

**Incorporating
SCANNERS**

HAM RADIO TODAY

JULY 1995 £1.80

**Ham software
offer-WXSAT
decoding on your
multimedia PC
with no external
interface!**



CUSTOMISED AR-3000A 'PLUS' tested

**Weather satellite
reception without worries**



**Realistic's latest
base scanner
reviewed**

**Pye PFX ex-PMR
conversion to a 70cm
synthesised handheld**

**AOR SEARCHLIGHT
for WINDOWS**

PC control of the AR3000 & AR3000A

Minimum Requirements: 25MHz 80386 IBM PC (or above),
4Mbytes RAM, Microsoft compatible mouse, 2Mbytes free disk
space, Microsoft Windows 3.1 or Windows for Workgroups 3.1,
RS232 port with serial lead, AR3000 or AR3000A receiver,
1.2Mbyte 5.25 inch media disk available to order.

© Simon Collings 1994 ~ All trade marks acknowledged.
Distributed by: AOR UK LTD Adam Bede High Tech
100 Derby Road, Wirksworth, Derby, DE4 4BG,
England. Tel: 01629 825926 Fax: 01629 825927

Serial Number: **99999**

9 770269 826062

07 >

NEXUS

COASTAL COMMUNICATIONS

AMATEUR RADIO FOR THE RADIO AMATEUR!

IC 706 £1,125.00

★ NEW ★
**HF / 6M / 2M
 ALL MODE &
 .5/200 MHZ RX
 HF 100W
 6M 100W
 2M 10W
 WFM RX
 DETACHABLE
 FRONT
 ONLY 167 (W) x
 58 (H) x
 200 (D) mm
 DEPOSIT £135
 18X £55.00**



TS 850 HF TRANSCEIVER £1699.95

FREE THIS MONTH!

INTERNAL AUTO ATU & DESK SPEAKER

**TOTAL WORTH £1927.85
 ONLY £1699.95**

CASH, CHEQUE, CREDIT CARD.



FT736R COASTAL SPECIAL

**2M 25W / 70 CMS 25W/6M 10W/ 23CMS 10W
 VHF-UHF ALL MODE MAINS BASE STATION**

**£2,617.00 DEPOSIT £262
 THEN 30 x £78.50**



TH79E

£449.95

DEPOSIT £98.95

9 x £39.00



IC 736 £1,969.00

HF + 6M ALL MODE

**DEPOSIT £205.00
 18 x £98.00**



IC820 £1,795.00

**45W VHF - 40W UHF
 ALL MODE 12V BASE
 DEPOSIT £283.00
 18 x £84.00**



FT840 £899.00

**HF ALL MODE
 DEPOSIT £95.00
 12 x £67.00**



HUSTLER PRICE LIST

4BTV HF Base 10-15-20-40 metres	£142.95	RM-20S 20m Mobile resonator 100-150Khz	
5BTV HF Base 10-15-20-40-80 metres	£160.95	bandwidth 1.5KW	£29.95
6BTV HF Base 10-15-20-30-40-80 metres	£179.95	RM-40S 40m Mobile resonator 50-80Khz bandwidth 1.5KW	£34.95
RM-10 10m Mobile resonator 150-250Khz bandwidth 400W	£17.49	RM-80S 80m Mobile resonator 50-60Khz bandwidth 1.5KW	£45.95
RM-15 15m Mobile resonator 100-150Khz bandwidth 400W	£18.49	MO-1 Mobile mast 54 inches long. tilts at 15 inches	£27.95
RM-17 17m Mobile resonator 120-150Khz bandwidth 400W	£21.95	MO-2 Mobile mast 54 inches long. tilts at 27 inches	£27.95
RM-20 20m Mobile resonator 80-100Khz bandwidth 400W	£26.49	MO-3 Mobile mast 54 inches long, solid rubbercoated	£22.95
RM-30 30m Mobile resonator 50-60Khz bandwidth 400W	£26.99	MO-4 Mobile mast 22 inches long, solid rubbercoated	£19.95
RM-40 40m Mobile resonator 40-50Khz bandwidth 400W	£27.49		
RM-80 80m Mobile resonator 25-30Khz bandwidth 400W	£28.49		
RM-10S 10m Mobile resonator 250-400Khz			
bandwidth 1.5KW	£24.95		
RM-15S 15m Mobile resonator 150-200Khz			
bandwidth 1.5KW	£26.95		

(All masts end in a 3/8 thread, for mounting.
 Ideal for any strong CB style mount and cable.)
 NB Postage/delivery extra as required.



19 Cambridge Road, Clacton-on-Sea, Essex CO15 3QJ

Tel: 01255 474292 Fax: 01255 476524




 SUBSCRIPTIONS AND
 BACK ISSUES HOTLINES:
ORDERS:
 01858 - 435344
ENQUIRIES:
 01858 - 435322
 LINES OPEN 9am - 6.30pm

CONTENTS

HAM RADIO TODAY

HAM RADIO TODAY VOLUME 13 NO.7 JULY 1995

REGULAR COLUMNS

HRT SOFTWARE OFFER 5
 WXSAT decoding on your multimedia PC with no external interface!

SCANNERS 34
 Bill Robertson with a new scanners book, and a different way of using the 'HF Spectrum' frequency database

FROM MY NOTEBOOK 36
 Geoff Arnold G3GSR lends a guiding hand in helping to understand circuit diagrams

QRP CORNER 38
 Dick Pascoe G0BPS has a giggle at an unusual form of band watching

DATA CONNECTION 40
 Chris Lorek G4HCL looks at 7-plus file problems plus a guide to the 'whys' and 'hows' of TCP/IP

VHF/UHF MESSAGE 42
 Geoff Brown GJ4ICD presents an interesting diary of VHF Sporadic E activity 'down under'

HF HAPPENINGS 44
 Don Field G3XTT gives a reminder of the Radiosport and IOTA contests this month, and shows what you can work on the 15m band

SATELLITE RENDEZVOUS 46
 AMSAT-UK news plus details on the failed launch of the Techsat/Unamsat flight, compiled by Richard Limebear G3RWL

FREE READERS ADS 52
 Helplines, For Sale, Wanted and Exchange, published free

FEATURES

PYE UHF PFX EX-PMR CONVERSION TO 70CM 22
 Tony Skaife G4XIV converts the Pye UHF synthesised handheld into a 99 channel 70cm rig

THE YAESU FT-101 TRANSCEIVER 29
 Ben Nock G4BXD describes how this popular secondhand transceiver can provide a compact multimode HF rig at low cost

CONSTRUCTION PROJECT

A MODULATED NOISE SOURCE 26
 John Cronk GW3MEO describes a simple alignment aid with many applications from HF to 23cm, including ex-PMR conversions

NEWS & VIEWS

CQ DE G8IYA EDITORIAL 5
 What are we doing here? Where are we going to? No more 430-440MHz?

RADIO TODAY 6
 The latest Amateur Radio news

LETTERS 12
 Our readers have their say, no censorship here

HRT SUBSCRIPTION OFFER 28
 Make sure you get your favourite magazine each month, right through your door

CLUB NEWS/RALLIES 48
 Dynamic go-ahead clubs and voluntarily-run RAE course contact details. Is your club listed? If not, why not?

ADVERTISERS INDEX 57
 Who's 'in' Ham Radio Today, trader-wise

REVIEWS

THE AR-3000A UPGRADED! 15
 Chris Lorek G4HCL takes a look at the receiver of his dreams, and finds it's now even better

REALISTIC PRO-2036 REVIEWED 18
 Our Consultant Technical Editor finds a base scanner with built-in tone decoding

REALISTIC PRO-62 REVIEWED 20
 G4HCL goes portable with triple conversion using Realistic's new handheld scanner

EQUIPMENT REVIEWS IN HRT 32
 Missed that review? Here's a list of the very large number we've featured

BOOK REVIEW - RADIO AMATEURS AND LISTENERS DATA HANDBOOK 39
 Reviewed by the Ham Radio Today Editorial staff



Realistic PRO-62 scanner reviewed

Pye UHF PFX ex-PMR conversion to 70cm



All reasonable care is taken in the preparation of the magazine contents, but the publishers, nor the Editor, cannot be held legally responsible for errors in the contents of this magazine, or for any loss arising from such errors, including loss resulting from negligence of our staff. Reliance is placed upon the contents of this magazine at readers' own risk.

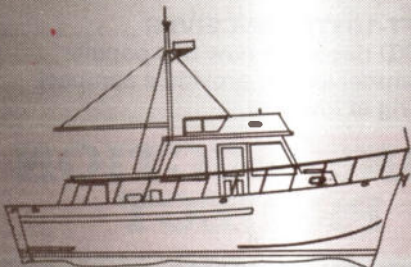
HRT
 JULY 95

For All Your Marine Radio Communications

SKYWAVE
OF CORNWALL

Try us first for all your
Radio amateur and
marine
communications

ICOM YAESU NAVICO JAYBEAM



Give Mike GIDDK a call today!

47 TREVARTHIAN RD, ST AUSTELL,
CORNWALL PL25 4BT.
TEL 0726 70220 MOBILE 0374 996595

New Stolen Equipment Register

- 24 hour accessibility by fax
on the Ham Radio Today
Voicebank and Fax-back Information Service
24 hr: 01703 263429

We're pleased to introduce a new service to the Ham Radio Today 24 hour fax-back service, this being a stolen equipment register for ham radio, SWL, and scanner equipment, from received information from any source, i.e. readers as well as ham radio dealers. It is available to **anyone** on a 24 hour basis on a normal rate (non-premium!) fax line. So if you're worried about an 'iffy' piece of gear offered to you, the answer is just seconds away, **anytime**.

If you'd like any gear you've had stolen in this list, just post, fax, or email any such information to us including the equipment type and serial number, contact Tel. No. and reference, or if available the police crime reference number and local station contact information.

Please send to:

Post: Ham Radio Today Editor (Stolen Equipment), Nexus,
Nexus House, Boundary Way, Hemel Hempstead,
Herts HP2 7ST

Fax: 01703 263429 (same No. as the fax-back service),
Attn: 'Stolen List'

Email: chris@radshack.demon.co.uk

We welcome all readers to publicise this service through your radio club, on the air, and of course to rally and exhibition organisers! This is a free service by Ham Radio Today magazine for the benefit of our hobby.



D A T O N G
ELECTRONICS LIMITED

Clayton Wood Close
West Park
Leeds LS16 6QE
Tel: 0113 2744822

For products you can rely upon to give amazing results

For information on **Active Antennas, RF Amplifiers, Converters, Audio Filters, the Morse Tutor and Speech Processors** send or telephone for a free catalogue and selective data sheets as required.

All our products are designed and made in Britain.

Orders can be despatched within 48 hours subject to availability.



— VISA AND ACCESS WELCOME —





CQ de G8IYA

Editorial

*What are we doing here?
Where are we going to? No
more 430-440MHz?*

In the radio communication field, there is often a continual battle for frequency spectrum. We see this at each WRC (World Radio Conference, previously WARC) when various radio users 'battle it out' to try and divide the spectrum fairly according to the needs of the various users. As licensed amateurs, we've often managed to hang on to 'our' frequency bands, through the work put in at these conferences on our behalf by representatives of the amateur movement and the realisation by governments that we amateurs can provide a number of valuable services.

We've provided much work in the field of propagation research. We've helped in pioneering work in low-Earth orbiting satellite communication. We've established a digital radio network across the world. Many amateurs are actively continuing with this, but what of the future? Is technology overtaking us?

Let's take the case of 70cm. What gear do you use on this band? A 'black box'? I do, it's a small Japanese handheld. I'm not ashamed to admit it, and I'm sure most amateurs in Europe use similar 'black box' gear on this band.

For some years, PMR (Private Mobile Radio) users have had no frequencies at all left on the 'high band' VHF PMR range (165-174MHz) in London. It's full up, no more PMR licenses can be issued on there, new users must go on UHF instead. Surprise surprise, that's getting full up as well. There's now a reported danger of us losing 430-432MHz and 438-440MHz across Europe, and it isn't based on rumour.

There goes a chunk of 70cm

The DSI Report Stage 2 (29.7-960MHz) by the European Telecommunications Committee is a 'Request for Comment' by government and users. It's been reported from this that additional spectrum is urgently required in the low UHF range, particularly in the major European cities, with 430-432MHz and 438-440MHz to be taken away from us for the (quote) "land mobile" service.

Shocked? Why? What have I, or you,

done to justify keeping hold of this bit of 'our' band? I do know people who have, my husband Chris G4HCL for example, indeed throughout the UK the packet radio 'backbone' uses these sections of 70cm for its 'trunk' data links. But what of the future?

If you'd like more information on this, plus any 'latest' updates, you'll find it on the Ham Radio Today information line, Tel. 01703 263429, where you can receive a faxed document straight away or listen to voice info and updates including how to obtain more information in the post for the cost of an SAE.

Is QRP the answer?

It isn't all doom and gloom of course. But isn't there something many of us are good at? How about QRP, i.e. getting through and communicating on low power levels that the 'commercial lads' would otherwise think ridiculous. We often show them it *can* be done. It sounds just like "give amateurs the bands below 200m, they're no good for our use", when amateurs subsequently showed them what *could* be done!

Now, I'm not talking about low technology 'simple one-transistor rigs', I'm talking about using our expertise of effective circuits, aerials, propagation, and communications methods, to get through when others would think it's impossible. Is this one area where significant pioneering work by amateurs can benefit mankind? I think so. A real benefit to the radio 'industry' from our low power work could be smaller portable sets with smaller batteries, the 'personal communicator'. Now, isn't that what the 'commercial lads' want? Why not drop a line to the *Letters* page, and share *your* thoughts!

This month's software offer

There's a big collection for you this month! Firstly, there's *DXer* by WA6JOO, for the HF or VHF/UHF DXer. This gives, for your (or any) location; TX/RX bearing and distance, sunrise and sunset times, Maximum Usable Frequency and Frequency of Optimum Traffic, and all locations sharing a

common 'grey line', prints custom bearing/distance charts, there's also a grid locator function using either 6 digit (Maidenhead) or 4 digit coordinate systems, plus a complete database of all DXCC countries as well as other locations around the world, with the latitude, longitude, continent and CQ zone of each. Entries may be easily added, deleted or edited.

Also on this month's disk, for packet-active amateurs using either a normal TNC, or a BayCom modem, or running a BPQ node, we've the very latest suite of all three *G7JF packet software* programs, see this month's 'Data Connection' column for info.

We've also included a complete *HF spectrum* listing on the disk for several thousand broadcasting, commercial, and utility stations, which you can either print out or use with your favourite database. See this month's *Scanners* column for more details.

How to get your software

For this month's collection, supplied on a 1.44Mb HD PC disk inc. UK p/p to you, send a £1.00 cheque or PO, payable to; *Mr. Steven Lorek*, together with your name and address and the original 'corner flash' from this month's 'contents' page, to; **Software Services, P.O. Box 400, Eastleigh, Hants SO53 4ZF**. Overseas readers, including Eire, should send three US \$1 notes, or for airmail (if required) outside Europe four US\$ in notes. Other payment methods can't be accepted due to high banking charges - and *please do not* make your cheque or PO payable to any other individual or any company (as this is an 'at cost' service, we cannot pay to return letters, cheques etc. which do not comply with the above instructions).

Queries regarding supply of these 'at-cost' disks should be sent to the above address with an SAE or IRC for reply, please don't contact the Editorial staff or the magazine publishers (Nexus), as they can't answer your queries. Your disk will normally be placed in the post to you within 7-14 days of receipt of your request, please allow up to 28 days for delivery.

Club of Friendship

Howard G1JGY asks "Are you interested in becoming a member?" He's trying to revive the *Club of Friendship* (COF), which was founded in 1987 by Ken Norvall (G3IFN), to develop and further the friendship between the UK and Russian radio hams. The club has its own callsign, G4BAS, and help is needed to re-establish this club. The aim of the club is to develop the friendship, between the two countries over the air, with regular nets etc. It's also a good way of learning another language if you so desire, and about each other's country. In the past some members have been on exchange visits to see their 'friends'.

If you have even a slight interest in becoming a member, drop Howard a line, (an SAE would be appreciated). Should sufficient people show a positive response to becoming a member of the COF, he will then will act as the coordinator amongst UK amateurs, and liaise with the Russian section of the club so that it can continue. Contact; Howard Ketley G1JGY, 1 Tewkesbury Avenue, Mansfield Woodhouse, Notts NG19 8LA, Tel/Fax. 01623 423697

Red Cross 125th anniversary

The British Red Cross will be running a special event station to mark its 125th anniversary over the weekend of the 14th to 16th of July, and Anita Segar, G0SXO, asks anyone else who is planning to organise a Red Cross 125th anniversary station to please contact her as soon as possible; A. R. Segar, 21 Woodcroft, Kennington, Oxford, OX1 5NH

Stolen Gear

A TS-50S HF transceiver and an FT-480R VHF transceiver were stolen from the car of Ray Oliver, G3NDS, while in Torquay over the Easter holiday period. Any information should be sent to G3NDS, or to Torquay Police on 01803 841301. Remember that the Ham Radio Today Voicebank and Fax-back information line has a list of *all* known stolen ham radio equipment, a fax-back document list of this is accessible 24hr/day.

