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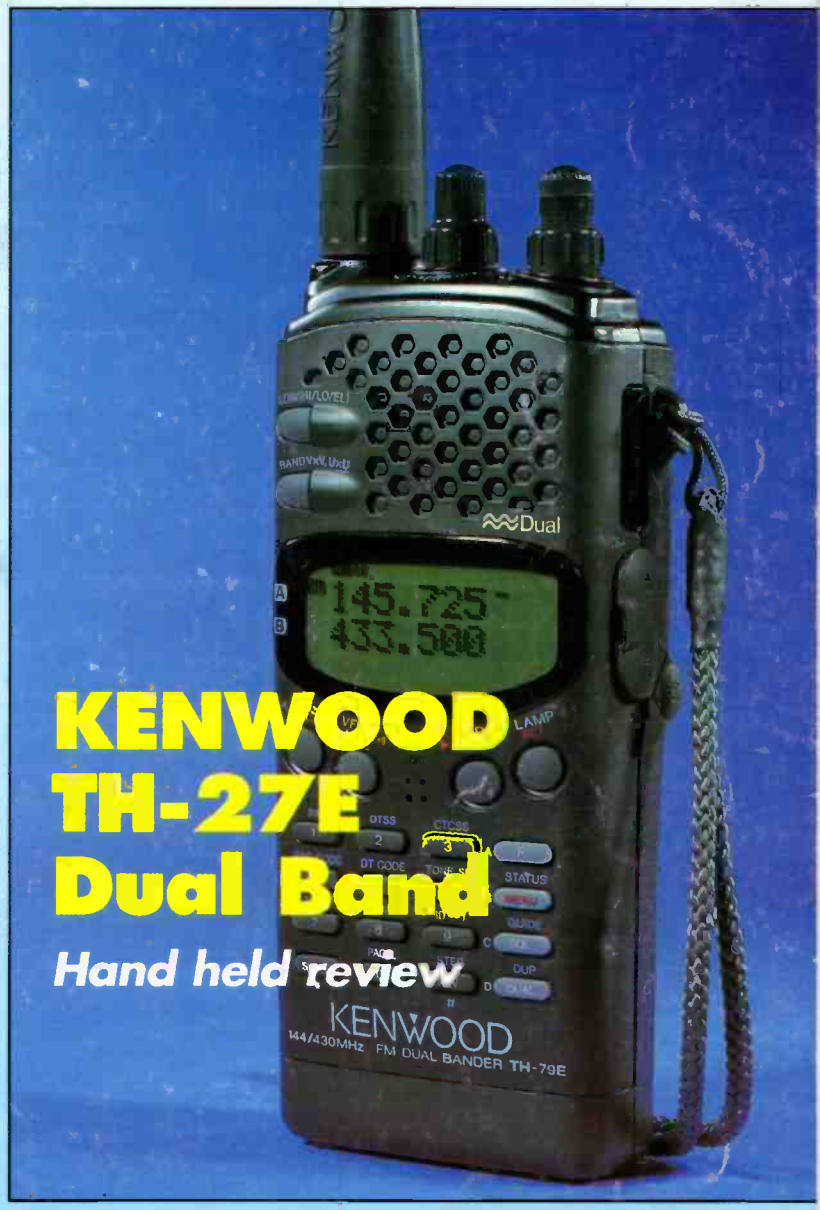

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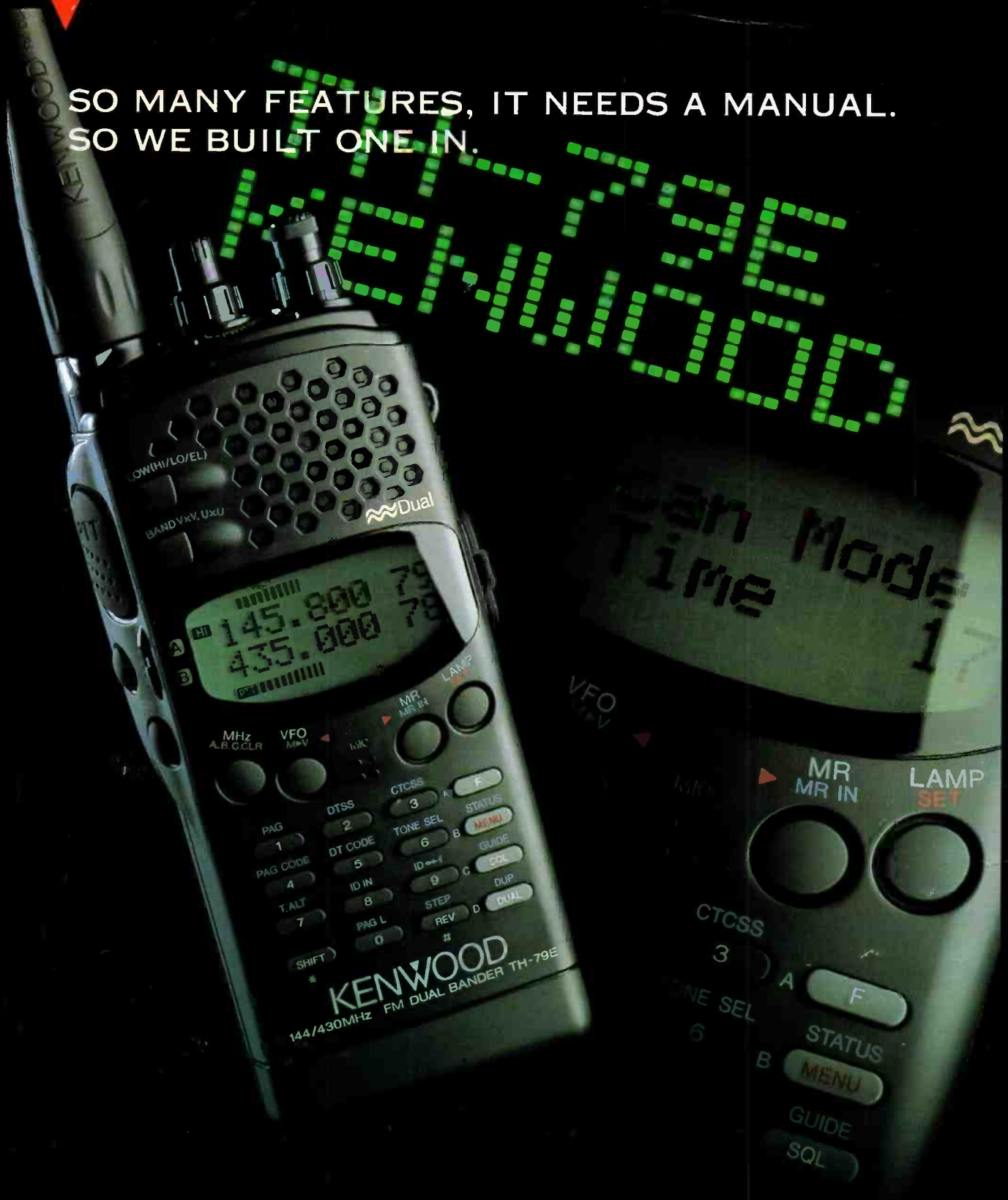

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Editorial

Surfing Cyberspace on the ham radio airwaves!

Have *you* been surfing in Cyberspace on the Ham Radio airwaves recently? No, it's not the effects of any Editorial over-indulging in festive 'tipple'! I'll explain. Or try to.

Communicating

'Crazes' come and go, but the so-called 'Information Superhighway' is getting bigger, and bigger, and bigger, every day. 'Cyberspace' is the name given by such enthusiasts to this electronic computer communication network, and 'Surfing the Net' is exploring what's out there on the network. One second, you can being downloading a file or a program from a local service, a few seconds later you could be 'node-hopping' between US computer data links, having 'roundtable' discussions between like-minded enthusiasts. Or housewives. Or politicians. Or scientists. Or a school club 'station'.

Hang on, this sounds rather familiar. Isn't this what we can do on amateur radio each day?

Costs

There *is* a difference. Doing all this with a modem, via the telephone lines, costs money in terms of call costs. If you access an Internet 'Point of Presence', i.e. a 'gateway' into the 'World Wide Web' of all this communication, you'll also likely be charged a monthly subscription plus more charges for 'on-line' time. Plus the extra yearly telephone line 'standing charge' because no-one can get through during all the hours it's tied up each day 'connecting in'.

We don't pay for on-air time on amateur radio. Neither do we have to pay a subscription to go 'on-line'. We don't need a computer either to simply *talk* to people around the world. The only cash *we* have to pay out is our annual £15 licence fee, or indeed nothing at all for Novice licensees who are under 18 years of age, who get their licence free.

On the HF bands, using just a simple one-IC interface plugged into the serial port of a PC (no expensive modems or Terminal Node Controllers needed), we can exchange full-colour pictures, and of course text, with other hams around the world. The 'JVFAX' software, which we recently provided in the HRT Software Service, does just that.

Like the landline based *FidoNet*, we amateurs have a global electronic mail network, packet radio. My local packet BBS also gives me access to the CD-ROM drives fitted on its computer. No 'subscription charges' here for downloading all the information and data, or for sending and receiving messages worldwide.

As well as this, hams can log into things like a local DX PacketCluster. This in turn is usually automatically linked in 'real time' to other DX clusters throughout Europe, the thousands of 'on-line' hams all sharing their DX information with us. There are, of course, even more distant packet mailboxes, like the one on board the orbiting Mir space station, that any licensed amateur can 'tap into' if they want. I don't somehow think landline-based 'net surfers' would be able to match that!

If you're a new reader, then *welcome!* I hope this may have opened your eyes to what is just a small part of our world. Why not drop me a line, or a fax (maybe using the shiny new faxmodem you received for Christmas?), and let me know what you're interested in reading about? I'm always pleased to hear from readers, and I'll certainly keep trying my very best to cover the topics in HRT that *you're* interested in.

Cover disk

Many readers have contacted me saying how much they appreciate the ham radio software service we offer each month. Many readers, even a number in South Africa, have asked "Why not have a cover disk?". For this month and the next, we've done just that. Unfortunately, I've been told the cost of distributing the 'more awkward' magazine to newsagents has gone up as a result, but direct subscribers get it totally free of any increase. Don't shoot me, I'm only the Editor! Things will be back to the 'normal' price following next month's issue, don't worry! But maybe, just maybe, if it's successful, something nice *might* just happen in the future.

A new name for a new year

Sharp-eyed regular readers may have spotted a small difference with HRT this month. No, besides the front-cover disk! HRT's earlier 'parent firm' of Argus Specialist Publications, which published over 20 magazines including such titles as Electronics Today International, CB Citizens Band and so on, has now been 'absorbed' into the even larger Nexus Group, who now look after over 100 specialist magazines. *Nexus Specialist Interests* is the new name, and our earlier address of 'Argus House' is now, surprise surprise, 'Nexus House'. Little else has changed, yet, but watch this space. Exciting things could happen!

FaxBack service

Every day, especially during weekends and evenings (i.e. during the 'cheap rate' times) I receive many faxed Free Readers Ads, Club News diaries, and 'Radio Today' news items from readers for inclusion in HRT. In the month you're reading this, I hope to be able to launch an automatic 'FaxBack' service for the benefit of readers with queries like "What issue was such-and-such PMR conversion published in", and "Have you done a review on the Yupiteru MVT-7100?". This will possibly also include a 'voicebank' information centre for those without a fax machine, giving information such as construction circuit updates, availability of hardware for HRT projects, and so on, 24 hours a day. I've lost count of the number of calls asking "Where can I buy an MX296 ex-PMR rig from", one reader even saying "My local taxi firm has a pile of these to give away, are they worth converting?". Maybe a computerised voicebank would save my voice? HRT readers will hopefully also be able to get some of the latest amateur radio news as well - the sky's the limit!

Remember HRT's 'real person' Editorial line, 01703 262105, is usually always manned weekdays between 10.00-14.00 and 18.30-20.30. Our 24hr fax line, 01703 263429, soon to become a FaxBack/databank/voicebank line, is also there, for your use. Try it?

This Month's Cover Disk

You asked us for it, and here it is!

This month's cover disk contains a copy of the very latest ***Log-EQF*** shareware ham radio program, written by Tom N3EQF. This fully-functional (not 'old' or 'crippled') software, as well as being a fully-eatured amateur radio logging program, is indeed described as a ***total control centre for amateur radio on-air activities***. It offers computerised logging with Packet TNC interface including PacketCluster control, automatic RS-232 control of your rig's frequency, gives beam headings for your aerial, prints QSL labels, interfaces automatically to a CD-ROM 'callbook on disc', and lots, lot more! Try it, we're sure you'll be very impressed with the tremendous capabilities and versatility of the program.

To get started, place the supplied disk in your floppy disk drive, and select this drive on your computer, i.e. by entering ***A***: or **B**: as appropriate. Then, type ***GO*** followed by a press of your 'Enter' (Carriage Return) key. This will first bring up a HRT 'welcome' text screen, which you can easily scroll through. No changes to your computer's start-up configuration files will be made, unlike many cover mounted disk 'demos'!

The software has even been ready-installed onto the supplied floppy disk for you, and can run from this alone. There's no requirement to transfer this onto a hard disk, although if you have one you can simply copy all the files over to any suitable empty directory you've made. Have fun!

System requirements

Log-EQF can be run on any 100% IBM-compatible computer with at least 512k memory and DOS 3.0 or higher. The program works with all video adapters, monochrome or colour. Details are also given in the 'welcome' text for configuration under Microsoft 'Windows'.Please do not write protect the floppy disk - the program neess to write to this when loading

Problems?

If you have problems with the disk not being accepted at all by your IBM-PC compatible computer, i.e. messages such as *"data error reading Drive A:"*, please contact our Magazine Services Dept. on 01442 66551 for details on obtaining a replacement disk. If you have problems in running the program itself (i.e., after the initial 'welcome' screen') on your computer, please contact the software author, details being given on-screen.

Plenty more software!

Next month's HRT will have another cover-mounted disk, again packed with the very best ham radio software. If you don't already have a regular order or a direct subscription for HRT magazine, maybe now's the time? Phone our subscriptions hotline on 01737 768611, or contact your newsagent - HRT is available on request at ***any*** UK newstrade outlet. If you have problems with your newsagent, contact our magazine sales department on 01442 66551 and we'll give them, completely private and confidential, kick up the whatsits!

Did you miss any of our last superb software offers? These are available **only to HRT readers!** If you're a new reader, for this and next month's issues **only**, you can take advantage of ordering any or all disk selections to get you started in the fascinating additional hobby of computing in ham radio.

Disk contents

SEP 94; paKet 6.1, the 'best packet software in the world' (updated program). Also the ***entire FCC exam question licence pool*** in text form on disk for all US ham licence classes, including the latest questions which were changed in 1994.

OCT 94; Bumper 'rig modification' collection, packed full of text files with modifications for ham transceivers, receivers, and scanners. Also, ***AUTOEXAM*** where you can sit a randomized 'mock US licence exam' of any class you choose on your PC!

NOV 94; JVFAX, V7, giving full colour weather satellite and SSTV reception using your PC with a simple home-built interface connected to your receiver. Also ***SuperMorse***, a superb learning aid for today's 'QSO format' tests plus QSOs for you to practice copying

DEC 94; PC HF Spectrum, a huge ready-programmed database of HF frequencies and their users. Also ***Hyperlog***, an extremely comprehensive shareware ham radio logging program.

JAN 94: GEOCLOCK, a full colour 'radio amateur's map' giving, a stunning 'alternative clock' for your shack, guaranteed to impress visitors as well as being a handy propagation and operating aid. Also ***NUMORSE***, a fully-featured Windows-based Morse code shareware program written by a UK ham author.

How to get your disks

Each month's collection is supplied on a high density 1.44Mb 3.5in disk, as an 'at cost' service to readers *(a box of 10 formatted HD disks at my local computer store costs £12.00, i.e. £1.20 each - Ed!).* For each disk, including return p/p to you, send a £1.00 cheque or postal order, payable to; Mr. Steven Lorek, together with your name and address (some readers forget to put in a return address!), details of the disk(s) you want, and the original 'corner flash' from this month's 'contents' page, to; *Software Services, P.O. Box 400, Eastleigh, Hants SO53 4ZF.* Overseas readers may send two US $1 notes plus an IRC, Eire readers may if they wish send a one punt note (not coin) plus an IRC. Other payment methods cannot be accepted due to excessive banking charges.You may send for as many disks as you wish this month, including extra disks for your non-HRT reader friends if you wish, providing you send this month's contents page 'corner flash' with your request. Queries regarding supply of these back-order 'at-cost' disks should be sent to the above address with an SAE for reply, not to the magazine publishers or the Editorial staff. Please allow up to 28 days for delivery (there's a lot of disks to get through now!).

'QRZ!' CD-ROM Review

The latest information-packed disc, reviewed by the Editorial staff

Recently launched, the latest 'QRZ! Ham Radio' PC CD-ROM, for DOS and Windows, looks set to be even more popular than ever. Why? Well, together with the huge amount of amateur radio software on the disc, including the full US callbook with a built-in 'search' facility. There are also callbook databases for Italy, Canada, and very interestingly, the UK on the CD-ROM. The latter covers callsigns up to G7MAJ and G0RQI, and all the callbook data is in unencrypted 'ASCII' text, in a form suitable for use with many external database programs. I used the 'LIST' file viewer for this to very good effect! A QSL manager list comes on the disk, together with DXCC information, a guide to 'Getting on the Hamsats', and plenty more text files, although I found many of these were simply messages 'pulled off' the amateur packet network.

A comprehensive 'rig mods' directory is on the disc, plus a huge selection of text 'digests' on subjects such as building your own equipment, amateur radio aerials, equipment and gear topics, digital communications, and the like. There's also a collection of digitized world maps for Africa, Antarctica, Asia, Australia, Europe, North America, and South America, together with a viewing program on the CD-ROM.

The CD-ROM is available from the Public Domain and Shareware Library (Tel. 01892 663298) at £18.00 including UK p/p, to whom my thanks go for the provision of the review disc.

VHF/UHF band plan consultation

The RSGB's VHF Committee have asked for HRT readers' opinions on the following issues which affect our use of the 2m and 70cm bands, our thanks go to the RSGB for letting us pass on this information for the benefit of readers.

2m band revision

At the IARU Region I conference in Sep 93 it was agreed that a working party comprising representatives of the national societies of the UK, Germany, France, Finland, Belgium and Denmark should consider changes to the band plan for the bottom Megahertz of the 144MHz band with a view to proposals being discussed at a VHF Managers' meeting early in 1995 and, possibly, formally adopted at the next IARU Region I conference in September 1996.

The RSGB's VHF Committee is considering the following proposals for a new band plan for 144-145MHz;

144.000-144.035; CW/SSB EME
144.035-144.125; CW
144.125-144.380; CW/SSB
144.380-144.400; All narrow band modes
144.400-144.510; Beacons
144.510-144.710; Data communications
144.710-145.000; All modes

The frequencies quoted are *not* ranges of carrier frequencies. Actual carrier frequencies are to be chosen so that sidebands do not spread outside the relevant range. No attempt has been made to designate frequencies for particular purposes such as calling, emergency communication priority or mailboxes.

The following points should be noted;

1) The allocation for all narrow band modes is intended to be used by narrow band data modes as well as CW and SSB. Data communications within this band must be strictly human-to-human, i.e. no computers, digipeaters or network nodes.

2) The modulation methods and frequencies used to support data communications in the range 144.510-144.710MHz are a matter for decision by the data communications community.

3) At this stage, any decision to adopt 12.5kHz channelisation above 144.5MHz is independent of the re-planning exercise.

4) The frequency range 144.500-144.510MHz is a guard band, no beacons will operate in this frequency range.

The VHF Committee seeks comments on the above suggestions. In particular, they would like comments from HRT readers on the relative amount of space for SSB/CW, all narrow-band modes and beacons.

12.5kHz channel spacing for 2m FM

Also at the 1993 Conference, a resolution was passed to adopt 12.5kHz channel spacing for FM operation on the 144MHz band. This was opposed by several societies, including the RSGB, and a dissenting footnote was added to the conference resolution. In spite of the RSGB's recorded dissent, their VHF Committee would like to investigate the possibility of adopting 12.5kHz channels for FM operation on 145MHz. The advantages in terms of the extra number of channels available are obvious but the transition may be difficult.

One proposal is to decide on three dates (D0, D1 and D2). By D0 they hope that all transmitter deviations will have been reduced to the 12.5kHz specification, by D1 all receiver filters will have been adjusted to the 12.5kHz specification and on D2 the extra channels released for general use. This will be a major reorganisation requiring careful coordination. The VHF Committee would welcome comments from HRT readers on the possibility of changing to 12.5kHz channelisation, especially the time scale of any changes. *(Tech Ed's note; - looks like this one has come up yet again!)*

Novice allocation on 2m

The VHF Committee has been considering the possibility of a Novice allocation on the 144MHz band. This could be restricted to certain frequencies and modes. The VHF Committee would welcome comments on such an allocation.

Extra packet frequencies on 70cm

The VHF Committee has been considering proposals for an extra sub-band for packet radio use on 432MHz in order to relieve congestion and improve linking. Various alternative ranges of frequencies have been proposed and are listed below;

1) 430-430.6MHz
2) 439.6-439.8MHz
3) 434.4-434.6MHz
4) 433.8-433.875MHz
5) 438.6-438.8MHz

It is their intention to allocate one of these sub-bands to packet radio. Comments and alternative proposals are sought.

Comments

The RSGB have asked HRT readers to send their comments on any or all of the above to Peter Burden G3UBX, at 2 Links Rd., Penn, Wolverhampton WV4 5RF, via packet to G3UBX @ GB7MAX, or via Internet electronic mail to jphb@scitsc.wlv.ac.uk.

Publication of revocation of Licenses

The Radiocommunications Agency have announced that details of the revocation of amateur and CB radio licenses issued under the Wireless Telegraphy Act 1949, will be published in future, where it is deemed appropriate.

Up to now, the Agency has not been able to inform the hobby radio community that a licence has been revoked as details about licenses have always been regarded as confidential between the Agency and the licensee. This has made it appear that the Agency has been too lenient with offenders.

The decision to publish will be based on the consideration that it is important to make other amateur radio and citizens' band radio licensees aware of the revocation of a licence, and the ensuing ban on radio use for the person concerned. This outweighs the normal rule that information about licensees should be regarded as private.

RA Battle against pirates

The Radiocommunications Agency staff tell us they are staying ahead in the battle to keep unlicensed stations off the air; executing 570 raids against over 150 pirate stations in the last financial year.

The Agency is responsible for taking enforcement action to keep the radio spectrum clean for licensed users to operate without interference to their services. Staff in the Agency's 20 district offices are responsible for dealing with unlicensed radio users and those who operate outside licence conditions. During the last financial year, District staff took the following enforcement action;

1) Seized the equipment of unlicensed broadcasting (pirate) stations on 570 occasions;

2) Acted against 151 different unlicensed (pirate) stations;

3) Successfully prosecuted 71 individuals involved with unlicensed broadcasting, one of whom had to pay £5000 in fines and costs and another received a suspended six months' prison sentence;

4) Successfully prosecuted a person for selling non-type approved radio-activated car alarms, penalty £4000 in fines and costs.

The Agency have asked us to tell readers that they remain committed to taking the necessary enforcement action to ensure legitimate radio users are able to achieve reliable communications. Agency staff are empowered to seize equipment which is being used illegally and other items which are evidence of the offence. Offences under Sections 1, 1A, 1B and 1C of the Wireless Telegraphy Act are indictable. On conviction at the Magistrates Court, the maximum penalty is six months' imprisonment and an unlimited fine. At the Crown Court the maximum penalty is two years' imprisonment and an unlimited fine. The courts may also order that equipment and other property used in the offence, including vehicles and vessels, be forfeited.

Guernsey Liberation Station

To celebrate the 50th anniversary of the Liberation of Guernsey, on Tuesday May 9th 1995, the Guernsey Amateur Radio Society tell us the will be running a special event station from Castle Cornet in St. Peter Port, Guernsey. The station will run from Sunday May 7th until Saturday may 13th, with full 24 hour operation on Liberation day, Tuesday 9th May.

The club are hoping to be active on all HF bands, 160m to 10m, with SSB, CW and RTTY. A QRP station will also run for periods during the week to give QRPers the chance to make contact. plus packet on 2m, and if conditions allows, 2m and 70cm SSB, satellite working is also a strong possibility. The club is currently awaiting confirmation of the special call.

For HRT readers interested in 'Castles on the Air', the club are running from a 13th century castle, built on a rock that was originally half a mile from St. Peter Port. The gap has since been bridged by a causeway. For square hunters, the locator is IN89RK, and the Worked All Britain area is WV37, St. Peter Port.

RA Annual Report published

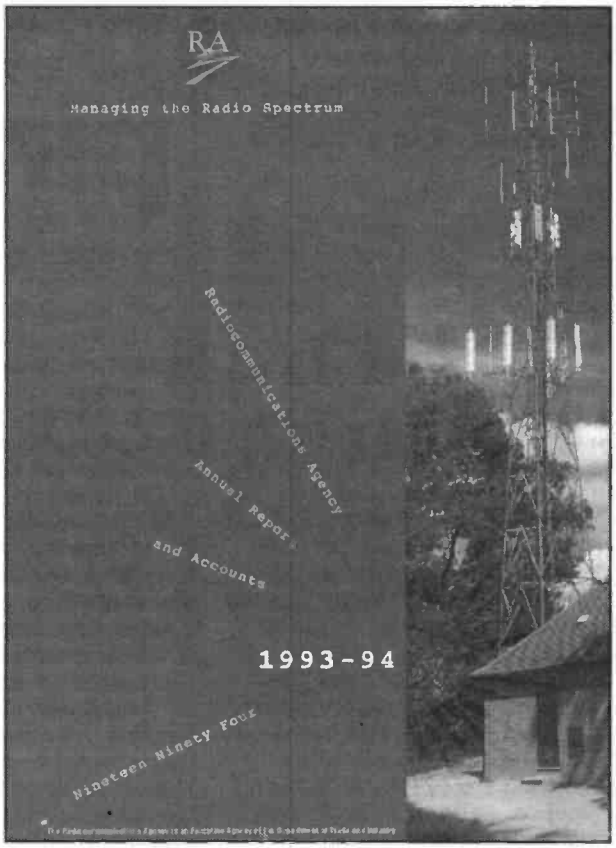
The RA recently held a press launch of their 1993/94 Annual Report, which readers can obtain free of charge (see below).

Speaking at the launch of the Agency's Report and Accounts for 1993/4, Radiocommunications Agency Chief Executive Jim Norton said;

"I am pleased to report another year of continued growth in the demand for spectrum". He later added "We will be publishing a strategic spectrum plan early next year for consultation and debate so that users can have more ready access to the information they need and can tell us what their spectrum requirements are likely to be. We are continuing with annual customer surveys to find out what our customers want and how we can serve them better. A major review of the future management of the radio spectrum is in progress to provide a framework of spectrum management to take us to the next century. We are developing more sophisticated quality of service measures to reflect the quality of the assignments we give to users."

