6th. Talk-in on S22 and SU22. For further details contact John or Sue on 01522 525760 September 14th

BARTG Annual Rally Sandown Park Racecourse, Esher, Surrey. This rally is organised by the British Amateur Radio Teledata Group and is of general interest to all amateurs with most aspects catered for, but naturally there is an emphasis on Data Communications. Were told there is one major difference this year: 'DataStream 97'. This is a series of lectures covering various aspects of data communications in amateur radio. For general enquiries contact Ian Brothwell, Tel. 0115 926 2360 Internet: <http://www.bartg.demon.co.uk>

SEPTEMBER 21ST

Peterborough Radio & Electronics Society East of England Rally, will be held at the Peterborough Showground, with easy access from A1, A605, A47. Featuring trade stands, radio car boot sale and other local attractions. Acres of free parking, catering and bar etc. Doors open 10.30am (10.00am for disabled visitors). Admission £1.50. Talk-in on S22 via G3DQVV. For further details contact Vince G8NGZ, Tel. 01733 331211, or g8ngz@compuserve.com

NOVEMBER 8TH

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

NOVEMBER 15TH/16TH

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

NOVEMBER 23RD

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

DECEMBER 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).

FEBRUARY 1ST 1998

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

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Info, Circuit, manual required for the old STE Eletr Telecom, Milano, Italy, 2-10m multimode AM, FM, SSB receiver. Good price paid for good info (technical details, circuit diagrams etc. only please). W. Jackson (Blackburn), Tel. 01254 208183

Owners handbook or manual, plus memory unit required for Yaesu FRG-7700. Mr. B. R. Sartin, 79 Stoodham, South Petherton, Somerset.

FOR SALE

Icom IC-71E receiver, manual, £400. Racal 117E, excellent, inspect, collect, £150. Panasonic DR-29 SSB general coverage, digital, £140. B40-D, GWO, very sensitive, £80. Sony CRF320, best of Sony, 32 band, digital, SSB, FM, LW, MW, £350. R. Rai (Middx), Tel. 0181 813 9193

Eddystone EC10, EB35, S358X, all in good to very good condition. Also set of wedge feet and S-meter. Please phone for details anytime. Peter Lepino (Surrey), Tel. 01372 454381, or 0374 128170

AEA PK232 decoder, manuals, unmarked, excellent condition, boxed, £150. Icom IC-T7E handheld, 144-146, 430-440MHz, charger, unmarked, excellent condition, manual, boxed, £150. A. Brooks (Basingstoke), Tel. 01256 473715

Morse key miniature, 25mm x 55mm, black, new, £20. WS No.52 receiver, £60. WS No.19, moded, £80. Packard Bell pre-amp type K, less valves, £5. Test set for BC611,

£200. Wanted; Military type sets, green boxes - Hi. Ben (SVV Mids), Tel. 01562 743253

Yaesu FT-200 and matching PSU/speaker unit, excellent condition with spare PA tube and manual, £200, or part exchange for FT-690 Mkl. Kevin MOAHN (Marlborough), Tel. 01672 563382

Heathkit SB1000 HF linear amplifier, excellent order, £375. FL110 100W HF linear amplifier, £75. IBM XT computer suitable for Packet, including BPQ JIF software, £180. P. Webster (Southampton), Tel. 01703 267126

ATU, 300W, for wire coax or balanced, £20. T. Hartshorn (Chesterfield), Tel. 01246 236496

AOR AR800E scanner, 75MHz to 1GHz with gaps, AM/FM selectable, complete with two aerials, instructions, charger, nicads, carry case, frequency charts and frequency database, boxed, VGC, £125. Also Matsvi 4099 HF receiver, £75. Andy (Gwent), Tel. 01633 420805 6-7pm.