UK licence records changes

The RA tell us that SSL now issue Validation Documents on receipt of the fee (allowing time for cheques to be cleared) as opposed to waiting until the actual renewal date. Following suggestions made by licence holders, SSL will be issuing renewal notices to all licence holders. For those who pay by Direct Debit or Standing Order the renewal notice will be for information purposes only. Renewal notices will be sent out 6 weeks before the licence renewal date. If payment is not received by the renewal date, the licence will lapse. It is therefore important that licence holders pay the renewal fee in good time. SSL will now normally only issue the Licence Terms, Provisions and Limitations Booklet when the licence is first issued. At the time of renewal, SSL will tell you of any changes to the Booklet. If you lose your Booklet, SSL will issue a replacement, free of charge, on request.

The RA add that one of the problems that SSL has faced over the last three years has been the errors and inconsistencies within addresses held on the database. SSL will upgrade address information to official Postal Address File (PAF) standards. SSL will now also issue new licences within 5 working days of receipt of the application instead of the current 14 days (this assumes that the application is complete and funds have been cleared).

The RA have also decided to make a change to the information provided to callbook publishers. UK amateurs currently have the option to permit their name, call sign and Main Station Address to be released for publication in call books. Where you do not wish your details to be published, they release only your callsign and the first part of the post code of your Main Station Address (e.g. SE1). Following concerns expressed by licence holders, they will restrict this further so that where you request details to be withheld only the call sign will be released. Where they do publish details, they will be issuing details of your Mailing Address and not your Main Station Address (where there is a difference) because of concerns some Radio Amateurs have about security on remote sites.

If you have any questions about your licence, please contact the Radio Licensing Centre, details are included every month following the 'Club News' section in Ham Radio Today.

RA give 'OK' to 6m repeaters

The Radiocommunications Agency say they have agreed in principle to the establishment of 50MHz voice repeaters in the shared portion of the band, 51 to 52MHz. They have also agreed to consider further voice repeater linking proposals on a 'case by case basis', with repeaters in remote areas only being considered.

ISWL 'Guide to European Broadcasts' now available

The ISWL's "Guide to English Language Short Wave Broadcasts to Europe (Summer Schedules)" is now available from the ISWL HQ. The guide will be in its usual tried and trusted format, i.e. in a very 'easy to use' arrangement. The booklet will cost the modest price of value of £1.50 (IRC's or postage stamps are also acceptable). If you'd like a copy, you can contact the ISWL at; International Short Wave League, 10 Clyde Crescent, Wharton, Winsford, Cheshire CW7 3LA.



RAYNET 24hr emergency line

RAYNET tell us they've now established a 24 hour telephone contact point on 0141 621 2121. The main purpose of the line, which became 'live' on Sunday 2nd April 1995, is to provide the User Services at a national level with a contact point for the Network at any time. It is not intended that the line should replace local contacts which are currently in place, although local groups will be encouraged to give the number to their own contacts as a backup to existing local arrangements. The Duty Controller, who could be in any part of the UK, will answer the call and pass the request for assistance to the relevant County / Region or Group for action. A secondary use is to allow Group Controllers to contact the National Committee of Management should they require to do so and cannot readily reach their own Zonal Coordinator.



**The Radio Amateurs'
Emergency Network**

A Voluntary Communications
Network

'G' callsign number plates?



Over the last eighteen months, the RSGB say their agents had four meetings with officials of the Sale of Marks division of the Driver and Vehicle Licensing Agency (DVLA) in Swansea and London, including on two occasions the Head of that division, in an attempt to set up the much-discussed scheme to offer radio hams an opportunity to purchase a vehicle registration mark corresponding to their radio callsign. In a letter to the Society from the DVLA, they say that they have now concluded their study into the feasibility of a specific and exclusive early release of the 'G' prefix marks to radio amateurs, but (sadly) they have for the moment decided that such a scheme is not justified.

Their reasons for deciding not to proceed at this time are as follows: firstly, they advise that, to issue the 'G' prefix marks early and exclusively to radio amateurs would require an Act of Parliament, and they have been advised that the Secretary of State for Transport would not, at present, consider presenting such an Act. Secondly, they also make the point that their scheme was originally set up by the Department of Transport with the express objective of generating the maximum possible revenue from the sale of such marks. The potential represented by the release next, for example, of the 'B' prefix marks is of the order of 24 million qualifying vehicles, whereas the 'G' prefixes would offer them a potential maximum market of well under half that number. On commercial, as well as legal grounds, therefore, they feel unable at this time to countenance any release of the 'G' prefix marks - even a general release.

They confirm that they remain fully aware of radio amateurs' desire to acquire such marks, as well as of the need to protect amateurs from exploitation by unscrupulous dealers in such marks. They conclude their letter by confirming that, as and when they are ready to consider the release of the 'G' prefix marks, they will be in touch with the Society again to discuss how best the legitimate interests of radio amateurs may be served.

SSL team 'tunes in'

Here's the 'word' from Subscription Services Limited (SSL), who are the nice bunch of people who are tasked with issuing us with our licenses. SSL say they've established a new top quality improvement team to boost customer service for holders of the country's Amateur Radio and Citizens' Band Radio licences. They tell Ham Radio Today readers these include; earlier despatch of validation documents (as soon as funds have cleared); the introduction of renewal notices being sent to direct debit and standing order customers (for information only); state-of-the-art enveloping machines to speed up document despatch; and easy to recognise envelopes so that licensees can pick out correspondence from other mail. A Radio Licensing Centre "Code of Practice" is also being produced which will be sent with Validation Documents to all customers.

Mr. Bob Symons, SSL's Marketing Director, told us; "We have tuned into the views of our Amateur Radio and Citizens' Band licence customers. SSL wants to provide high levels of service and we have therefore put this top improvement team together to look at our systems and ensure that everything possible was being done to meet the needs of licence holders."

"In line with the requirements of our new contract, we have already been able to improve service levels considerably. But we are not complacent and we are continuing to look for new ways to improve our systems to give licence holders an even better service." Mr. Symons added, "Issues of policy remain a matter for the Radiocommunications Agency. Many customers are still not aware of this distinction, but we are determined to ensure that the area we are responsible for - the administration of the licence - is run as effectively as possible."

You can get further info from SSL direct, their details, as always, are in Ham Radio Today (following 'Club News') every month.

RAIBC voucher help

The Northern Ireland Branch of the Radio Amateurs Invalid and Blind Club (RAIBC), who we know do much to help our fellow amateurs, have contacted us to ask if the magazine will renew an old appeal, for readers to donate any gift tokens, petrol vouchers, air miles or cigarette tokens, to their club. David Caldwell of the group says that, as cash is always being asked for by charities, *giving* tokens can be a way of donating without actually costing money. The group add that these vouchers account for a large proportion of their income, and they have found in the past that many of the motoring public collect these vouchers with the intention of obtaining a small gift for themselves, but never get around to using them before they go out of date. As a charity the petrol companies have been very helpful by processing orders, so they may be used to obtain prizes for a raffle or tombola, at one of their many fund raising events throughout the year.

Tokens or vouchers of any brand, may be sent *free of charge* to the following address; Charities Appeals Officer, Radio Amateur Invalid and Blind Club NI, Freepost BE 1789, Belfast BT15 3BR. The group say any funds generated will be used, to purchase radio equipment, and audio cassette courses for home study, for blind and disabled people in Northern Ireland. Enabling their disabled community to partake in a hobby which is very therapeutic, and in a lot of cases enables the individual to develop their communication skills, without being embarrassed about their disability.

Many of the disabled people which the group have been able to help in the past, have since been seen giving up their free time to help others, by using their radio equipment and communication skills, in conjunction with able-bodied friends, by supplying radio communications for other voluntary sectors, such as the Red Cross and St. John Ambulance, in training for the occasion that emergency communications may be needed. One of the group's projects for this year is to encourage deaf people to partake in the hobby, with the use of a computer, linked to their radio with a modem for packet radio, which in itself will open up a new world of communications for the deaf.

Forest of Dean weekend

An informal weekend of direction finding is once again being organised by the Swansea DF Group. The aim is to promote interest in 2m 'foxhunting', and encourage inter-club and national competition. It will again take place in the Forest of Dean on the 8th and 9th July, 1995. Whilst you can, of course, stay at any site or hotel of your choosing, the Swansea Group will again be staying at the Forestry Commission's Braceland camp site located at S0560130, which is 5km east of Monmouth, the site charges being £2.50 per person, per night. The Swansea group will arrive on site on Friday, and anyone requiring directions should give a call on the foxhunt frequency of 144.725MHz. Any queries regarding this weekend event should be directed to Phil Smith (GW1XBG) on Swansea (01792) 642001.

Information and rules;

1. The frequency will be 144.725MHz.
2. The carriers, either voice modulated or unmodulated, will be for 30 seconds every 5 minutes. A warning will only be given 2 minutes before the *first* carrier is due. The second fox will start transmission as soon as the first carrier ends.
 - 2a. Clues will *not* be given as this could give an unfair advantage to some teams. For the same reason as above, the Fox should *not* transmit outside the prescribed times on *any* frequency.
3. There are no restrictions on polarisation or aerial type. The aerial should not be moved or adjusted after the commencement of the foxhunt. If a beam is used it should be directed to the central point of the Foxhunt Area.
4. Transmission power should be a minimum of 2.5W output and remain constant throughout the event. If a change of power is necessary due to technical problems, the Fox will make announcements of such on all subsequent carriers.
5. The lair should not be in any location that is private, requires permission, or payment.
6. The team is deemed to be the driver and passengers in one car. When searching for a portable Fox, the team should search together and not spread out, increasing the area of search.
7. Only one set of DF equipment to be used per team at any one time.
8. Apart from the Fox, transmission is forbidden on the Fox frequency. When a team has found the Fox they should leave the immediate area, and should not transmit on *any* frequency in the immediate vicinity of the Fox.
9. The Fox is deemed to be the *transmitter*, not the aerial or operator.
10. The winning team will be the one to find the Fox in the shortest combined time. It is the prerogative of each team to decide in which order they search for the Fox.

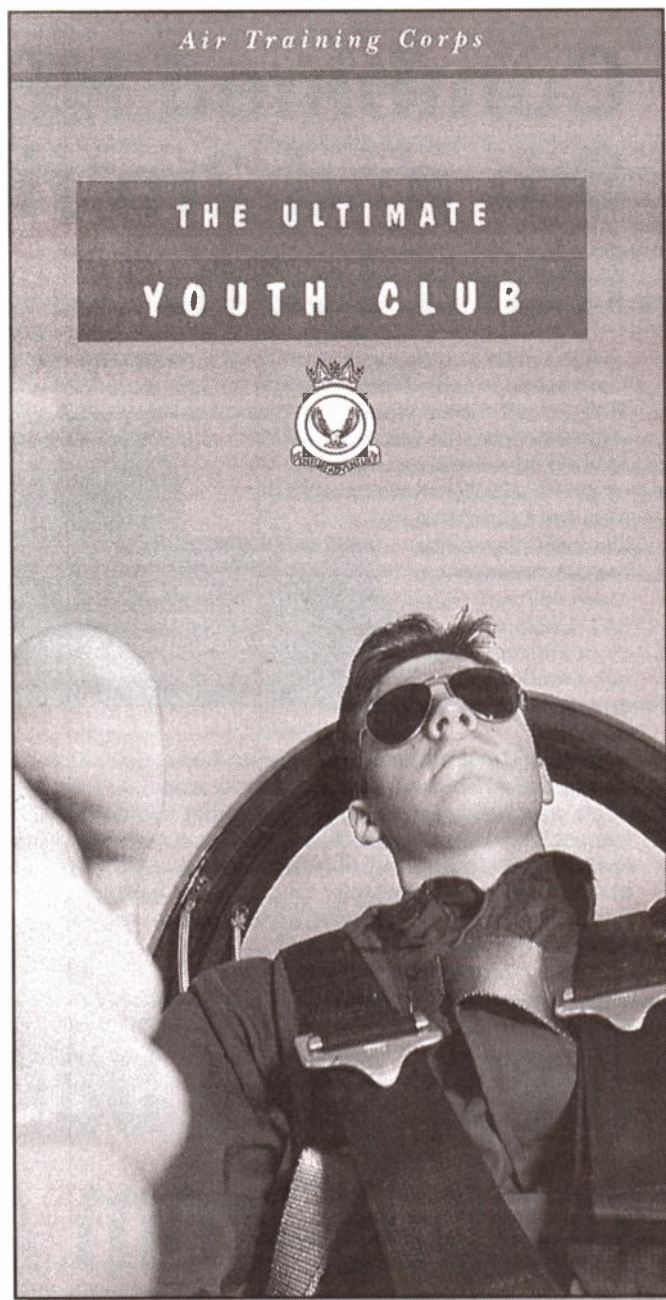
The Ultimate Youth Club

The Air Training Corps is a uniformed youth organisation whose aims are to encourage amongst young people a practical interest in Aviation and the Royal Air Force, to provide training which will be useful in both the Services and in Civil life, to foster a spirit of adventure and to develop the qualities of leadership and good citizenship. Cadets have an opportunity to fly in both powered aircraft and gliders, take part in adventurous training and many sports. Training is also given in such subjects as Principles of Flight, Airframes, Air Navigation, Map Reading, Propulsion, Space-vehicles and Radio Communications. Examinations in these subjects are held several times a year to test the Cadets knowledge.

Another activity is tuition in Radio Operation. For this purpose the RAF have allocated several frequencies to the ATC. There is an assortment of frequencies in the HF, low and high bands of the VHF spectrum and two spot frequencies in the 70cm ham band. As these frequencies have been allocated through the RAF they are not divulged to the general public. The ATC usually run several Special Event Radio Stations throughout the year, two frequencies normally being used, one on VHF and the other HF. The next one being during the Flight Activities Week, RAF Museum, Hendon during the period 12 to 20th August 1995, using the callsign

GB4ATC (the team are looking for Air Cadets who hold Novice Licenses to assist with the operating).

The Corps is always looking for adult staff to help train Cadets in the use of radio. They say it is a worthwhile and rewarding hobby. HF Instructors must be able to send and receive Morse at 8WPM and to be able to teach Cadets to that standard. Many



of the ATC Instructors are indeed Radio Amateurs but this is not essential. They can have previous Service knowledge of radio and electronics or other suitable professional qualifications.

Operating instructions laid down by Headquarters Air Cadets and are based on NATO operating procedures. These procedures differ from ham procedures. Unlike hams, Cadets and Instructors do not have their own individual callsigns but each Unit in the Corps is allocated its own callsign. The base station will have a fixed callsign and any mobile or portable equipment will have its own unique callsign. This method enables any malfunctioning equipment to be quickly identified.

Negotiations are taking place with the aim of introducing the Novice Licence Scheme as part of the ATC training syllabus. For further information, contact Malcolm Wood, Tel. 0171 438 6053 daytime, or 0181 363 0727 evenings. You can also contact your local Wing or Squadron Headquarters, the telephone

Combined HF, 6m and 2m rig from Icom

Just when you thought multimode, multiband rigs couldn't get any smaller, Icom steps in with their all-mode IC-706, a combined 100W HF and 6m plus 10W 2m all-mode mobile rig, complete with a detachable front panel! With a receive coverage of 30kHz-200MHz and 144-148MHz plus full ham band transmit capability, the set measures a mere 167mm (W) x 58mm (H) x 200mm (D), smaller than any other competing rig we



know of! There's plenty of 'bells and whistles', including a spectrum scope, alphanumeric memories, 1Hz tuning steps, IF shift, CW reverse, variable pitch, and full break-in. RTTY capability is claimed as another 'first' for a transceiver of its class, this employing 'real' FSK rather than AFSK. This rig looks like it's going to prove rather nice both in the shack as well as out and about mobile and portable. Don't worry, we'll have a full review in Ham Radio Today as soon as one's available! In the meantime, you can get further details from Icom (UK), Tel. 01227 741741.

Kanga Summer catalogue

Kanga Products have announced the availability of their Summer 1995 catalogue of QRP (Low Power) kits. The catalogue is packed with easy-to-build kits, including several low-cost 'weekend projects' for your station. Send an A4 sized SAE to Kanga Products, Seaview House, Crete Road East, Folkestone CT18 7EG for a copy, or contact Kanga direct on Tel. 01303 891106.

New dual band mobile from Alinco

Waters and Stanton Electronics have announced the new Alinco DR 610E Dual Band Mobile transceiver, due to retail at £659. The transceiver incorporates a detachable front panel, 11 band channel scope monitoring facility, dual VFO and will even monitor two frequencies on the same band. Extended receive coverage is available (where permitted) between 108-174 MHz including AM airband, 430-510 MHz and 800-999 MHz, and the transmitter delivers 50W on 2m with 35W on 70cm. CTCSS tone encode is provided as standard in addition to a conventional tone burst which is controlled from the mic, and 9600 baud (GMSK) packet operation is offered. Further details from Waters and Stanton Electronics, Tel. 01702 206835.