"Finally, I am pleased to report that we have at last signed the lease on new offices in Docklands and will be relocating next year. This will bring considerable benefits to customers in terms of greater efficiency". The report, which you can obtain free of charge from the RA, makes very interesting reading, this issue showing a six percent increase in the number of amateur radio licences in force, the total at the end of March being 63,033.

You can get a free copy of the RA's Report and Accounts, from the RA's Library and Information Service, contact details for the RA are published in HRT every month following 'Club News'.



Ham Radio goes underground

GB4RCO will be operating from 900m underground in White Scar Cave, over the Easter weekend of 14-17th April. Here's the setup; A radio called a 'Molephone' will transmit on 87kHz SSB via a 1m loop aerial on the cave floor, to a similar unit on the surface. Here, the signal will then be fed to a Yaesu FT-757 transceiver via a specially designed interface unit, using semi-VOX operation. This will allow the surface unit to monitor both sides of the QSO and to override the underground station if necessary. Signal reports and QSL cards will be made out on the surface using the monitor. A Yaesu FL-2100Z linear and wire dipoles for each band will be used in conjunction with the FT-757. Frequencies to be used are; 3.720MHz or 3.775MHz, 7.075MHz, 14.220MHz, and 21.250MHz, all frequencies +/- QRM.

The station is being run by the Central Lancs Amateur Radio Club in conjunction with the Cave Rescue Organisation and the Cave Radio and Electronics Group. A further station in operation during this period will be GB2RCO, run by the Mid-Glamorgan Amateur Radio Group and the Cave Radio Electronics Group (Wales) from Dan Yr Ogov Caves in South Wales. There's also the possibility of further GBxCRO stations on air from caves in the south of England and Cheddar, these are yet to be confirmed. The primary intention is to work cave to cave, which we're told will be a 'world first', and from then on an award will be issued to anyone working both, or all, cave stations. Any and all cash raised from the event will be donated to the various Cave Rescue

New 2m repeater for Wales

On Friday the 5th November 1994, the new mid-Wales repeater, GB3RA, came on-air on 2m channel R5. It's located north west of Llandrindod Well, Powys, locator IO82GG. Further details from repeater keeper GW0KQX.

Yorkshire coast 2m repeater

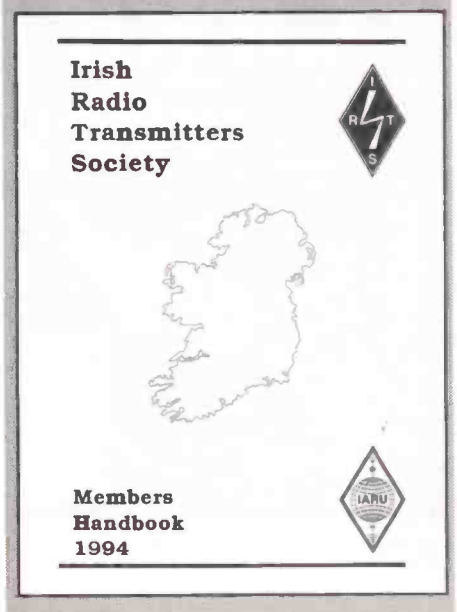
The 'fill-in' repeater for the Yorkshire Coast, GB3YC, came on air on Monday November 7th. The repeater is located north-west of Scarborough in North Yorkshire, and operates on channel R0. You can get further details from, and send reports to, Repeater Keeper G0OII.

Irish language net

If you fancy practising your understanding of the Irish language, or of course if you're a fluent speaker, then you may be interested in the weekly Irish Language Net. This takes place at 12.00 noon on 3.650MHz each Sunday following the Irish Radio Transmitters Society 'news' broadcast call-in.

IRTS Members Handbook avaliable

The latest Irish Radio Transmitters Society 'Members Handbook' is once again packed with information on Irish awards, radio news services, licensing and reciprocal licensing information, packet and repeater station maps, and of course the 'usual' full Irish licensees callbook listings. You can contact the IRTS for further information, details each month in HRT following 'Club News'.



Janson Project; GB6JAS and GB0JAS

Each year the Jason Project, founded by Dr. Bob Ballard who discovered the Titanic and Bismark wrecks, takes a team of scientists and students on a scientific expedition. In March 1995 they will explore the volcanic islands of Hawaii. At Mauna Kea observatories, a study will be made of other planets, and from outer space, NASA technology will be used to look back at 'Island Earth'. daily satellite broadcasts will bring the Jason expedition live to sites in the UK and North America, giving schools, colleges, and the public a chance to see real science in action.

Planned events include two special event stations, GB6JAS and GB0JAS, which will be on air from 5-11th March. GB6JAS will pay particular attention to the 50MHz and 433MHz bands to give Novices a good opportunity to work a special event station. 144MHz FM and SSB, plus other bands and modes, will also be used as appropriate, together with live satellite tracking and communication using OSCAR satellites. GB0JAS will mostly operate on the HF bands, and schedules with British research vessels in the North and South Atlantic are being arranged.

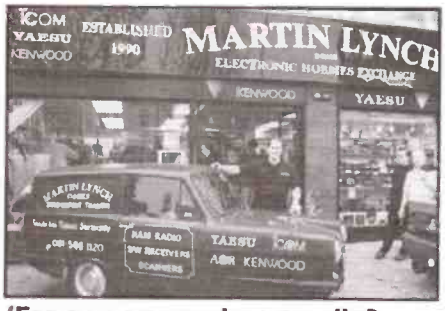
Amateur radio links to other Jason sites are also being planned, and a similar special event station at the National Museum and Galleries On Merseyside in Liverpool is being investigated. Local radio clubs will be involved and several importers and retailers have kindly offered to lend equipment. An estimated twenty five to thirty thousand visitors are expected to visit the UK Jason sites, with some 3000 visitors, mostly from schools, being expected at the British Geological Survey alone. Details of the Jason Project are available on Freephone 0800 666151 (UK only, Mon-Fri 08.00-19.00) or ask for the Jason coordinator at the National Museum and Galleries On Merseyside on 0151 207 0001.

Further information on the amateur radio stations will be distributed on packet and Email systems closer to the event date. Offers of help are welcome, particularly from radio hams in the Midlands and Merseyside areas who may be able to organise events, give demonstrations, and operate the stations during the Jason event week. Contact Alan Clayton G7HZZ, Tel. 0115 936 3253 0900-1700 Mon-Fri, 0115 921 2857 other times, or Email k_arc@uk.ac.nerc-keyworth.vaxa.

Martin Lynch Open Day

Saturday the 26th November saw another successful 'open day' at Martin Lynch's Electronic Hobbies Exchange centre. As well as the free refreshments laid on for visitors were a number a free prize draws throughout the day for various ham radio 'goodies' such as handheld transceivers, station accessories, even a rather smart Kenwood 'bomber jacket' was given away. As well as Martin and his staff, Yaesu UK, Icom UK, Kenwood UK, Alinco (with importers Waters and Stanton) and Siskin Electronics staff were on hand, together with the RSGB, all to answer questions and give advice to old and new hands alike.

The event also coincided with the celebration of Yaesu-UK's first birthday, Martin having arranged for a special 'birthday cake' to be presented to Barry Cooper, Sales and Marketing Manager of Yaesu UK. This was promptly enjoyed by the many visitors to the event! Thank's for a great 'amateur radio day out' Martin.



'Ere guv, wanna buy a radio?

Plenty on show for visitors

Dennis Goodwin of Icom UK pulls a winning ticket from Barry Cooper's bag

Sandy Hunt won a Kenwood TH-42E 70cm handheld, presented here by David Wilkin of Kenwood UK

The next draw won Terry Whittaker G1JKV an Optoelectronics 3300 handheld counter, presented by Jeff Stanton of Waters and Stanton Electronics

Barry Cooper of Yaesu UK was pleased to celebrate the company's 1st birthday with a cake from Martin

New Cirkit catalogue published

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LETTERS

Letter of the Month

Dear HRT,

Having read Mr. Walters G4DFV's letter in Dec 94 HRT, it is with great disappointment I write this letter.

Being a radio enthusiast for many years and also a CB operator, I would like to say that in the fist place, it was because of my interest in CB radio I became a radio amateur. Secondly, I cannot see any connection between CB radio operators who make the effort to become radio amateurs having much to do with the many faults with ham radio. Also on the point of buying radio equipment instead of building radios, I can see no problem whatsoever. I and many other radio amateurs are more interested in using our time to talk to fellow operators in this country and abroad, instead of using all our time building radios and then wondering why no one is around to talk to when we want to operate on the radio.

In Russia and other poor countries, radio operators cannot buy or afford to buy radio equipment, so they build radios. The point I would like to make is - when the radio is built, they use the radio. Maybe Mr. Walters should take a leaf out of Gerry Spence G0FPI's book and join a small handful.

Andrew Gilbert, 2E0AJA

Out of the Stone Age

Dear HRT,

In reference to the letter headed 'Changes over the years' published in the December 94 HRT.

It seems to me that Mr. D.J. Walters, G4DFV wants to come out of the stone age and start living life as it is in the 90's. I cannot believe the attitude of this man towards CB Radio and modern radio equipment, especially blaming the aforementioned two for the rise in misbehaviour on the amateur bands.

The vast majority of CB Radio enthusiasts have just as much technical knowledge and sometimes more than the average amateur. As for the idiots, well yes, I am the first to admit that there is a lot of idiots on CB Radio. That is why a lot of people come from CB Radio to Amateur Radio to get away from these sort of people. But if the licensing authorities enforced the conditions of the licence and dealt with these idiots by bringing them to justice then would the majority of people who are making the change bother? I think not.

Having been a CB Radio enthusiast up until 1990, I then turned my back on CB because of the idiots. Still being interested in radio I took up Short Wave Listening and I am presently studying for the RAE. I can honestly say if the licensing authorities dealt with the idiots like they should, I would still be on the CB band and I would not be studying for the RAE at all.

At the end of the day, why should CBers and amateurs pay for the pleasure of a piece of paper with loads of conditions on, when the licensing authorities do not uphold these conditions. If both CBers and Amateurs were to refuse to pay the fee for the licence until something was done about the moronic few, then would the licensing authorities do something about it?

Also I cannot believe that people who want to abuse radio go through the hassle of the RAE and of the expense involved with Amateur Radio just to annoy others.

As for the point made on high tech equipment, well surely it is left up to the individual whether or not they want to build their own equipment. Manufacturers only manufacture equipment if there is a demand for it, and if people are demanding high tech equipment then obviously the manufacturer will meet that demand. At the end of the day, the manufacturer is there to make money.

This debate of who to blame will probably continue for years, but for me the blame lies with the licensing authorities for not dealing with the people who abuse the use of radio equipment and its users.

Keep up the excellent work with the magazine, it is top class.

Yours in radio, 73
Andrew Moseley

Editorial comment;
The RA do act and prosecute, as is frequently reported in the press.

£10 for the 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. So write in with your views, to Letters Column, The Editor, Ham Radio Today, Nexus, Nexus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST, or fax your letter direct to the Editor's desk on 0703 263429. Please keep your letters short, we reserve the right to shorten them if needed for publication. Reader's views published here may not necessarily be those of the magazine

Diplomacy, what diplomacy?

Dear HRT,

On the 31st October 1994, late morning between 11am and 12 noon, I heard someone using the most disgraceful and offensive language towards a French Citizen, who was visiting this country. This occurred through the Leamington Repeater WK. The Frenchman, was suddenly subjected to an unannounced torrent of abuse and racialist insults. This tirade continued for a minute or two, until a strong signal jammed it out. After this, the abuse could only be heard in short bursts, as the unknown jammer listened, to see if further jamming was necessary. This continued for another minute or two and then the repeater went quiet.

My immediate reaction was to feel upset and angry. I felt that I wanted to apologize to the Frenchman and say to him, that at that moment, I felt deeply ashamed to be British, and deeply ashamed to be associated with amateur radio.

I believe the amateur responsible for the outburst is often on the Malvern Repeater. He assumes a woman's voice and often makes offensive remarks to other radio amateurs. He also takes delight in making gibes at the DTI, clearly he is throwing down the gauntlet to them.

As someone who passed the RAE in 1964 and then stopped listening on amateur frequencies (sometime in the 1960's), when I listen now after more than 24 years of absence, I am struck by the general increase in bad language, bad manners, and unbelievably, the appearance of yobs, crackpots and clowns who actually think they have a right to be on the air. Sometimes I wonder if I will want to renew my licence when it becomes due next year.

Yours sincerely,
P. Griffiths, G7RRR

G3's and G4's unfriendly?

Dear HRT,

I read with displeasure the letter from G4DFV regarding CB/Amateur users. I am a CB user and so are many of my friends who are also licensed Radio Amateurs. CB Radio is a wonderful starting point into the world of radio communications. Many of us pride ourselves on the quality of our CB stations, causing no interference or bother to others, and making contacts all over the UK and Europe on the legal CB power and frequencies. It is a natural progression to then want to become a Radio Ham.

Unfortunately there are a few people in this world who enjoy upsetting others, either by treating people such as ex-CBers and newly qualified amateurs as though they are inferior, or using the airwaves for abuse. These are very narrow minded people and we should all feel sorry for them.

Perhaps if some G3's and G4's were more friendly and helpful to newcomers, there would be less people on the radio with nothing better to do than key mics and cause a nuisance. In their minds they probably think that if you won't let me join in and enjoy this hobby, then why should you enjoy it. I cannot condone such behaviour, but I can understand it. There is no reason why an ex-CBer will be any more of a nuisance than an ex-SWL.

At the moment I am taking an RAE course, and if I pass, I will go out and buy a commercial 'black box' transceiver, aerial, etc. Plus a few pieces of test equipment to set my station up to the required standard.

I have no desire to build the set myself and what is wrong with that? We have all heard tales or know of people who have made these home brew kits, only to interfere with all and sundry. There is a saying; "A little knowledge is a dangerous thing!". I will leave the building of my equipment to people who are properly qualified in radio electronics, while I enjoy the hobby. I will be qualified in setting up and using a radio station, making new friends and acquaintances over the air who enjoy radio, satellites and computers. Radio has progressed a long way since the crystal set, and that's what keeps it interesting. Live and let live, that's my motto.

Pat, from Wadebridge, Cornwall

Kenwood TH-79E Review

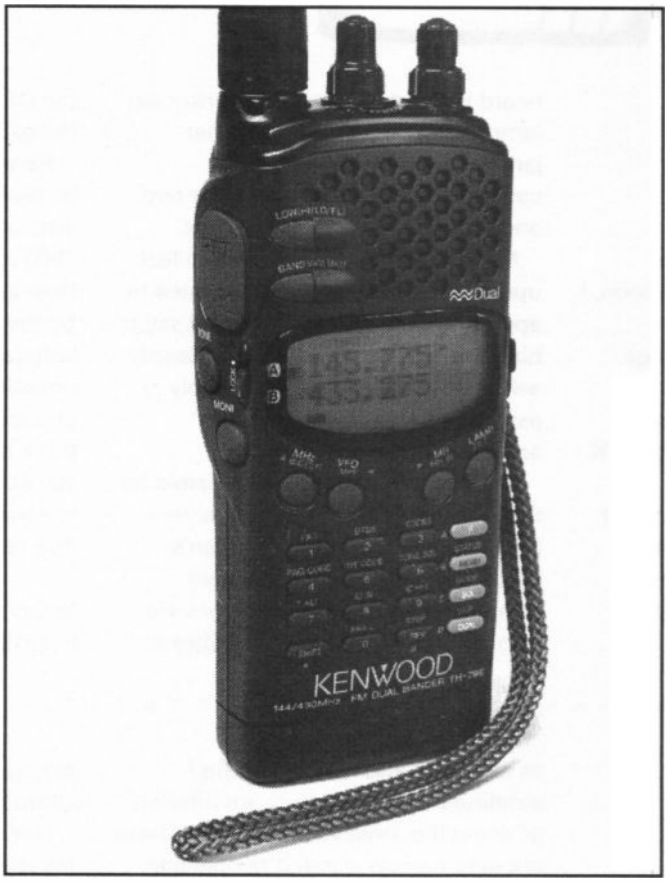
Chris Lorek tries out a 2m/70cm dual band handheld with built-in artificial intelligence

A comment I hear about many of the latest 'all-singing, all-dancing' dual band handhelds, which seem to capable of doing everything apart from making you a cup of tea, is that many amateurs don't make use of even a small fraction of the facilities. Not because they don't want to, but often because trying to remember *how* to use them is so difficult, they sometimes just aren't worth 'bothering about'. Of course, microprocessors are wonderful things, but when you just get a low frequency error 'blluurrpp' from the set when you've tried to enter a frequency incorrectly, it doesn't really help very much, does it?

The Kenwood TH-79E doesn't overcome *all* these difficulties by any means, but it *does* try hard to help the user. How? Well, it doesn't speak itself, yet. But it *does* have a large dot-matrix LCD panel which, besides acting as a display for all the usual things like operating frequency, memory channel, and so on, can also give you a selection of 'help' messages. These scroll along the LCD, just like the large scrolling LED message displays you see advertising prices and goods at your local butcher or post office!

Want to know how to enter a memory channel? Just select the 'Guide' function, and the scrolling text tells you what to do! On selecting this, it first tells you to "Turn the ENC control", which is the rotary encoder knob on the top of the set. When you do this, various other 'sub-displays' come up, giving you text instructions for Band Scan, MR Scan, MHz Scan, MR Input, Split MR, ID Input, and so on. Very clever!

Likewise, setting up the rig's various options, such as the 2m and 70cm repeater splits, scan mode, battery save, and so on are done with a quick press of the 'Menu' button, the display then showing you in 'real English' what each mode is set to.



Basics

So that's how easy the set is to use, but what does it do in the first place? Well, it covers the 2m and 70cm amateur bands in all the usual tuning steps. On receive, as well as offering simultaneous twin-band monitoring, it can also monitor two frequencies on VHF, or two frequencies on UHF, at the same time, with transmit on any selected band. Where permitted, the set may also be used on receive over a very wide frequency range, between 110-180MHz, 300-470MHz, and 800-1000MHz, including airband AM reception on both the 120MHz and the 320MHz ranges.

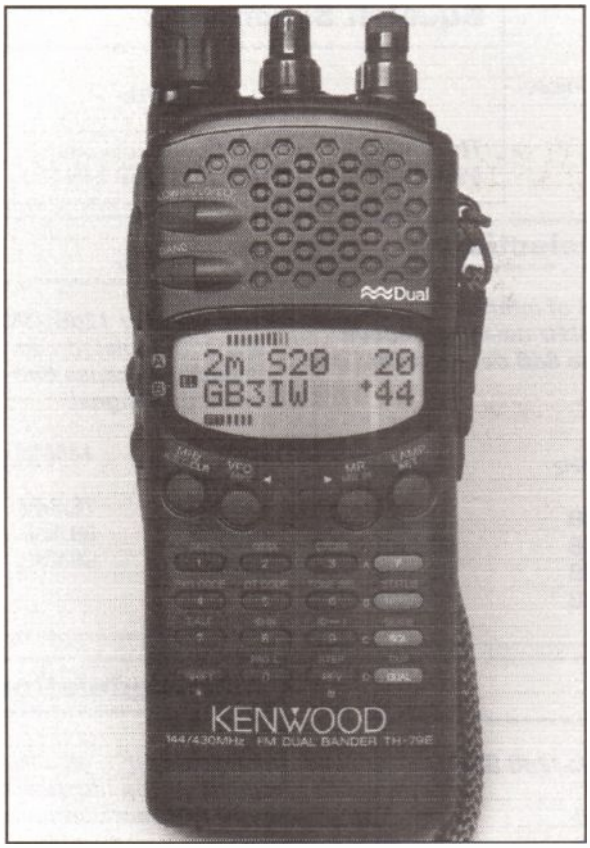
With its FET PA the transmitter provides a nominal 2.7W on 2m and 2.0W on 70cm using the supplied 6V type PB-32 nicad pack. An optional 12V PB-34 pack, or operation from an external 12V supply, increases the power to 5W on 2m and 70cm, although with this power level you'll need to keep your transmit 'overs' reasonably short to prevent the set from getting too hot. Switchable 'Low' (500mW) and 'E Low' (30mW) transmit power levels can be used in each case for local, and very local working.

Memories

80 memory channels are fitted, which are shared between the two operating bands. Each channel is capable of storing a dot-matrix alphanumeric 'tag' of up to seven letters, which is displayed instead of the frequency when each 'tagged' memory channel is selected. So, you can if you wish store the callsigns or IDs of your local repeaters, to be displayed rather than the frequency, for easier use.

Tones and controls

Separate volume controls are fitted for each band, the VHF volume knob also acting as an on/off control. The UHF volume is an outer concentric knob with the smaller multi-purpose click-step 'encoder' knob in the middle. The



remainder of the set's functions are controlled by a variety of push buttons on either the keypad section, or larger buttons above this for the more-often used functions such as memory/VFO switching, LCD backlight, band switching, etc.

A CTCSS (sub-tone) encoder is fitted as standard for repeater access use, together with a 1750Hz repeater access tone generator which is enabled with a button just below the set's main push-to-talk control. Alongside this also is a 'Moni' button, which temporarily defeats the squelch when pressed. This, in my mind was more useful than normal, as there's no separate squelch control fitted for either band. Squelch pre-setting is instead done by a keypad button push followed by the click-step encoder/tuning knob, with five pre-set squelch levels. Along with CTCSS, DTMF encode is fitted, for either manual or automatic transmission, together with facilities for automatic three-digit DTMF selective calling and 'paging' between the TH-79E and other suitably equipped transceivers, from Kenwood and other manufacturers. An optional 'plug-in' CTCSS decode unit is also available for alternative 'quiet monitoring'. This unit simply slots into the side of the case, so you don't need to grapple with tiny screws in opening the set to fit it.

With all these buttons and functions, a tiny but rather handy slide switch is also fitted at the side of the case, next to the PTT button, acting as a 'lock' control to prevent any accidental modes changes when you handle the set.

On the air

I found the slim casing of the TH-79E very comfortable to hold, and the non-keypad buttons were easy to use whilst operating the rig 'one-handed' when walking out and about. The slim profile also meant that it would slip into my top pocket comfortably, which can't be said for some earlier dual band handhelds! An optional extension speaker-mic is available for the set, this being fitted with three programmable 'remote control' buttons which you can choose the functions of, i.e. band switching, memory/VFO, etc. Full wiring details are usefully provided in the manual supplied with the set for this, in case you wish to make your own, e.g. for mobile use.

I found the set gave an adequate audio level on receive for portable use, although I sometimes felt the need for an extension speaker when using the set as a car passenger when travelling at speed, as I often had to hold the set near my head for comfortable listening. The supplied set-top helical aerial was extremely efficient, allowing me to get into my semi-local 2m repeaters with the 2.7W or so of output power when I thought I would otherwise have had problems. My transmit audio was described as good, without any traces of overdeviation which I often find with sets I test on review. On connecting a rooftop colinear when operating the set from home, although I found the receiver to be extremely sensitive, I had considerable problems in trying to operate on the repeater section due to breakthrough from VHF paging signals. To be fair, I've experienced this on one or two other dual-band handhelds, but it did totally prevent me having QSOs through one of my semi-local 2m repeaters using the TH-79E.

I found the alphanumeric 'tagging' faciltiy of the memories very useful, it really did make the set that much easier to use. I often found I used just the memory channels, although on my review set, I could not lock any of these individually out of 'memory scan' mode, I had to scan them all, or not at all, which I found annoying. However I'm told by Trio-Kenwood UK that, by the time this review appears, all TH-79E's coming into the country will have memory 'lockout' facilities in the operating software to overcome this.

The LCD backlight gave very good illumination of the set's display for night-time use, but there was no lighting of any of the other buttons or their functions. I found this to be a real problem when walking outdoors during one dark evening when I attempted, in vain, to try to change one of the set's modes. Eventually I simply had to find a handy street lamp to do this. Other handhelds backlight at least the most important key functions, why not this one?

Lab tests

Overall, the set gave a good performance, something I've consistently found with products from Kenwood. The 2m 'half IF' response, at +19.425MHz (i.e. 164.425MHz on 145.000MHz) being slap-bang in the middle of the UK VHF paging band, could cause some users a problem if they operate the set in a busy RF area.

On transmit, there was an adequate and well-controlled level of output power, the difference in this across 144-146MHz being unmeasurably small. The transmit deviation was correctly set, which I appreciated as many sets seems to be supplied 'cranked up' to hopefully 'sound better' at the distant end!

Conclusions

I found the TH-79E very easy to use when out and about, and getting to know how to use several of the 'main' functions was made even easier with Kenwood's 'memory jogger' on the scrolling text display. The alphanumeric 'tag' of memory channels is a very nice touch, a feature which I'm sure is going to become very popular with amateurs as sets become more and more complex as well as becoming smaller and smaller!

The TH-79E has a current selling price of £449.95, and my thanks go to Trio-Kenwood UK for the loan of the review transceiver The TH-79E is available in the UK from all Kenwood dealers.

LABORATORY RESULTS:

All measurements taken on 145.000MHz, using fully charged nicad, high power TX, otherwise stated.

RECEIVER;

Squelch Sensitivity;

	145MHz	435MHz
Threshold;	<0.06µV pd (<2dB SINAD)	0.09µV pd (4dB SINAD)
Maximum;	0.20µV pd (21dB SINAD)	0.18µV pd (18dB SINAD)

Adjacent Channel Selectivity;

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

	145MHz	435MHz
+12.5kHz;	36.1dB	31.4dB
12.5kHz;	26.5dB	22.3dB
+25kHz;	62.9dB	55.8dB
25kHz;	62.6dB	59.9dB

Blocking;

Increase over 12dB SINAD level of interfering signal modulated with 400Hz at 1.5kHz deviation to cause 6dB degradation in 12dB SINAD onchannel signal;

	145MHz	435MHz
+100kHz;	76.3dB	73.9dB
+1MHz;	88.1dB	81.9dB
+10MHz;	96.6dB	95.8dB

Sensitivity;

Input level required to give 12dB SINAD;

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

Intermodulation Rejection;

Increase over 12dB SINAD level of two interfering signals giving identical 12dB SINAD onchannel 3rd order intermodulation product

	145MHz	435MHz
25/50kHz spacing;	62.1dB	-
50/100kHz spacing;	61.4dB	63.2dB

Image Rejection;

Increase in level of signal at first IF image frequency, and at the 'half IF' frequency difference, over level of onchannel signal, to give identical 12db SINAD signal;

	145MHz	435MHz
Image	75.8dB	56.5dB
Half IF	68.0dB	76.4dB

S-Meter Linearity

	145MHz	435MHz
2 segments	0.15µV pd (0dB ref)	0.22µV pd (0dB ref)
4 segments	0.22µV pd (+3.0dB)	0.31µV pd (+2.8dB)
6 segments	0.27µV pd (+4.9dB)	0.39µV pd (+4.9dB)
8 segments	0.38µV pd (+7.8dB)	0.51µV pd (+9.7dB)
10 segments	0.47µV pd (+9.8dB)	0.68µV pd (+9.7dB)

TRANSMITTER

Current Consumption

Standby, squelch closed;	43mA (2m only), 44mA (70cm only) 75mA (2m and 70cm)
Receive, mid volume;	117mA
Receive, max volume;	191mA

Harmonics;

	145MHz	435MHz
2nd Harmonic;	-79dBc	-67dBc
3rd Harmonic;	-75dBc	-81dBc
4th Harmonic;	-90dBc	-76dBc
5th Harmonic;	-90dBc	-
6th Harmonic;	-90dBc	-
7th Harmonic;	-90dBc	-

TX Power and Current Consumption;

Measured using fully charged 6V nicad

Freq.	*Power*	
145MHz	High	3.06W
	Low	340mW
	E Low	30mW
435MHz	High	2.33W
	Low	230mW
	E Low	40mW

Peak Deviation;

145MHz	*435MHz*
4.48kHz	4.39kHz

Frequency Accuracy;

145MHz	*435MHz*
-310Hz	-656Hz

NEVADA

.....Everything For The Radio Enthusiast!