Kenwood TS-530S, little used, spare 6146Bs, narrow band CW filter and manual, £320. Ray (Essex), Tel. 01702 584691

Sony 2001 AM, FM, SSB scanner, 150kHz to 30MHz and 76 to 108MHz FM, with PSU, 240V input and manual, £105. Trio R2000 scanner receiver, 150kHz to 30MHz, with VHF converter 118 to 174MHz, AM, FM, SSB, CW, £385. T. Knight G2FUU (Essex), Tel. 01992 892274

HRO table models, UX valves, one with HRO PSU, 9 coils from 50kHz to 30MHz, including 4 bands spread, one with 5 coils, 900kHz to 30MHz and PSU, £120. Both work well, no splits. D. Hiorns (Merseyside), Tel. 0151 252 0044

Grundig Satellite 1400 multiband radio, good cabinet, needs tuning assembly and mains transformer, for spares or repair, £15. Buyer collects. P. White (Chester), Tel. 01244 310267

Yaesu FT-736 2m, 70cm, 6m multimode base station with CTCSS module, mint condition, with supplementary technical reference manual, £1,100 ovno. Telereader CWR-68SE, RTTY, ASCII and CW TX/RX terminal unit, completely self contained, with keyboard and 5" screen, £150 ovno. S. Walters (NW London), Tel. 0956 544202

Icom IC-2SE 2m handheld, plus Yaesu FT-708R 70cm handheld, both complete with extra nicads, chargers, soft cases, speaker/mic, boxed, £140 the pair, no split. G6JHR (Kent), Tel. 01474 824224

Icom RC-R1 miniature receiver, just serviced by Icom, includes leather case, charger and aerial, £200. R. Chilton (W.Mids), Tel. 01384 274660

Yaesu FT-101 HF rig, general coverage, with separate digital readout, base mic and manual, GWO, £275, or £375 with Tokyo Hypower ATU HG400L. Steve (IoW), Tel. 01983 563276 after 2pm.

Linear; Kenwood TL922, pair of brand new Eimac 3-500Z fitted Oct '96 (invoice

available), amp unused since, mint, £1,000 plus carriage. G3RB, 78 Thorntree Drive, West Monkseaton, Whitley Bay, Tyne and Wear, Tel. 0191 253 0504

Bearcat 120XLT handheld scanner, only few months old, cost £139, will accept £75. D. Swayne (N. Yorks), Tel. 01748 823700

HQ1 minibeam, 6, 10, 15, 20m, good condition, plus AR40 rotator and control unit, £100. Realistic PRO-2024 60 channel base scanner, excellent, boxed, £90. Buyer collect or pay carriage. D. Radford (Chesterfield), Tel. 01246 862099

FT-101B with receive preamp, spare driver, PA valves, £310. Europa transverter wired for FT-101B, spare valves, £35. Tamaphone TS1510S 2m FM, synthesized, 10W, ideal packet or portable use, £80. All with manuals. John G4CPI (Leics), Tel. 01530 838377

Yaesu FT-221R 2m all mode base, 12W AC or 12V DC, all leads, mic, instructions, excellent DX rig, mint condition, MuTek, £255. Miller HF receive aerial, £40. Re-advertised due to timewaster. Gary G7VAU (Cheshire), Tel. 01928 567707

Yaesu FRG-7000 receiver, only been switched on once, offers? E. Evans (Weybridge), Tel. 01932 848876 evenings.

KP-100 remote keypad for Yaesu FRG-100 receiver, giving direct frequency entry, memory control and up/down tuning, £30 (cost £45). Yaesu FRT-7700 ATU, excellent condition, boxed with instructions, £40. S. Clifton

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KDK FM740 70cm mobile transceiver, 16 memories and CTCSS, all programmable, 3/10W output, mic, mobile mount, manual and circuit diagram, £150. Doug G1BWW (Cambs), Tel. 01480 890992

6m and HF rig: Kenwood TS-670 multimode 10W transceiver, 6m, 10m, 15m and 40m, excellent condition with mic, handbook and packing, £375. J. Lemay (Colchester), Tel. 01206 240700 evenings.

2m linear amplifier MML/144/30LS, 30W output, all mode operation, ultra-low noise receive preamp equipped with RF Vox and manual override, suitable for 1 or 3W transceivers, never used, £70. Buyer collect or pay postage. GOOJZ (Kent), Tel. 01304 374612

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Racal MA1723 HF TX driver, 1-30MHz in 100Hz steps, LSB, USB, AM, CW, FSK, perfect match to 1792 RX, internal frequency standard, excellent condition, no tampering, rare PRO equipment, £750. R. Myers (Manchester), Tel. 0161 902 9612

Icom IC-735 HF transceiver, mint condition with box and manual, £500. Gary G7MLC (Norwich), Tel. 01603 470927

WANTED

Any Collins CW filters, F455FA to fill last space in my

755-3C. Also cabinet for Racal 1772, please help. Bill (Glasgow), Tel. 0141 562 4571

Matching speaker for HRO receiver. Also source for 'Black Crackle' paint, willing to pay good price plus postage etc. P. Norris (Yorks), Tel. 01287 63439 9am to 5pm (just ask for Peter).