Kits for the home constructor
and the QRP man

KANGA PRODUCTS

(The UK's leading QRP kit manufacturer)

Catalogue:
Summer
1995



Seaview House, Crete Road East, Folkestone CT18 7EG
Tel / Fax +44 01 303 891106, Email: Dick@kanga.demon.co.uk

MORE
RADIO
TODAY
NEXT
MONTH

ASK ELECTRONICS LTD

248/250 TOTTENHAM COURT ROAD, LONDON, W1P 9AD • Tel: 0171-637 0353/0590 • Fax: 0171-637 2690



YOUR SONY SPECIALIST

All products covered by a total manufacturers guarantee

CRF-V21 Satellite Weather Fax and hr Receiver with printout £1900.00

ICF-SW77 Similar specification to the ICF-2001D but with 160 memories & labelling facility £349.95

ICF-SW55	£249.95
ICF--SW100E	£189.95
ICF-SW100S KIT	£235.00
ICF-SW1E	£149.95
ICF-SW1S KIT	£159.95
ICF-SW1E	£129.00
ICF-SW1SKIT	£179.00
ICF-SW7600G	£159.00
ICF-SW7600	£129.00
ICF-PRO 80	£299.95
ICF-PRO 70	£179.00
ICF-SW33	£109.95
ICF-SW30	£89.95
ICF-SW22	£69.95
ICF-SW10	£44.95
AN-1 Active SW antenna	£59.95

Panasonic

RF-B65D
digital SW receiver & ssb . £165.00

ROBERTS

RC-818	£184.95
R-817	£159.95
R-808	£94.95
R-617	£120.95
R-621	£59.95
R-101	£49.95

AS ADVERTISED IN
SW MAGAZINE

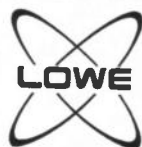
GRUNDIG AT ASK

Sattalite-700	£349.00
Yachtboy-500	£159.95
Yachtboy-400	£120.00
Yachtboy-230	£65.95
Yachtboy-222	£52.95
Yachtboy-206	£37.95
Yachtboy-205	£30.00
Concertboy-230	£35.95

MAIL ORDERS WELCOME ON THE ABOVE PHONE NUMBERS
FAST-EFFICIENT-CONVENIENT TO YOUR DOOR STEP!!!

We also have in stock a range of Frequency Scanning Guides

UK Scanning Directory 4th Edition	£17.50
The VHF/UHF Scanning Guide	£12.95
Monitoring the World Above 30MHz	£19.95
Shortwave International Frequency H/Book	£14.95
How To Interpret Facsimile Weather Maps & Charts	£8.95
Weather Reports from Radio Sources	£6.00



SW Receivers

HF-150	£355.00
KEY PAD	£34.95
PR-150	£205.00
IF-150 interface	£34.95

HANDHELD & BASE SCANNERS

YUPITERU

MTV-125II air band	£169.95
VT-150 FM marine	£169.95
VT-225 civil & military airband	£220.00
MVT-7000 100kHz-1300MHz (no gaps)	£255.00
MVT-7100 500kHz-1650MHz	£315.00
MVT-8000 home base 8MHz-1300MHz	£335.00



AR-1500EX 600kHz-1300MHz	£290.00
AR-2000 500kHz-1300MHz	£245.00
AR-2700	£260.00
AR-8000 100kHz-1950MHz no gaps	£379.00
AR-3000A 100kHz-2038MHz home base	£840.00
AR-3030 30kHz-30MHz home base	£615.00

TAX FREE FOR EXPORT.
MAIL ORDER
IMMEDIATE DESPATCH.
GOVERNMENT
& LOCAL AUTHORITY
ORDERS WELCOME

YAESU

FRG-100	
50Hz-30MHz	£509.95
FRG-9600	
60MHz-905MHz	£525.00

ALINCO

DJ-X1D	
200kHz-1300MHz	£249.95



ICR-1	
100kHz-1300MHz	£380.00
(The smallest hand held scanner)	
IC7-7100 homebase	£1,279.00

All products are subject to a post & packing charge.

PLEASE MAKE ALL CHEQUES PAYABLE TO ASK ELECTRONICS AT 248-250 TOTTENHAM COURT ROAD, LONDON W1P 9AD

FOR THE BEST PRICES GIVE US A CALL ON:- **0171 637 0353**

LETTERS

Letter of the month

Dear HRT,

Yes, I too agree with some of G4DFV's comments (Dec '94 HRT) and also with Tom McPherson's 'penetrating' appraisal of what he euphemistically refers to as "button pushers and knob twiddlers" in the April '95 issue of Ham Radio Today. But, whether amateur radio as we know it has finally and fatally succumbed to the irresistible temptation of ready-built and ready-to-jive transceivers or not, yet another far more dangerous, insidious and formidable enemy has soft-landed in the midst of amateur-radio. The Internet!

So, will the reality of being able to let a computer keyboard transport you through the trenches of "Cyberspace", and in so doing, converse with anyone anywhere on the planet without having to continually get into an almighty sweat about propagation, QRM, QSB, time differentials, staying up all night 'just in case' and, having

to go without life's little luxuries to enable one to pay for an enormous tower and triband beam which in all likelihood, the next-door neighbour probably thinks is a blight on the landscape, irreversibly and I have to sadly, make amateur radio totally irrelevant in-so-far as mere communication is concerned?

After all, let's face facts, the Internet gives everybody the potential communication power the majority of radio amateurs can only dream about. Just think about the problems involved with regard to packet radio via the short wave amateur bands? The virtually prehistoric mode of slow-scan television? When, with the future introduction of MPEG etc, you'll be able to send full motion high quality video via the Internet! Well, put it this way, when will it be possible to do the same thing via amateur radio? Probably never. I won't bore with other examples because, if you're a licensed-amateur you'll no doubt be aware of them, right?

Perhaps if the amateur-radio

community had embraced the concept of a global satellite repeater communications system instead of directing itself toward short-term and quick-fix solutions to amateur-radio communication challenges, we might just stand a fighting chance of repelling an unwelcome enemy who, whether we like it not, is hell-bent on winning the hearts and minds of countless thousands of young people who might very well be the amateur radio enthusiasts of the future. So, what can amateur radio offer to offset the electronic wonderland of the Internet? And please don't mention "self-training in radio communication/construction". Because, as some of us already know, the only training the majority of radio amateurs get is how quickly they can navigate the multitude of knobs and buttons on their freshly purchased modern-day transceiver, without having first read the instruction manual!

Ray Howes G4OWY

The funny side of the RA

Dear HRT,

Your excellent publication has (quite rightly) been giving a fair bit of space to the activities of the RA. May I offer the following? You need to know that I have the following aerials at my location; 1) W3DZZ Trapped Dipole, 2) 144 MHz 4 el quad, 3) VHF/UHF Discone. It also helps to know that 2/3 years ago the RA issued me a CB licence by *mistake* for my amateur G3KNB. I quote from a letter I have received from their Birmingham Office dated 3 February 1995;

"During visits in your area we note you have a CB type aerial erected but on checking our licence details we do not appear to have any record of a current licence" etc. etc..

They go on to outline the penalties of £5000 and/or 6 months imprisonment. I have offered to hold short aerial recognition seminars for their officers on payment of a nominal salary of £15 per annum.

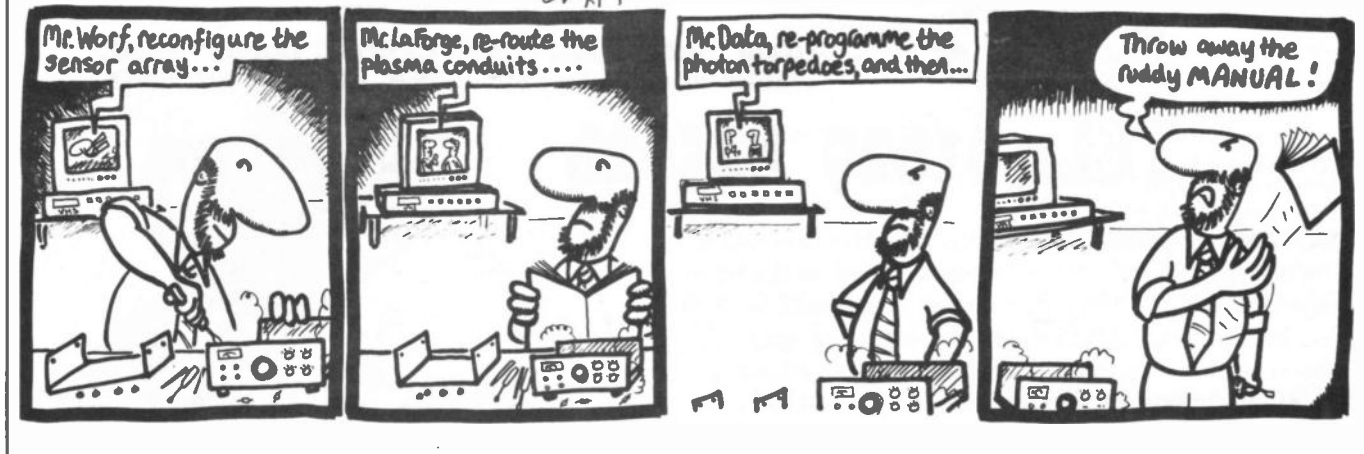
Please send your food parcels and messages of sympathy to my new /A QTH at the local HMP.

73 de Ken Ballance G3KNB

£10 for letter of the month

Do you have something constructive to say on the state of Amateur Radio today? Perhaps you'd like to put your viewpoint to the readers, get some discussion going, or give an answer to one of the issues raised? We'll pay £10 for the best letter we publish each month (normally paid during the month following publication). So write in with your views, to: Letters Column, Ham Radio Today, Nexus, Nexus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST, or fax your letter direct to the Editor's desk on 01703 263429. Please keep your letters short, we reserve the right to shorten them if needed for publication. Letters must be original and not have been sent to any other magazines, and must include names and addresses plus callsign if held. Reader's views published here may not necessarily be those of the magazine

"TONE" BURST tinkering. By GOMENAK



Gentleman's agreements

Dear HRT,

After I read the letter in December's HRT from G4DFV, and Mr. McPherson's letter in the April HRT, let me set a few things straight, if I may, as an ex-professional radio operator, as well as an ex-CBer, with over 30 years of experience. As a professional, CB and Amateur Radio Operator, I feel quite able to comment upon the standards, lower or higher, as pertains to the three areas of my own expertise.

There has never been, on Amateur as well as CB Radio, any universally accepted standard of operating. Both systems use the same basic idea of 'doing your own thing man'. On Amateur Radio especially, one hears the oft-quoted phrase; "It's all done by gentleman's agreement and I ain't signed nothing and I ain't agoing to either". Personally, over the last 30 years or so, it's been my experience that the individual and personal operating standards of A and B class, and in the last few years the Novice class, depends upon (a) the age of the operator (and where he/she was trained), (b) the type of equipment and mode of operating preferred, (c) the operating experience during training (if any?). The standard that I have observed, on both CB and Amateur Radio, as compared with professional radio operating standards, range from adequate to abysmal, bloody minded, intransigence (mainly from amateurs). By far the worst of the amateurs, are that minority we often hear about, most

of whom were licensed before 1980, though they have been joined by the odd(?) ex-CBer. Reading between the lines, of the two aforementioned letters, it is my firm belief that these two persons are of the type that champions the use of ex-military, PMR and are either avid earwiggers (Short Wavers), or are the Morse-code-only fanatics.

It's 1995, not 1935 or 1945, *progress*. That means that the 'black boxes' these people so often denigrate, are far less prone to the ills of their preferred machines; out of band transmissions, third harmonics etc. The filtering one has with these new radios is super, it's sharper, cleaner and most important of all, they cause far less man-made interference on the bands. Perhaps they prefer 'hash'? Let us also not forget, as these two people have, Amateur Radio is a *hobby*, it's not a profession, nor is it a hard and fast way of life, it's a hobby that caters for all who wish to take up the challenge. From as little as doing nothing more than 'knob twiddling' to home construction, Morse code, RTTY, Fax, Packet, SSTV etc., etc. It is like all hobbies, up to the individual to choose from and it matters little or nothing by which route one has come into Amateur Radio. Honestly, each of us who hold any amateur radio licence, should accept each other's personal radio or lack of personal radio background. We must accept that once he/she has passed the RAE or NRAE, then they are an *Amateur*, no more or less.

J. Davies-Bolton, G4XPP

No licence needed

Dear HRT,

I found your articles in the March '95 issue HRT on the Radio Shack BBS and the Internet very interesting. I am a newcomer to amateur radio, what sort of licence do I need in order to use the BBS, and how much does it cost?

E. Stapley (Essex)

Editorial comment;

The BBS is on a telephone line, and the good news is that you do not need any official licence or whatever to use it. All you need is a terminal, or any computer running appropriate 'terminal software' and a landline modem (a suitable PC terminal program was included on the cover-mounted disk of the March '95 issue HRT). The Radio Shack BBS, with its Ham Radio Today discussion groups, carries plenty of information for amateurs and listeners alike - the HRT Tech Ed currently downloads several hundred messages on amateur radio and SWL subjects every few days from it! Full details are in the March 1995 issue of Ham Radio Today for new readers who may have 'missed out' - it's in Whitby, N. Yorks, on Data Tel. 01947 897551, with free access.

WORLD RADIO CENTRE™



Adam Bede High Tech Centre, Derby Road,
Wirksworth, Derbys. DE4 4BG. ENGLAND

TEL: 01629 825926

FAX: 01629 825927

The **AR3000A** has established itself as a high performance base mobile receiver offering an extremely wide frequency coverage of 100 kHz - 2036 MHz and all mode receive. The introduction of the **AR3000A PLUS** provides even greater performance and capabilities. What is the plus? Plus five custom modifications applied as standard: Switchable narrow AM filter for improved shortwave listening, switchable WFM filter for WEFAX reception, 10.7 MHz I.F. output and switch for compatibility with the SDU5000, tape relay with independent contacts and switched audio, discriminator output. Further custom modifications are available and may be applied to existing units. Simply request the descriptive leaflet and price menu for full details.

AR3000A receiver £999

AR3000A PLUS receiver £1099

SEARCHLIGHT PC WINDOWS software £99 + £3 P&P

DEMO DISK for SEARCHLIGHT £3 inc P&P

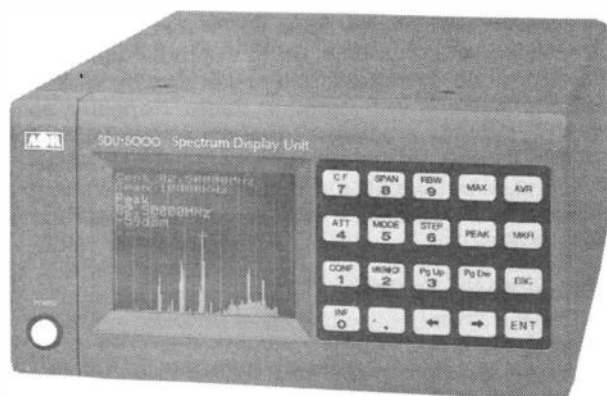
AORSC PC DOS software £75 + £3 P&P

DEMO DISK for AORSC £3 inc P&P

CR400 tape record lead £16.95 + £1.50 P&P

WA7000 wide band base aerial £149

MM1 mobile mounting bracket £16.95 + £2 P&P



The **SDU5000** is a spectrum display unit designed with the AR3000A in mind. Locating brief transmissions has never been so easy, by using the MAX facility any transmission within ± 5 MHz may be identified and signal strength measured in dBm. A small modification is required to the standard AR3000A to provide compatibility but the **AR3000A PLUS** is ready to go. (The SDU5000 will also operate in conjunction with the AR3000 but facilities are reduced - a small modification to the AR3000 is still required). Support for the ICOM range R7000, R7100 & R9000 is provided by the fitting of an optional ROM. A supporting PC based software package for dual control of the AR3000A & SDU5000 is planned for later in the year.

SDU5000 spectrum display unit £799

ICOM-ROM SDU compatible ROM £131.31

SPECIAL OFFER FOR THIS MONTH ONLY

for direct orders from World Radio Centre only - quote HRT magazine

Option 1 - AR3000A PLUS receiver with SDU5000 at a package price of £1729
(a saving of £169 on the usual price)

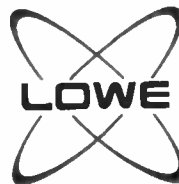
Option 2 - SDU5000 with ICOM ROM fitted for a special price of £875 (a saving of £55.31 on the usual price)

Option 3 - SDU5000 with free SDU modification to an existing or new AR3000A £799



DRAKE

ICOM



YUPITERU



Other makes & models available, please phone or send a SAE for details.
Fast mail order available for direct orders. Carriage free on main items
in UK and Eire. Prices correct at time of going to press E&OE. All trade marks acknowledged.

Review - The AR-3000A, Upgraded!

*Chris Lorek G4HCL takes a look at the receiver of his dreams,
and finds it's now even better*



'WEFAX' bandwidths - overcoming this limitation nicely!