... This Month I've listed a selection of our most popular items - But why not send a Large S.A.E. (A4 Size) in for our latest 48 page catalogue packed full of equipment. Can you spot the bargains?

73 · Mike Devereux G3SED

Icom Special Deal This Month

ICOM 707 HF TRANSCEIVER

- 32 Memories
- 100 Watts Output
- Gen. Cov. Receiver

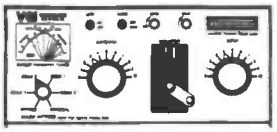
A great budget H.F. Transceiver
This months special offer ~~£895~~ **£795**

ICOM 736 ..... **Price Too Low To Print**

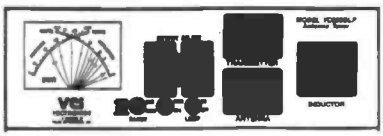
OTHER BARGAINS

Kenwood TS50 ..... **One Only Bargain Price!**
Yaesu FT900 ..... **One Only Bargain Price!**
Yaesu FT530 Dual Bander ..... **Bargain Price!**

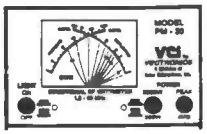
VECTRONICS A range of high quality accessories imported by us direct from the USA.



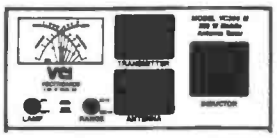
HFT1500 - A 3K Watt (PEP) ATU, with all the extras. 4 way ant.switching, roller-inductor, SWR/PWR meter, Balun for open wire feeders and Peak reading digital meter **£349**



VC300DLP - Our most popular ATU. 300W (PEP), Dummy load, VSWR meter, 3 way ant. switch & Balun for open wire feeders **£129.95**



PM30 - Displays Peak or Average forward power, reflected power & SWR simultaneously. 1.8 to 60 MHz Pwr 3Kw (in two ranges) **£69.95**



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Alinco DR-M06 6m Mobile Review

G4HCL adds some excitement to his VHF mobile operation

Are you fed up with all the 'routine' activity on your 2m mobile rig? How about a bit of excitement, like not knowing whether the answer to your mobile VHF 'CQ' will come from the next town or the next continent? From the title of this review, you'll know I'm talking about the new 6m FM mobile rig from Alinco, and this indeed is what the 6m band can offer.

The DR-M06

Readers of HRT's monthly 'VHF/UHF' column will know what can be worked on the band, with its variety of exciting propagation modes 'round the corner' such as sporadic-E, F2 reflection, even trans-equatorial. As well as this, there are already a number of 6m FM repeaters planned for the UK, all with CTCSS access. Indeed there's one on test, near to my location, as I write this article.

Tiny rig

Unlike other 6m rigs I've seen, this one's relatively very tiny, and at 140mm (W) x 40mm (H) x 154mm (D) it's even smaller than many 2m/70cm mobile rigs on the market. I was fortunate in already owing one of the commonly-available mobile multi-band whips which include 6m coverage, but even so a simple mobile quarter wave is just a 1.5m long steel whip which is easily made or cheaply bought.

The DR-M06 covers the 50-54MHz range 'as standard' (although we in the UK are restricted to 50-52MHz), however it may also be modified to provide extended receive coverage between around 45-60MHz for 'DX TV' signal monitoring, as is often carried out by UK hams as a guide to enhanced propagation conditions.

4m coverage as well?

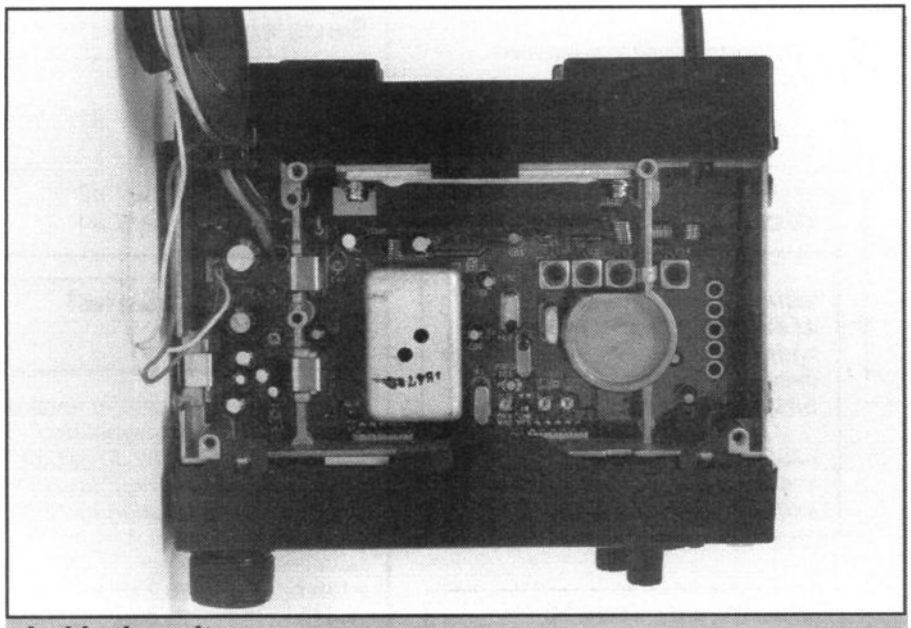
Optional 4m band coverage on both transmit and receive is also possible 'in a fashion', although the receive and transmit performance here are both pretty well reduced. However, this could be a very useful 'bonus' for local packet BBS and DX Cluster access from your shack on what is a relatively 'quiet' band in many areas.

Operating

The DR-M06 could be described as a very 'simple-to-use' rig, the uncluttered backlit display giving a clear indication of the frequency and channel in use. The click-step VFO knob can be set to step in 5, 10, 12.5, 20 and 25kHz increments, we in the UK using 20kHz steps with a 10kHz 'offset'. For example, the FM 'calling' channel is 51.510MHz with 'working' channels either side, and common packet channels are centred on around 50.650MHz. If you don't want to 'crank the knob round' each time, the set has no less than 100 memory channels for quick access, and memory channel scan use. The latter I found quite useful, as in 'VFO' scan mode it went across the entire 50-54MHz band, with no pre-settable 'scan limits' available. You only have a choice of scanning all memory channels, or none, with a 'time resume' mode of 5 seconds (i.e. the scan stops on a 'busy' channel for 5 seconds, then always continues). Although this could be limiting on busy bands such as 2m, I found this reasonably satisfactory on the quieter 6m and 4m bands.

The transmitter puts out a nominal 10W, with a switchable low power mode of around 1W. I found the tiny rear panel heatsink copied with this without getting too hot during long QSO periods as long as I placed the set in a reasonably ventilated position - it didn't like being housed in my car glove compartment! I noticed fixings for a small cooling fan on the rear panel, so either there's a higher power version around the corner or Alinco have used their heads and employed an existing heatsink from other equipments in their range.

For repeater use, the DR-M06



Inside the unit

comes fitted with a CTCSS (sub-tone) encoder, with 50 pre-set tones which may also be stored along with the operating frequency in the memory channels. quick access 'Call' channel is accessed from a front-panel button, an addendum to the supplied manual giving details of how to program this for any frequency in the set's range. This was very useful when on the move, and a selectable transmitter 'time out' could be switched in to save any problems with a locking mobile mic switch. For some strange reason, this time-out timer could not be used with CTCSS encode enabled, unless the optional CTCSS decoder unit was fitted.

I found the set operated quite well on voice, the supplied mobile mic giving crisp audio. As supplied, this was set to a rather high deviation for users of converted ex-PMR rigs on the band with their narrow receive filters, but I quickly learned to speak a little further away from the mic in such cases. The set did, however, work admirably on packet, the manual addendum giving details of the microphone pin wiring required for this, or indeed for those who wish to use a hands-free mobile mic. On 4m, I managed to get into my local DX PacketCluster quite well with the half watt or so of output power produced, and although the receiver was very, very deaf on this band, I found it just about OK for the 'line of sight' operation I was using it for.

Laboratory Measurements

The all-important transmitter second harmonic, this falling slap-bang in the middle of the FM Broadcast Band, was suppressed to a good level, of just over 80dB, by the set's low pass filters, higher order harmonics being even further down with is very good. The receiver parameters in terms of both sensitivity and strong signal handling were again nothing I could complain about, indeed I was quite impressed with the performance for what is probably a reasonable cost for such a Japanese rig. The transmitter frequency accuracy was exceptionally good, although the deviation was slightly 'over the top' for 20kHz channel spacing, as found on air.

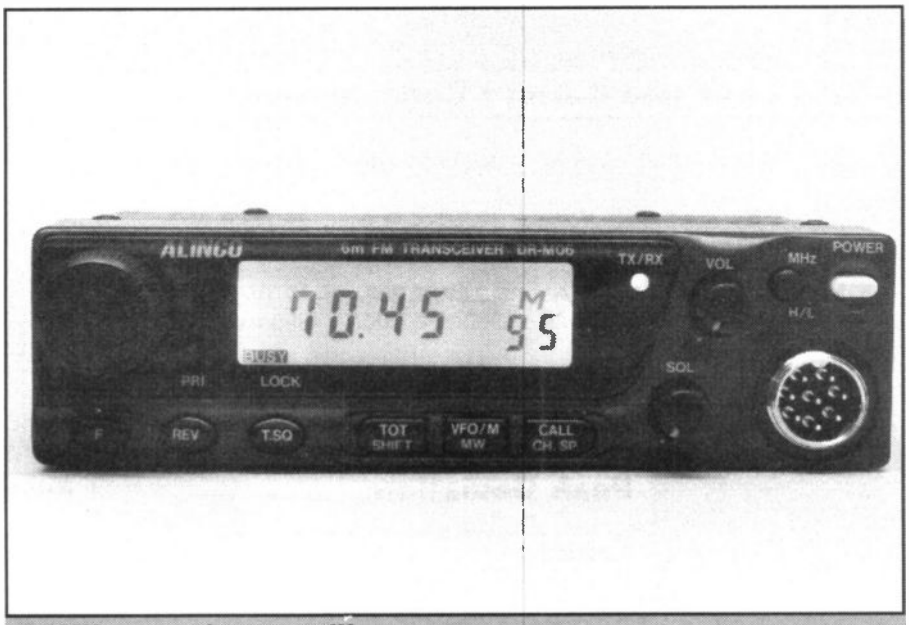
70MHz

On 4m, a quick lab measurement on 70.35 and 70.45MHz showed a transmit output power of 0.65W (around 12dB down, restricted by the PA 'block' and fixed low-pass filter), with a receive sensitivity of 1.2mV pd (around 79dB down). With the review equipment supplier's permission, I gave the receiver front end a quick 'tweak' which brought the sensitivity up to 51µV pd (still rather 'deaf' at around 52dB down), this naturally reducing the 50MHz sensitivity and image rejection.

Conclusions

The DR-M06 is a very easy-to-use rig, it isn't filled with 'bells and whistles', but it has everything you need for simplex, repeater, and packet operation, on what is usually a relatively 'quiet' band. Reduced performance operation on 4m, as an option with the set from the UK importers, could be a useful 'added bonus' for some operators for very local working.

The DR-M06 currently retails at £299, and my thanks go to Waters and Stanton Electronics (Tel. 01702 206835) for the loan of the review transceiver.



70MHz operation as well!

LABORATORY RESULTS

All measurements taken on 51.00MHz with 13.2V DC supply, using supplied DC cable, high power TX selected, otherwise stated.

RECEIVER;

Squelch Sensitivity;

Threshold;	0.08µV pd (3dB SINAD)
Maximum;	0.22µV pd (21dB SINAD)

Intermodulation Rejection;

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

20/40kHz spacing;	71.5dB
40/80kHz spacing;	70.3dB

S-Meter Linearity;

Reading	*Sig. Level*	*Rel. Level*
1	0.32µV pd	0dB ref
2	0.47µV pd	+3.4dB
3	0.98µV pd	+9.7dB
4	2.57µV pd	+18.1dB

Blocking;

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

+100kHz;	79.0dB
+1MHz;	92.4dB
+10MHz;	93.0dB

Maximum Audio Output;

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

2.97W RMS

Sensitivity;

Input level required to give 12dB SINAD;

50MHz;	0.13µV pd
51MHz;	0.13µV pd

Adjacent Channel Selectivity;

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

+10kHz;	16.7dB
-10kHz;	19.0dB
+20kHz;	66.9dB
-20kHz;	67.5dB

Image Rejection;

Increase in level of signal at first IF image frequency, over level of on-channel signal, to give identical 12dB SINAD signal;

88.4dB

TRANSMITTER;

TX Power and Current Consumption;

Freq.	*Power*	*10.8V Supply*	*13.2V Supply*	*15.6V Supply*
50MHz	High	9.86W/2.45A	10.0W/2.40A	10.1W/2.35A
	Low	940mW/1.05A	940mW/1.05A	940mW/1.05A
51MHz	High	9.84W/2.40A	10.0W/2.30A	10.1W/2.35A
	Low	950mW/1.00A	950mW/1.00A	950mW/1.00A
52MHz	High	9.80W/2.35A	10.0W/2.20A	10.1W/2.20A
	Low	950mW/1.00A	950mW/1.00A	950mW/1.00A

Harmonics;

2nd Harmonic;	-81dBc
3rd Harmonic;	-88dBc
4th Harmonic;	<-90dBc
5th Harmonic;	<-90dBc
6th Harmonic;	<-90dBc
7th Harmonic;	<-90dBc

Peak Deviation;

5.96kHz

Frequency Accuracy;

+21Hz

Looking back on '94

The HRT Editorial staff look back on amateur radio in 1994, and give a few predictions for 1995

If outstanding amateur radio happenings in 1994 could be summed up in a few words, it would be along the lines of 'not many'.

However, the immediate future has quite a lot going for it, and there are possibly quite exciting times ahead in 1995.

There weren't many revelations in terms of new or exciting events in the last year, although the IOTA (Islands On The Air) programme received a good 'boost' with commercial sponsorship from a major rig manufacturer, as reported in HRT. Talking of rig manufacturers, many 'plodded along' with the occasional new piece of equipment. Handhelds got smaller, with more features, one or two rigs were 're-packaged' into different forms with different operating software, but that's about it.

US vs Japan

The commercial trade in ham radio equipment saw quite a 'change' in 1994. The Japanese Yen strengthened, making these sets relatively more and more expensive in the UK. In 'real' terms, almost twice the cost to import than a few years ago. The US Dollar suffered, in favour of UK purchasers, making US-manufactured gear more affordable. Witness the 'revival' of interest amongst UK hams, and dealers, in equipment made by firms such as Ten-Tec, with their 'Scout', and Drake with their recent HF receivers. Even US-made accessories such as HF aerials, frequency counters and DSP filters are being marketed heavily now, but where are the Japanese-made versions of these?

The economy

Several ham radio rallies were cancelled in 1994, something almost unknown of a few years ago. However, it's been reported that we're now on the 'upturn', indeed a major new professionally-run rally has been announced for 1995, at Bletchley Park, adding to the two high-profile annual events, in London and the Midlands, already being staged by the same organisers.

Computer aided

Whether you love or hate them (we at the Editorial Office often curse at ours!), 1994 could certainly be described as *the* year when a PC made its entry to many amateur's stations, with PC prices falling each day. 1994 saw the entry of the first offerings of commercial 'callbooks on disk', actively competing against the 'traditional' printed versions.

Our ham software service has been incredibly popular, and requests for disks increase with each month, to the point of this month's cover disk. Are we the first ever ham magazine to have such a cover disk? Will we be copied by others? Maybe.

Communication in 1995

At HRT, we predict (well, OK, give an educated assumption based upon published facts) that 1995 is going to see an explosion in electronic communication, as the public become more and more aware of what can be achieved.

Ham radio numbers are now once again on the increase, as reported by the RA and seen in the latest 'callbooks on disk'. It's an indisputable fact that young newcomers are primarily interested in 'modern' forms of communication, witness the interests of the winner and runner-up of the 1994 'Young Amateur of the Year' Award, and that of 1993. This would be a superb opportunity for us to gain some 'new blood' into our hobby. But only if we go about it the right way.

1995 will hopefully also see a new 'era' in amateur radio satellite communication, with the launch of the Phase 3-D spacecraft, funded by radio hams. This will offer communication to hams worldwide using what could almost be described as 'modest' equipment. We'll certainly be publishing construction articles for suitable gear and aerials in HRT.

More predictions

It wouldn't surprise the HRT staff to see or even review a HF transceiver, possibly US made, with a built-in digital communication mode interface with accompanying PC serial port, maybe for packet or other digital-aided modes, before the end of 1995.

Receivers and transceivers will undoubtedly get forever smaller, with more 'bells and whistles' each time. But 'real' RF performance often suffers, when the wonders of microprocessors start to overshadow the primary purpose of the set, which is to communicate. The very popular dual-band 2m/70cm handhelds, from several manufacturers, have been getting smaller and smaller. But their RF performance, in terms of immunity to other signals 'overloading' the receiver section and degrading or even preventing communication, has in general been getting steadily worse.

It would be nice to see a new dual-band handheld on the market that addresses this. One pioneering Japanese manufacturer in this line has, up to now, not done very well, even though their 2m/70cm handhelds have had an incredible amount of features. Apart from getting rid of paging breakthrough. Maybe there will be a surprise from a manufacturer in 1995?

Getting together

Radio clubs are going to have to try harder and harder, but the active ones, who set up activities and interesting talks, videos and 'hands-on' events for their members, will be the ones who blossom. The HRT Tech Ed is already 'booked up' for several club talks in January, these all being at 'dynamic' clubs, which we're please to actively promote each month.

With European travel becoming easier and cheaper, we'll be interacting more and more with our fellow hams around Europe and the US. Our common language on the air helps us, the pan-European licence helps even more. Will we see a similar arrangement with the US and Europe in terms of licensing? Possibly.

1995 is going to be very, very interesting.

HRT Reader Offer - EX-PMR Conversion EPROMs

Ready-programmed EPROMs are available for the MX290 series ex-PMR transceiver conversions featured in HRT. these are available for the MX294 (2m, published HRT Mar 94), MX295 (for conversion to 2m, planned for a forthcoming issue of HRT), and MX296 (70cm, published HRT Dec 94). The 2m EPROMs are programmed with all simplex, repeater, and reverse repeater channels, plus 144.500-144.8875MHz in 12.5kHz steps. The 70cm EPROMs are programmed with all channels between 430.000-439.975MHz in 25kHz steps, including repeater, reverse repeater, simplex and packet channels for use with 16 channel or BCD switches.
Each EPROM comes supplied with connection information and a channel list, the price includes UK p/p.

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IC-449E	70cm Mobile	Ex-demo	£359.00	SAVE £66.00.
IC-3230H	2M/70cm Mobile	NEW	£525.00	SAVE £170.00.
IC-3230H	2M/70cm Mobile	Ex-demo	£395.00	SAVE £300.00.
IC-X2E	70/23cm Handheld	NEW	£395.00	SAVE £170.00.
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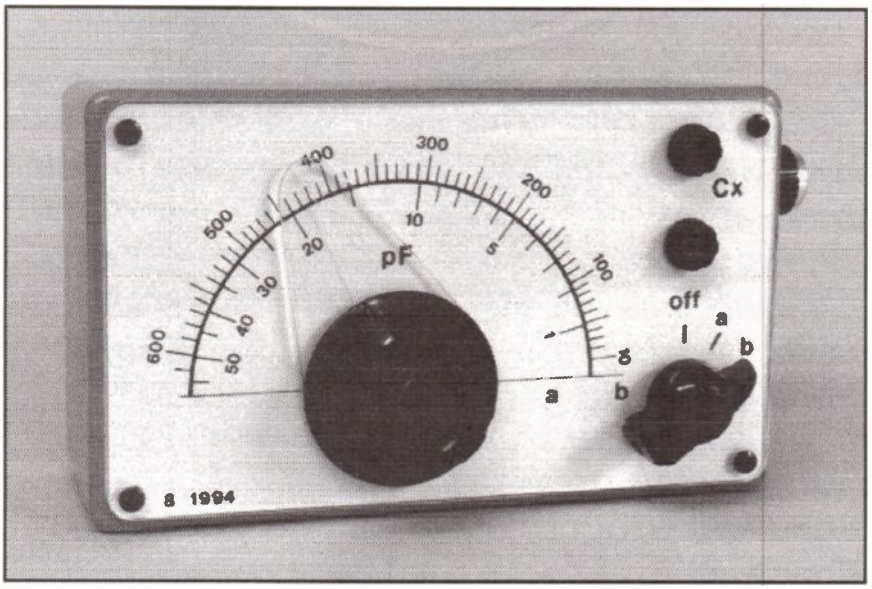
Project - A Capacitance Meter

Raymond Haigh describes a simple, novel, and inexpensive unit for measuring low values of capacitance



The cost of variable tuning capacitors has escalated in recent years, and high-quality air-spaced units are now often the most expensive single components involved in radio construction. They have accordingly become important items of salvage from older valve and transistor radios. Unfortunately, they are hardly ever marked with their capacitance value, and some means of measuring this makes the salvage operation even more worthwhile. Once the value is known, it is quite an easy matter to calculate the size of a series capacitor to reduce the swing to suit a particular circuit.

Many published designs for capacitance measuring equipment are either complicated, or have limitations when it comes to determining the low values encountered with radio frequency tuned circuits. This meter is easy to construct, calibrate and operate. Used in conjunction with a domestic radio receiver, it measures capacitors from 1pF up to 1000pF in value by the resonance method, and is capable of a high degree of accuracy. Special components are not required, and most constructors will be able to assemble the unit entirely from their spares boxes. Even if the parts are purchased new, no great expense will be incurred.

Principle of operation

The unit is reduced to its essentials in Fig.1. Inductor, L and variable capacitor, C, form a tuned circuit which determines the operating frequency of a two transistor oscillator. With the vanes of C fully meshed, inductor L is adjusted to set the frequency of oscillation at 198kHz, to zero beat with Radio 4 received on a transistor portable.

Connecting an unknown capacitor, Cx, across the test terminals detunes the oscillator, and variable capacitor, C, has to be turned to a lower setting to restore zero beat. The amount that C has to be rotated represents the value of the unknown capacitor.

Calibration is achieved by connecting fixed capacitors of known value across the test terminals, re-setting C to restore zero beat, then marking the dial accordingly. Accuracy of calibration is, of course, determined by the precision of the fixed capacitors. Oscillator and radio receiver are tuned to a long wave rather than a medium wave station in order to reduce the possibility of spurious responses causing confusion when the unit is being set to zero beat. If Droitwich on 198kHz is difficult to receive, use another long wave station, preferably one on a lower frequency.

The Circuit

The full circuit diagram is given in Fig. 2. TR1 and TR2 are two FETs, source coupled to form a transistor version of the Butler oscillator. This circuit oscillates reliably even with a high ratio of tuning capacitance to inductance. It is, therefore, ideal for this application. A single winding inductor is all that is required: there are no feedback coils or tappings, and this simplicity and reliability more than compensates for the need for a second transistor.

Tuning inductor, L1, has to be varied to set the unit to zero beat with

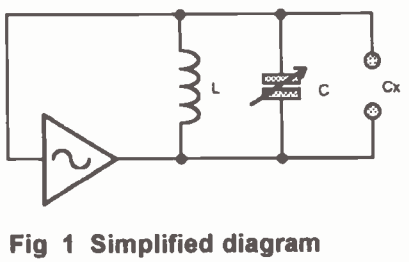


Fig 1 Simplified diagram

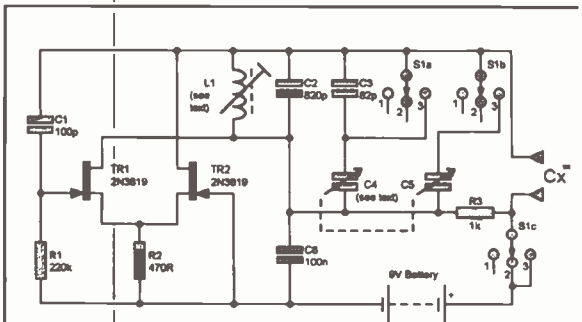


Fig. 2 Circuit Diagram

different tuning capacitor arrangements, and its ferrite core is adjustable.

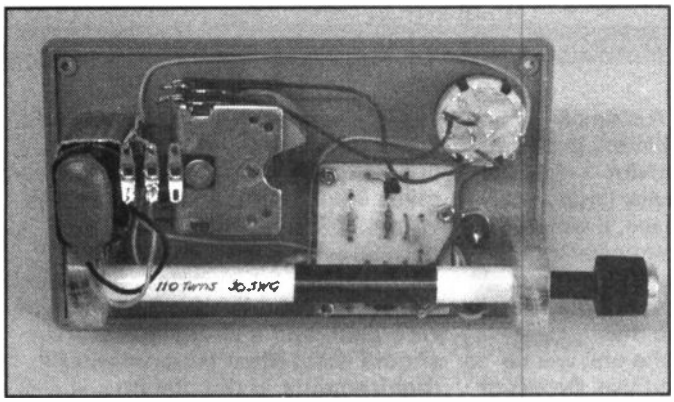
A comparatively high value fixed capacitor, C2, is connected across the inductor to keep the frequency of oscillation below the monitoring receiver's IF even when the variable capacitors are set at minimum. This avoids spurious responses. C3 is placed in series with C4, one gang of the two gang variable, in order to reduce its swing and make it easier to measure capacitors in the 1pF to 50pF range.