TS-930 or FT-747, dead or blown, for Fledgling Club. A. Murphy (Notts), Tel. 0115 930 8096

Urgently required for disabled pensioner, 2m convertor with instructions for Yaesu FRG-7 receiver, fair price paid, thanks. Frank (Warwick), Tel. 01295 670749

Spare VFO, VFO 120 for Kenwood TS-130S, purchase price and postage paid by recipient. Dave Reece, 24 Nordenfeldt Avenue, Welgemoed, Cape 7530, South Africa, or via Packet: ZS1DFR @ ZS0STB.wcp.zaf.af, or Tel. +27 21 9131774

Eddystone items: Please look in your loft for a 358X with PSU and coils. Also EC10 II, 960, 870, 890, 930 and Marconi CR300 with PSU. Please ring Peter (Surrey), Tel. 01372 454381 or 0374 128170 anytime, thank you.

Military type sets, receivers, transmitters, test gear, anything considered, any age or service, have sets to swap or will buy outright. Need T1115, T1083, R1082, any small sets ideal as easier to carry - Hi. Ben G4BXD (SW Mids), Tel. 01562 743253

EXCHANGE

FT-200 with mic, manual and PSU, VGC, needs IF alignment otherwise OK, swap for PRC 316 complete, or other HF military, or WHY (no interest in FT-200s!). Andy (Derbys), Tel. 0115 930 8096

Yaesu FTV-107R transverter with 2m unit. Exchange for FTV-700 transverter, or FV-700DM digital scanner/memory. Dave (Glasgow), Tel. 0141 632 5408

HRT Vol. 15 No. 5

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RADIO TODAY PUBLICATION DATES

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

Volume 15 Issue No. 6	23rd May '97
Volume 15 Issue No. 7	20th June '97
Volume 15 Issue No. 8	18th July '97
Volume 15 Issue No. 9	15th August '97
Volume 15 Issue No. 10	12th September '97
Volume 15 Issue No. 11	10th October '97
Volume 15 Issue No. 12	7th November '97
Volume 15 Issue No. 13	5th December '97
Volume 16 Issue No. 1	2nd January '98

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**Ham Radio
TODAY**

ISSN No.
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All-Mode HF Transceiver **FT-1000MP**



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An HF Masterpiece, Combining the Best of Digital and RF design technology. The FT-1000MP.



Specifications

- EDSP (Enhanced Digital Signal Processing)
- Shuttle-jog Rapid Tuning Enhancement
- Directional Tuning Scale for CW/Digital mode and clarifier offset display
- Dual In-Band Receive w/ Separate S-Meters
- Selectable Antenna Jacks
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- True Base Station: Both 100-117 or 200-234± VAC 10%, 50/60 Hz and 13.5 VDC Power Inputs

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Only with this combination of EDSP, independently selectable 8.2 MHz and 455 kHz IF filters, and a low-noise DDS local oscillator system can receiver performance without compromise be obtained. You can customize your FT-1000MP by choosing from 20 kHz, 500 Hz, and 250 Hz optional, cascaded IF filters, then zero in on weak signals using Yaesu's exclusive Shuttle-jog Rapid Tuning Enhancement and high-resolution (0.625 Hz) DDS VFO. Without question, the FT-1000MP is the most technologically advanced HF rig today.

EDSP operates in both transmit and receive modes. On receive, the EDSP produces enhanced signal-to-noise ratio and significantly improved intelligence recovery during difficult situations involving noise and/or interference. The result of hundreds of hours of laboratory and real-world experimentation, EDSP's 4 preset random noise reduction protocols and 4 digital filtering selections are controlled by easy-to-use concentric controls on the front panel of the transceiver. High, low, and mid-range cuts for voice work are teamed with razor-sharp CW bandpass filters and an automatic notch filter which identifies and attenuates undesired carriers or heterodynes. Also operational in the transmit mode, EDSP provides 4 performance-enhancement pattern selections for different operating circumstances, ensuring best readability of your signal on the other end of the path.

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