On AM, the AR-3000A normally uses the same filter as NFM, i.e. 12kHz bandwidth. This is fine for AM airband reception, especially where 'offset' carriers are found on the civil airband, but on the HF AM broadcast bands, and for serious Medium Wave DX work, it's can be a little too wide. AOR UK come to the rescue again, with a switched 'Narrow AM' filter.

Other modifications include an internal double pole relay, driven by the tape recorder solid-state switching circuitry. Here, one pair of contacts is used to drive the external tape record switching contacts, giving more flexibility with this 'isolated' output, the other relay section adds a switched receive audio output from the set only

when the squelch is open, useful for 'voice activated' recording. A 'direct' discriminator audio output is also added, for better external data decoding, and a 10.7MHz IF output

The AR3000A 'Plus'

If you take a look in the *Scanners 3* book, you'll see the AR-3000A described as "Worth every penny", "This is one scanner I'd love to have in my radio station", and "Grovel in front of your bank manager".

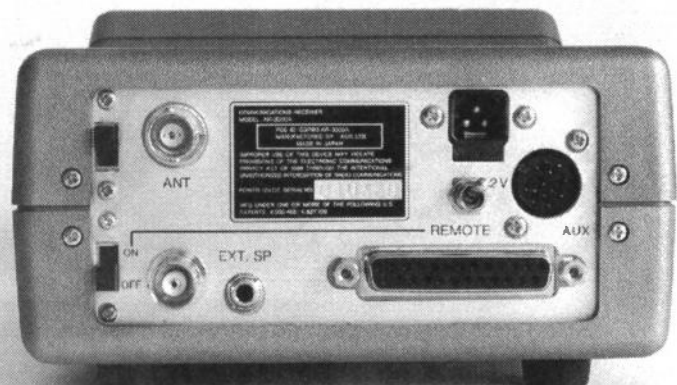
After those comments, it's hard to find a better scanner, but I have. The AR-3000A was always the 'scanner of my dreams' (I wish I could afford one!), but AOR UK have now gone one step further by giving it even more and better facilities.

The AR-3000A 'Plus'

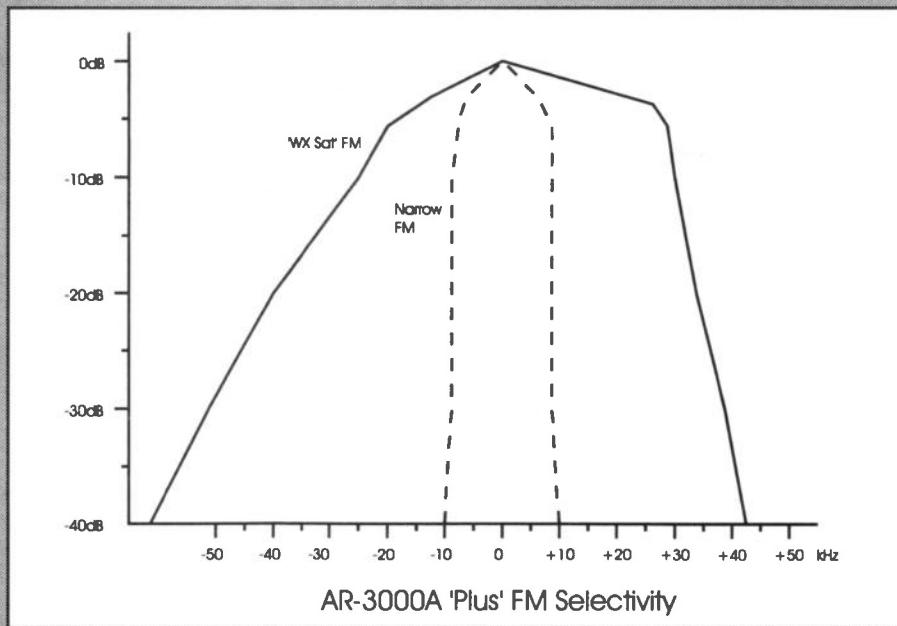
Two additional narrow filters have been added inside the set,

selectable via a rear panel mounted switch. Firstly there's the purpose-design WEFAX FM bandwidth.

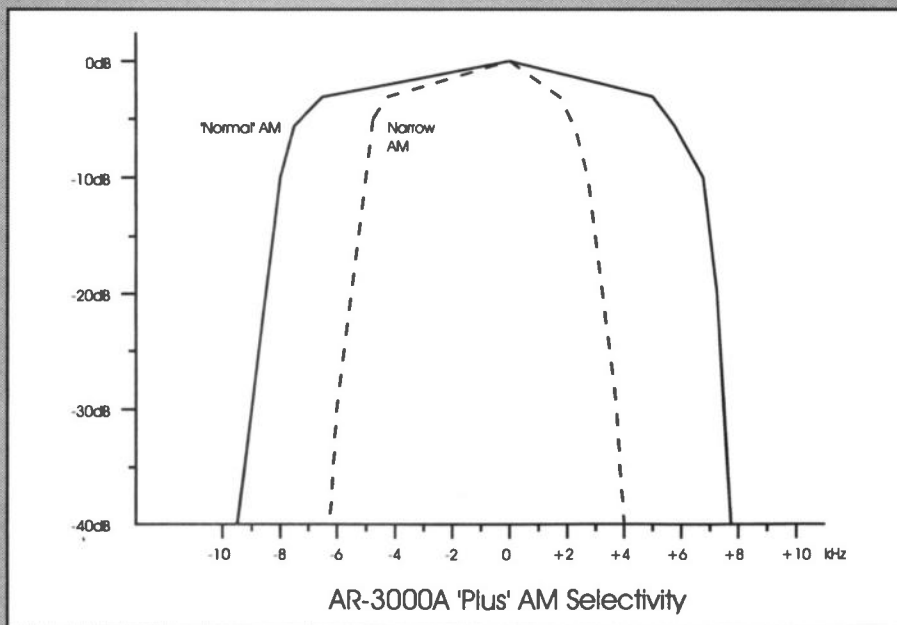
Weather fax reception from orbiting and geostationary satellites needs a receive bandwidth of around 30kHz or so, 'normal' FM filters are usually too narrow, and 'wide' FM filters are too wide for best performance. AOR UK have added a filter which switches WFM between the 'normal' and



Rear panel additions



AR-3000A 'Plus' FM Selectivity



AR-3000A 'Plus' AM Selectivity



via a rear panel BNC socket is fitted, for use with panoramic adaptors such as AOR's SDU5000 spectrum display, a rear panel toggle switch also providing switched AGC and mute for this unit.

In use

AOR UK kindly offered me a sample of the AR-3000A 'Plus' on loan to test, I didn't refuse! After using this for a number of weeks, my thoughts of 'the best scanner' remain, even more so.

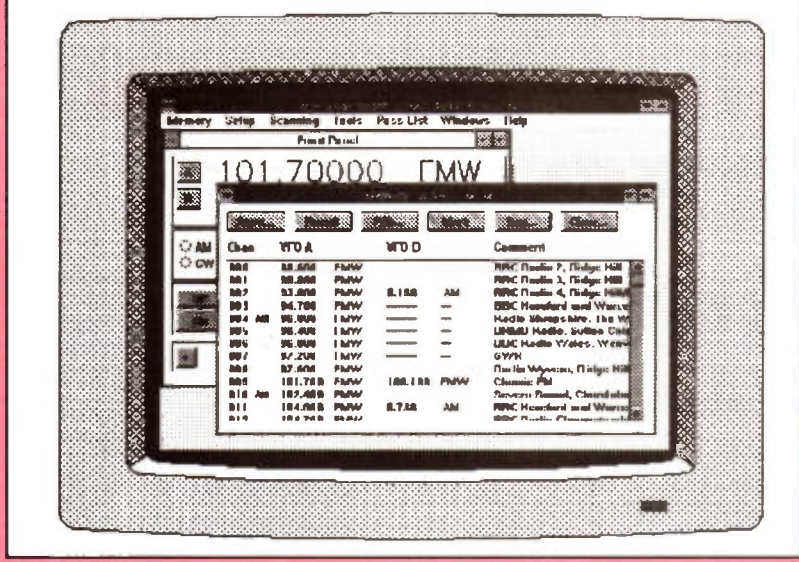
With the growing popularity of PC programs for WEFAX reception, this aspect of the hobby has grown by leaps and bounds. I had great success with the AR-3000A 'Plus' on this mode, switching to the WEFAX filter gave absolutely superb results. No more distorted tones from 'narrow' FM, and better sensitivity and better rejection of VHF paging transmissions than in normal 'WFM' mode.

Likewise, on AM the performance on crowded HF bands was far better. There was still a good audio response, and interfering heterodynes from adjacent stations often magically disappeared! The accompanying bandwidth graphs show the results I measured with my signal generator, the FM measurements being taken on 137MHz and the AM measurements on 6.5MHz, each showing the set now has the 'best of both worlds'. Now, what more could I ask? How about computer control.....

AOR Searchlight

Searchlight is the latest PC 'Windows' based control program for the AR-3000 and AR-3000A, written by Simon Collings G4SGI and distributed by AOR UK. It's a 'genuine' Windows program, not a 'DOS' one that just uses a window. As such you can do all the usual clever things such as have multiple windows open, run the program in the 'background', copy data to and from the Windows 'Clipboard', have full on-line 'help' facilities, and so on. Not only that, but 'Searchlight' also has a sound recording option, which uses your PC's sound card to record and replay off-air received audio. No more tape recorder needed (just a big hard disk!).

'Searchlight' has so many more



facilities, just a few of them being an unlimited number of disk-based memory channels arranged into 400 channels each, a 'bar-graph' display of the activity on each channel with full control including a cursor indicator and sound recording, a graphical and text-based analysis report of activity on any given 'single frequency watch' channel, and a spectrum analyser with cursor operated tuning. You can even have a number of these shown on your screen at once. The mind boggles!

Computerised scanning

AOR UK were also good enough to send me a copy of 'Searchlight' to test, and again I wasted no time! Just a simple pin-for-pin RS-232 lead is needed between the computer's RS-232 connector and the AR-3000A, the receiver having its own built-in interface. I found the program's flexibility was superb, and I was quickly downloading plenty of channels to my disk-based 'log files' for future use. The sound recording option was rather novel, using this I could have a nicely condensed, and accurately logged, 'activity' program after I'd been away from the set for a while, without the need to rewind tapes and the like.

I did however find the RS-232 control noticeably slowed down the scanning and searching rates of the set, and sometimes when the computer was 'multi-tasking' with other Windows applications the set would even slow down to one channel per second or even slower, even with a 486DX2/66 computer with 8Mb RAM.

However, for faster scanning I could automatically download stored banks of channels from the computer to the AR-3000A, and then use its own scanning facilities (i.e. not under RS-232 control) to good effect, which got over this nicely.

Conclusions

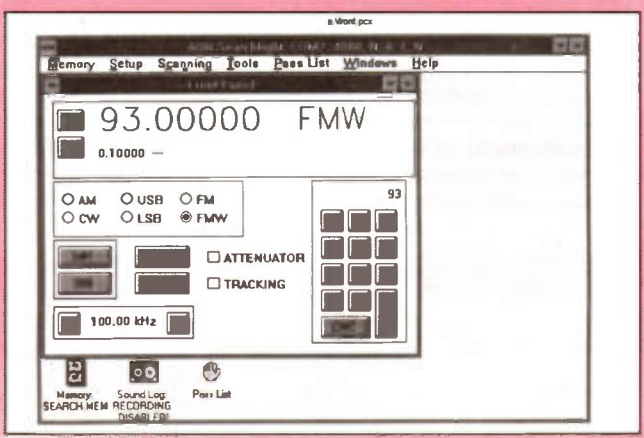
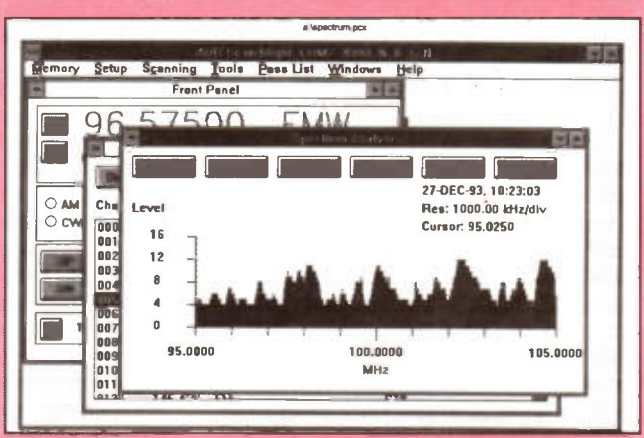
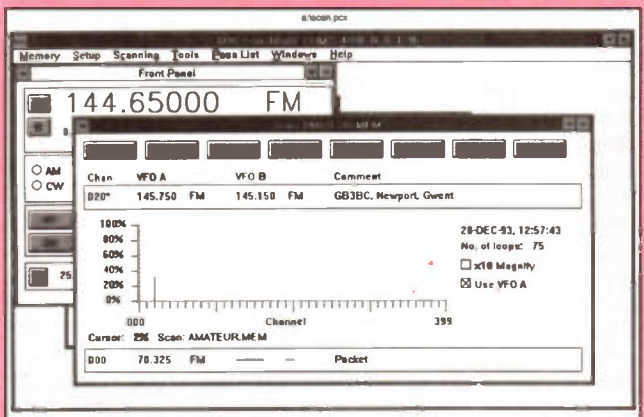
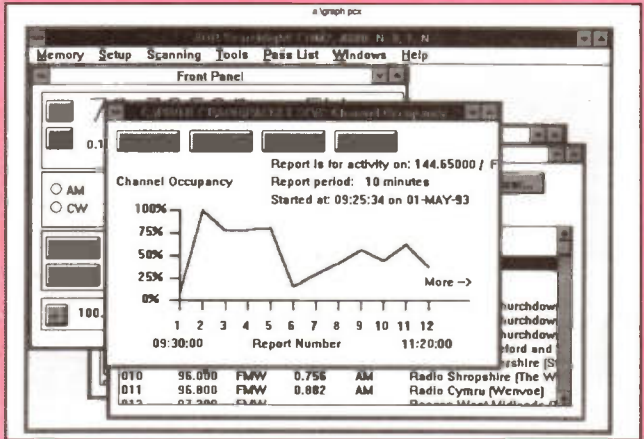
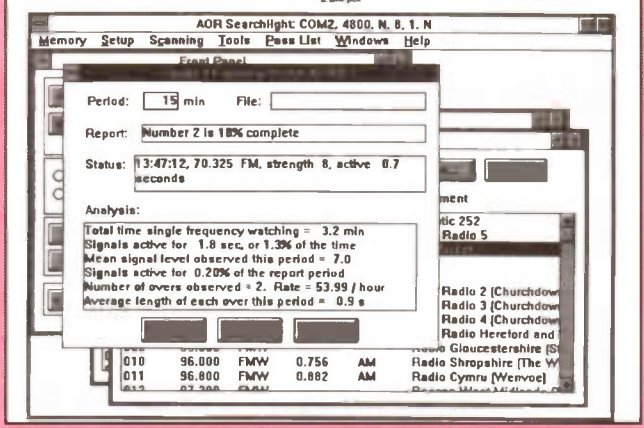
The AR-3000A was my favourite scanner, the AR-3000A 'Plus', which AOR UK currently sell at no extra cost to its predecessor, now takes this title. It's superb, there's nothing more to add.

The 'Searchlight' software adds tremendously to the set's already great amount of flexibility, I was a very, very happy chap in my shack using the combination. The RS-232 control side did however slow the scanning rate down somewhat, although 'normal' scanning combined with computer-controlled channel upload/download overcomes this.

I'm told that AOR UK can offer an 'upgrade' service owners of existing AR-3000A models to add these facilities if required. A number of 'demo' disks of PC programs for various AOR receivers, including the AR-3000A, are also available (see this month's *Scanners* column).

My thanks go to AOR (UK) for the kind loan of the AR-3000A 'Plus' and for the provision of the software for review. I'm saving my pennies hard!


 SUBSCRIPTIONS AND
 BACK ISSUES HOTLINES:
ORDERS:
 01858 - 435344
ENQUIRIES:
 01858 - 435322
 LINES OPEN 9am - 6.30pm



Realistic PRO-2036 Review

Our Consultant Technical Editor finds a base scanner with built-in tone decoding



Hot on the trails of Realistic's PRO-2035 (reviewed in the March 95 issue), is the smartly styled PRO-2036. In many respects this looks like a slightly 'cut-down' version of its 'bigger brother', having 200 (rather than 1000) memory channels, which are arranged into 10 banks of 20 channels each, ten 'priority' channels, and a band-segmented (rather than almost continuous) frequency coverage. It covers 66-88MHz, 108-174, 216-512, and 806-956MHz, and offers FM-only reception apart from the civil airband range (108-137MHz) where AM reception is automatically switched in for you.