S1a and S1b short out C3 and connect both gangs of the variable capacitor into circuit to permit the measurement of higher capacitance values. The upper measuring limit is, of course, determined by the combined value of C4-C5.

Components

The variable inductor is home wound and the remaining components are available from a number of advertisers in this magazine.

I fitted a salvaged 300pF + 300pF air-spaced variable as C4-C5. I also tried 500pf + 500pF capacitors and the circuit continued to oscillate vigorously. (Indeed, my prototype unit, with the specified inductor, would oscillate with more than 10,000pF connected to the test terminals). The higher value ganged capacitors will, of course, permit measurements up to 1000pF.



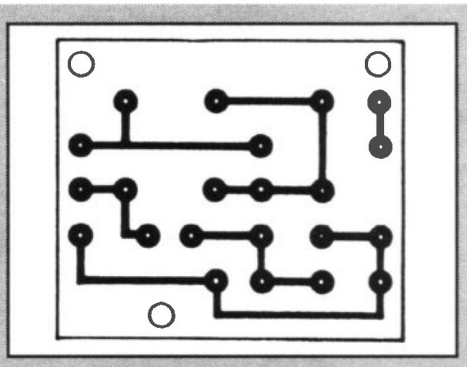
Small, plastic film dielectric variable capacitors salvaged from inexpensive transistor radios are not likely to be suitable. The combined value of both gangs of these units is often less than 300pF and this would excessively restrict the upper measuring limit. If a variable capacitor is purchased as a new item, the 355pF + 355pF polyvaricon unit retailed by Cirkit would give adequate coverage at modest cost.

Construction

With the exception of C3, C4, C5 and the switch, all of the components are mounted on a small printed circuit board. The component side of the board is illustrated in Fig. 3 and the copper track side in Fig. 4. Veropins inserted at the leadout points aid off-board wiring.

The swing reducing capacitor, C3, is mounted on the terminals of the rotary switch.

PCB track side, full size



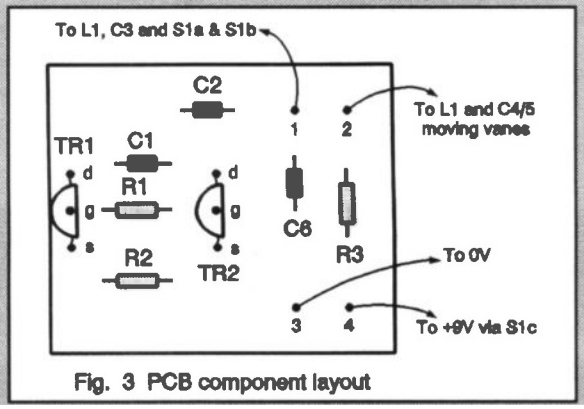


Fig. 3 PCB component layout

Constructing the coil

The construction of the variable inductor is shown in Fig. 5. Wrap cartridge paper around the 8mm diameter ferrite rod, applying balsa cement or a similar rapid setting adhesive to secure the layers, until an overall diameter of about 10mm has been built up. When the adhesive has hardened, the paper tube coil former will be quite rigid and the ferrite rod should be a good sliding fit. Close wind (i.e. turns touching) 110 turns of 30 SWG enamelled copper wire onto the former in the position shown. The ends of the winding can be secured by thin strips of masking tape or a dab of balsa cement. Keep the turns tight and even.

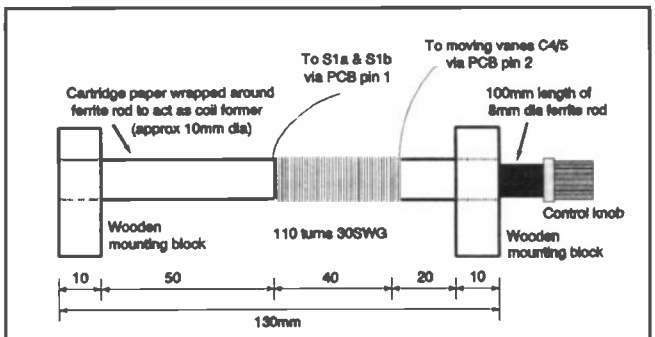


Fig. 5 Details of variable tuning inductor L1

The wire gauge is not particularly critical, but constructors are advised not to stray too far from the arrangement shown unless they are prepared to experiment a little with the length and position of the winding.

The coil former is glued into holes drilled into the *wooden* mounting blocks which secure the inductor to the lid of the case. Do *not* use metal fixings; they will act as shorted turns, reducing both the inductance and Q of the coil.

A small control knob fitted to the end of the ferrite rod makes it easier to adjust when the meter is being set to zero beat. The knob collet will, of course, need reaming or drilling out to accept the 8mm ferrite rod.

Assembling the parts

All the parts are mounted on the lid of a small plastic box and a hole is drilled in the box side to accept the

ferrite rod core of L1. A strip of aluminium holds the battery in place against one of the inductor mountings. If a physically large variable capacitor is used, it would probably be more economical to house the unit in a wooden cabinet.

Use reasonably heavy, single strand hook-up wire and keep the construction rigid, or the unit will be difficult to calibrate and use. Details of the switch wiring are given in Fig. 6.

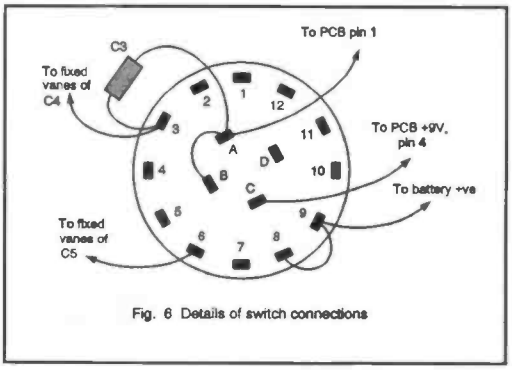


Fig. 6 Details of switch connections

Checking and calibration

Check component placement on the PCB, particularly the orientation of the transistors. Check for bad soldered joints and bridged copper tracks and make sure the off-board wiring is correct. If everything appears satisfactory, connect a fresh 9V battery and switch on. The current consumption should be around 4 mA.

I used low cost, 5% tolerance ceramic capacitors to calibrate the prototype unit. Ten 10pF and ten 100pF components will provide sufficient main calibration points, even for units incorporating 500 + 500pF variable capacitors. Constructors wishing to calibrate up to 10pF in 1pF steps will need the following standard values: 1.8, 2.2, 2.7, 3.3, 3.9 (2 off), 4.7, 5.6 and 6.8 pF. Connected in the series or parallel combinations given below, they will provide acceptably close approximations to the required markers. 1.8pF in series with 2.2pF gives 0.99pF (1pF). 3.9pF in series with 3.9pF gives 1.95pF (2pF).

5.6pF in series with 6.8pF gives 3.07pF (3pF). 1.8pF in parallel with 2.2pF gives 4pF. 10pF in series with 10pF gives 5pF. 2.7pF in parallel with 3.3pF gives 6pF. 2.2pF in parallel with 4.7pF gives 6.9pF (7pF). 3.3pF in parallel with 4.7pF gives 8pF. 2.2pF in parallel with 6.8pF gives 9pF.

Calibration below 5pF calls for very careful listening for precise zero beat, and a single 5pF marker should meet most experimenter's requirements. If the dial is simplified in this way, the standard capacitors up to 10pF in value can be dispensed with.

Switch on a transistor radio, tune it to Radio 4 on the long wave band, and place it about 1m from the unit. Set C4-C5 to full mesh, switch to the low capacitance range, and adjust the position of the ferrite rod. A whistle will be heard on either side of the correct setting. This reduces in pitch to a slow fluttering as the precise tuning position is approached. With care, even this fluttering can be eliminated as the unit is tuned to perfect zero beat with the Droitwich (Radio 4) carrier.

Connect a 10pF capacitor across the Cx terminals, reset C4-C5 to restore zero beat, and mark the 10pF calibration on the dial. Connect another 10pF capacitor to give 20pF and repeat the process. By adding more capacitors the calibration can be extended in 10pF steps until the vanes of C4-C5 are fully open. If sub-divisions down to 1pF are required, the combinations of standard value capacitors listed above must be connected across the Cx terminals.

Switch the unit to the high capacitance range, rotate C4-C5 to full mesh, and adjust the ferrite rod for zero beat. Following the procedure outlined above, connect 100pF capacitors to provide the main dial markers. Two 100pF capacitors in series will, of course, provide an intermediate 50pF marker.

It is a wise precaution to turn C4-C5 back to full mesh and check for zero beat before locating each dial marking. This reduces the chance of thermal drift (drift is very low) and vibration introducing errors. If a high degree of accuracy is required, 1% tolerance silver-mica capacitors can be used to provide 10pF and 100pF calibration points, and the much cheaper ceramic capacitors selected against these to produce the required number of close tolerance standards.

The dial calibration of the prototype unit is reproduced in Fig. 7. This reveals how connecting the small fixed capacitor, C3, in series with C4, spreads out the markers at the low capacitance end of the scale.

If you have any queries regarding this project please address them to the author c/o the HRT Editor, enclosing an SAE if a reply is required.

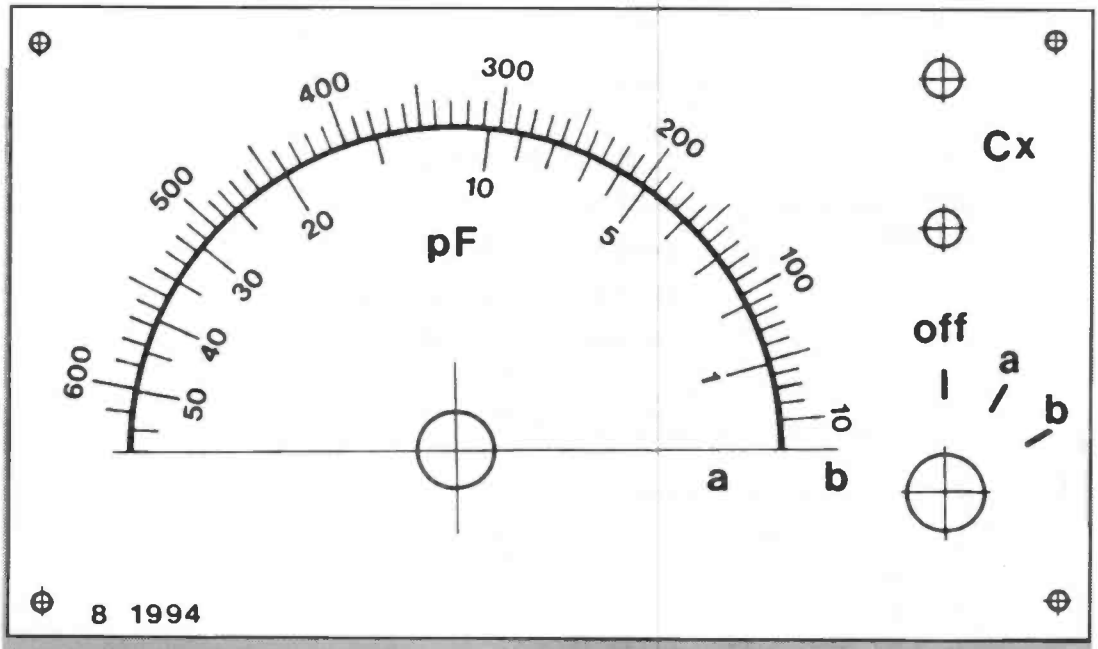


Fig.7 Dial calibration and front panel (ACTUAL SIZE)

Book Review - 'Thanks to Amateur Radio'

Reviewed by the HRT Consultant Technical Editor

'Thanks to Amateur Radio' was launched in the UK at the 1994 HF and IOTA Convention, by the author himself, Stan Gülich SM7WT. After hearing many encouraging remarks about the book from other attendees, I was very pleased to come away with a review copy on loan.

Unlike many other ham radio publications, this isn't a technical book. It's a human interest book. I took it with me on a short business trip to the Middle East, for some 'alternative reading' to the usual airline magazine during the plane journeys. I couldn't put it down, even when the meals arrived!

'Thanks to Amateur Radio' gives a true account of the good things that amateurs do, both on the bands and elsewhere. It details famous amateurs, it details others who are not so famous, many are just 'ordinary people'. Most of the book is filled with testimonies from such amateurs, altogether giving an wide and varied insight to the international friendship that comes from ham radio. Some of the stories are sad, most are happy, a few very moving. But after reading just the first ten or twenty pages, I felt proud to be part of this group. I'm sure others would also.

Words cannot really 'sum up' this book, you have to read it to appreciate its contents. It's touching, emotional, uplifting. Stan later showed me letters he'd received from other pleased readers, recommending the book. He didn't need to, I'd already decided I liked it, and I recommend it wholeheartedly.

'Thanks to Amateur Radio' is available in the UK from Martin Lynch (0181 566 1120) at £16.95 inc. UK p/p, and my thanks go to Stan

Components;

Resistors; *all ¼W, 5% or better.*

R1 *220k*
R2 *470R*
R3 *1k*

Capacitors;

C1 *100pF ceramic.*
C2 *820pF ceramic, 10%.*
C3 *82pF ceramic.*
C4-C5 *twin gang variable capacitor, minimum value 300pF per section. See text.*
C6 *100nF (0.1µF) ceramic*

Capacitors required for calibration: (all 5% tolerance ceramic or better).
10 off 10pF
10 off 100pF

If calibration in 1pF steps is required, 1 off of each of the following:
1.8, 2.2, 2.7, 3.3, 4.7, 5.6 and 6.8pF

2 off 3.9pF

Semiconductors;

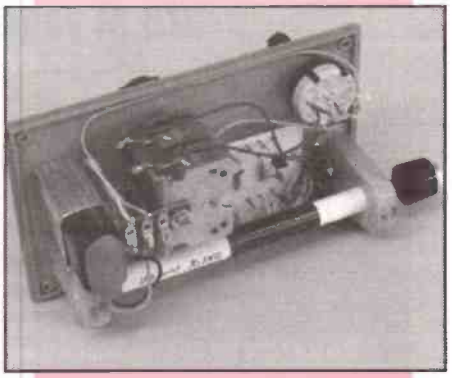
TR1, TR2 *2N3819*

Inductors;

L1 *30 SWG enamelled copper wire for coil, paper and adhesive for former, and 8mm dia x 100mm long ferrite rod for core (see text for construction details).*

Sundries;

4 pole, 3 way switch (one pole not used); control knobs, PCB materials, Veropins, hook up wire, test sockets, battery connector, scrap aluminium for battery holder, scrap wood for coil supports, plastic box for case, nuts and bolts, card for dial, Perspex for



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SCANNERS

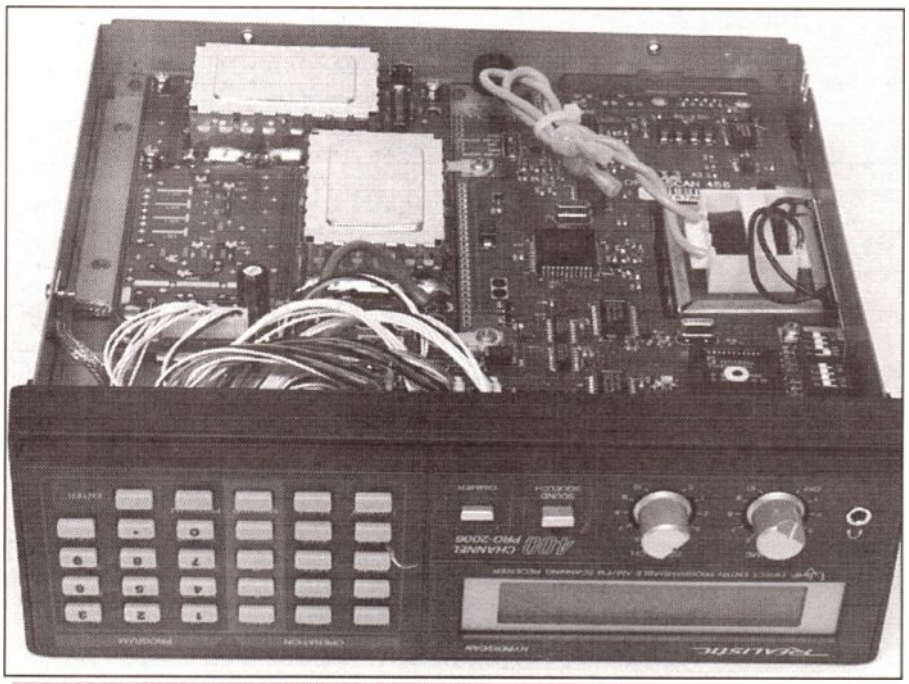
Bill Robertson finds his scanning activities get a little help from a PC

John Hodkinson writes to say he uses an AOR-1000 scanner, finding that it gives good performance, but he asks if there are any known mods to improve the performance still further?

Well, I know that many AR-1000s, in various countries, have coverage down to 8MHz. However, I do have a modification, which requires the use of a soldering iron inside the set, to extend the coverage down to 0.5MHz. Unfortunately it's too detailed to list here, but if any 'Scanners' column reader would like a copy, I've made arrangements for this to be available in return for an SAE, marked 'AR-1000 mod', sent to the Editor at the HRT address. John has already been sent a copy by the Ed, I hope you find it useful

Keith Goodchild writes to say he's interested in airband in a big way, and asks whether we could feature a section each month on airband listening. What do other readers think? If there's enough interest, I'll be very pleased to get something moving on this

A letter from Mr. Rigby tells me he has the Scanners 2 (detailing scanner projects) and Scanners 3 books by Peter Rouse, and says it would be nice to see the occasional small project in HRT for scanners. Well Mr. Rigby, HRT has already had a number of such projects, such as a wideband scanner aerial, an in-line scanner preamp, as well as receivers themselves, and the HRT Editor tells me there are more projects like this 'in the pipeline' for publication. Mr. Rigby also asks if there is any way in which the Yaesu FRG-9600 scanner (which Yaesu tell me is still 'going strong' and in current manufacture by them) can be made to halt for the duration of a signal, rather than for ten seconds and then resume regardless as it does normally. Yaesu UK tell me this is a built-in design feature of the set, and don't know of a 'mod', however they're now contacting their HQ in Japan about this. If a mod does materialise, I'll be pleased to detail it in a future issue.



The Optoscan PCB fits within the scanner itself

Optoscan PC Control for the PRO-2005/6

Further to my mention of this in last month's column, I've now been merrily scanning away, and finding all sorts of interesting frequencies, with a PC-controlled PRO-2006. All in the cause of this column of course

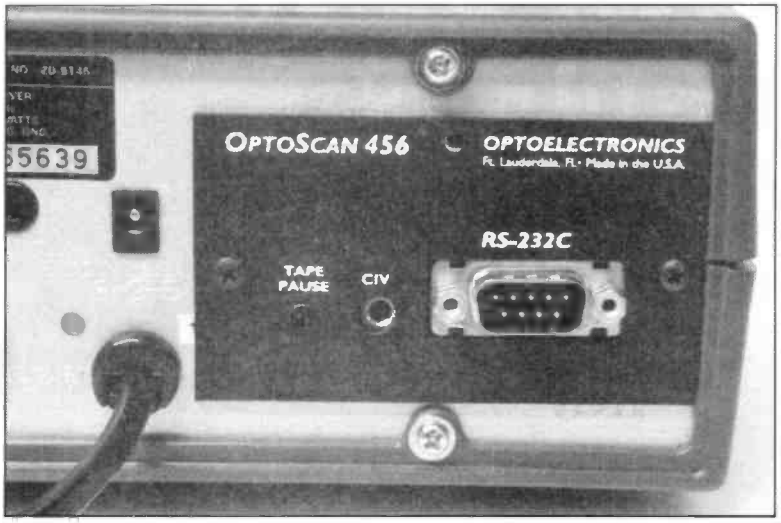
The Optoelectronics 'Optoscan 456' unit is a PCB which fits inside either the Realistic PRO-2005 or PRO-2006, adding full PC remote control to these already very popular desktop scanners. The overall frequency ranges stay the same of course, but the controller board adds CTCSS (sub-tone), DCS (Digital Coded Squelch) and DTMF decode facilities, together with a comprehensive 'logging to disk' capability, of what the set hears.

Installation

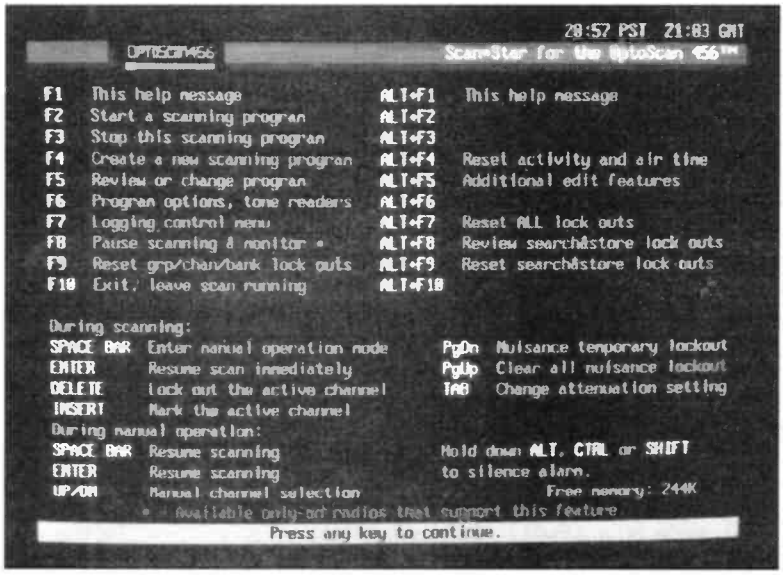
You only need a screwdriver, and a pair of cutters or modelling knife to 'trim' some connectors, to install the unit, there's no soldering needed at all. 'Step by step' instructions are given, and where on-board connections are needed, the unit has small 'grip prods' ready-attached to wires for connection. It took me around three quarters of an hour in total to install the unit. This fits entirely within the scanner, and rear backup battery cover is transformed into the remote control panel, with an RS-232 connector plus 'CI/V (Icom type remote interface) and tape recorder remote switching output lines.

Software

The interface is capable of being driven by a number of optional software packages (sold from the US at additional cost), however a fairly basic software package on 3.5in disc,



Newly-added rear panel connectors



'Bundled-in' software gives a variety of functions

suitable for a 286 or better PC is 'bundled in' with the interface to get you started. This came with 'demo' versions of other programs available at additional cost, although I found the supplied software did still have many useful features.

In use, the number of channels, scan banks, and the like are limited only by your imagination or what your computer can hold, and the software usefully logs the number of times a signal appears on each channel. More interestingly, it also displays any CTCSS sub-tone in use on the channel, even the numbers of any 'dialled' DTMF digits If you set the unit scanning across a given frequency range, it can display, or send to a printer, a list of all 'active' frequencies, together with all the above tone information. I left the unit in this 'logging mode' to scan across the amateur 2m band for 24 hours, and it nicely showed me which channels were in use in my area, and how 'busy' each one was. It even found an 'out-of-the-way' channel being used with CTCSS together with the commonly-used 3-digit DTMF selective calling system as fitted to many ham rigs, even identifying the DTMF IDs in use by the operators As I've mentioned, further optional software is available on the market for the interface, with a staggering range of operating modes including graphical displays of activity and even a 'spectrum analyzer' mode. The 'bundled-in' software was however completely functional, rather than being a 'demonstration version' or whatever, even though it did use an unregistered shareware utility for installation

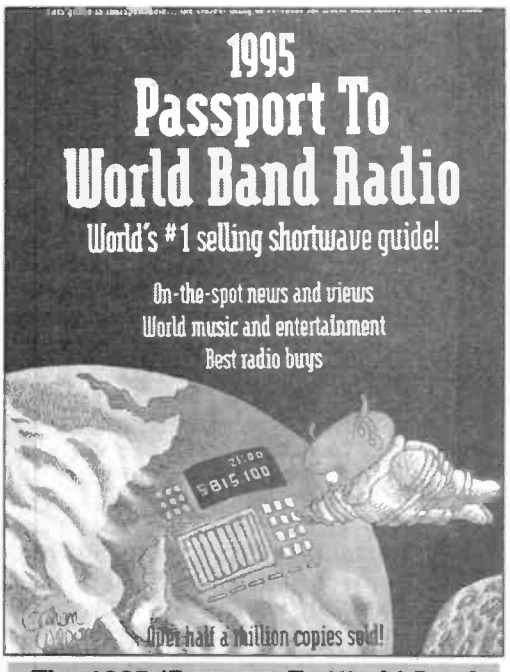
As you can see, I had great fun using the system, especially to find, and automatically record, channel-by-channel activity across a given band of frequencies. My only reservation would be that, for what I consider is already a relatively high price for the interface unit at £299, it would have been nice to have this 'better featured' software provided with it rather than opening the box, testing it in 'demo' mode, and finding I had to pay more money to obtain it.

My thanks go to Waters and Stanton (Tel. 01702 206835) for the loan of the Optoscan interface, and to Link Electronics (Tel. 01733 345731) for the loan of the PRO-2006 used for this review. For the benefit of readers, the remote-controlled system is available from either of these two companies.

1995 'Passport'

A few days ago I was pleased to receive a copy of the 1995 Passport to World Band Radio. Each year, I find this to be an excellent guide for the shortwave broadcast listener, and the 'Passport' always has a (well used) place in my listening station. As well as containing a very comprehensive frequency listing, in both 'country' and 'frequency' order, it also has an hour-by-hour "What's on tonight" listing of short wave transmissions and their program content, even a program 'rating' guide for each one It's also a very readable book in its own right, having over100 pages of listening topics plus articles and reviews on HF broadcast stations and receivers. With 536 pages, ISBN 0-914941-35-6, it's priced at £14.99 in the UK, and is available from a number of radio dealers and booksellers.

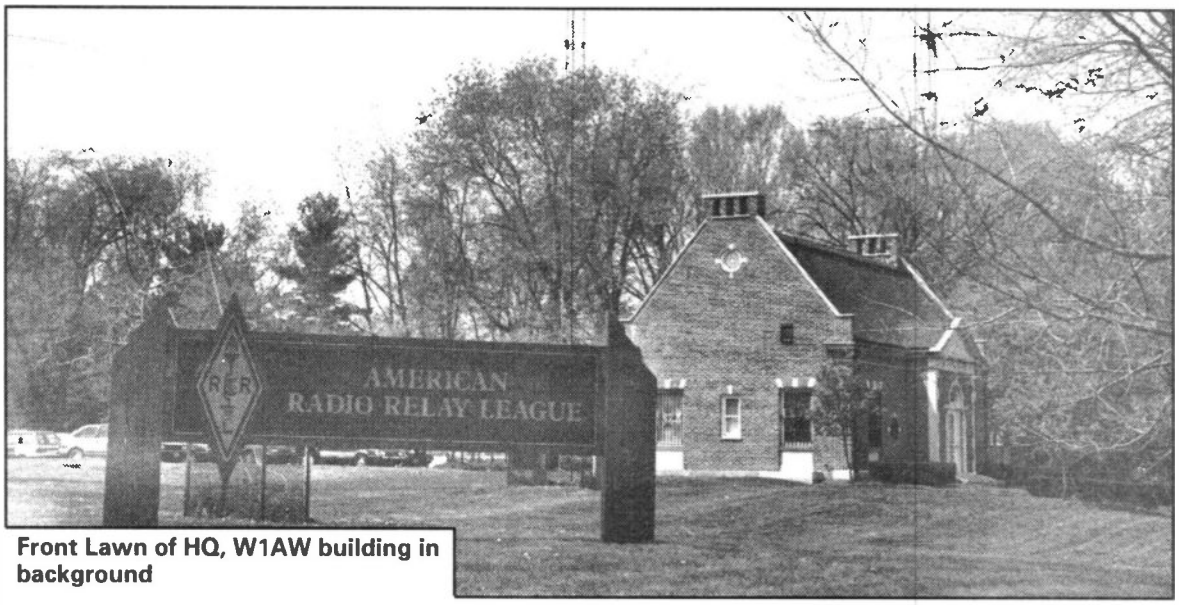
Our thanks go to Gazelle Book Services Ltd. (Tel. 01524 68765) for sending us the sample copy.



The 1995 'Passport To World Band Radio

A Visit To The ARRL Headquarters

Dick Pascoe G0BPS pays a visit to the American Radio Relay League in Newington, Connecticut



Front Lawn of HQ, W1AW building in background

It was at Dayton that I first met Brad Thomas KC1EX, the Advertising Manager of *QST*, the magazine of the American Radio Relay League (ARRL). I had stopped off at their stand to renew my membership, and in passing mentioned that I was travelling overland across Canada from Dayton to Connecticut and staying over for a few days. "Why not call in and see us then?" was his reply. It was only then that I realized just how close to their HQ that I was to be. So Niagara Falls, Buffalo, and lower Canada later....

As you drive down through Main Street in Newington the appearance is that of a typical small American town. Neatly laid out lawns, comfortable houses in a very pleasant setting. Turning a slight bend in the road as you approach some traffic lights at a crossroads, most drivers would not notice, but just behind some trees, slightly to the left ahead can be seen several towers with a multitude of aerials attached.

This is the first glimpse that we had of the Headquarters of what many amateurs recognize as the largest Amateur Radio club in the world, the ARRL (Amateur Radio Relay League). The entrance drive passes the leagues station W1AW, housed in its own building on the front lawn. Several towers 'grace' (depending on your views about towers) the lawns in front of the main building, and carry every type of aerial that an amateur may wish to see. Several more were mounted on the roof of the main building, others in the wide sweeping grounds.

The imposing front entrance, with flags of the USA fluttering in the breeze, greeted us as we made our way into the front entrance. This area is a small museum, with memorabilia of past amateurs covering the walls and even the ceiling!

The receptionist quickly found Brad, who told me that each and every person working at the HQ took their turn in showing visitors around, the average tour lasting about 45 minutes. Two hours later we bade him goodbye.

History Lesson

The ARRL was founded in early 1914, when Hiram Percy Maxim (of the Maxim gun fame) needed to contact another amateur some 30 miles distant. He failed to make the contact direct, but with the help of another amateur he passed the message. Thus the "Relay

The main entrance

League" was born. Hiram, known as *HPM*, was inducted as the first President of the League and remained so until his death. It grew from strength to strength to what it is today.

HPM was travelling by train to the west coast of the USA when he was taken ill with a throat infection, and after a short period in hospital died in February of 1936. The whole of the Amateur fraternity in the USA observed a period of radio silence in memory of this great man.

The League's amateur station had until that time used the callsign W1MK. It was located at Brainard Field in Hartford Connecticut, just a few miles from the present HQ. Just after HPM died, a flood devastated the field and the station with only the log books and some other printed records surviving. In May of 1936 the directors applied for, and received Hiram's old callsign of W1AW to be used as the new official callsign of the ARRL at their HQ in memory of that great man. This station is still available for use of visitors on production of a valid licence.

Full Size Lab!

The laboratory at the ARRL is a real eye opener to the visitor, especially the homebrewer. The amount of test equipment would make most constructor go green with envy. I certainly offered to help them clear it all out and tidy up the room, but to no avail. To some it may seem strange that a 'Club's' HQ should have a lab, but it should be remembered that every project that is published in their monthly publication *QST* is built and tested by lab personnel. They even have a fully equipped RF-proof room! Anything that does not reach their high specifications is not published until figures / details are agreed. These technicians also do all the product reviews that appear in QST.

Unlike the UK they go out and buy products off the shelf, and carry out full testing before writing the review. Thus, they are certain of getting a standard piece of equipment. These products are then sold off by tender at a later date and any member can bid for them.

I had the chance to meet and chat to one of these engineers, Zak Lau KH6CP, who is well known amongst UHF enthusiasts. A diminutive technician who delights in building designing fine UHF transceivers and associated equipment, often doing it 'ugly style'.

Moving further on through the passages we were surprised to see what appeared to be instruments of torture displayed in cases lining the passages. Brad explained that, even back in the 1920s, local amateurs were having

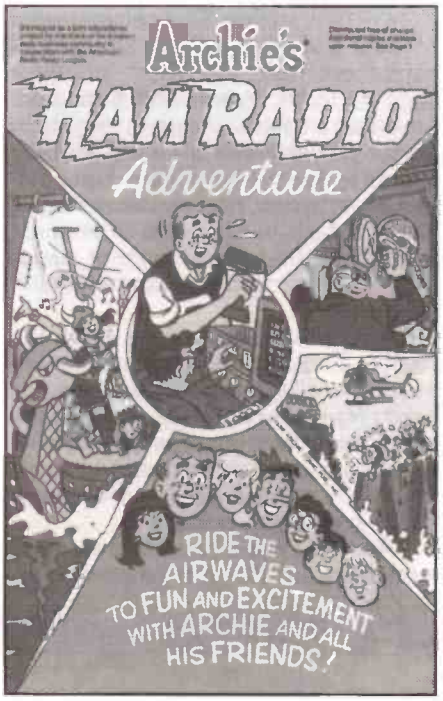
The labs

trouble with bad language and bad operating practices on the air. These items were used to persuade these people to reconsider!

Moving on through the corridors I found an office stacked high with piles of paperwork. As it was lunchtime the office was empty but imagine my amazement when I discovered that it was for the full time lobbyist of the ARRL. Yes, *full time!* It was their job to lobby Senators and Congress for the betterment of the hobby and to protect the amateur bands.

The ARRL take the future of the hobby very seriously. Whilst it is getting more common to see young children going around with a handheld, they still try to 'future proof' the hobby by getting more and more children interested. They often visit schools and show youngsters modes such as ATV to 'sell' the hobby. What child would miss the chance to appear on TV?

Another approach taken is the comic book approach. "Archie's Ham Radio Adventure" may sound a little twee but the adventures of Archie with his friends during a volcanic eruption coupled with apprehending a thief whilst a local dam is being broached may sound a bit over the top. But the story line covers the use of amateur radio to the full, every opportunity is taken to mention the hobby. It obviously appeals to the kids too.



QSL?

In 1991 the ARRL QSL bureau sent out a total of 2,954,810 cards from HQ. That is just under three million, which weighed in at a massive 9.65 tonnes! Just like our own bureau here, it is all done in a small room. Most Americans love to QSL much like the English. Another office visited also has an equivalent in Potters Bar, the Awards Office. But unlike ours, the popularity of the DXCC award is well known throughout the world and is the aim of many amateurs. Some seem to do it in days, mere mortals like myself will take years.

I mentioned QST earlier, a whole department is aimed at producing this quality magazine. The entire publication is prepared at HQ, all artwork and text is prepared before being sent to the printers as a finished product.

My guide Brad was very keen to keep his hand on this, as they were able to control the setting of the magazine so that it appeared exactly as they wanted it. It appears to be very successful too.

Volunteer Examiners (VEs)

Licence examinations in the USA are not carried out by the Government, Federal or State. There are several organization that carry out the exam, one of which is the ARRL. They have over 17,500 Volunteer Examiners, who are usually local amateurs able and willing to carry out the examination. I could have sat the exam if I wished back in

Ohio and thus gained a US Licence (had I passed), over 200,000 people had taken the test in this manner since it had started.

At this point, Brad was reeling off a string of statistics, as if from memory. I then spotted a list pinned to the back of the door. They cheat too!

All this makes life much easier for anyone who wishes to become an amateur in the US. The prospective Ham can do all his training at the local club, take the exam, and if passing can immediately apply for a licence. At the time of writing I understand that the US government was considering issuing a temporary licence to those that passed the test so that they could get on the air immediately, without having to wait until their proper licence arrives.

As we left the main building, I was called over to look at a very impressive memorial in the grounds. The inscription read "Those recognized here left the 'air' signed with their honor". Six names were listed, each had died at an amateur radio event. The first, Charles WD4DFK, had died in 1979 while helping out at a Boy Scout Jamboree, another, Kenneth W7KCM, whilst helping at a Red Cross exercise.

W1AW

The final part of my visit was the W1AW station, renovated in the early 1960s at a cost of over $500,000, all donated by members. It was again renovated in the late 1980s for the 75th anniversary of the league. As mentioned, this building housed the complete W1AW station. Three shacks were actually provided full of commercial equipment from the major suppliers such as Icom, Yaesu and Kenwood. American amateurs are permitted much higher power levels than we, so I expected to see the amplifiers. Not amateur ones though, but commercial ones. They can be in use for up to eight hours a day, and Brad explained that standard amateur models just wouldn't stand the pace.

Four towers are sited around the station, varying in height from 18m to over 33m, all with rotatable aerials for bands from 40m upwards. Single band aerials they were too! Yes, you *do* read correctly a forty metre band beam *is* fitted! Many were designed specially by Cushcraft for the station.

Amateur radio news is broadcast regularly from HQ, using a stacked array of four 20m beams facing the west to enable all on the West Coast to hear it all. A full satellite array should also be in place by now.

My final surprise before leaving was to bump into the well known Doug DeMaw W1FB. Doug had worked at the League's HQ for several years, and many of his books on the hobby will be remembered by British readers. He had worked as a technical writer and tester for most of his time. I knew Doug from the previous year, having stayed with him and his wife at their home in Michigan after George G3RJV and I had left Dayton. I was also able to introduce Brad to Doug as they had never met.

I ended my visit to the ARRL HQ with a smile, they had got it right in almost every department. They worked very hard at representing their members at all levels and appeared to succeed in every way.

I must thank all the staff of the League who stopped work to chat and help me without complaint. I was made very welcome and made a few friends. Special thanks to Brad Thomas KC1EX for all his patience and humour during our two hour tour.

Satellite Rendezvous

Richard Limebear G3RWL with AMSAT-UK news on the amateur satellite communication scene, plus an offer of satellite information sheets

Hopefully the UoSat Oscar-11 News Service will have re-appeared by now, to compliment this column with the very latest news. I'm sending the 'electronics news' text each week to the University of Surrey satellite command station for them to upload to Oscar 11, and the rest is up to them!

MicroSats roundup

We heard last month that *IO-26* had been brought back by its control station but it was not yet available for general use. Due to heavy workload and the desire to turn to different interests, I2KBD, appointed IK2VOO as main command station and IK2OYD as backup. After some training, on the 20th October IK2VOO successfully turned on ITAMSAT and exercised some on-board functions. Both transmitters (435.867MHz and 435.822MHz) were commanded on and some telemetry was collected. The spacecraft was in good shape, the battery well charged and the main parameters in nominal status. After a week of test, with the main purpose of better training in the commanding procedures, IO-26 was reset in preparation to the main software reload which is now awaited.

Dove is still making funny noises while work continues on new software. It transmits 90 seconds of AX-25 TLM, DAC Test (8 tones), and the 'slurred' voice. S Band is still off until further notice. I noticed yesterday that when the DAC and voice come on the downlink frequency shifts HF by one or two kHz.

Webersat controllers noticed over this last month that OSCAR-18 is increasingly harder to copy with a weak relatively steady tone of about 1200Hz in the demodulated signal. Their working hypothesis is this tone is due to a partial loss of the carrier suppression in the RC transmitter. For the RC PSK transmitter (437.102MHz +/-doppler), a ground-based solution suggested by Tom, EA2CLS, is to adjust the IF-shift of the receiver which probably works by shifting the insufficiently suppressed carrier into the skirts of the IF filter, suppressing the carrier on the ground. They are trying to find ways of fixing this, or working around it, on the satellite. They may also occasionally switch to the straight-PSK transmitter, 437.077MHz, which may now give better copy.

Fuji Oscar 20

FO-20 went back into analogue mode on 28th Sept and it is not known whether it was a result of ground command or not. The command station announced that the "Mailbox software ran away and malfunctioning of Under Voltage Control was confirmed by command station". On 19th Oct software reloading was completed and digital (Mode JD) transponder operation resumed.

FO-20 launched four and a half years ago, and its battery performance is still better than FO-12 in its early days. The characteristics of batteries have changed gradually, and the setting of battery voltage of the power control unit has been changed.

Short bursts

For information on upcoming Shuttle flights and other current NASA activities, look under "Hot Topics" on NASA's Spacelink BBS. Internet users may access the system via the TCP/IP address of 192.149.89.61. The BBS is located in Huntsville, Alabama, USA, and may be reached by landline at 00 1 205 895 0028.

A Proceedings was published by ARRL in conjunction with their recent Symposium, copies of which are available from AMSAT-NA Headquarters in the USA. For information, call Martha at 00 1 301 589 6062.

Keplers

Due to various timescales, Kepler tables are often out of date by the time readers would see them here. So, if you'd like a printed set of the very latest Keplers for all amateur satellites, send an SAE, marked 'Keplers', to the HRT Editor at the HRT office (address on page 58). You can also obtain an 'electronic' set from myself G3RWL on request, either by modem or HF/VHF packet, my packet mailbox is GB7HSN. When asking for Keplers from me, please say *which* satellites; *ALL* means about 200 satellites. ("all amateur sats" is adequate if that's what you want); requests on packet will get 2-line elements unless Amsat format is specified.

Ed's note - for beginners, Keplers are the elements needed by you or your computer to calculate where an orbiting satellite is at any time, so you can listen or communicate. You'll even be able to get a copy of a suitable PC tracking program in a forthcoming HRT software offer, in which you simply enter these Keplers. We're also hoping to have the latest Keplers available soon on our automatic fax/voicemail number.

New Amsat-UK info sheets available

Amsat-UK have a new series of information sheets available, covering an introduction to simple orbit prediction & tracking. These are six A4 sized sheets, if you'd like a set please send a £1.00 coin with your request, to the Secretary Ron G3AAJ, address below.

Amsat-UK also attend many rallies around the country, and are wondering about new items to sell at the Amsat stand which will be of use to visitors. Any suggestions from readers?

For further information about Amsat-UK contact: AMSAT-UK, c/o Ron Broadbent, G3AAJ, 94 Herongate Rd., London, E12 5EQ. A large SAE gets you membership info, and beginners and listeners as well as licensed hams are all very welcome. All new joiners get the USAT-P tracking program on 5¼ disk.

QRP Corner

Dick Pascoe G0BPS with a report on the 1994 annual QRP Convention

In last month's column I mentioned that 1994 was the 20th anniversary of the G-QRP Club, this of course makes this year the 21st year of the club. It has come of age! Who would have thought that in those dim days, 21 years ago, that the club would go from strength to strength, from an initial membership of a few dozen to the current membership of almost nine thousand. This year is very special to all members and I would think that the annual convention in October next will be quite something.

Dragonslayers QRP group members came along from Holland

G-QRP Mini-Convention 1994

The Annual G-QRP Club Mini Convention was held once again at the St. Aidan's Church Hall on Saturday 15th October last. This church is the parish church of the club's founder, the Rev George Dobbs G3RJV. The church hall is a fairly modern building, built on a slope, with the lower floor being used by a metal working firm. The upper hall is on the same level as the church with several rooms available including a nice kitchen.

As in previous years a good 'bring and buy' was evident, with goodies such as an Heathkit HW9 with WARC bands changing hands at £175. A few small faults were found on this but it was very soon on the air from the owner's caravan in the car park.

Yes, the car park is taken over for the weekend by several caravanners. This year just three were there, but in previous years we have had up to five vans in situ. There is no substance to the rumour that George is asking for planning permission to convert it into a Caravan Club certificated location!

The main hall is set out with a ring of traders devoted to the hobby around the walls. No 'black boxes' were to be seen, but lots of kits from the main suppliers, and lots of components available for the builder. Tables were piled high with wonderfully useful heaps of good quality junk. We were sorry to see that Alan from Lake Electronics couldn't get there this year and many were also disappointed to hear that Derek from Jandek had decided to cease trading and go back to university. We all wish Derek the very best in his studies.

As usual, the centre of the hall was set out with tables and chairs for visitors to take their ease and chat about their latest contact or project. Only a couple of homebrew units were on display this year, rather disappointing after the good display last year.

Advice and test facilities were available to home brew enthusiasts, with Ian G3ROO holding an inpromtu Q&A session on aspects of building various units. David GM4ZNX also brought along a modern Spectrum Analyzer to check out the equipment brought to the show.

Foreign visitors were also down, but the usual gang from the Dragonslayers QRP group from Holland were in attendance. Vit, OK2BWH was seen to be enjoying himself, as were the group of four Germans. Derry VE3QK showed off his homebrew QRP SSB transceivers.

Many members stayed over for the Saturday night, when plans for the next visit to Dayton and Friedrichshafen were made late into the evening. It was during this time that George Dobbs brought out the birthday cake to celebrate the 20 years of the club, George can be seen cutting the cake prior to every visitor enjoying a slice.

During this time the Index Labs 'QRP Plus' was put through its paces alongside Derry's transceiver, and compared to a Drake 'C' line pair. It was difficult to say which was best but I think the Drake just took it.

QRP ?

It's a well-known fact that all low power operators are total idiots. Who in their normal mind would attempt to maintain amateur radio contacts with Morse code using just 5W when we are permitted quite legally to use up to 400W out. Who in their right mind would attempt to use milliwatts to make a very difficult contact instead of just upping the power to perhaps 10W of CW?

Why use an antiquated mode such as Morse code anyway, when even a phone call can be made so very easy these days? The answer is not simplistic. How could it be, within a hobby as complex as ham radio?

Most QRP operators (QRP comes from the Morse code abbreviation to mean Low Power Operating) are dedicated hard working operators, who just love to get that contact with the lowest power levels possible. Of course this can be done with SSB, but the efficiency of that mode falls dramatically when compared to the simplicity of the 'on - off' sound of Morse Code.

There is no doubt at all that in marginal conditions that Morse code will get through when single (or double) sideband will fail. It is in these marginal conditions that we low power nuts revel! QRPers are egotistic, a very proud group who delight in doing it with less. We may revile those who just switch on their 100W rigs and transmit, even when our licences tell us to use the minimum power necessary for the contact.

Low power operating is a skill that can be learned like any other. Firstly, it is pointless for those with limited power and aerials to go onto the band and call 'CQ' just anywhere. So, there are centres of activity and ways that the newcomer can gain those precious first contacts to generate the interest to continue. Table 1 gives the international centres of activities, note that I do not call them 'calling frequencies'. For example, you will find QRPers up to 5kHz either side of 3.560MHz. Rather than call CQ, try 'tail ending'. Find a QRP QSO and wait for it to end. Then

call the strongest station. Being the strongest, he should hear you well also, then off you go.

It's not always easy. Signals will often be down in the noise level, and this is where a good receiver can be of great benefit. Remember that a good receiver is a boon, 5W of CW to the aerial is just that, irrespective of how it is generated. The latest £4000 rig wound down, or a simple one transistor transmitter, will produce the same RF at the same setting. The other receiver will not be able to tell the difference.

I well remember another amateur coming into my shack some years ago. He listened to the Morse code coming from my FT707 transceiver, and after a few moments asked if the loudest station heard was the one I was working. "No, can you hear another just under him?". "Yes", he replied, "Well the chap I am working is the one under him, the third one down". It does take skill and lots of practice, but the very best audio filters can be our own ears!

Most QRPers are also avid aerial builders. With such low power being emitted from the transmitter, we need the very best aerial we can get. Multiband arrays are the norm, but not essential. I know of several successful amateurs who do very well with simple dipoles such as my own.

The bottom line of any hobby is simple, you get out of it as much as you put in. The likes of Chris G4BUE with his huge aerial system and early / late operating hours will get those rare ones when the less active will miss out. Low power operators also tend to build their own equipment, but again this is not essential. There is a lot of dedicated QRP equipment on the market today, including the latest Argo 556 from Ten-Tec as well as the latest QRP Plus from Index Laboratories.

The final line on this topic this month is from Stephen in Sri Lanka. Stephen wrote to say that he has just passed his Sri Lankan Novice Licence and is interested in QRP operating. His remote village, Batapola is 65 miles from Colombo City. My reason for mentioning it, he lives on Millawatta Street. I like it!

My old friend Peter PE1MHO, with his wife Jeannette, have just arrived for a short visit with us. Peter tells me that he requires just one more country for DXCC on 6m. All with QRP power levels too. Peter has our equivalent of the 'B' licence, but has also worked a couple of countries on the key. Lets hope there is another opening soon for his 100th.

Well, that's it for this month, news and views to me via the Editor, Packet to GB7RMS, Email to Dick@kanga.demon.co.uk or direct to Seaview House, Crete Road East. Folkestone CT18 7EG.

QRP Centres of activity (USA in brackets)

	CW	SSB
160m	1.843MHz (1.810MHz)	(1.910)
80m	3.560MHz (Novice 3.710MHz)	3.690MHz (3.985MHz)
40m	7.030MHz (7.040MHz, Novice 7.110MHz)	7.090MHz (7.285MHz)
30m	10.106MHz	
20m	14.060MHz	14.285MHz
15m	21.060MHz	21.385MHz
10m	28.060MHz (Novice 28.110)	28.385MHz

From My Notebook

Geoff Arnold G3GSR explains why realignment can sometimes be ill-advised, but when it is necessary, gives a few pointers on how to go about it

This month I am returning once more to the topic of receivers, in particular simple superhets. I am sometimes asked to give advice on how to go about realigning receivers. My first inclination is to say that unless someone has been fiddling with the trimmers or cores, or there's been a component failure in one of the tuned circuits. It's very seldom that you need to do any realignment. The exception might be an old set, where component values may have drifted with time, or the adjusters on pre-sets may have fought their way free from whatever locking gunge was originally applied, and moved from their optimum positions.

My second inclination is to tell the questioners that if they have to ask, they shouldn t be thinking about tackling the job anyway. However, we all have to start somewhere, and I would recommend a little practice on a cheap and cheerful (and preferably expendable) medium-wave superhet broadcast receiver, either valved or transistorised, as an introduction to the effect of various adjustments.

If a full service sheet or manual for a receiver is available, it should give step-by-step instructions on realignment, including any special features or procedures that have to be taken into account. However, doing something as complicated as realignment by rote can be risky if you don't have an understanding of what you are doing and why you are doing it. If you have neither the service details nor the understanding, leave well alone!

The first step in receiver realignment is to check, and if necessary to adjust, the tuning of the intermediate amplifier stages. Only after that has been done can you sensibly tackle the alignment of the front-end and local oscillator circuits. However, before getting onto the question of realignment, it will be helpful to explain a little of the most basic principles of receiver design. To do that I shall talk about the front-end and oscillator circuits first.

Design Principles

The whole idea behind the superhet is that the main selectivity - in other words the receiver s ability to select one station from the middle of a whole range of stations - is obtained at one fixed frequency.

Sometimes, we may want to listen to just one particular station all the time, but usually we would like to be able to tune around some band of frequencies in order to choose different stations to listen to. If all our selectivity is to be at one fixed frequency, we have to convert the incoming received signal from the aerial to our fixed frequency, which is then called the intermediate frequency or IF.

The term intermediate frequency confuses some beginners, who get the impression that it must mean a frequency which lies somewhere numerically between the radio frequency of the incoming signal and the audio frequencies of the sound output produced in the receiver s loudspeaker or headphones. It may agree with that definition, but it s quite likely that it won't. In fact, intermediate frequency simply means a frequency used in some intermediate stage or stages of a receiver.

The conversion to the intermediate frequency is done by mixing or heterodyning the incoming signal with the output of a local oscillator (LO), having arranged that the frequencies of the signals are separated by an amount which is equal to the IF. The stage where the mixing is done is termed variously the Mixer, First Mixer, or First Detector. Sometimes it is called the Frequency Changer, although that term is also applied to the combination of mixer and local oscillator.

To allow us to tune over a range of frequencies, the local oscillator must obviously be variable in frequency. A couple of examples will help you to understand. To keep things simple, we'll confine ourselves for the moment to a broadcast bands receiver covering just the medium wave band of 550 to 1600kHz. The IF will usually be chosen to lie somewhere in the range 450 to 470kHz (a band reserved internationally for this purpose - in theory at least!), let's say 460kHz.

When tuned to the bottom end of the band, at 550kHz, in order to produce the required IF signal at 460kHz, the LO must be at either 550 + 460 = 1010kHz or at 550 - 460 = 90kHz. In each case, the fixed-tuned IF circuits select the difference of the incoming and LO signals: 1010 - 550 = 460kHz; or 550 - 90 = 460kHz. Any other mixing products will fall outside the IF passband, and will be rejected.

At the other end of the medium wave band, at 1600kHz, the LO must be at either 1600 + 460 = 2060kHz! or 1600 - 460 = 1140kHz. Again, it is the frequency difference of the two signals which is selected by the IF circuits, in the first case LO *minus* incoming signal, and in the second case incoming signal *minus* LO.

The fact that there are two ways of achieving the same end result gives a hint that this process of mixing two signals to produce a third might bring with it some hidden snags, and indeed it does. Taking my first example, where the LO is running at a frequency of 1010kHz! let's suppose that also coming from the aerial there is another (unwanted) signal on 1470kHz. If this arrives at the mixer and combines with the LO signal, one of the resulting outputs will be at 1470 - 1010 = 460kHz, our IF! The tuned IF stages will not be able to tell the difference between the wanted and unwanted signals, and will amplify both equally. The frequency of the unwanted response is called the Image frequency or Second Channel .

As 1470kHz is within the medium wave broadcast band, it is quite likely that there will be a strong signal on that frequency. At the top end of the band, where the LO is running at 2060kHz, the image frequency will be 2060 + 460 = 2520kHz! This is outside the broadcast bands, but is within a band reserved for shipping radiotelephone services, and could still be a problem.