Built-in CTCSS

A unique feature of the PRO-2036 is its built-in CTCSS (sub-tone) decode facility. Many commercial radio users, as well as radio amateurs, use such a CTCSS system where a given sub-audible tone is transmitted 'beneath' the speech audio. With a suitably equipped transceiver, the radio user then only receives transmissions with that particular sub-tone frequency present. So on a channel shared by many users, each using a different sub-tone frequency, only those of the user's own radio group come through the speaker. Although now a common fitment on amateur and commercial VHF/UHF transceivers, the PRO-2036 is the first scanner I've seen to have this facility 'as standard' - rather unique!

Bell and whistles

The scanner also has quite a number of other operating features. Together with the usual scan, search, limit search, delay and channel lockout facilities (as found on most scanners), each of the ten memory banks may have one of its channels assigned as a 'priority'. When 'priority check' is selected, whilst the set is otherwise monitoring the channel or frequency of your choice, it also periodically samples each one of priority channels in turn briefly, and if any have activity present the scanner pauses on that channel.

An 'auto-store' function also allows the scanner to find new active channels over any selected frequency range, this automatically storing active channels (i.e. those which open the receiver squelch) in the memory banks you choose whilst 'remembering' those it's stored before and not duplicating these (unlike the PRO-2035, which rather annoyingly does this). An 'auto-record' facility lets you connect your tape recorder, with the scanner controlling the remote record on/off to switch on the recorder only when the receiver squelch raises.

The scanner also gives a good amount of operating flexibility. As well as a direct frequency entry keypad and channel up/down buttons, a soft-feel click-step tuning knob lets you step up or down through the memory channels, and in 'Freq' mode you can

tune up and down through the frequency range, just like a 'normal' receiver.

The set comes in a smart looking grey plastic-fronted case with metal lids and chassis, and measures 99mm x 265mm x 218mm, weighing 1.68kg. It operates from a 13.8V DC supply, a 230V AC wall adapter fitted with a UK mains plug being supplied. The scanner looks remarkably like the Bearcat BC-890 (reviewed the Nov 93 issue) in terms of styling and general features, apart from the frequency band ranges and CTCSS facility.

On the air

The set comes supplied with a plug-in telescopic aerial for local listening, this plugs into the rear panel BNC connector which is also used for connecting a 'proper' outdoor aerial. So, in went the coax from my rooftop VHF/UHF vertical, the AC adapter plugged in and connected, and I switched on the set. The 'owners manual' gave excellent operating instructions, and within minutes the set was merrily searching away over the AM airband range, automatically storing 'active' channels into its memories for me. So I had a cup of coffee and carried on reading the manual. After an hour or so, the set had filled nearly 100 channels, but unfortunately most of these were either channels with 'blank' carriers or image frequencies from other bands (i.e. grossly distorted wide band FM audio from Broadcast Band II). So, I tried again on the 2m amateur band. This nicely filled the memories with grossly distorted AM aircraft band 'images'. Ah well, back to manual selection!

Otherwise, as long as I was 'careful' in avoiding problems from such images, I found the scanner worked quite well, with good immunity from problems with closely-spaced strong signals - something other scanners, including the PRO-2035, fall down on very badly. I found the tuning knob was quite handy to use, rotating this quickly automatically 'speeded up' the channel

and frequency selection - just like the 'auto rate tuning' found on expensive HF base stations. There was, however, a significant pause in received audio as the set switched between frequencies, and I found I could easily miss signals if I 'tuned' through these too quickly.

The set automatically decided itself which frequency steps to use, 12.5kHz on airband and UHF, and 5kHz otherwise on VHF, i.e. based on non-UK use. These could be manually changed to either 5, 12.5 or 25kHz once I'd switched to the required frequency, the small LCD indication flashing away to show whenever it wasn't at the 'default' setting, as it usually wasn't on VHF.

I found the built-in CTCSS decoder was a very nice feature. Any number of memory channels could each be programmed with different CTCSS tones, the scanner only halting and enabling the set's speaker when a valid tone was present on that channel. Very useful if, for example, you can hear a number of users on a given channel and you just want to monitor one group of these.

Technicalities

A look inside the set shows a single-board construction, and although there's a lot of 'fresh air' in there, a smaller case would thus give a smaller front panel and all the buttons need to fit somewhere!

The laboratory results show the set usually has a very good level of rejection of other strong signals, both adjacent channel and elsewhere in adjacent bands. The image rejection (what there is) is an exception to this, in that it is extremely poor, especially on UHF. Here, unwanted image signals (21.6MHz away) of even the same strength as the wanted signal would totally interfere with it. Black marks, Realistic - I'd have expected better for a base set, especially as the otherwise excellent manual says (quote) "Occasionally you may get interference from a weak or distant signal from a strong broadcast 21.6MHz below or above the tuned frequency. This is rare, and the image signal is usually cleared

whenever there is a broadcast on the actual frequency". It isn't, it doesn't, and it caused real problems in use.

Conclusions

The PRO-2036 gives a good account of itself in operating flexibility, I found operating the set was a pleasure. Unfortunately it appears to have been primarily designed for the non-UK market, as AM is only selectable on the airband range. The set overcomes the poor strong signal handling performance of it's PRO-2035 'big brother' with very good rejection of 25kHz spaced adjacent channels and most other strong signals, although its image rejection is extremely poor, particularly on UHF. I suppose it's 'swings and roundabouts'! The wide availability of the set will sell it, as such I'm sure it'll be popular with users who can cope with the image limitations as the set otherwise has fairly reasonable performance for a base scanner.

My thanks go to SRP Trading for the loan of the review set.

LABORATORY RESULTS:

All measurements taken at 145MHz, NFM, unless stated

Sensitivity;	
Input signal level in μV pd required to give 12dB SINAD;	
Freq.	Level
66MHz	0.32
78MHz	0.32
88MHz	0.32
108MHz	0.57 (AM)
125MHz	0.74 (AM)
136MHz	0.99 (AM)
137MHz	0.36
145MHz	0.34
155MHz	0.36
165MHz	0.41
174MHz	0.48
216MHz	0.26
224MHz	0.26
225MHz	0.39 (AM)
250MHz	0.58 (AM)
300MHz	0.34 (AM)
350MHz	0.39 (AM)
400MHz	0.32 (AM)
405MHz	0.20
425MHz	0.25
435MHz	0.26
450MHz	0.26
475MHz	0.29
500MHz	0.31
512MHz	0.28
806MHz	0.18
850MHz	0.15
900MHz	0.18
950MHz	0.23
956MHz	0.23

Squelch Sensitivity;	
Level of signal required to raise receiver squelch	
Threshold;	0.28 μV pd (9dB SINAD)
Maximum;	0.96 μV pd (25B SINAD)

Image Rejection	
Difference in level between unwanted 1st Image (-21.6MHz) and wanted signal levels, each giving 12dB SINAD on-channel signals;	
145MHz;	11.5dB
435MHz;	1.2dB
935MHz;	2.2dB

Blocking;	
Measured as increase over 12dB SINAD level of interfering signal modulated with 400Hz at 1.5kHz deviation to cause 6dB degradation in 12dB SINAD on-channel signal;	
+100kHz;	75.5dB
+1MHz;	84.0dB
+10MHz;	86.7dB

Intermodulation Rejection;	
Measured as increase over 12dB SINAD level of two interfering signals giving identical 12dB SINAD on-channel 3rd order intermodulation product;	
25/50kHz spacing;	55.9dB
50/100kHz spacing;	63.4dB



SUBSCRIPTIONS AND
BACK ISSUES HOTLINES:
ORDERS:
01858 - 435344
ENQUIRIES:
01858 - 435322
LINES OPEN 9am - 6.30pm

Adjacent Channel Selectivity;	
Measured as increase in level of interfering signal, modulated with 400Hz at 1.5kHz deviation, above 12dB SINAD ref. level to cause 6dB degradation in 12dB on-channel signal;	
+12.5kHz;	10.9dB
-12.5kHz;	7.6dB
+25kHz;	60.8dB
-25kHz;	61.5dB

Maximum Audio Output
Measured at ext. speaker socket, 1kHz audio at the onset of clipping (10% distortion), 8 ohm resistive load;
1.49W RMS

Realistic PRO-62 Review

G4HCL goes portable with triple conversion using Realistic's new handheld scanner

Just about due on the UK market as this issue appears is Realistic's new PRO-62 handheld scanner, and I was very pleased to receive an early model to test for Ham Radio Today.

The set is uniquely styled, having a very modern and up-to-date appearance with a grey plastic case. It's also nicely hand and pocket-sized, measuring 62mm (W) x 42mm (D) x 145mm (H), and is powered from a set of six internally fitted AA sized cells, a side-mounted 'charge' socket also allowing optionally-fitted nicads to be charged in-situ.

AM and FM Coverage

The scanner covers 68-88MHz, 118-174MHz, 380-512MHz and 806-960MHz. 'Default' channel spacings and modes are automatically switched in depending upon the frequency selected, these being AM with 25kHz steps on the AM airband range of 118-137MHz, 5kHz FM on other VHF ranges, and 12.5kHz FM on UHF. On any frequency however, you can manually select either AM or FM reception, with channel steps of 5, 12.5, or 25kHz.

200 memory channels are available, arranged into 10 banks of 20 channels each, and each bank as well as individual memory channels can be selected 'in' or 'out' of scan mode as you wish. The usual 'limit' and 'priority' scan facilities are fitted together with a switchable two-second delay prior to scan resume, and a switchable backlight is provided to show you what's happening on the LCD at night.

In use

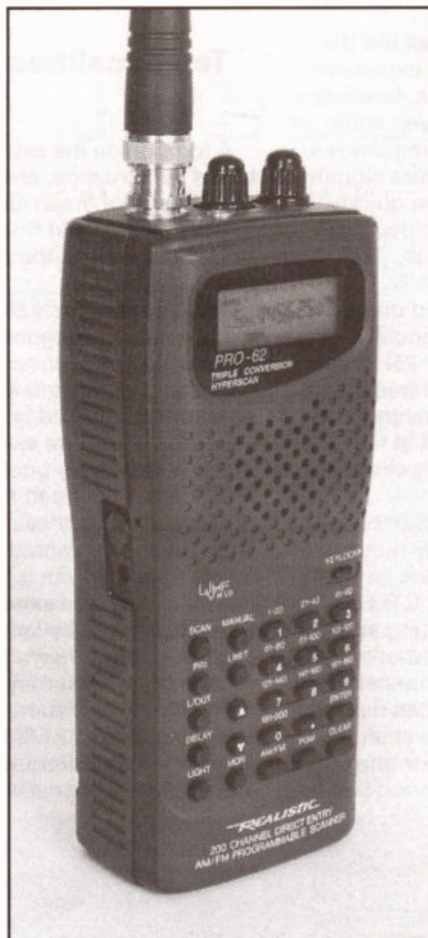
I found the set was very easy to operate, although I had to be a little

careful in using the small rubberised keypad due to the small buttons (or maybe it's my large fingers). A belt clip is supplied as a carrying aid, this was quite handy, I found the receiver also

fitted nicely into my pocket. In the latter case, I had to make sure I'd switched the (equally tiny) 'key lock' control in, to prevent accidental key presses.

Out and about portable, I found the set was quite sensitive with its supplied set-top aerial, and when connected to my rooftop VHF/UHF aerial at home it brought in otherwise weak and distant VHF stations with ease, a little less so on UHF but still quite well. Surprisingly, I had no problems at all from unwanted signals 'breaking through', even from around home in a rather 'RF congested' location in the south of England where I usually suffer greatly from these. I found the switchable AM receive facility useful, many such scanners (obviously not being designed with the UK market in mind) being incapable of this.

With the set loaded with six 700mAh nicads, a fully charged set usually lasted for around 8 hours

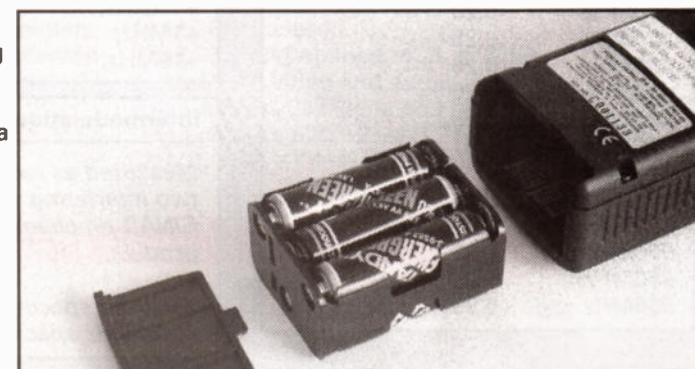
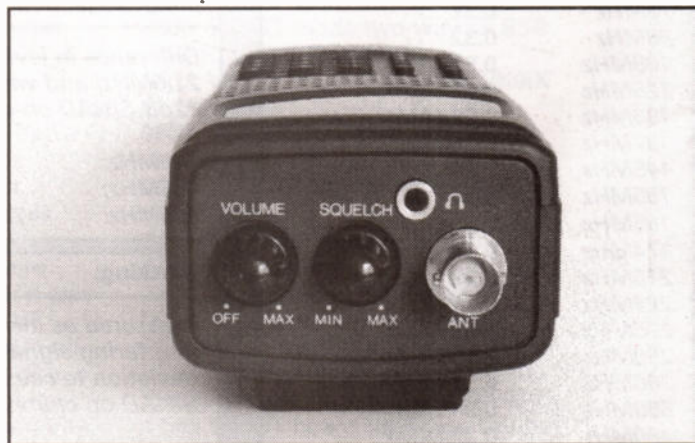


worth of use where the squelch raised intermittently - so a spare set of nicads could be useful for 'all day' monitoring, at an air show for example. A DC socket (next to the 'charge' socket) lets you power the scanner from an external 9V (not 12V) source. This uses a coaxial DC connector with the outer as positive, rather than negative, so you'll need to watch out for this, as well as the voltage requirement, if you want to use the set from your car's supply via an in-line regulator.

Insides

A glance inside the set shows it's very well made, with a good amount of inter-stage screening. The receiver circuitry uses a triple conversion

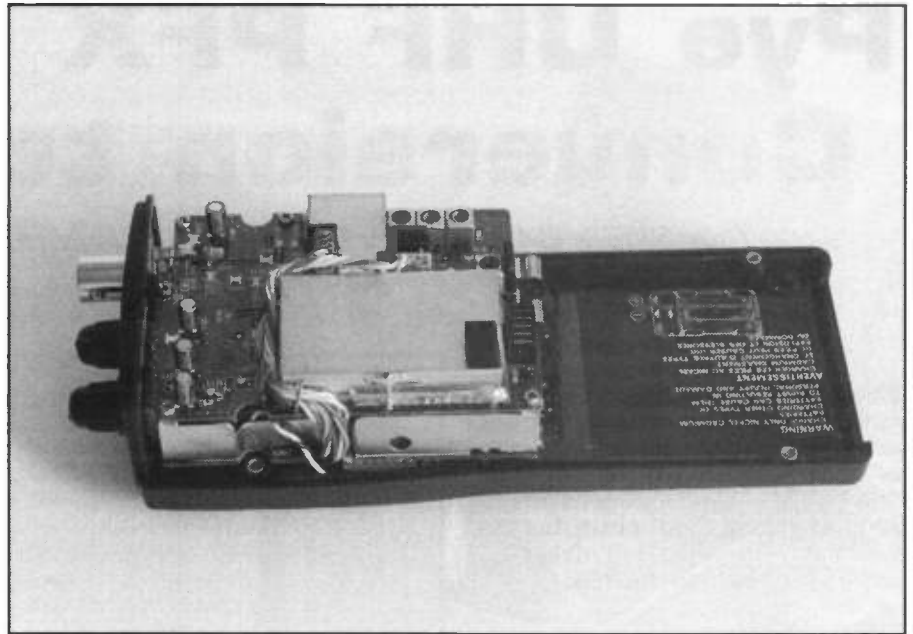
superheterodyne, with a high (VHF range) 1st IF followed by 10.8MHz and 455kHz 2nd and 3rd IFs respectively. All this means that it should give good performance in terms of unwanted signal rejection, which my measured technical results as well as the on-air performance confirmed.



Conclusions

The PRO-62 is nicely styled, and what's more it works as well as it looks. It certainly isn't just another 'gimmicky' handheld that 'looks' the part but doesn't 'act' the part. The facility of switchable AM/FM across the coverage range is a useful function, this often not being the case for similar sets which are usually primarily designed for a US, and not UK, market.

My thanks go to Link Electronics in Peterborough for the timely loan of the review set.