So, obviously it will not be possible to have a superhet receiver with all its selectivity in the IF stages; we must have some

selectivity between the aerial and mixer, in order to drastically reduce the level of the image signals. Because the interfering signals in our examples are higher in frequency than the wanted signals, you might think that this selectivity could take the form of a fixed frequency low-pass filter. A nice idea, and one which is in fact used in some applications, such as modern HF communications receivers using up-conversion to high IFs in the region of 60 to 80MHz. In our simple broadcast receiver it won't work, though, because the image frequencies of the bottom end of the band lie within the top end of the band. If we have a filter cut-off frequency low enough to do the required job when the set is tuned to 550kHz, the top end of the band will be dead.

Instead, we need the RF or front-end selectivity to be tuned across the band in step with the LO, but always separated in frequency from it by a fixed amount, equal to the IF

Tracking

In the traditional valved superhet broadcast receiver, the station tuning is usually accomplished by means of a two-gang variable capacitor, with a maximum value of 500pF when the vanes are fully meshed, and a minimum value of perhaps 15 or 20pF with the vanes open. Added to that would be the value of trimmer capacitors (see later), wiring stray capacitance and, in the case of the front-end circuit, the capacitance of the aerial and its feeder. These might add up to perhaps 50 or 60pF, which means that the values of capacitance swing from maximum to minimum are in a ratio of around 10:1. Because the frequency of an LC circuit is proportional to the square root of the capacitance, this translates to a frequency swing of around 3:1, which fortuitously is just what is required to cover the medium wave broadcast band.

Referring back to our figures for the maximum and minimum LO frequencies to cover the same medium wave band, we find that in the case where the oscillator frequency is above the signal frequency, the frequency limits are 1010 and 2060kHz, a ratio of around 2:1. However, if we try to put the LO frequency below the signal frequency, the limits are 90 and 1140kHz, a ratio of almost 13:1. To provide that frequency ratio would need a capacitance ratio of 160:1, which is clearly impossible with our 500pF variable. So, for medium wave receivers, oscillator high (i.e. LO frequency above signal frequency) is the rule. When we get up to the short wave bands, the figures work out quite differently, so it is possible to run oscillator low , and to gain benefits in terms of oscillator stability in the process. I'll leave you to work out the sums for yourself - choose the 10m amateur band for a start.

Because the front-end tuning on our medium wave receiver needs to cover a frequency swing of 3:1, and the LO tuning is just 2:1, we obviously have a problem if we intend to use a ganged variable capacitor with two identical 500pF sections. Two-gang capacitors having a smaller (lower maximum capacitance) oscillator section, to match the required swing of the LO, are (or were) made with the vanes specially shaped to give the matching laws (change of frequency with change of angle) for each section. The alternative is to lower the effective value of the oscillator section by adding external components.

Padding

How can that be done? Well, if you require a capacitor of a particular value, and you only have ones with larger values in your component stock, what can you do? Put two in series!

Where this is done in a receiver to reduce the swing of a variable capacitor, the series capacitor (which may be either fixed or variable, depending on the design of the tuned circuit) is called a padder (Cp in Fig. 1a). Adding a typical 500pF padder in series with a variable capacitor having a swing of 50 - 500pF reduces that swing effectively to 45 - 250pF, a range of 205pF. Remember that a quick way to calculate the total value of two capacitors in series is to use the same formula as for two resistors in parallel - multiply the two values together and divide the result by their sum.

Reducing the value of the padder to 250pF would change the swing to 42 - 166pF, a range of just 124pF. So, by using a variable (pre-set) padder, we could tailor the band coverage, produced by

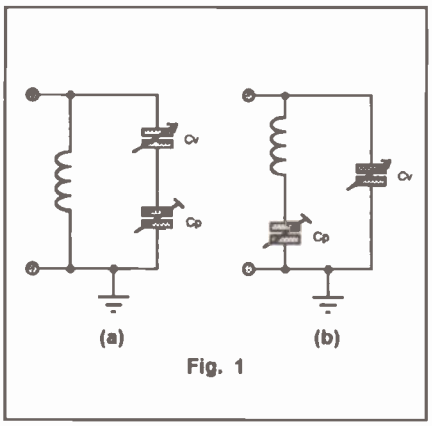


Fig. 1

swinging the variable capacitor from fully closed to fully open, to whatever is needed to match the specified frequency range the receiver.

Notice that the modifying effect of the padder is much greater at the 500pF end of the swing (variable capacitor closed), where the tuned frequency is lowest, than it is at the 50pF end (variable capacitor open), where the tuned frequency is highest. This fact is vital in understanding the realignment process.

Putting the padder in the position shown in Fig. 1a presents

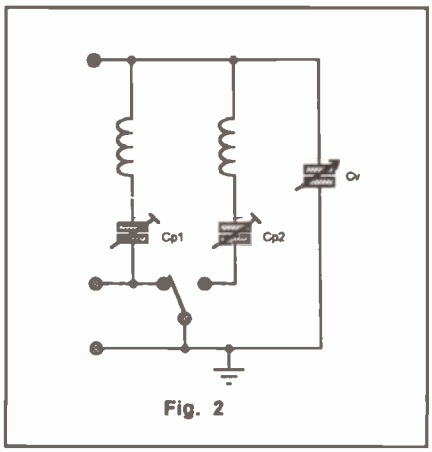


Fig. 2

a serious mechanical problem, in that the frame of the tuning capacitor Cv is no longer at ground or chassis potential. It makes no difference to the operation of the circuit from an electrical point of view to put it in series with the bottom (earthy) end of the coil instead (Fig. 1b) and this is what is usually done in practice. In multi-band sets, the medium and long wave coils each have their own padder, selected along with the coil by the wave-change switch (Fig. 2).

That's it for now we've run out of space! See you next month.

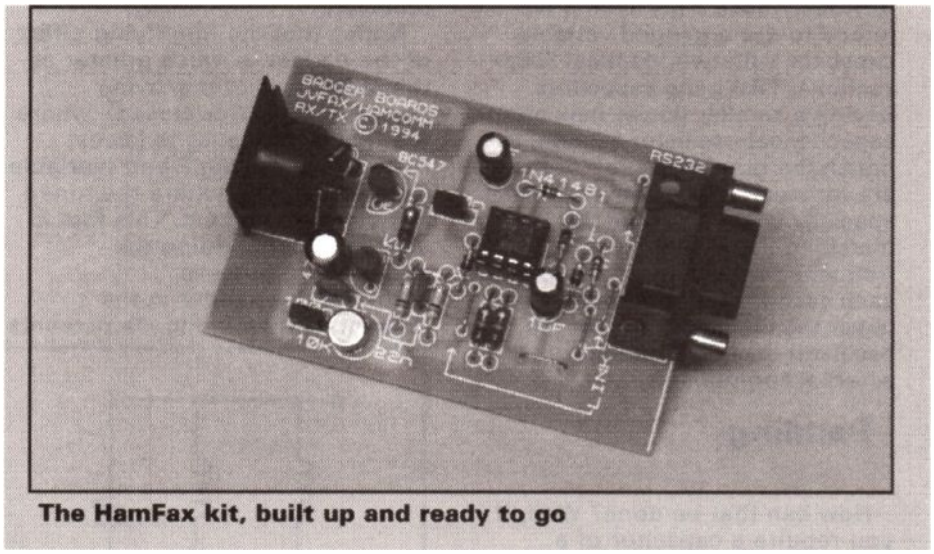
Data Connection

Our resident packet radio SysOp reviews a low cost multimode data kit for PCs

Hello, welcome to the 're-styled 'Packet radio roundup', which if you read last month's issue has now been extended to cover all things 'digital' in our world of amateur radio communication. So, without further ado, I'll 'kick off' with a look at one of the latest low-cost offerings for data use on the air.

The 'HamFax' kit

This kit is designed for use with a PC running appropriate 'processing' software, such as JVFAX (as supplied in our HRT software copying service) and HamComm. It's available from our friends at Badger Boards at just £21.00 plus £2.00 p/p, complete with



The HamFax kit, built up and ready to go

copies of JVFAX V.7 and HamComm V.2, and it lets you get up and running with multimode data, SSTV, and FAX transmit and receive on either the HF or VHF/UHF bands when coupled up to your receiver or transceiver as appropriate. For the uninitiated, this clever software employs the processing power of your PC for demodulation and generation of the various communication modes, and you can send and receive full-colour Slow-Scan TV etc as well as receiving and decoding Morse, plus Weather Fax signals, even in full colour with a 'slide show' format just like you see on the weather forecast on your TV.

The kit was first launched at the Leicester show, where it was demonstrated at the Badger stand. It was a 'sellout', indeed there was quite a waiting list created for 'mail order' kits to be sent on after the show! In chatting with proprietor John Badger, we agreed HRT readers would be interested in this, and I received a kit to build up shortly after the show!

A very well made roller-tinned and silk-screened PCB is supplied together with all PCB mounted components and assembly instructions. These even gave details of component identifications, such as resistor colour bands, and I feel it should be capable of being easily built by anyone who knows how to solder. The PCB-printed component identifications were superb, and in my view excellent for such a low-cost kit. It took me around 15 minutes (only!) to build, and yes, it did indeed work first time.

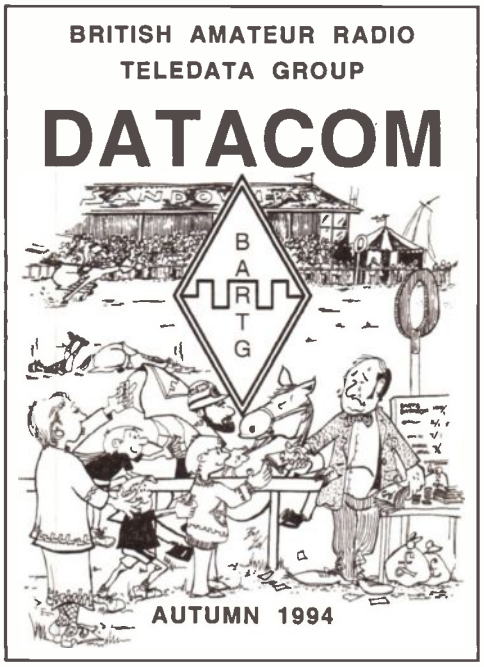
The kit comes without a case, you can easily add one if required, and if you're not too sure of your soldering skills you can get a ready-built unit for £25.00 plus £2.00 p/p.

For radio interfacing with RS-232 port, the 'usual' 741 IC is employed as an audio limiter/level shifter, and on transmit a passive audio filter is used for the audio together with a transistor PTT interface. The board has its own 9-pin RS-232 connector, to either plug directly into your PC's RS-232 port or via a standard RS-232 pin-to-pin lead which you can obtain at most computer shops. The radio port is a 5-pin PCB mounted DIN connector, with lines for receive and transmit audio, ground, and PTT (push-to-talk). If you already have a Baycom unit (which uses a different modem) for VHF/UHF packet, you'll find the in/out connections are exactly the same as this unit, so there's no re-wiring needed between your rig.

If you're a PC user, this can be a superb way to 'start out' on a wide range of data modes at low cost. You can obtain the HamFax unit direct from Badger Boards themselves (Tel. 0121 384 2473) or from their agents at ham exhibitions and rallies around the country.

Radio data group news

The British Amateur Radio Teledata Group, who run the ham radio data rally at Sandown Park each year (see this column in the Dec 94 issue), are hoping for 1995 to also run a simultaneous Data Convention, with speakers and maybe even demonstrations, covering a range of data subjects. They ask the questions; "Would you like to attend a data convention?"



'Datacom' from the British Amateur Radio Teledata Group

DC

OCT/NOV 1994

MAXPAK
DIGICOM
NEWSLETTER

THIS MONTHS LATEST NEWS

GB7MAX BBS

At the August committee meeting, discussion took place regarding the increasing number of 'crashes' occurring at GB7MAX. It was thought this was in part due to the increase in the number stations using the BBS, and the speed in which the data transfer could take place. As a direct result of these discussions, the following changes were made during the second week in September, by the SysOp, Mick G1DKI.
1. The mother board has been upgraded from the existing 386 SX 25 to a 486 DX2 66
2. The RS232 facility of the multi port expansion card has been replaced with a buffered 'super fast'.
5 * RS232 port expansion serial card.
Further 'fine tuning' is scheduled, as new and improved hardware becomes available. It is hoped that users will find a much improved service available on GB7MAX over the coming months.

GB7BHM The callsign has been re-issued, this time to, Bob G1LOA together with an N.O.V. for immediate operation. The BBS will be located in West Bromwich and hopefully will cover a similar area to the previous BBS. *MAXPAK* is providing support for the new SysOp.

NODE NEWS

WV NODES

The committee discussed the switch to 9k6 baud operation on the trunking nodes and came to the decision that WV11 should change from 1200 baud to 9k6 baud on 1st. December 1994. A letter has been sent to the stations who use this node for forwarding trunk mail, advising them of the impending change. Replies have been received stating that some are either ready or making provision for the change.

AP NODES

The upgrading at this node site has been discussed by the committee and as a result, Bob G8KHV and Drew G7DMO have carried out a site survey. They are now checking the availability of the necessary hardware and making detailed drawings etc. setting out our proposals before submitting them to the site owner. We also plan to replace both the GB7AP-2 & GB7AP-7 rigs with modern transceivers.
It is also planned to install a dedicated 70cms trunk link to the WV site as part of the upgrading work.

Maxpak Digicom 1 Issue 15 (Oct/Nov 1994)

The bi-monthly 'Digicom' from Midlands-based Maxpak

and "What sort of topics would you like to be presented?". You can send your ideas to the rally manager Peter G8VXY (Tel. 0121 453 2676) or Ian G4EAN @ GB7BAD (Tel. 0115 926 2360). The BARTG publish an excellent quarterly, 'Datacom', sent free to their members, details this time from their Membership Secretary, Peter G6LZB @ GB7BST (Tel. 01923 220774) News from ***Maxpak***, the Midlands AX-25 Packet Group, is that their club-run BBS, GB7MAX, has been upgraded from the earlier 386 SX 25 to a 486 DX2 66, plus buffered 'super fast' RS-232 port expansion cards. This should hopefully 'keep up' rather better with the increasing amount of data traffic the BBS handles! Their latest bi-monthly newsletter, 'Digicom' also has a feature on the HUB 5/29 IP routing experiment, which should be interesting reading for IP'ers out there. Further details on Maxpak from Richard G1NZZ @ GB7MAX (Tel. 01973 262287 19.00-22.00 Mon-Fri, 10.00-22.00 weekends).

CTRL-Z, end of message

That's it for this month. My apologies to readers for any delays in replying to packet messages, my local BBS recently moved site to a different town, and my station is now a 'dead spot' in its coverage! We're working on getting a local 'link node' up a running, *very* fast! You can contact me either by phone or fax on the HRT numbers, packet with a message to G4HCL @ GB7XJZ.#48.GBR.EU (I'm running a tower-mounted beam to get into it now!), and hopefully also soon by modem 'mailbox' at the HRT office.

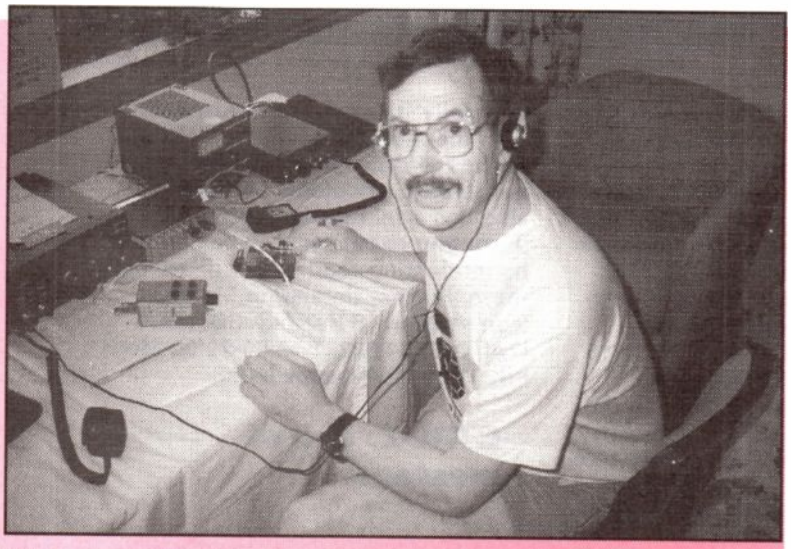
VHF/UHF Message

Geoff Brown GJ4ICD gives an account of the UK 6m group's DXpedition to Jordan

The UKSMG DXpedition to Jordan in June/July made about 1800 QSOs on 6m with about 1200 different callsigns in the log. A fantastic 49 countries were worked, including the USA, via multi hop or cordal hop 'ES'.

Conditions on 144MHz were very poor, however, 9H (Malta) was heard on tropo twice, and 5B4 (Cyprus) was worked. Due to the continuous QRM from the Syrian Ambulance service on 144.300MHz it was not possible to listen on the band all the time, and no sporadic 'E' was monitored on 144MHz.

The UKSMG operators were (in order of arrival), Neil G0JHC; Geoff GJ4ICD; Nick G3KOX; Tom DL7AV; Paul G4CCZ; Mike G3SED; and Chris G3WOS.



Nick, G3KOX operating JY7SIX

The DXpedition callsign was JY7SIX and was based at the Marriott Hotel in Amman, the capital of Jordan. The equipment used was as follows; 50MHz main TX/RX FT650, loaned by SMC Ltd., 144MHz station (100W) loaned by Steve G4JCC, the HF station was an Icom 736 loaned by the Chairman of Icom UK Ltd. Various aerials were used for HF, but the 50MHz aerial was a 6 element yagi on an 8 metre boom, built and donated by Mike G3OIL.

The aerial was mounted on the top of the Marriott Hotel (about 60m high) and had a clear take-off in all directions.

Country 'firsts' on 50MHz were as follows: SV1DH (first contact on 50MHz), I2ADN/8, YU7AS, SV9ANK, 9H4CM, JY4MB, ER5OK, Z32BU, F8MP, GJ8ORH, LZ1KDP, YO7VJ, OZ3ZW, DJ4SO, OE5OLL, 5B4JE, ES6PZ, OH2TI, G3HBR, GW3LDH, LA9ZV, SM3EQY, S59A, 9A2SB, R3VHF, EI7GL, PE1LCH, CT1BH, SP4TKK, CN8ST, OK2JI, EU1AA, HB9RUZ, ON4GG, 5T5JC, GD3AHV, GM4WJA, OM3LQ, LX1JX, WD4KPD, EH3ADW, EH6FB, GU2HML, T70A, GI0OTC, 9K2USA, UU8JJ, T97V, and UX0FF.

7Q7RM was heard at 319 but no contact took place, so there *was* a little TEP, but in June this was not expected.

Sunday June 5th was a special day for the UKSMG and JY7SIX. Mohammed, JY4MB had arranged for a special visitor to come and see the shack. Around 9.00am, His Royal Highness Prince Raad Ibn Zeid, JY2RZ, arrived at the Hotel. Mohammed and Richard Lyon, Manager of the Marriott, met HRH first, followed by myself, Neil, and Nick. The next hour was spent talking about our DXpedition. HRH had a look at the computer log and congratulated us on our "fine contacts". In fact his exact words were, "We are very happy to have you in Jordan, staying with us and contributing your technical expertise. Thank you for coming, for us it is a great honour, on behalf of His Majesty, I am pleased to get to know you."

After some Arabic coffee provided by the Marriott in the adjoining hospitality room, the presentation of the JY6ZZ 50MHz beacon, (built and donated by GJ4ICD and Lawrence, GJ3RAX), was made by myself in my capacity as Chairman of the UKSMG. Also presented was a Diamond 6m vertical donated by Waters & Stanton for use with the beacon.

Thursday June 9th brought the first of the really *big* openings. The band was open from early morning until late evening. Nick G3KOX and myself shared the operating during the day and at 5.00pm Mohammed took me on a trip to Jerash and the mountains to the north of Amman. On returning at around 9.00pm, Nick was discovered in a state of total exhaustion, and was more than happy to see another operator! The log for Thursday contained nearly 400 stations, but the best was yet to come.

The record-breaking contact and the highlight of the DXpedition took place later that night, with WD4KPD being worked at 2145z (0045 local time). Nick and I were taking a well-earned rest when weak CW could be heard. We dashed to the radio and listened intensely, it was WD4KPD. The contact took nearly ten minutes to complete due to heavy QSB, the distance was nearly 9800km, possibly a world record via 'ES' propagation.

The DXpedition finished in early July, and was an outstanding success. 49 country 'firsts' were made, and now Jordan has access to 50MHz.

It wasn't all radio whilst in Jordan. Neil, Chris, Mike, Paul and Tom visited Petra, we were also taken by Mohammed to the Dead Sea, Jerash and other historical places in Jordan.

The UKSMG and the team would like to thank:

His Majesty King Hussein, JY1, for the generous permission that allowed the UKSMG to use 50MHz in Jordan for the first time.

Colonel Ali Shukri, JY3AK, for helping with the formalities of the permits.

Mohammed Balbisi, JY4MB, Secretary of the Royal Jordanian

L to R: Mohammed, JY4MB, HRH Prince Raad, JY2RZ, and Geoff, GJ4ICD presenting the 50MHz beacon JY6ZZ

Radio Amateur Society (RJRAS) who spent a tremendous amount of his time enthusiastically helping the group of 6m enthusiasts to make the DXpedition an overwhelming success.

Robin Bellerby, G3ZYE, for the initial help and making contact with the Palace in Amman.

Richard Lyon, Manager of the Marriott Hotel, and all the staff of the hotel who made the stay at the hotel such an enjoyable one. We'd like to especially thank him for the significant discount on 5-star room rates, which was much appreciated! We would also like to thank him for his support in allowing access to the roof at all times of the day and night.

Royal Jordanian Airlines and especially Emma Bodnosian in the London office for all their help, especially the reductions on airfares and the discount on excess baggage.

Members of the UKSMG for the financial support the Group gave us. This was used to reduce the large amount of money each of the team members had to contribute to the DXpedition. We also thank Byron, G6HCV, for enthusiastically collecting money on behalf of the team.

Mike, G3OIL, for the 'permanent' loan of the 6-element beam.

Geoff, GJ4ICD, and Lawrence, GJ3RAX, for the manufacture and donation of the JY6ZZ beacon.

Last but not least the UKSMG would like to thank all of the equipment sponsors without whose support the DXpedition would have not been possible: SMC Ltd, Nevada, Icom UK Ltd, Kent Keys, RN Electronics, and Waters & Stanton, plus HRT for the advance publicity.

If you would like to read the full story, and see the pictures (35 pages!) then contact Neil G0JHC or Chris G3WOS for Issue 43 of Six News.

Neil G0JHC operating JY7SIX

Other news

The RSGB Propagation Studies Committee is setting up an experiment to investigate 6m tropo propagation. Computer controlled CW transmissions (30 seconds every hour, 24 hours a day) will be made on 50.275MHz from the station of Chris Deacon, G4IFX, beaming due south from Darlington (IO94FM). Automatic monitoring by a number of stations at 300km range will be carried out over a period of at least a year. 50MHz operators in the south of England with reasonable stations and a good take-off to the north who are interested in taking part are invited to contact Ray Cracknell, G2AHU for further information (Tel. 01568 780614).

Renny, 9A3FT dropped a line with the news that his 'score' on 50MHz was 55 DXCC countries, and 230 squares, from May 93 to Sept 94. Great going from Croatia, despite the problems!

Renny is also very active on 144MHz, 432MHz, and 1296MHz, and his letter only took six days to arrive in Jersey. Unlike Ela, G6HKM's letter, from the UK, which took *ten days*.

1995

Another cold month past, and the start of a new year, let's hope 1995 will bring all HRT readers good DX on the VHF/UHF bands. Thanks to the UKSMG's journal *Six News* for the Jordan input this month. News, views and photos welcome please to: Geoff Brown, TV Shop, Belmont Rd., St. Helier, Jersey. Channel Islands, Fax/Phone 01534 77067 anytime.

HF Happenings

Don Field G3XTT says "Why not have a go on 10MHz?"

I am writing this month's column shortly after the CQ Worldwide Phone contest at the end of October. Although there were no major openings during the contest to the US or Japan, all the HF bands were in remarkably good shape considering that we are so far down the sunspot cycle. There was a solar disturbance on the Sunday which knocked out the higher bands, but nevertheless 10 metre contacts were possible with, for example, New Zealand, Australia and Japan. To give a flavour of the level of activity, shown here are the country and zone (40 zones maximum) totals worked by G0KPW, the large multi-multi station near Ipswich.

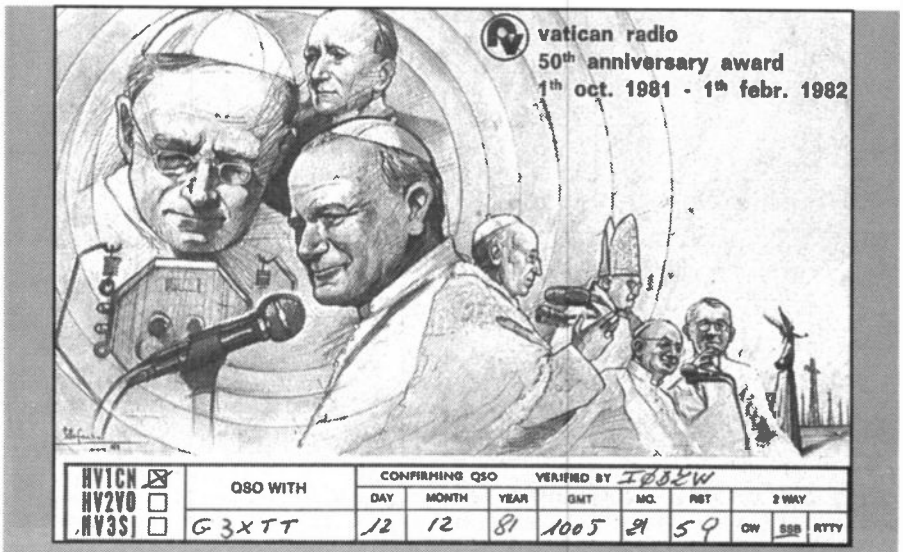
G0KPW totals (see text)

Band	*Zones*	*Countries*
160	14	66
80	22	100
40	33	118
20	38	160
15	38	172
10	31	155

It is the ten metre country total which I find impressive. To work 155 countries in a weekend when solar activity is close to its minimum is truly remarkable. However, some stations found it hard going and the farther north they were, the tougher it was. Stations in Canada reported very low totals, for example, while those operating from near the equator were able to achieve very high contest scores indeed. Incidentally, the group at Ipswich were using stacked Yagi aerials on 10, 15 and 20 metres this year, with very good results. VHF operators have appreciated the benefits of stacking for many years, but the sheer logistics of doing so on the HF bands make it impracticable to all but a few well equipped individuals or contest groups.

9X5HG

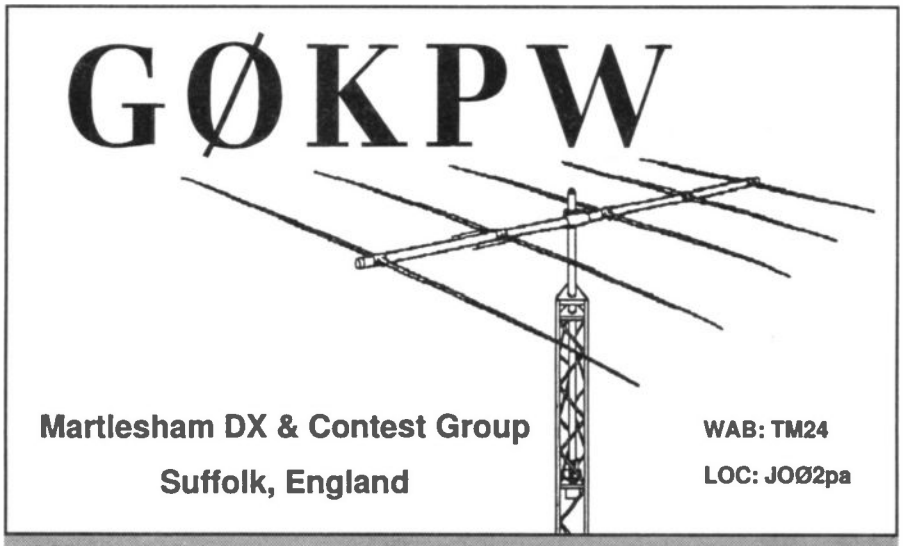
I was interested to read in the Australian *Amateur Radio* magazine a piece about Hartmut 9X5HG in Rwanda, especially as I'd had several very pleasant CW contacts with him in recent years. Hartmut reports that he worked in Kigali at the Deutsche Welle shortwave relay station, and was comfortably settled in the country, with plans to extend his amateur radio station with some better aerials. The civil war brought an abrupt end to that. Hartmut and his wife Heidi were in Germany for their annual holiday when matters in Rwanda got out of hand and were advised not to return although almost all their possessions were still in Africa. In the event Hartmut was able to return to Rwanda for two weeks to clear up the mess that had once been his home and to rescue a few things, but is now back in Germany for good. I suspect we sometimes forget when we talk to amateurs in these out of the way spots just how precarious their situation can be. The other side of that is that they often enjoy the companionship that amateur radio brings, and welcome the opportunity of a chat back to Europe or wherever. A screaming pile-up of amateurs wanting to exchange five-nine signal reports and QSL details doesn't always satisfy the same desire!



QSL cards from Vatican City State (see text)

Peru

Talking about dodgy parts of the world, Pierluigi IK1EDC activated a number of islands off the coast of Peru during October for the benefit of IOTA



QSL card of the successful G0KPW Contest Group

(Islands on the Air) enthusiasts. This was part of a holiday visit to Peru by Pierluigi and his wife, but they had not appreciated the level of civil unrest in Peru and were forced to be very careful wherever they travelled in the country. In situations like this, carrying a radio can add significantly to the level of risk, and one has to wonder whether the risk is over and above what we can reasonably expect of our fellow amateurs. A very different situation to the kind of relaxed holiday operation described by Phil G4OBK in my November column.

Bhutan

Jim Smith VK9NS was back in Bhutan again in October, this time with Kan Mizoguchi JA1BK. Unfortunately, yet again Jim was not allowed to undertake an extensive amateur radio operation, but at least he and Kan made some limited progress, including a demonstration of amateur radio to officials of the Ministry of Communications. Using the callsign A51MOC they contacted almost 30 Japanese amateurs in poor band conditions. Let's hope things continue to look up there, as Bhutan is now close to the top of the worldwide 'Most Wanted Countries' list.

Macau

Roger Western G3SXW and Nigel Cawthorne G3TXF were active from Macau during October, making 10,115 CW contacts during a 7 day operation. 58% of their contacts were with Europe. UK stations were able to work them on eight of the nine HF bands, with 160m being the one band that failed to co-operate on this occasion. Another excellent operation from these two super operators.

A group of UK amateurs was also very active from the Gambia during October and, I'm sure, enjoyed themselves greatly in the process. There are two hotels in the Gambia owned and run by radio amateurs, which makes it very easy to arrange a sunshine holiday there with radio thrown in.

Band of the month

I want this month to say something about the 30 metre band. One of the so-called *WARC* bands (because they were allocated for amateur radio use at the 1979 World Administrative Radio Conference), 30 metres is just 50kHz wide (10100 to 10150 kHz), and therefore by common consent is used only for CW and data operation. However, its propagation characteristics make it an ideal band for almost every kind of HF activity. Short skip European contacts are possible for much of the day, while there is frequently round-the-clock propagation to distant parts such as Australia and Japan. Very few people have beam aerials for the band, so with a simple dipole or vertical it is easy to compete with the majority, and the relatively low level of activity combined with excellent propagation makes the band ideal for low power (QRP) operation. When the band was first allocated to radio amateurs, there was a transition period in which we shared the band with its existing commercial users. The amateur radio community was urged to take care not to cause undue interference to these users. However, in some ways the tables have now turned. Most if not all of the legitimate commercial users have now moved elsewhere, but because amateur radio use is often light, some unauthorised commercial traffic has started to move back into the band. So it really does make sense for us to make the fullest use of the band that we can. Most activity, especially DX chasing, takes place at the lower end of the band, between 10100 and 10115 kHz, while many casual ragchews take place higher in the band, along with beacon transmissions (DK0WCY in Germany is on 10144kHz). RTTY and packet operation takes place in the top ten kHz, and this activity also includes several AMTOR mailboxes. While not all countries have yet released 10MHz to their amateurs (Chile has yet to do so, for example), a number of amateurs have now worked nearly 300 countries on the band, which gives a good idea of the level of activity. With a dipole and 100W it is relatively easy to work 150 countries or more in a year. By common consent, none of the WARC bands is used for contesting, so even at weekends there is usually plenty of room on 30 metres to find a clear frequency and enjoy a ragchew. So brush up your Morse and enjoy!

3Y0PI

Remember the 3Y0PI operation from Peter 1st Island last February? The new 'Most Wanted Countries' list shows that the expedition took Peter 1st from the top of the list to number 94, a remarkable effort! The group have now started talking about their next operation, which is planned for sometime in 1997. Heard Island may be their target and, by then, will almost certainly be at number one most wanted itself.

Finally, my wife and I spent a few days in Rome over the October half-term holiday. It was interesting to see all the HF beams and quads on the rooftops of apartment blocks. It is easy to see how it is possible for so many Italian amateurs to put out cracking HF signals, although the proximity of these beams to the TV aerials of their neighbours must give rise to the occasional problem! We also saw a KT-34XA Yagi on the Vatican Radio building, dwarfed by two enormous log-periodic arrays which are presumably used to relay Vatican Radio's broadcasts to broadcast facilities elsewhere in the world, and the quad of the HV3SJ (Society of Jesuits) station. There is quite a lot of activity from the Vatican under the calls HV3SJ, HV4NAC and, occasionally, HV2VO (the Vatican Observatory). DX News Sheet reports that the HV3SJ station has recently been extensively re-built and there should be considerably more activity during 1995 (often by visiting hams). By the way, the Italian 2000 lire banknote has a picture of the earliest radio amateur of them all - Marconi himself! Good DXing.

CLUB NEWS

Braintree and District ARS meet on the first and third Monday of the month (except bank holidays), 8.00pm, at the Braintree Hockey Club, Church Street, Bocking. 2m club net on the 2nd and 4th Mondays at 20.00 GMT, 145.375MHz. Planned club events/talks;
Jan 16th Electrical safety, by Tony Harman G8LTY
Feb 6th Satellites - Part 2, by Frank Howe G3FIJ
Feb 20th Operating evening
For further details please contact Margaret Andrews, Tel. 01376 327431

Bristol (South) ARC meet every Wednesday at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol. Club diary of events/talks;
Jan 11th Police - don't be a victim of crime and save money, by PC Chisholm
Jan 18th Bring and buy - car boot sale
Jan 25th Photographic equipment evening
For more information and meeting times, Tel. 01275 834282

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;
Jan 17th AGM
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, Burcot, Bromsgrove. Club diary of events/talks;
Jan 10th Night on the air
Jan 24th Amateur Radio Observation Service
Feb 14th Technical topics - RadCom
Feb 28th Cables and feeders
Further details from Barry Taylor G0TPG, Tel. 01527 542266

Crowborough & District ARS meet every fourth Thursday, at The Plough and Horses, Crowborough at 8.00pm. Planned club diary;
Jan 26th Annual General Meeting
For further details contact club Secretary Michael Smith G6UUO, Tel. 01892 661807

Dragon ARC meet on the first and third Mondays of each month at the Four Crosses Hotel, Petraeth Road, Menai Bridge, at 7.30pm for 8.00pm. Visitors and new members are welcome. The club run several special event stations throughout the year. Club diary of events/talks;
Jan 2nd Competition evening, including best club QSL card design.
Jan 16th Who invented wireless? by GW3KJW
Feb 6th Underwater explorations, by Graham Wright
Feb 20th Radio Yspyty Gwynedd (hospital radio)
Mar 6th A home brew spectrum analyzer, by Stewart GW0ETF
Further details from the Secretary Tony Rees GW0FMQ, Tel. 01248 600963

Dundee ARC meet at 7.00pm every Tuesday at the College of Further Education, Graham Street, Dundee. Construction nights are alternate Tuesdays. Morse tuition is every Tuesday evening and the College has an RAE course on Thursday evenings, the technical library and radio shack are also available to members. Club net is on 7.070MHz at 13.00Hrs GMT daily. Planned club diary;
Jan 10th Construction night
Jan 17th Club lecture, Local Commercial Radio - Radio Tay
Jan 24th Construction night
Jan 31st Members mini lectures
For further details contact Allan Martin GM7ONJ, 11 Langlee Place, Broughty Ferry, Dundee, Tayside DD5 3RP

Edgeware and District RS meet at the Watling Community Centre, 145 Orange Hill Rd, Burnt Oak, Edgeware, on the 1st and 3rd Thursdays of each month, starting at 8.00pm. Club nets; Mondays at 10.00pm on 1.976MHz and the last Sunday of the month at 9.15am on 3.775MHz. Morse Practice at 8.00pm at start of club meetings. Planned club diary;
Jan 12th AGM
Further details from Rod Bishop G0SQL, 99 St. Pauls Ave, Kenton, Harrow, Middx, Tel. 0181 204 1868

Halifax and District ARS meet at 7.30pm on the first Tuesday each month. at The Tap and Spile Pub (formally Royal Oak), Clare Road, Halifax, for committee and Morse tuition. On the second and fourth Tuesdays they meet, 7.00pm, at Queens Road (note Queens Road is closed for some periods at school holidays) .planned club events/talks;
Jan 17th RSGB, Pete G4EJP
Feb 21st Video's
Mar 21st Hudds 70cm repeater, John G0PRF
Further details can be obtained from Mr. D. Moss G0DLM, 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;
Feb 15th Tracker network
Mar 15th AGM
For further details contact Reg Kemp G3YYF, Tel. 01424 830454

Horndean and District ARC meet on the first Thursday of each month at Horndean Community School, Barton Cross (off Catherington Lane), Horndean, Hants. Club diary;
Jan 5th The video signal, by Stephen Harding G4JGS.
Feb 2nd Junk sale
Mar 2nd The early history of telecommunications, by Dr. M. Pope
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. Planned club talks/events;
Feb 2nd WW2 Radar, by Brian G3GDU
Mar 2nd Surplus equipment sale
Further details from Peter Stevens G8SUI, Tel. 01737 842150

Itchen Valley ARC meet on the second and fourth Fridays each month at the Scout Hut, Brickfield Lane, Chandler's Ford, Hants (just up the road from SMC), 7.00pm for 8.00pm. Planned club events/talks;
Jan 27th HRT Equipment Reviews, by Chris Lorek G4HCL
Further details from Les G3ABA, Tel. 01703 732997

Liverpool and District ARS meet at 8.00pm every Tuesday evening at The Churchill Club, Church Rd., Wavertree, Liverpool. They run RAE, Novice RAE and Morse courses. Planned club events/talks;
Jan 10th GX3AHD on the air
Jan 17th The new Morse test, G3AVJ
Jan 24th Quiz
Jan 31st Surplus sale
For further details contact Ian Mant G4WWX, Tel. 0151 722 1178.

Medway ARTS meet 7.30pm on Fridays at Tunbury Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham. Morse practice, construction and Novice help available. Club diary;
Jan 27th An evening with Rob Mannion G3XFD
Further details from Gloria G3VUN, 40 Linwood Ave, Strood, Rochester, Kent ME2 3TR, Tel. 01634 710023

Norfolk ARC meet every Wednesday at The Norman Centre, Bignold Road, off Drayton Road, Norwich, 7.30 for 8.00pm start. Informal meetings are usually held on alternate Wednesdays, where it is a night on the air, construction QRP and Morse practice evening. Club diary of events/talks;
Mar 1st Use of test equipment, Mike G4UUB
Mar 12th Trip ti Pickets Lock Rally
Mar 15th CW National Field Day briefing
Mar 22nd Science for all, Arnold G3PTB
Further details can be obtained from Mike G4EOL, Tel. 01603 789792.

Nottingham ARC meet every Thursday, 7.30pm. in the Sherwood Community Centre, Mansfield Road, Nottingham. Visitors interested in amateur radio, whether as a transmitting amateur or SWL, are most welcome. Forthcoming events/talks include;
Jan 12th The light fantasique, by Tim G0MLM
Jan 19th Construction/activity night
Jan 26th RAYNET
Feb 2nd Transmission lines, by Trevor G0IXR
Feb 16th Contest operations, by G6ABU and G0FOG
Feb 23rd Construction/activity night
For further details contact Simon G0IEG, Tel. 0115 9501733

Plymouth Radio Club meet Tuesdays, 7.30pm, at the Royal Fleet Club, Devonport, Plymouth. Planned club diary;
Jan 10th Home security
Jan 17th Your first QSO
Jan 24th Talk by the Radio Investigation Service
Jan 28th Annual dinner dance
Jan 31st Natter night
For further details contact the Public Relations Officer, F. P. Russell, Tel. 01752 563222

Poole Radio Society usually meet on the second Friday of each month, 7.30pm, in The College of Further Education, Lady Russell Cotes House (just behind the Jellicoe Theatre), Constitution Hill Road, Parkstone, Poole. Planned club events/talks;
Jan 13th Top band activity evening
Jan 14th Annual dinner
Feb 10th Novice evening, all Novices welcome
For further details contact Vernon G3BCI, Tel. 01202 762110

Salisbury Radio and Electronic Society meet at the 3rd Salisbury Sea Scout Hut, St. Mark's Ave, Salisbury, on

Tuesdays at 7.30pm. They run RAE classes with training at only £15 for adults and £10 for OAPs and students, Morse and Novice tuition also available with three qualified instructors. Planned club activities;
Jan 3rd BBC Wiltshire sounds engineer
Jan 10th AGM
For further details contact David Kennedy, Tel. 01722 330971 evenings and weekends

Salop Amateur Radio Society meet at the Oak Hotel, The Mount, Shrewsbury every Thursday. Planned club diary of events/talks;
Feb 9th Equipment sale (not junk)
Feb 23rd 23cm the easy way, by G8DIQ and G4EAB
Mar 9th Eagle aerials, by G4UDE
Mar 23rd SARS open evening and on air event
For further details contact Ian G7SBD, 56 Roselyn, Harlescott, Shrewsbury SY1 4LP or via packet @ GB7PMB

Sheffield ARC meet Mondays, 7.30pm, at their new venue; Club 197, Brook Hill, Sheffield (this is the lecturer's social club opposite the main buildings of Sheffield University). The club runs both RAE and Novice courses on Mondays starting at 7.30pm, plus Morse tuition when required. Planned club diary;
Jan 9th Hangover and post Christmas blues counselling session!
Further details via P. O. Box 365, Sheffield S1 1BY or Tel. 0114 2446282, or Dave G0TYO @ GB7MRU

Southdown ARS
meet on the first Monday each month, 7.30pm, at Chaseley Home For Disabled Ex-Servicemen, Southcliff, Bolsover Road, Eastbourne, Sussex. Please enquire about RAE and Morse classes. Planned club talks/events;
Jan 7th AGM
Mar 6th Fox hunting, by G4BCO, G4FET and/or G4VBK
Further details from John Vaughan G3DQY, Tel. 01323 485704

Stourbridge and District ARS meet on the first and third Mondays each month, at The Robin Woods Centre, Scotts Road, Stourbridge. Planned club events/talks;
Jan 23rd Corrosion problems in Amateur Radio and other domestic systems, by G4VPE
Feb 20th The Royal Signals, by Phil Martin
Mar 20th AGM
Further details from James French, G7HEZ, 2 Pepper Hill, Stourbridge, West Midlands DY8 1BJ, Tel. 01384 374354, or via packet G7HEZ @ GB7PZT

Surrey Radio Contact Club meet on the first Monday of each month at TS 'Terra Nova', The Waldrons, Waddon, Croydon, Surrey. Planned club talks/events;
Jan 2nd SSTV, by Peter Bruce
Feb 6th One hundred years of radio, by Jon G0GNA
Mar 6th Surplus sale
For further details contact Berni Wynn G8TB, Tel. 0181 660 7517

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;
Feb 16th Constructional contest
Mar 4th Club annual dinner at Sutton United Football Club
Mar 16th Early television, by Ray G2KU
For further details, Tel. 0181 644 9945

Sutton Coldfield ARS meet on the second and fourth Mondays each month, 8pm, at the Sutton Coldfield Rugby Club, Walmley Road, Walmley, Sutton Coldfield, West Midlands. Planned club diary;
Feb 13th Surplus sale
Feb 27th HF night on the air
Mar 13th Computers in radio
Mar 27th Slow Scan TV demonstration
For further details contact Tony Quy G0FEO, 17 Fircroft, Kingsbury Park, Kingsbury, Nr. Tamworth, Staffs B78 2JU, Tel. 01827 874010

Three Counties ARC meet at the Railway Hotel, Liphook, Hampshire on alternate Wednesdays. Planned club events/talks;
Jan 18th Local Repeaters, GB3GF and GB7GFD
Feb 1st HMS Warrior
Feb 15th Junk sale
For further details contact Tom Milne G4CMG, Tel. 01428 606298

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;
Jan 20th Contest entries/construction night
Feb 17th AGM
Mar 24th Operating contests, by G3LHJ
Further details can be obtained from Walt G3HTX, Tel. 0803 526762, or 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 1st Wednesday of the month, and a natter night every third Wednesday. Planned club events/talks;
Mar 1st Talk and demo of the 'Somerset Range' of kits, by Walford Electronics
For further information contact Ian G0GRI, Tel. 01225 864698 evenings and weekends.

Welwyn and Hatfield ARC would like to let readers know that as from the 16th January they have a new venue which is; The Hyde Club, Holly Bush Lane, Welwyn Garden City, Herts. They meet on the First and Third Mondays each month at 8pm. For further details contact Jeff Dixon G6YIQ, Tel. 01707 325447

Wimbledon and District ARS meet on the second and last Friday each month, at St Andrew's Chrich Hall, Herbert Road, Wimbledon SW19. Planned club events/talks;
Jan 27th Surplus sale
For further details contact Michael McCarthy G0AWQ, 32 Hillside, Banstead, Surrey SM7 1HF, Tel. 01737 351313

Wirral ARS meet 8.00pm, at The Club Room, Ivy Farm, Arrowe Park Rd., Wirral L49 5LW, on the first and third Wednesdays each month. planned club events/talks;
Jan 18th Test gear, by G3FLG
For further details contact Alec Seed G3FOO, 31 Withert Ave, Bebington, Wirral L63 5NE, Tel. 0151 644 6094

Worthing and District ARC meet every Wednesday, 7.30pm for 8.00pm, at the Parish Hall, South Street, Lacing. Planned events/talks;
Jan 4th Discussion evening
Further details from Roy Bannister G4GPX, Tel. 01903 753893

Yeovil ARC meet every Thursday at 7.30pm, at the Red Cross Centre, 72 Grove Avenue, Yeovil, Somerset. The club run a Novice and RAE course, all are welcome. Club nets, Sundays 10.30 on 3.665MHz (80m SSB), Tuesdays 20.30 on 145.350MHz (2m FM) and Fridays 20.00 on 3.550MHz (CW). Club events/talks;
Feb 9th Applying for planning permission
Feb 16th RAE Class members request night
Feb 23rd First Broadcasts in Britain, by G3MYM
Further details can be obtained from Cedric White G4JBL, Tel. 01258 473845

National and International

British Amateur Radio Teledata Group (BARTG) have a quarterly magazine, and hold a rally plus three contests each year. For details of joining the BARTG, their membership officer is Peter Adams, G6LZB, Tel. 01923 220774, for other information the group's Secretary is Ian Brothwell G4EAN, 56 Arnot Hill Road, Arnold, Nottingham NG5 6LQ, Tel. 0115 926 2360, or via packet G4EAN @ GB7BAD.

G-QRP Club publish a quarterly journal 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, 10 Clyde Crescent, Wharton, Winsford, Cheshire. CW7 3LA

The Irish Radio Transmitters Society send out regular newsletters giving details of local activities, and publish the yearly IRTS callbook. The contact man is Dave Moore EI4BZ, 12 Castle Ave, Carrigtwohill, Co Cork. Tel. (Eire) 021 883555.

Radio Amateurs' Emergency Network (RAYNET) can be contacted at Hunters Moon, Newton le Willows, Bedale, N. Yorks DL8 1SX. The RAYNET Training Team can be contacted at P. O. Box 2, Chinnor, Oxon OX9 4JY, they produce a quarterly newsletter for people interested in the National Training Scheme.

Radiocommunications Agency are the radio licensing authority for the UK. 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 general aspects of licensing. They are based at Waterloo Bridge House, Waterloo Road, London SE1 8UA, The general enquiries point and switchboard service Tel. 0171 215 2150 is manned between 8.30am and 5.30pm Monday to Friday,

with an automatic 'voicebank' and 'faxback' service outside these hours.

Radio Society of Great Britain are based at Lambda House, Cranbourne Road, Potters Bar, Herts. EN6 3JE, Tel. 01707 659015. They have a unique blend of full-time staff at Potters Bar coupled with many volunteer officials around the country, and can help members with many aspects of amateur radio.

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 9258333.

To include your club, or rally, in this feature, make sure you send us your events details early. 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) so if they're not listed here they're obviously not very dynamic! Is your club listed - if not then either give your Secretary a boot or get some activities going! If your club also has a regular 'net', let us know, we'll let your prospective members know! ***Dates to be included in the issue published on the 3rd March must reach us by the 14th January*** *(unfortunately we cannot guarantee to include details received after this date, a lot of 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 you can fax your club's details direct to the Editor's desk on 01703 263429.*

Rallies

If you're travelling a long distance to attend rallies, we recommend you contact the organisers of the events first, before travelling, to check if there has been any changes since this magazine went to press.

February 5th 1995

South Essex ARS Radio Rally, The Paddocks, Long Road, Canvey Island, Essex. Doors open 10.30am. Trade stands, bring and buy, home made refreshments, free car parking, disabled car parking outside main door. Admission £1.00. Further details from Roger G0LTO, Tel. 01268 693786, or Ken G0BBN, Tel. 01268 755350

February 19th

RSGB VHF Convention, details from Norman G3MVV, Tel. 01277 225563

February 25th

Rainham Radio Rally, Rainham School For Girls, Derwent Way, Rainham, Gillingham, Kent. Talk-in on S22 GB4RRR, doors open 10am (9.30am for disabled visitors), usual trade stands, plus a few new ones selling computers, bring and buy, many special interest groups will be represented, ample off road parking, licensed bar, snack and refreshments, all one level with easy access for the disabled, admission £1. Children under 14 free. Further details from Martin G7JBO, Tel. 01634 365980 any reasonable time.