LABORATORY RESULTS:

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

Squelch Sensitivity;

Level of signal required to raise receiver squelch

Threshold; 0.18 μ V pd (8dB SINAD)
Maximum; 0.87 μ V pd (30dB SINAD)

Adjacent Channel Selectivity;

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

+12.5kHz; 6.3dB
-12.5kHz; 10.1dB
+25kHz; 56.9dB
-25kHz; 57.1dB

Blocking;

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

+100kHz; 67.3dB
+1MHz; 77.7dB
+10MHz; 93.0dB

Intermodulation Rejection;

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

25/50kHz spacing; 52.5dB
50/100kHz spacing; 52.3dB

Sensitivity;

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

Freq.	Level
68MHz	0.20
78MHz	0.21
88MHz	0.24
118MHz	0.31 (AM)
125MHz	0.33 (AM)
135MHz	0.33 (AM)
145MHz	0.22
160MHz	0.23
174MHz	0.27
380MHz	0.43
400MHz	0.44
435MHz	0.37
450MHz	0.35
500MHz	0.42
512MHz	0.42
806MHz	0.33
825MHz	0.39
850MHz	0.42
875MHz	0.44
900MHz	0.44
935MHz	0.46
950MHz	0.49
960MHz	0.5



SUBSCRIPTIONS AND
BACK ISSUES HOTLINES:
ORDERS:
01858 - 435344
ENQUIRIES:
01858 - 435322
LINES OPEN 9am - 6.30pm

Image Rejection

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

1st Image; >100dB
2nd Image; 73.3dB
3rd Image; 58.2dB

Maximum Audio Output

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

98mW RMS

Current Consumption

Scanning, no signal; 88mA
Receive, mid. volume; 119mA
Receive, max. volume; 174mA

Pye UHF PFX ex-PMR Conversion to 70cm

*Tony Skaife G4XIV converts the Pye UHF synthesised handheld into
a 99 channel 70cm rig*

The PFX is a series of FM handheld transceivers, covering VHF and UHF. Some readers may be familiar with the PF85, which was featured in an earlier HRT conversion article. The PFX is of similar dimensions to its crystal controlled cousin, but the fact that it is synthesised makes it more versatile than the PF85.

Operation

With the battery fitted, the set is switched on and off by pressing the green button at the lower side section of the radio. This on/off switch should have a very positive feel to its action, and has a 2.5A fuse 'hidden' inside it. The battery supply (9.6V nominal) is primarily routed direct to the PA, together with the control unit and a three leg plug-in regulator which provides 7.4V to power the rest of the modules. Generally when the regulator fails, a dark brown patch develops in the lower corner and its output falls to about a volt and so, the radio failing to operate. However, a failure of the regulator can cause it to go short circuit, and that sends 9.6V where 7.4V would normally be. Externally there would be no fault symptom as the radio would appear to function, but due to the increase in voltage the radio would operate about 25kHz too high.

The analogue module is encapsulated so it cannot be repaired, only exchanged for another. Its function is to act like an interface to and from the logic board. Transmitter audio (modulation) passes through the analogue as do the PTT and VCO lines. Two lithium cells provide a constant supply for the logic board, and should the radio fail to operate, it is a very simple task to measure each cell to check if their failure has caused the problem. Each cell should be higher than 2.6V and if they have dropped to that level from their nominal 3.3V then I would advise their renewal. Most of the test points can be checked with moderate test equipment, so far all that I've needed has been a multimeter.

The other main feed to the logic



The PFX handheld

board is the plug-in reference oscillator, which is an adjustable crystal controlled device. Its frequency can be monitored on the logic board and runs at 8.4MHz, therefore a frequency counter gives a handy check. Because this unit is a plug-in item, a major cause of its failure is one or more of its legs coming off, so check the sockets for detached legs should you have cause to remove the oscillator. The logic board is the unit that controls the main radio functions, this being a plug-in unit. On it are the ICs that control the frequency synthesis and transmit and receive operations.

PROM control

A plug-in PROM (Programmable Read Only Memory, which is the device that actually decides what frequency each of the 1-99 indicated channels will receive and transmit, will need to be changed for use on

different frequencies such as 70cm. (This is an 82S185 18 pin fusible-link TTL PROM, - Tech Ed).

It is at this point I had to enrol outside help, as I don't have the facility to do PROM blowing myself. As for the cost, generally I find it less than the cost of crystallising a couple of channels on a PF85.

Set-top display

There is a fault symptom that, apart from not being able to transmit or receive, when the set is out of lock the LCD displays all 100 channels, which can aid fault finding.

The LCD (Liquid Crystal Display) and logic board both feed each other via a flexible printed circuit. At the top of the radio on the side is a small button that brings on the LCD backlight while it is being pressed. The small button on the top, marked with a speaker symbol, lifts the squelch only while it is being pressed. The next button along has a musical symbol and is only used if a tone coding or encoding is fitted, usually it won't be so the button has no use (although it can be used if you add an internal 1750Hz tone burst, as I did - Tech Ed). On switching the radio on, the word 'volume' and a number from 1-8 appears on the display. The numbers represent the volume setting, with 8 being the maximum, the level being preset by a variable resistor on the motherboard. To vary the volume, press the buttons with '+' or '-' until the required audio level is obtained. Pressing the 'M' button displays the word 'Channel' and its number currently being used and can, like the volume, be changed by prudent use of the '+' and '-' (up/down) buttons. After about four seconds of not touching the buttons, the display will revert to its volume and number.

On the side of the radio is the rubber covered PTT (Press To Talk) switch, holding it pressed will cause the radio to transmit. An indication that the radio is transmitting is given by the display showing just a

line of 10 chevrons (>>>>>>>>>>>>) . The number of chevrons is not proportional to power out like a amateur transceiver might show, it merely indicates it is in the transmit mode. On some versions of the PFX, there is a red LED (Light Emitting Diode) situated between the up/down buttons, on that type this is lit during transmit but the display goes completely blank.

Frequency generation

Basic frequency generation comes from the VCO (Voltage Controlled Oscillator) which has one receive section, and two transmit sections. Instructions from both analogue and logic modules control the VCO in its transmit and receive functions. Outputs from the VCO are amplified in the buffer. An output from the buffer provides about 1V RMS to the input of the PA (Power Amplifier) stage. Transmitter audio (modulation) may be from an external or internal electret microphone, and is amplified in the transmit audio stage. This is a totally plug-in module so must be replaced if faulty. Its output is controlled by a variable resistor network to the logic unit via the analogue module, and because of this arrangement, once the deviation is set on one channel, it becomes set on them all, hence one adjustment does the lot.

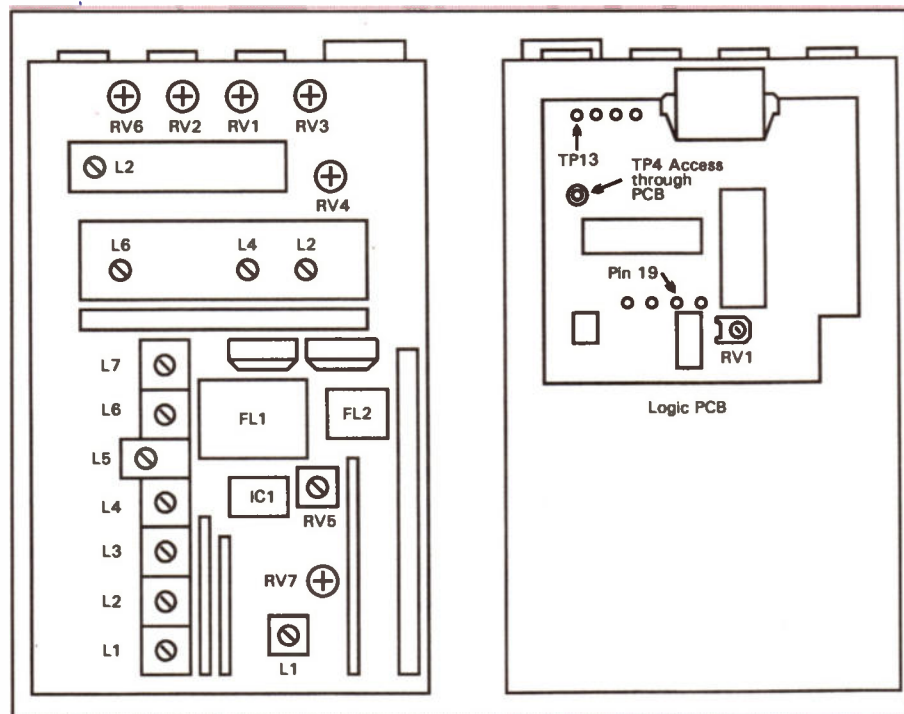
Returning to the PA, it is a plug-in module and is either a low power (1.5W), or high power (4W). If in doubt, the identification numbers on the module will be '-700/' or '-710/' respectively. An output from the PA goes to the aerial switch module, from there it is routed to either the set top aerial or a remote one if the facility socket is used.

Getting it on 70cm

If the radio has not been converted to your particular band then fit a suitably programmed PROM and set the radio to the channel containing the highest transmit frequency. With the PTT pressed, use the multimeter to measure, against chassis, the DC voltage at TP4, which is reached through a small hole in the logic board. Using a non-metallic trimmer adjust the transmit VCO until about 4.8V can be read. An unadjustable 7V at this point would show that the VCO is faulty and would need replacing. Fine frequency adjustments can now be made by tuning the slug in the reference oscillator, so a frequency counter would prove useful. If power measuring equipment is not available then, using a external 11V supply, measure the current on transmit and set the variable resistor for no more than 700mA (1.4A with the high power PA).

Turning now to the receiver, the VCO receive section provides an output which is amplified in the buffer and appears as half the local oscillator frequency to the RF and mixer unit, where it is doubled to produce the LO. Also fed into this unit is the received signal from the aerial and aerial switch. From there on the radio is like a conventional double superhet with IFs at 21.4MHz and 455kHz. Power for the AF stages is via the control unit which keeps it suppressed during transmit. To align the receiver, select the channel which has the highest receive frequency and measure the DC voltage on TP4 (but not while transmitting), and set the VCO receiver tuning slug to no more than 4.8V. Select a channel with a mid frequency then inject (via the aerial or the facility socket) a modulated signal, then tune the plastic slugs in the RF mixer unit, reducing the input signal as necessary until no further improvement is seen. From then on you will have a radio to be proud of.

Due to the joining of Pye and Philips, it is possible to find either of those names painted on the radio, or sometimes even with no name. Charging the battery is best achieved with the manufacturer's drop-in charger, but one of these may not be available. The simple answer is to obtain a spare facility plug and connect a wire to pin 10 (+) and one to pin 12 (-), a suitable socket may be connected to one of those little multi-voltage power units, set on 12V, that come with a built-in mains plug. Also remove the two pins (with flats) by unscrewing them and that will enable you to listen while charging. If a 10.5V, 1A regulated supply is available then one can transmit and receive without having a battery connected. Alternatively, a dud nicad unit may have its insides removed and replaced with a voltage regulator circuit, so the radio can be used from the car's battery, or the shack's 13.8V power supply.



Internal alignment points

Test and adjustment points
RV1 - sets deviation
RV5 - sets power output
RV6 - sets volume level
RV7 - sets mute level
VCO, L6 sets RX and L2 sets TX
RF and mixer, adjust L6, L7, L1, L2, L3, L4, and L5
Reference module, L2 sets fine frequency

More information and ready-programmed PROMs

For any queries regarding this article, and for further PROM programming information including information on programming other channels, you should contact the article author either by phone (Tel. 01904 792208) or by post to Tony Skaife c/o the HRT Editor, with an SAE if you require a reply from Tony. Tony also tells us he can supply a ready-programmed PROM for 70cm with all simplex and repeater channels programmed, at a nominal cost - contact Tony direct for details.

If you'd like to receive a circuit diagram for the UHF PFX featured here, including connection details of the facility module connector, plus any further updates as available, just send an SAE together with the corner flash from this page to; *PFX Circuit, Editor, Ham Radio Today, Nexus, Nexus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST.*



PROM code calculation

For 70cm channel RB1, i.e. 433.000MHz RX, 434.600MHz TX;

RX freq: 433.000
 -21.4MHz = 411.600
 'MHz.' - 384 = 27
 Convert to hex = 1B
 Reverse = B1 (Digit 'a')
 'kHz' divided by 12.5 = 48
 Convert to hex = 30
 Reverse = 03 (Digit 'b')

TX Freq: 434.600
 'MHz.' - 384 = 50
 Convert to hex = 32
 Reverse = 23 (Digit 'c')
 'kHz' divided by 12.5 = 48
 Convert to hex = 30
 Reverse = 03 (Digit 'd')

Store in PROM in the hex string; **1 'b' 'a' 3 0 B 2 'd' 'c' 3 0 B**, i.e. for this example; **103B130B2032330B**.

'1' signifies RX, '2' signifies TX, with each sequence being followed with 30B hex. Remember to prefix the string with any required address numerals for your programming software.

Let's take a further worked example, 70cm channel RB1, which is 433.025MHz RX and 434.625MHz TX. First, take the receive frequency and subtract 21.4MHz (the RX IF) to give the VCO injection frequency, this giving 411.625MHz. Now, take the 'whole' MHz portion, i.e. 411, and subtract a fixed offset of 384, to give 27. Now convert this to hexadecimal, to give 1B hex. Now 'reverse' this, to give B1. For the 'kHz' portion, divide by 12.5 (the minimum channel spacing), i.e. 625 divided by 12.5, to give 50. Convert again to hexadecimal, to give 32 hex. and again 'reverse' this to give 23. Do likewise for the transmit side, except that we've now calculating for the actual transmit frequency, so don't subtract the RX IF of 21.4MHz. Now for the transmit side. 434.625MHz, the 'whole' number minus 384 is 50, which is 32 hex, reversed give 23. The kHz section, 625, divided by 12.5 gives 50, which is 32 hex, reversed gives 23. This should then be stored in the form 123B130B2232330B. Storing this in PROM address '00' will then give RB1 on the first channel, i.e. channel 1. Note that channel 0 is not available and is not displayed unless a fault condition occurs, so you'll need to store RB0 in a different channel, e.g. channel 99



Typical PROM codes for 70cm channels RB1 to SU23

70cm Chan	PROM Addr	Stored Hex Info
RB1	00	123B130B2232330B
RB2	01	143B130B2432330B
RB3	02	163B130B2632330B
RB4	03	183B130B2832330B
RB5	04	1A3B130B2A32330B
RB6	05	1C3B130B2C32330B
RB7	06	1E3B130B2E32330B
RB8	07	104B130B2042330B
RB9	08	124B130B2242330B
RB10	09	144B130B2442330B
RB11	0A	164B130B2642330B
RB12	0B	184B130B2842330B
RB13	0C	1A4B130B2A42330B
RB14	0D	1C4B130B2C42330B
RB15	0E	1E4B130B2E42330B
SU16	0F	100C130B2021330B
SU17	10	120C130B2221330B
SU18	11	130C130B2421330B
SU19	12	160C130B2621330B
SU20	13	180C130B2821330B
SU21	14	1A0C130B2A21330B
SU22	15	1C0C130B2C21330B
SU23	16	1E0C130B2E21330B

WISE BUY BARGAINS!

TAIT 498 2M SYNTH MOBILE COMES WITH FULL INFO TO MOD TO 2M AND PRE-PROGRAMMED EPROM FOR 2 METRES ALSO A KIT OF PARTS FOR THE MOD. APPROX 25 WATTS OUTPUT, 100 CHANNELS. ALL YOU HAVE TO DO IS THE MODS AND BUILD YOUR OWN FRONT PANEL (INFO INCLUDED FOR BUILDING YOUR OWN FRONT PANEL). £50

STORNO 5114S HIGH BAND SYNTHESISED DASH MOUNT MOBILE SET FOR USE ON 2 METERS ORIGINALLY 12 CHANNELS AND APPROX 25 WATTS RF O/P. 12V SUPPLY INPUT. THESE HAVE BEEN USED COMMERCIALY FOR DATA TRANSMISSIONS SO HAVE NO MIC OR LOUDSPEAKER. BUT THEY ARE SUPPLIED WITH FULL INFO TO MOD TO 2 METRES AND ARE ALSO IDEAL FOR PACKET USE AND BELIEVED SUITABLE FOR HIGH SPEED PACKET USE ALSO. £29

STORNO 5662S UHF SETS FOR 70CMS THESE SETS ARE BASICALLY THE SAME AS THE STORNO 5114S AND ARE ALSO SYNTHESISED THESE COME WITH A PRE-PROGRAMMED EPROM FOR 70CMS AND A KIT OF PARTS AND INFO TO MODIFY FOR A 40 CHANNEL UHF SET, THESE CAN ALSO BE USED FOR THE UHF PACKET. (NO SPEAKER OR MIC SUPPLIED WITH THIS SET.) £50

NOVA 242 LOW BAND AM OR FM SWITCHABLE 4 FOR 4 METRES 10 CHANNEL CRYSTAL CONTROLLED WITH MIC AND SPEAKER ALSO WITH ALIGNMENT INFO YO MODIFY TO A GOOD 4M RADIO 12V IP AND 25 WATTS O/P. £29

PYE MD283 LOW BAND AM SYNTHESISED WITH SPEAKER AND MIC. THESE SETS CAN BE USED FOR MANY APPLICATIONS AND ARE ALSO SUITABLE FOR LOW BAND AM PMR RADIO USE. £46

STORNO 5662 CRYSTAL CONTROLLED FOR 70CMS OK FOR 9600 PACKET. £35

ALL EQUIPMENT SOLD "AS IS" BUT CHECKED FOR COMPLETENESS BEFORE DESPATCH
PLEASE SEND AN SAE WITH ENQUIRIES

G.W.M. RADIO LTD

40/42 PORTLAND ROAD, WORTHING, SUSSEX BN11 1QN
TEL: 0903 234887/0903 236913 OR FAX: 0903 239 239050

SOFTWARE FOR THE RADIO AMATEUR

Europe's leading distributor of Amateur Radio, Engineering and Communications Shareware/PD programs for the PC - 100's of related program disks - FREE CATALOGUE

Transmit and Receive

SSTV - FAX - RTTY - CW - AMTOR

This BRITISH communications interface for the PC is built into a 25 way 'D' Connector. Comes complete with interface cable & 3 software packages. Reviewed in December Ham Radio Today. only £49.95 plus postage

VENUS ELECTRONICS

26 Pevensey Way, Frimley Green, Camberley
Surrey GU16 5YJ Tel/Fax: 01252 837860



D-i-Y RADIO

AN INTRODUCTION TO AMATEUR RADIO - FOR BEGINNERS OF ALL AGES

Newly Licensed - Just Starting?