March 11/12th

London Amateur Radio and Computer Show Lee Valley Leisure Centre, Pickets Lock Lane, Edmonton, London N9. 10am to 5pm each day. Priority admission for disabled visitors. Large trade presence in three large halls, free parking, on-site camping (at extra cost), lectures, disabled facilities, bar, restaurants, bring and buy and special interests section. On-demand Morse tests (2 photos needed). Talk-in on 2m and 70cm. For further details Tel. 0181 882 5125

March 12th

Wythall Radio Club Rally, Wythall Park, Silver Street, Wythall (near Birmingham on the A435, just 2 miles from junction 3 M42). We're told there will be the usual traders in three halls and a marquee, a bring and buy stall run by the club, bar and refreshments available, doors open 10.30am to 4.00pm. Talk-in on S22, admission £1. Further details available from Chris G0EYO, Tel. 0121 430 7267

April 9th

Launceston Amateur Radio Rally, Launceston College. Bring and buy, well known traders, RSGB Morse test on demand (bring two passport photos), hot snacks from 7am, doors open 10.30am, talk-in on S22, two large halls, ample parking. For further information contact Roy G0IKC, Tel. 01409 22164, or Rodney G8HDW, Tel. 01566 775167

April 16th

Cambridgeshire Repeater Group AR Rally, Philips Telecom Catering Centre, St. Andrews Road, Chesterton, Cambridge. Trade stalls, bring and buy, doors open 10.30am. Further details from Darren Salter G1ERM, Tel. 01223 60601 evenings

May 6th

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

May 14th

Dunstable Downs Radio Club Annual Amateur Radio Car Boot Sale, Stockwood Country Park, Luton, Nr. Junction 10 M1, 10am to 5pm, talk-in on 2m. Attractions include open day, environmental exhibits, side stalls, free entry to the Mossman Collection of Horse Drawn Vehicles, Craft Museum, train and carriage rides, and much more. For plot details, Tel. 01582 451057. Pre bookings for plots until May 11th. Plots can be purchased on the day

June 17th/18th

Bletchley Park Computer and Radio Rally, in the grounds of the former top secret government code-breaking and intelligence centre at Bletchley Park, Bletchley, Milton Keynes, Bucks, where there is also a wartime and computer museum. We're told there will be two huge marquees with large trade presence, and that admission to the rally will be included in the normal price of admission to the museum. Further details from RadioSport Ltd., Tel. 01923 893929

June 18th

North of Scotland Amateur Radio Convention (The Gordon Rally), Gordon Schools, Huntly, North West of Aberdeen, easily reached from A96 trunk road. Further details from Mike Shread GM6TAN, Tel. 01261

August 19th/20th

Stafford Computer and radio show, The County Showground, Weston Road, Stafford, Further details from RadioSport Ltd., Tel. 01923 893929, Fax. 01923 678770

August 20th

Kings Lynn ARC Great Eastern Rally, The Cattle Market, Hardwick Narrows, Nr. Kings Lynn. Doors open 10am (9.45am for disabled visitors), outdoor car boot area, bring and buy, Talk-in on S22, spacious indoor area with major national exhibitors, easy access for disabled, refreshments, free parking. Bookings, information etc. from Ian Cooper G0BMS, Tel. 01553 765614 or @ GB7OPC Packet BBS

September 3rd

Vange ARS Rally, further details from Stuart G1VWB, Tel. 01375 859632

HRT In 1994

Here's a list of reviews, features, construction projects and ex-PMR conversions featured in HRT during 1994

Reviews

Jan 94
Icom IC-707 HF transceiver, Ten-Tec 'Scout' transceiver, 'Outbacker' mobile HF aerial, MFJ HF loop aerial, Revex PC 705 power checker, Garex portable scanner aerial, Garex tuneable notch filter
Feb 94
Icom IC-U101 and IC-V200T PMR mobile transceivers. Alinco DJ-G1 2m portable. AEA HF VSWR Analyst. 'Scanner Manager' PC Scanner Database.
Mar 94
Alinco DJ-480 70cm handheld. Optoelectronics 3300 Counter. PRO-AM 2m/70cm glassmount aerial. Jones hand key. Netset PRO-2032 base scanner. PRO-AM mobile glass-mount scanner aerial.
Apr 94
Yaesu FT-11R 2m handheld. Kenwood TH-22E 2m handheld. Standard C-408 'credit card' sized 70cm handheld. 'Ham Radio' V3.2 CD-ROM.
May 94
MFJ-259 Aerial Tester. Buckmaster 'Hamcall' CD-ROM International Callbook. Bearcat BC-2500 handheld scanner. Monitoring Books.
June 94
Icom IC-T21E 2m handheld. ALS-600X HF Linear. UK Novice Tutor On Disk. Libris Britannia 3 CD-ROM. MuTek FT-736 Upgrade.
July 94
Standard C558 Dual Band handheld. MFJ Personal Morse Tutor. Drake SW8 HF Receiver. 'Hamware' CD-ROM. JPS Digital Signal Processor Filters.
Aug 94
UK Callbooks on PC disk. Mainline 75W 2m Amplifier Kit. Electronics Software Compendium CD-ROM . Maxpak Modem Kit.
Sept 94
Icom IC-820H VHF/UHF base station. Book Reviews; 'Antennas and Techniques For Low Band DXing', 'Antennas For VHF and UHF' and 'Scanners 3'.
Oct 94
Yaesu FT-2500M 2m mobile. AOR AR-8000 Receiver. Hustler 6-BTV Multiband HF vertical aerial.
Nov 94
Yaesu FT-900 HF Transceiver. Kantronics KPC9612 TNC. Equipment Reviews In HRT listed.
Dec 94
DataPack - a low cost 'beginner's special' DataPack which adds multimode data capabilities to your station

Features

Jan 94
Problems Page - 'Which HF rig is the best to get?'. Where To Buy Your Scanner?. The Top Band Net - our traditional Christmas chiller. 1993 HF/IOTA Convention.
Feb 94
Improving your scanner with a filter modification. The Metrewave Year, by Jack Hum G5UM. Problem Page - PF2UB fault finding.
Mar 94
The CD-ROM Revolution. The Lothians Club Net. Problem Page - "How Do I Get Going On Packet Without Any Packet Software?". To The Far Flung Limits Of These Islands (Part 2) - the 'How and Where' of repeaters in remote areas, by Jack Hum G5UM.
Apr 94
1994 London Show Guide. Scanner Buyers Guide.
May 94
A Low Cost 2m Packet Rig - how to use the economic 'Poky Toky' for packet. Getting The Aerial Up! - ever put up a monster aerial? Choosing The Right Aerial System For Your Station, by Don Field G3XTT.
June 94
SSL Reply to some amateurs problems. Novice Notes - Image Rejection.
July 94
Where To Find That Ex-PMR Gear. The VK9MM 1993 Mellish Reef DXpedition, by Steve Telenius-Lowe G4JVG.
Aug 94
'So What's In A Callsign' - a guide to choosing your callsign by Roy Clayton G4SSH. Our Rally 'Survival Guide' - Dick Pascoe says "let the buyer beware!". Across The Pond - Phil Bridges G6DLJ with 'an alternative guide' to the Dayton Hamfest.
Sept 94
Using The Ten-Tec 'Scout' on QRP, by Dick Pascoe G0BPS. Getting Ready For Contests - a beginner's guide to 'Having a go' in portable contest activity, by Steve Whitstable. Refilling The Well - Don Field G3XTT describes his DXpedition to Southern Africa.
Oct 94
Getting Started In Listening - a guide to getting started, what receiver to choose, and what to avoid. 'What, no QSY?' - Jack Hum G5UM offers a few thoughts about calling channels on VHF and UHF. Novice Notes - Nicads, by Ian Poole G3YWX.
Nov 94
Cheap QSL Cards For The Novice - Stephen Ortmayer G4RAW shows how you can have cheap colourful QSL Cards and maybe even promote your area at the same time. Leicester Show - floor plan and exhibitor's guide.
Dec 94
Getting Started On A Budget - Hugh Jones says "You don't need to break the bank to get started in Ham Radio". Operating The 1994 IOTA Contest - Steve Telenius-Lowe G4JVG tells a tale of an IOTA DXpedition.

Construction Projects

Jan 94
Long, Medium and Short Wave Superhet Receiver (Part 2), by Raymond Haigh.
Feb 94
Long, Medium and Short Wave Receiver (Part 3), by Raymond Haigh
Mar 94
HF Receiver Add-On Preselector by Raymond Haigh.
Apr 94
The HRT 'Parrot' - a speech 'store and replay' unit, by Paul Lovell G3YMP
May 94
An 80m Transmitting Loop Aerial, by Richard Marris G2BZQ
June 94
Audible VSWR Meter, by Ben Spencer G4YNM
Aug 94
Fast nicad charger, by Steven Goodier G4KUB and John Goodier G4KUC
Sept 94
Club Project - 24m/12m Portable Field Mast, by G3WKF. Portable aerial support, by Dick Pascoe G0BPS
Oct 94
Poky Toky handheld range improvement, by Jonathon Peters G1BAX
Nov 94
HF Receiver (Part 1) - Raymond Haigh describes a HF receiver which combines simplicity, low cost and good performance.
Dec 94
HF Receiver (Part 2) - Raymond Haigh details the PCB construction and alignment

Ex-PMR Conversions

Mar 94
Pye/Philips MX294 Conversion to 2m and 4m, by Chris Lorek G4HCL. PMR
May 94
Trio TK-801S Conversion to 70cm, by Dave G8UZY, Kev G8ZWU and Brian G8VPR
July 94
Storno 4000 series handheld conversion to 70cm by Simon Lewis GM4PLM. PMR Conversions in HRT Listed.
Oct 94
Trio TK-701S conversion to 2m, by Dave G8UZY, Kev G8ZWU and Brian G8VPR
Dec 94
Pye/Philips MX296 Conversion to 70cm, by Chris Lorek G4HCL

Back issues for the past twelve months can be obtained from HRT Back Issues Dept., Argus Subscription Services, Queensway House, 2 Queensway, Redhill, Surrey RH1 1QS, Tel. 01737 768611 (Please phone first to check the availability of the issue you require). Price £2.20 each, cheques payable to Nexus.

Free Readers Ads

HELPLINES

Wanted; full circuit diagram for Eddystone 730/4 receiver, add-on digital frequency readout for same, plus any info to upgrade its performance, will photocopy and return all information, thanks for any help. Brian (Lincs), Tel. 01572 768427

Circuit and data required for a Pye base transmitter type FM3832, high band 140MHz to 175MHz. Also Pye Vanguard, AM25T, lost mine. P.G. Ronins (Rob), 290 Priory Road, Southampton SO17 2LS, Tel. 01703 552247

Free to good home (Novice, beginner etc.), 1994 ARRL Handbook, a mine of information and projects (heavy!). You collect or pay postage. Chris G4HCL (Southampton), Tel. 01703 262105 6.30-8.30pm weekdays.

Manual or circuit required for Cleartone CH800 VHF handheld, all costs reimbursed, buy or copy and return. Mr. Hall G0MQG (Norwich), Tel. 01603 744197

Any info required on Bendix receivers used in Catalina aircraft during world war 2, expenses refunded. W.J. Williamson, Leeskol, North-A-Voe Yell, Shetland ZE2 9DA, Tel. 01957 2384

FOR SALE

Yaesu FT-102 with matching SP-102 speaker, as new condition with mic and mannual, £475. Also FRG-8800 all mode 0-30MHz receiver, £300. Looking for FT-77 or similar, possible P/X on above. Neil (Hitchin), Tel. 01462 456729

Yaesu FT-757GX HF transceiver, new, Yaesu FP-757HD heavy duty matching PSU and Yaesu FT-757AT matching automatic aerial tuning unit with boxes, operating instructions and Yaesu technical supplement, £750 ono for all three, will split. P. Nolan (W. Mids), Tel. 0121 355 8125

IC-735 with Adonis base mic, £500. TR-751E, needs attention, £300. Kantronics KAM, £200. Vectronics VC300DLP ATU, £70. 2m/70cm aerial similar X300, £70. K. Mathews (London), Tel. 0860 214084

Computer; Commodore 8032SK, printer 4022, disk drive, £40. Commodore printer 4023, £20. Vic 20, £5. Heathkit audio analyser IM22, £20. VCR97 tube, base/shield, £10. Tektronix tube 5BHP2, £20. Telequipment scope S32A, £30. D. Griggs G0IPT, 5 Collingwood Ave, Muswell Hill, London N10 3EH

Yaesu FT-470 2m/70cm handheld, complete with speaker/mic, charger, nicad battery plus spare battery, 12V pack, leather case, 13.8V 5/7A PSU, cigar lead, boxed, immaculate condition, £250. Tennamast 25ft, wall or ground mounted, galvanised, unused, with winch, brackets, £150 ovno. G0SKW (Mansfield, Notts), Tel. 01623 662624

Kenwood TM-702E 2m/70cm dual band mobile, 25W, unmarked condition, used as base station only, complete with standard accessories plus high quality duplexer, £300 ono. Steve G6ODR (Rotherham), Tel. 01709 378403

FT-757GX MkII, FC-757AT, FP-757HD, MH-IB8 fist mic, MD-IB8 base mic, YH-55 headphones, MFJ magnetic loop, Ambra 386 33MHz 120Mb hard drive, VGA monitor, keyboard, 5.25in plus 3.5in floppy drives, 4Mb RAM, going QRT due to ill-health, £1650 ovno. Also Panasonic 24 pin printer, all as new. Tony (Sufolk), Tel. 01787 371576

Yaesu FL-2100Z linear amplifier, mint condition, matches FT-101ZD, £500 ono, would consider part exchange with KW1000. Pye BC21 charger, £20. Philips BC34 charger, £20, suitable for charging PF85 type handhelds. 6-way consumer unit, brand new, boxed, £20. M. Whitehead (Shotts), Tel. 01501 825111.

Microset SR200 2m linear with 25dB preamp, 10 and 50W drive with 200W output, cost over £300, will accept £195. May exchange for other amateur radio related equipment, or WHY. Barry Williams G7OFR (Bradford), Tel. 01274 880895

Kenwood TS-430S HF G/coverage transceiver, MC43S mic, DC leads, PS430 PSU, Yaesu FC700 ATU, all in excellent condition, boxed with manuals, £800 ono, or exchange for good TS-930S. J. Curtis G0SEC, 21 Allsaints Road, Wyke Regis, Weymouth, Dorset DT4 9EZ

Yaesu external VFO FV-901DM, 40 memories, scanning function, with manual, £155. Also oscilloscope advance 35MHz dual trace with 3 manuals, probes etc., £135. Both excellent condition. P. Solman (Coventry), Tel. 01203 450476

Trio TS-430S with AM filter and FM board, little used, £450. Dentron super tuner plus, £65. Hansen 2kW PEP auto SWR meter, £65. Microwave Modules 144/28R transverter, £80. Offers considered. Mike (E. Sussex), Tel. 01273 411019

Eddystone receiver ref. S 830/7, good working order, any reasonable offer accepted. J. Barlow (Worcs), Tel. 01789 772468

Tokyo VHF-HF transverter, 10, 15, 20, 40, 80m, 2.5/10W input, 40W output, £175. Standard C5800 2m 25W m/mode, £245. Trio R600 general coverage receiver, £175 ono. W. Pettinger (W.Yorks), Tel. 01422 340790

Yaesu FT-2700RH dual band 2m/70cm transceiver, 25W output, boxed, £265. Diamond X50 with Rerex D24 duplexer, used inside only, £65. G. Wisbey (Streatham), Tel. 0181 715 9422

Alinco DR-510 2m/70cm dual band mobile, 35W/45W output, boxed, GWO, £275. Yaesu FT-23R 2m handheld, with case, speaker/mic, DC adaptor, nicad and charger, manual, £160, both ono. Buyer collects or pays postage. Shane G4JLQ (Glos), Tel. 01452 730764

Yaesu FT-101ZD Mk3 with FM and CW filter, £475, with but also offered: external VFO FV901DM, £95. VHF transverter FTV901R, £95. External speaker SP901, £20. VHF/UHF FM/SSB scanner, 60-960MHz, Yaesu FRG-9600M, £320. All VGC. Andy KE4IRF (Southampton), Tel/fax. 01703 496169

Kenwood/Trio R-2000 Short Wave receiver, 150kHz to 30MHz, SSB, CW, AM, FM, digital readout, ten memories, memory scan, boxed as new, had limited use, £265. W. Badley (Lincolnshire), Tel. 01205 361952

Yaesu FT-480R, new power module and relays fitted, five element beam with rotator, control and cable, all in immaculate condition, £325 ono. D. Coleman (Cheltenham), Tel. 01242 578903

NRD-535D, all options fitted, £1100. NRD-535, boxed, £850. ICR-71E, VGC, £499. Sony CRF-320 world band receiver, digital 32 band, excellent performance, £375. Eddystone 1650 receiver, mint, current model, 100 channel, memories, 6 filters, £1100. RX PX cash, KMW380. Mr. Rai (Middx), Tel. 0181 813 9193

Alinco DR-112E 2m FM mobile, good condition, CTCSS and toneburst fitted, 45W/5W output, £170 ono. Mr. Hall G0MQG (Norwich), Tel. 01603 744197

Yaesu FT-2500M 2m 50W mobile transceiver, boxed and in mint condition, £260. Welz SP-430 SWR/PWR meter, 2m/70cm, 5/60W with 15W Welz dummy load CT-15A, £35. Diamond 2m fibreglass 6.7dB colinear F22, £30. A. Guest (Bridgwater), Tel. 01278 456292

Full setup, all matching, FT-101ZD DC converter, fan etc., FL2100Z linear, FC902 ATU, FV901 external scanning VFO, SP901 speaker, all in excellent condition. Plus Jaybeam 3 ele triband beam, Yaesu G400RC rotator, P60 versatower with head unit and head bearing, auto brake winches, all as new. M. Whitehead (Shotts), Tel. 01501 825111

Icom IC-725 HF transceiver, mic, box, manual, service manual, Yaesu FC-700 ATU, Farnell 12V/20A PSU, all excellent condition, £625 ono. J. Atkins (Plymouth), Tel. 01752 363433

Saisho SW5000 receiver, multiband, twelve short wave bands, nine presets, auto scanning, digital frequency, battery, mains, boxed as new, headphones, SSB, handbook, £70. Greg (Harpenden), Tel. 01582 761834

Number of 807 valves, brand new, surplus to requirements, either RCA or Hytron, would sell or swap for general coverage receiver. Superrod 2 2m extending ant BNC, £15. Revex handheld mobile magmount BNC, £15, or Superrod/magmount, £25. GM4JNW (Western Isles), Tel. 0851 810899

Atari-ST 3.5in external D/Drive, boxed with instructions, £45 post paid. 40m HF 4 ele beam with mounting bracket, not corroded, £20 buyer collects. 50MHz multimode transverter with manual etc. for use on 2m transceiver, 5W in, 25W out, £100 post paid. Mike (Lancs), Tel. 01704 892088

Icom IC-745, new condition, IC-SM6 desk mic, no PSU, £500 ono. C. Wickenden (Colchester), Tel. 01206 41428

Butternut HF5B 'Butterfly' beam aerial, £95. Yaesu FP-707 PSU, £90. Wanted - Weltz meter, 200, 220 or 620. Also copies of HRT December 1983 and August 1988. Also Kenwood TM-721 transceiver. Dave (Norwich), Tel. 01603 745512 evenings.

Yaesu FT-480R 2m all-mode transceiver, £295, or exchange for 2m/70cm dual band. Jaybeam MBM88 70cm beam, £30. Daiwa DR-7500 rotator, new bearings and ring gear fitted, heavy duty, £90. Ray (Stevenage), Tel. 01438 749803

Icom IC-R7000, IC-R70, JRC NRD525,

SX400 scanner, SX200 scanner, Bearcat 220, FRT-7700 ant. tuner, Pocom AFR 8000, MBA Morse reader MBA-R0, Daiwa filter AR606K, CDR rotator, 1155 wireless. Offers. View by appointment. S. Blackett (Darlington), Tel. 01325 283771 or 466783

Yaesu FT-DX401 transceiver, 80-10m, 560W, VGC, four spare 6KD6's, manual, £210, consider exchange Pro. receiver and transmitter, or pro. receiver plus cash, any HF amateur equipment considered. A. Aldridge (Cornwall), Tel. 01209 832154

Yaesu FRG-7700 communications receiver, 0-30MHz, with Datong 2m converter, £250, or exchange for HF transceiver, e.g. FT-101. PRO-47 scanner xtal for 2m, £60 ono. Dave (Barnsley), Tel. 01226 759909 after 8.00pm weekdays, after 6.00pm weekends.

HRO spares! capacitor tuning coils 10 off, valves, crystal, BFO switch, meter, offers about £50. Prism modem 2000, GWO, £80. D. Rands (Harlow), Tel. 01279 433018

Yaesu FT-290R Mkl multimode, nicads, charger, original packing, accessories, very good condition, £180, £5 P/P. Howes linear with preamp, 1W in 15W out, £20, £3 P/P. Collect, real cash, £190 both. G3DSV (Exeter), Tel. 01694 61753

Kenwood TS-50(S) HF transceiver, mic, box, manual, showroom condition, £800. Mr. Barron (Northwich), Tel. 01606 862175

Kenwood TS-530SP HF transceiver, immaculate with box and manuals, never used on transmit, £480 ono. D. Gillatt (York), Tel. 01904 422472

Burndept/Dymar BE600 UHF handheld, 6 channel, with conversion info for 70cm, £25. Communique HX507 UHF handheld, 6 channel, no conversion info, £15. Steve (Portsmouth), Tel. 0585 371451

Icom 761 transceiver, £900. Icom 32E dual band handheld transceiver, £180. Palomar impedence noise bridge, £25. Bencher Morse key, £40. All excellent condition. J.C. Robertson, 14 Solent Drive, Warsash, Southampton SO31 9HB, Tel. 01489 584788 evenings/weekends

Two Storno 4000's UHF upper band radios with 2-way battery charger, eight spare batteries (four brand new), one spare aerial and leather carrying cases, £115. Mark (Edinburgh), Tel. 0131 661 5295 evenings.

Trio TS-120V, as new, never used on TX, boxed, unmarked, 10W out, fully tested, £200. FT-690R2, boxed, never used on TX, fully tested, £225. FL-110 100W HF amp, boxed, never used on TX, £75. KW2000A, nice condition, £100. KW600, 450W out, £100. Drake WH7 2kW SWR meter (new), £75. Icom R1 receiver, £200. All plus postage. Geoff Brown GJ4ICD (Jersey), Tel/Fax. 01534 77067 daytime

Uniden Bearcat 200XLT, 200 channel handheld, 10 band coverage, automatic search, priority channel, scan selective delay, automatic lockout, track tuning, display light, complete with case, AC adaptor charger, instruction book, 66-956MHz perfect, bargain £125. A. Eatenton (E. Sussex), Tel. 01424 217494

Racal RA1218 solid state professional communications receiver, £350. Racal RA17 receiver, £175. Tektronix 465 100MHz oscilloscope, £200. N. Rowley (Nuneaton), Tel. 01203 491245

Transmitter valves; 813, QY2-100, XG5-500, RG3-250A, 4CX350A, 5B/254M, CV485, CV223, coax triodes, 2E26, 2C34, CRT's 3SP1, 3ASP1, DG7-32-01, DNY-78 stabilisers STV-280. Contact G8ATY (Bucks), Tel. 01908 510282

Yaesu FT-107M, £485. Yaesu FT-77, £325. Yaesu FTV-707 transverter, 2m fitted, £95. Complete packet station, £65. J. Biggs (Warwick), Tel. 01926 495481

PRO-2006 programmable scanner, 400 channels, 25-520, 760-1300MHz, brand new, unwanted gift, bought 9/11/94, £220 ono. B. Drury (Beds), Tel. 01767 677070

Trio TR9000 2m multimode, boxed, instructions, service manual, magmount, etc., £300 ono. Yaesu FRG-7700 receiver, boxed, £250 ono. Many extras with both. Matt (Birmingham), Tel. 01384 895098 after 6.00pm, or answerphone if on.

Yaesu FT-102 HF transceiver, WARC bands, AM/FM fitted, manual, mic and leads, good condition, used on receive only last two years, transmit tested, works super, £400. G8RWN (Huddersfield), Tel. 01484 861782

Yaesu FT-101E complete with mic, mains lead and manual. Also FV-101 matching external VFO, original packing cases and one set of spare valves, £380 the lot. D.A. Watson, 1 Bracken Road, Dringhouses, York, Tel. 01904 705590

Icom IC-728 with FM board and CW narrow filter, plus MFJ 949D tuner, £750 ono. M. Large (Hastings), Tel. 01424 441966

WANTED

Any software to run on Amiga 500+ that will assist me in passing the RAE, in fact any info on software available for packet radio etc. Also good Morse tutor. D. Nelson (Clwyd), Tel. 01244 349494 daytimes.

Belcom Liner-2 2m SSB transceiver, must be complete with original mic and mounting bracket, and manual or legible copy. Chris G4HCL (Southampton), Tel. 01703 262105 6.30-8.30pm weekdays.

Radio Constructor 1960-1975 mags wanted. Info on Heathkit DX60, crystals 3.900 -3.940, 6.199 - 6.300, 7.335 - 7.400 any type. Valves required; 2 x 5R4GY, 2 x KT88, 2 x 6146. Plus non-metal pole e.g. 2 x 10ft (20ft or more) boat mast/vaulting pole, WHY? M. Evans, 120 Loughton Way, Buckhurst Hill, Essex IG9 6AR.

Kenwood/Trio SP430 matching speaker for TS-430S. Also AT250 ATU. All must be in good condition, cash waiting, will travel 100 mile radius. J. Curtis G0SEC (Weymouth, Dorset), Tel. 01305 784422

Kenwood TS-711 and TS-811, must be in good condition, cash waiting. C. Wren (Derbys), Tel. 01246 559923

Radio Telephones, as fitted to police and AA motorcycles in 50's and 60's, i.e. BCC Cossor, Pye, Ultra etc. Also handbooks wanted for motorcycle radios. Good price paid. Fred Baker, 80 Pelham Road, Wimbledon, London SW19 1NY, Tel. 0181 241 5880

Mizuho MX2, MX4, MX6. Mizuho SBSX 2m TX, cheap. FT-290R non-working examples considered. Kenwood MC-10 world clock. J. Rowlands (Worcs), Tel. 0121 445 3207 evenings

SP430 speaker suit TS-711, fair price paid. Snowy (Peterborough), Tel. 01733 342439

Eddystone, 960, EC10, EC10 MkII, diecast speakers, Panadaptor, Heathkit (unbuilt), broadcast band receiver. Hallicrafters, any broadcast band considered. Eagle products 4 valve. Clarke and Smith valve and solid state, for cash. Peter Lepino (Surrey), Tel. 01374 128170 or fax. 01372 454381 anytime.

Good quality SSB receiver suitable for weather fax reception, also backstay aerial. Would consider suitable transceiver, handheld unit also needed. Gordon (Cleveland), Tel/Fax. 01642 710440

HT800's UHF upper band. I am looking for spare batteries, aerials, mikes, leather cases, belt clips, or just about anything to do with the HT800 series. Please call Mark (Edinburgh), Tel. 0131 661 5295 evenings

Polarphaser for 70cm by SMC. Michael (Whitstable), Tel. 01227 266460

Kenwood ATU for TS-140S transceiver. Please contact G4USR (Doncaster), Tel. 01302 846544

Battery charger NC-11C wanted for use with the Yaesu FT-290R. Contact John GM7SBR (Elgin, Moray), Tel. 01343 545559

Heathkit RA1 receiver, amateur bands, good working order, details and price to; G0GJT, Tel. 01283 226475

EXCHANGE

Yaesu FT-470 dual band handheld, MH12A2B speaker/mic, YHA-28 dual band aerial, FNB-12V nicad pack, NC-1828U nicad charger (mains), want 2m/70cm dual band mobile or base station, older models welcome. Reg (Medway, Kent), Tel. 01634 867663

Yaesu FT-290R MkII 2m multimode plus 25W linear, VGC, exchange for dual band handheld plus accessories, must be in good condition. Dave (Brighton), Tel. 01273 566178

Canon FTQL 50mm lens, Canon 135mm Kohora 28mm 2x converter, 300mm zoom lens Cokin outfit filters skylight macro lens gadget bag etc, etc, plus Sony PRO70 scanning receiver. Want HF transceiver. J. Redmond, 38 Ochilview, Devonside, Tillicoultry, Clacks FK13 6JD Scotland, sorry no phone.

VHF/UHF Packet system comprising, Amstrad PPC512 twin disk drive laptop Baycom terminal MS-DOS 3.3 Baycom program and user instructions (written), all cables plus PRO-34 handheld scanner and accessories. Exchange for Shimizu SS105S or FT-707. G4XPP (Co. Durham), Tel. 01388 745787 between 4.30pm and 9.00pm.

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HRT is published by Nexus Special Interests, Hemel Hempstead. UK newstrade distribution by SM Distribution Ltd., 6 Leigham Court Road, London SW16 2PG, Tel. 081 677 8111. Overseas and non-newstrade sales by Magazine Sales Department, Nexus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST, Tel. 0442 66551. Typesetting and origination by Ebony, Liskeard, Cornwall. Printed in Great Britain by Wiltshire Ltd., Bristol.

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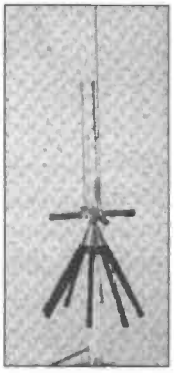

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