Then you need *D-i-Y Radio*, the RSGB's magazine designed just with you in mind!

Every issue contains - three construction projects for you to try out, ranging from the simple to the more complicated; Ham Facts; A Technical Feature; a Review - sometimes on equipment, sometimes on Books; Colour A3 Poster; News; Prize competition, and much, much more.

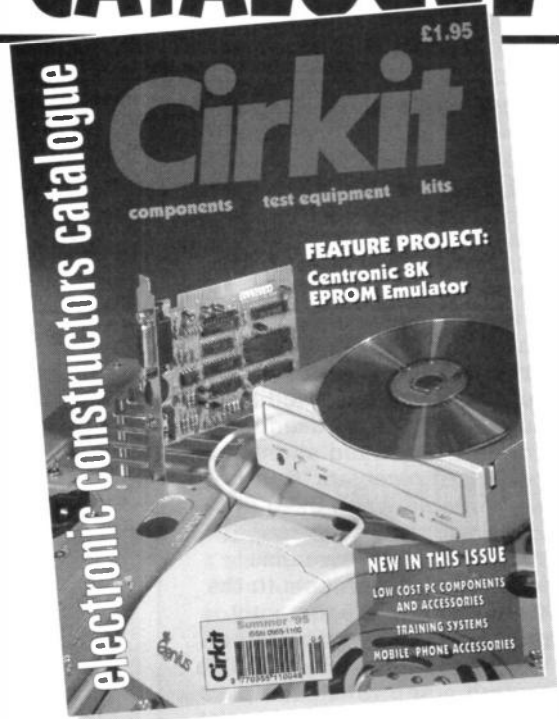
Delivered direct to your door six times a year.

*RSGB Members' price on application



D-i-Y Radio (HRT07), RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE

SUMMER 1995 CATALOGUE



The Summer '95 edition has 280 pages packed with over 4000 products and now with news and features including a full construction project.

- ▶ The computer section is greatly increased with new ranges of equipment and accessories for PCs including:
 - Mother boards, CPUs and SIMMs
 - CD ROM drives and hard drives
 - Sound cards, I/O cards, disc drive cards and video cards
 - Mice, trackerballs and joysticks
 - Power supplies and cases
- ▶ Feature project for an EPROM emulator
- ▶ New 20MHz 'scope from Leader, training systems from Flight and an extended range of mobile phone batteries and accessories from Uniross
- ▶ Latest addition from Velleman kits including a video digitiser card
- ▶ 280 pages, 26 sections, over 4000 products from some of the worlds finest manufactures and suppliers
- ▶ Available at most large newsagents, from 13th April, or directly from Cirkit
- ▶ **Send for your copy today!**

£1.95
+ 30p p&p

Cirkit



Cirkit Distribution Ltd

Park Lane · Broxbourne · Hertfordshire · EN10 7NQ
Telephone: 01992 448899 · Fax: 01992 471314

Project - A Modulated Noise Source

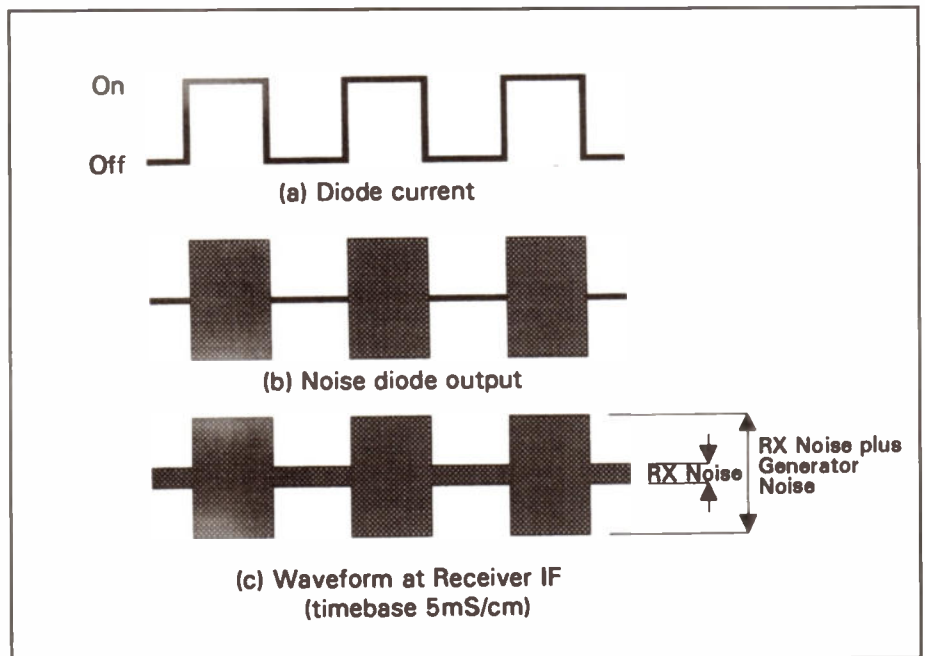
John Cronk GW3MEO describes a simple alignment aid with many applications from HF to 23cm, including ex-PMR conversions

This is a noise generator that is switched on and off at an audio frequency rate. It can be used in innumerable ways to aid alignment and servicing of receivers. It is especially suitable when used in conjunction with an oscilloscope for the adjustment of low noise amplifiers, as improvements to the signal to noise ratio are instantly apparent.

The NE555 is a timer IC that has a power output stage which can pass up to 200mA. In this application the NE555 is connected as an astable square wave generator that runs at about 1kHz, and the noise generator itself is a semiconductor junction in series with a resistive load.

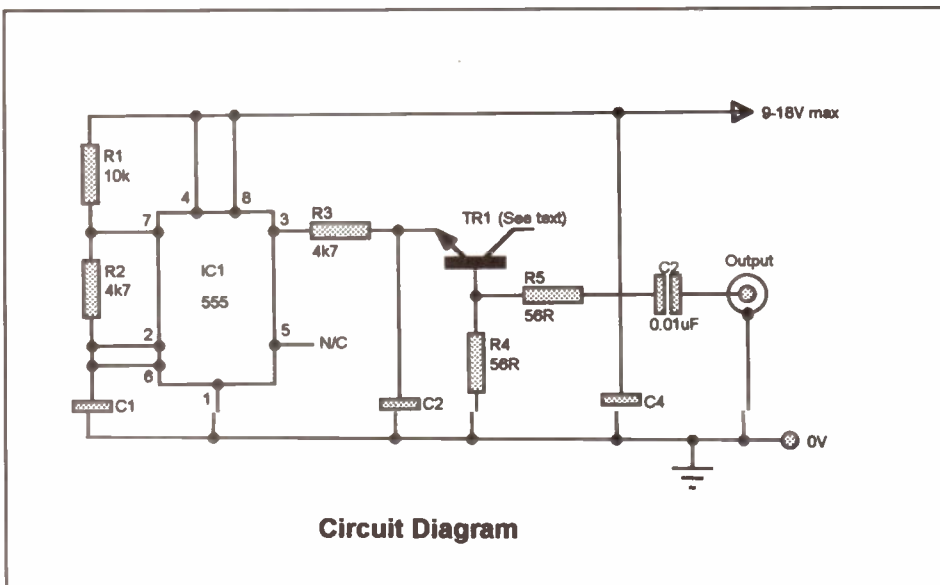
Applications

One application is adjusting the tracking of the RF stages of a general coverage receiver. This can be tiresome when using a signal generator, as both generator and



receiver will need to be repeatedly swung between the HF and LF ends of the band. This device generates a wide spectrum of modulated

noise and can thus replace the signal generator in this respect. The signal must be assumed to be AM, and the receiver controls set for linear operation, *not* overloaded. If the receiver does not have an 'S' meter, the audio output can be used. For FM or SSB receivers the signal needs to be monitored before the detector. An RF detector probe connected to an IF stage could be used as an indicator, but if available, an oscilloscope will show a more useful display. The inherent receiver noise will be seen in the 'off' period, and the generator noise plus the receiver noise seen in the 'on' period. Improvements to both the gain and signal to noise ratio will be instantly apparent as alterations are made to the equipment under test. The output from the noise generator can be considered a good enough match for HF receivers, but VHF and



Circuit Diagram

higher frequency equipment usually require the source to be 50 ohm resistive, especially when adjusting the input circuit. A good quality attenuator can be used to improve the match, at least 10dB should be used. A suitable component with BNC connectors is made by Greenpar and is available from RS Components rated to 1GHz, but has an acceptable VSWR up to 2.5GHz. Accurate attenuators are not easy to build for RF use.

Low noise RF amplifiers require their aerial matching network to be adjusted for best signal to noise ratio. As this is usually different from the maximum gain settings, this is a particularly effective application.

There are other ways of using the device. If connected to a television receiver, several horizontal bars will be displayed on-screen, improvements to the RF stages will show as an increase in the contrast.

Construction

All the components can easily be assembled on a small square of Veroboard or similar matrix board. Use minimum length leads for the noise diode and its associated components, C2, C3, R4 and R5.

The whole device can be housed

Component List

Capacitors;

C1 0.1µF ceramic plate 20V
C2, C3 0.01µF ceramic plate 20V
C4 10µF tantalum 25V

Resistors;

R1 10k 0.25W
R2, R3 4k7 0.25W
R4, R5 56R

Integrated Circuit;

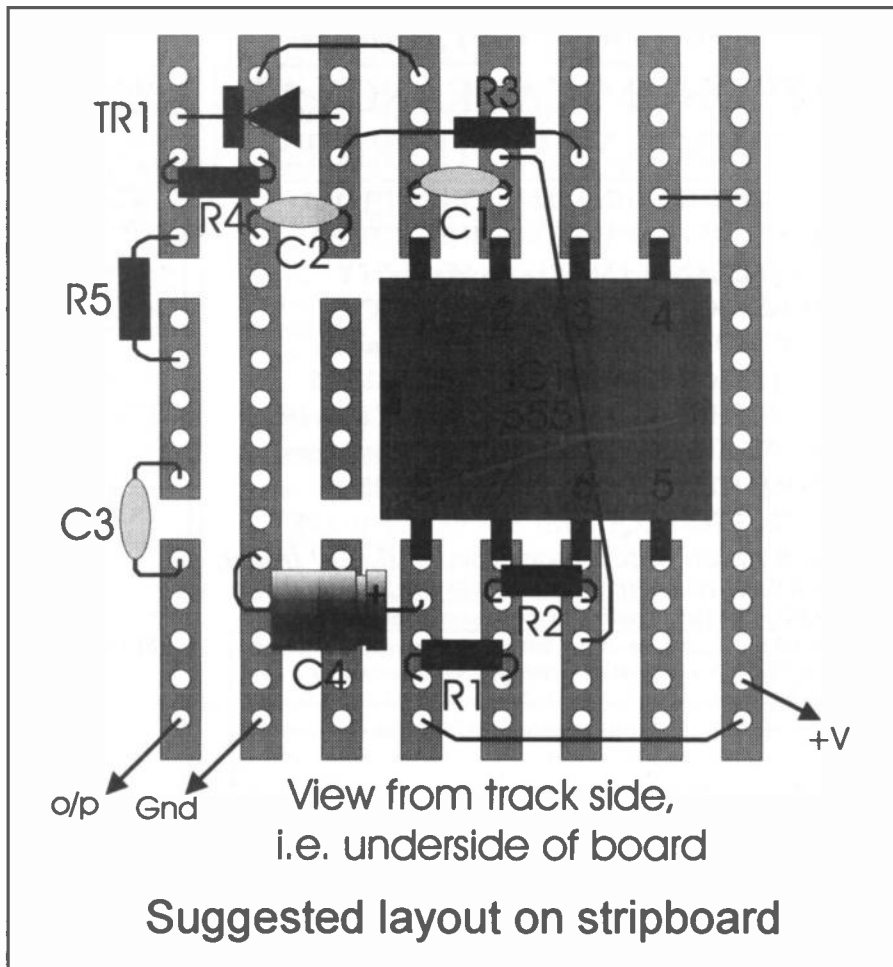
IC1 NE555 (8 pin DIL)

Semi-conductor;

TR1 2N918 (or other device - see text)

Hardware;

Small piece of matrix stripboard (say 20 x 20 holes), terminal pins, small tin or cast box, coax socket of choice.



in a small metal box fitted with an output socket. Power is supplied through a couple of fly leads, as a built in PSU or even an internal battery hardly seems worthwhile. The suggested diode, the base emitter junction of a 2N918 transistor, has frequently been recommended for noise generation and has been used up to at least 1.3GHz.

The whole project can be built in one evening and has repeatedly proved its value when commissioning new projects.

Diodes used as noise generators

All semiconductor junctions will produce noise, but as this is not a parameter to be found in data sheets, experiments with different types could be interesting.

It seems reasonable to choose microwave devices for microwave noise use. Point-contact diodes are often satisfactory. A junction will generate noise when current flows in the forward direction, (cathode

to negative potential) or in the reverse direction. This reversed current flow must be limited to a non-destructive value, but will often produce most noise. Sufficient voltage must be applied for reversed current to flow, with some devices there will be an abrupt increase as the voltage is increased, the Zener breakdown, while with other devices, e.g. germanium diodes, the increase will be more gradual.

The 2N918 base-emitter junction suggested exhibits an abrupt increase around 5.7V. Another consideration is the spectrum of noise generated. Low voltage Zener diodes may seem an obvious choice, but their noise is much greater at low frequencies than high. Forward biased diodes can be operated at high current in the order of ten to a hundred milliamps and reversed biased diodes at ten to a hundred microamps.

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

the new

CRICKLEWOOD Electronics

Very Interesting CATALOGUE

ASTRONOMICAL RANGE AT DOWN TO EARTH PRICES

- TRANSISTORS+ICs+SEMICONDUCTORS
 - RESISTORS+CAPACITORS+INDUCTORS
 - SURVEILLANCE+SECURITY+SECURITY
 - PLUGS+SOCKETS+LEADS+CONNECTS
 - TV & VIDEO SPARES (inc Video Heads)
 - HIFI+DISCO+HIFI GADGETS+SPEAKERS
 - AUDIOPHILE COMPONENTS (inc Capacitors)
 - IN CAR AUDIO+SPEAKERS (inc Bass tubes)
 - COMPUTER ACCESSORIES+BOARDS
 - TOOLS+TEST EQUIPMENT+BENCHWARE
- & much much much more (over 10,000 lines).*

SEND TODAY FOR THE VERY INTERESTING CATALOGUE
Pay by PO, Cheque, Credit Card or tape Coins to Paper

Please send mecopies of the 1995 Cricklewood Catalogue.
I enclose £2.50 per copy (UK & Europe). £5.00 overseas

Name.....
Address.....
.....
.....

Please Charge my Credit Card.no.....
Expiry Date.....Tel no.....HRT

Cricklewood Electronics Ltd, 40-42 Cricklewood Broadway
London NW2 3ET Tel 0181 450 0995 Fax 0181 208 1441



HATELY ANTENNA TECHNOLOGY

GM3HAT

1 Kenfield Place, ABERDEEN AB1 7UW, Scotland, U.K.
Credit Card Orders may be telephoned any day on 01224 316 004 from 0630 'til 2130

RELIEF FROM STRESS

Are you one of the thousands of licenced radio amateurs who cannot go on the air because of a restriction of site, or circumstance? Would you like to enjoy contacts on any of the HF bands with a space saving antenna system which is easy to OPERATE, WIDEBAND, LOW SWR, and BENIGN relating to EMC?

Try a **CROSSED FIELD ANTENNA** If you haven't heard of these revolutionary new devices, then send for data, or ask for the loan of a DOCUMENTARY VIDEO which we have prepared and lent out for a £5 returnable deposit, cheque only.

The TWO DESIGNS we market which cover all 9 HF Bands, (160m.....10m):-\

The Electromagnetic Delay-Line Radiator Types EMDR 1 and EMDR 2, being respectively 8.5 metres (28ft) and 15.5 (51ft) long which may be draped along a balcony of a block of flats, or laid over a house roof. Prices £189 and £199 inc.

The Crossed Field Loop CFL 0.5 being just 64 cm (2ft6in) in diameter which can be hung from a window, or placed on the roof of a car or small boat.

It is priced at £250.

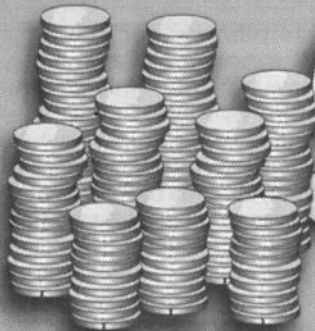
Proprietor Maurice C Hately, M Sc, FIEE Licenced since 1950

Ham Radio Today now on tape

This magazine is available on tape for those unable to read normal print. For details write to;

Talking Newspaper Association,
National Recording Centre,
Heathfield
TN21 8DB

Tel. 01435 866102



SAVE £££'s

GET A HEAD START WITH OUR SUPER SUMMER SALE!

14 issues for the price of 12!

Gain maximum benefit from your magazine with a subscription. Not only will you be able to enjoy the luxury of having your favourite magazine delivered to your door, if you subscribe now you will receive two magazines extra FREE!

Take advantage of this special give away now!

Either send off the coupon or order now on: 01858 435344
(lines open: 9.00am - 6.30pm.) (Enquiries: 01858 435322).

Yes, I would like to subscribe to HRT magazine for 1 year.
Please commence my subscription from theissue.
Please quote subscription number if renewing/extending

Special Subscription Rates 1 Year (14 issues for the price of 12!!!)

U.K	Europe & Eire	Sterling O/Seas	U.S. \$ O/Seas
£21.60	£28.40	£29.60	\$53.00

I enclose my cheque/M.O. for £.....
made payable to Nexus or debit my Access/Visa:

□□□□ □□□□ □□□□ □□□□

Signature.....

Expiry.....

Name(Mr/Mrs/Miss).....

Address.....

.....PostCode.....

Please post this coupon with your payment to: Nexus Subscription Department,
Tower House, Sovereign Park, Lathkill Street, Market Harborough, Leicestershire. LE16 9EF.
Please tick this box if you do not wish to receive information from any other companies which may be of interest to you. This offer must close on: 1/9/95 (HRT10)

The Yaesu FT-101 Transceiver

Ben Nock G4BXD describes how this popular secondhand transceiver can provide a compact multimode HF rig at low cost

One of the major influences on the world of amateur radio must have been the introduction of the FT-101 transceiver. Nearly every amateur I worked in the early 70's it seemed, was using an FT-101. From the start, the FT-101 found favour in many ham shacks. It was revolutionary in that it was self contained, had its own built-in power supply, operated on all HF amateur bands

(except 160 in the early versions), ran a good amount of power, all modes AM/CW and SSB, and was small enough even to be used mobile. The set also broke new ground for many hams in that it was a solid state set, save for the TX driver and PA stages and even these stages could be turned off when just listening. It was most pleasing to be able to walk into the shack, switch on the 101 and tune around immediately without having to wait for the valves to warm up. I can recall owning one of the early 101's. I guess by today's standards the performance could not be called anything like hot, the 40m band was nigh impossible to work at some times, but, compared to a lot of other rigs around at the time, it was certainly quite usable. Having used various KW's and other totally valved rigs since becoming licensed, the fascination with the solid state receiver took a long time to die down.

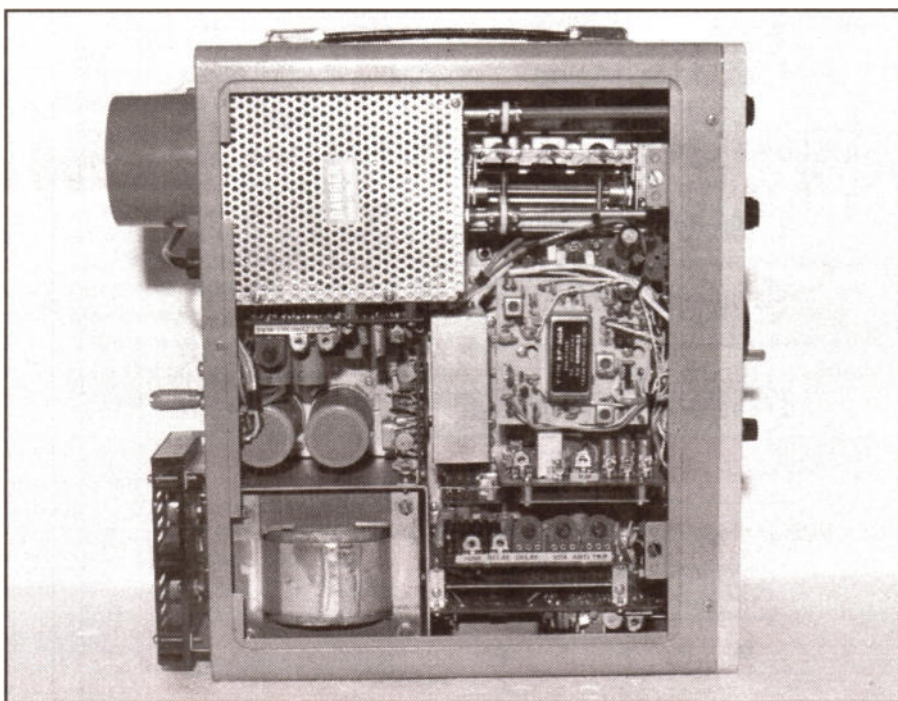
Generically speaking, the 101 arrived in the early part of the 1970's, around 71. There was then a 101 Mk 1, strangely, around mid 1972 which was different to the 101 in the area of the audio output stage apparently. A 101 Mk 2 followed



The Yaesu FT-101E

which had 160m fitted along with a better DC to DC converter, improved filtering, IF circuits and a noise blanker. 1973 saw an improvement to the Mk 2 with the addition of an audio preamp. The FT-101B arrived

around 1974, this came with a couple of LEDs on the front panel and an improved SSB filter. The noise blanker was moved to a different location in the set. The 1975 101B Mk1 had a replacement audio IC fitted, giving better AF output. The FT-101E, 1975, has the addition of a speech processor, but this model had no external means of adjustment. This problem was overcome in the Mk 2, 1976, which had an extra control ganged with the clarifier, which varied the amount of clipping. The last of the true FT-101's, the 101E Mk 3, arrived in late 76, this had a



Inside view, mains PSU lower left, PA stage upper left, clipper centre right

smaller DC to DC converter and an improved noise blander circuit. The 101 then went into the Z and ZD models, but were different rigs to the original 101 design, the ZD sporting a digital read-out. An enquiry on the packet radio 'super highway' brought several responses. Some moaned about the quality of the early sets for the reasons mentioned above. Others remembered their 101's with love and affection, strange behaviour for fully grown radio hams.

Circuit Description

The FT-101 series comprises 11 basic units, when they are all fitted. The RF unit houses the receiver RF amp and first mixer along with the TX second mixer and the associated crystal oscillator and buffer amp. The crystals are mounted on a small PCB separately. The mixer unit houses the TX first mixer, the band pass filter, and the receiver second mixer. The BPF operates between 5520 to 6020kHz, this being the RX first IF. The VFO unit tunes 8700 to 9200kHz and is followed by a buffer and amplifier.

The IF unit contains the SSB and CW (if fitted) filters, the SSB and AM detectors, and AGC and S meter amplifiers. The filter centre frequency is 3180kHz. The MOD and OSC unit houses the USB, LSB, and CW/AM

carrier oscillators, 3178.5, 3181.5, and 3179.3kHz respectfully, along with the balanced modulator, IF amp and oscillator buffers. The FIX and the Processor, if fitted, are housed together. The set has the facility for two fixed frequency channels to be selected, the crystals being between 8700 and 9200kHz, replacing the VFO signal. The processor, operating at the SSB carrier frequency, is in line between the output of the main SSB filter unit and the input of the TX second mixer.

The AF unit houses the RX AF amplifiers, the TX mic amplifiers and the VOX circuits, the side tone oscillator also being located on this unit. The Noise Blanker unit, if again fitted, uses 6 semiconductors and a diode and, when switched in, takes the output from the RX second mixer and processes it before passing it to the IF unit. The TX driver and PA can be considered a separate unit, as can the AC/DC power supply. Two hefty power transistors are used to provide the DC to DC function when operating off 12 volts. Current consumption is around 21A at 12V on transmit peaks.

The Regulator and Calibrator make

up the last unit, providing the required stabilised voltages and the 100/25kHz marker pips for calibration.

All Change

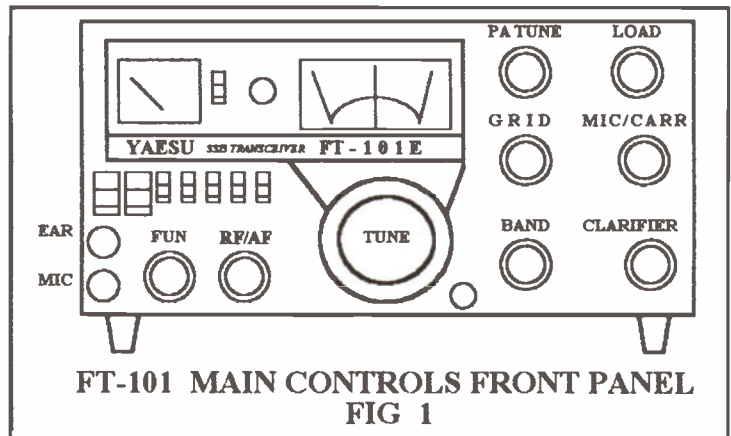
There have been numerous modifications to the 101 over the years. Why is it, that no matter what the set, we have to modify it, only a couple of weeks after its release. I heard one ham talking about the mods he was doing to his brand new TS-50!

Searching the packet network again brought to light various modifications. It is quite likely though, considering the age of the early sets, that most of them have undergone some form of mod or other. The following mods are offered as suggestions only, no credit is sought for them and no guarantee offered as to their validity.

Replacing the PA valves

The transceivers were originally equipped with 6JS6C tubes manufactured by NEC, the tube's properties are slightly different from the 6JS6C tubes available today from American tube manufacturers. In order to use the "American" variety 6JS6's, a simple modification to the neutralisation circuit must be made to the final section of the transceiver.

The modification consists of replacing the fixed value 100 pf 1000 VDC mica capacitor with a 10 pf 1000 VDC mica capacitor. This capacitor, C125, is in series with the 10pF variable neutralising capacitor of the plate circuit. Be sure to use a mica or silver mica of at least 1000 VDC. Do not substitute a different type, because the heat in the final compartment will change the value, and your tubes will fail prematurely,



FT-101 MAIN CONTROLS FRONT PANEL
FIG 1

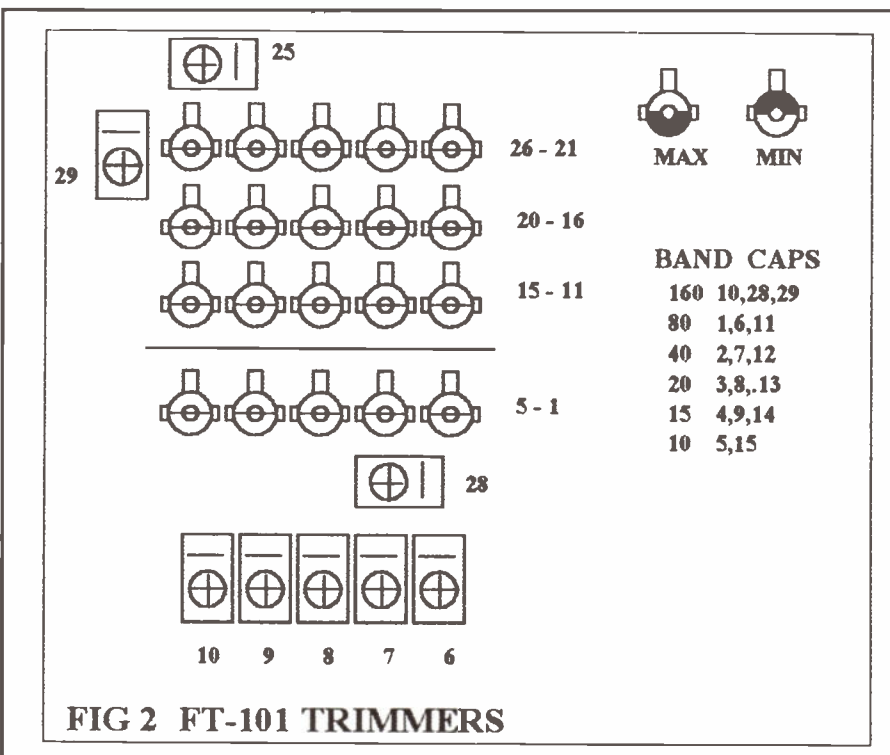
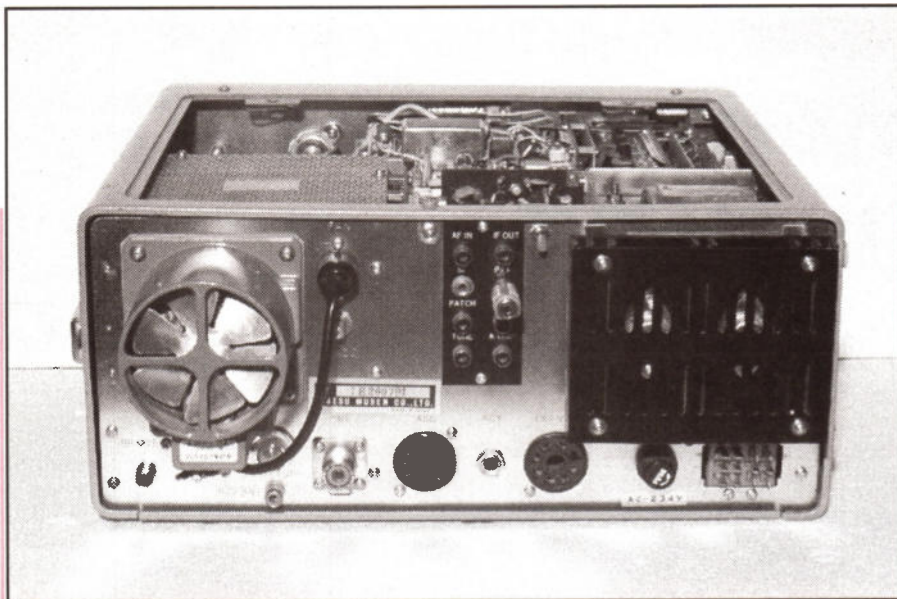


FIG 2 FT-101 TRIMMERS



Rear view, power socket lower right

keep all leads short and in exactly the same orientation as the original capacitor.

Before reneutralizing, open the variable neutralising capacitor all the way to minimum engagement and follow the neutralising instructions in the manual. While dipping the plate, remember to adjust the neutralising capacitor for equal value meter reading peaks (IC position) on both sides of the dip when tuning the "Plate" control.

FT101B CW stability

The CW/AM buffer in the FT-101B/PB-1184A can be unstable due to regeneration. This can be resolved by: Change Q2 2SC372Y/2SC828P to a BF199. Change R8 to 10k. Insert a 220R resistor between the collector and its tuned circuit. Put a Zener diode (1N5237B) across capacitor C15.

Using the set on air

Having had a couple of the early sets over the years, an original 101 and later a 101B, and even more

recently the 101E version, I have always been pleased with the easy tune-up the sets needed. After tuning to the required frequency the preselector is tuned for best received signal. As this control also tunes the TX driver, that part of the tune-up is quite quick. With the set switched to tune and an eye on the in-line power meter, the PTT is operated. A quick rotate of the PA Tune control for maximum output is done and the PTT released. You should not hold the set on tune, with full carrier, for too long as the PA valves are strained.

Another stab at the PTT and the Load control is rotated for maximum output again, a quick touch of the tune control and off with the PTT. This on/tune/off is repeated until no further increase is noted. Along with the PA Tune and Load, the preselector is given the odd tweak, just to ensure maximum output. As the TX circuits are a little more sensitive than on receive, there might be a slight discrepancy between what you think is best receive position and the actual TX peak position of the preselector.

If there is an appreciable difference then the set could probably do with a complete alignment. I would suggest

finding a manual if you do not have one, and finding a good technical expert if your aligning skills are weak. You should be looking at around 150W of output on tune position, that's about 380 to 400mA of PA current, i.e. around 240W DC input. Quite a respectable power level considering the size of the set. In normal use, the PA current meter should be flicking up to around 150 to 200mA. With the speech processor switched in this should rise, and of course hold, for longer. Depending upon the model and year of the set acquired, and whether any modifications have already been done, the receive performance should be quite adequate for those of modest aerial sizes. The filter is a little wide, perhaps again due to the more crowded bands these days, and does give a little problem. For instance, on 1.933 LSB there is breakthrough from USB maritime communications just down the band.

Taking all things in context though, the acquisition of one of these sets could get a newcomer onto the bands without too much cost. They cover all the bands, there are kits available to even get them onto the WARC bands, they run a good amount of power, do not take up too much room, have instant receive facility, and there were a good selection of add-ons to keep you looking at rallies for a while.

There were matching 2 and 6m transverters, external VFOs, speakers, etc., all designed to present a well styled shack to suit most users. So, if you pick up one of these sets, then have fun and I'll see thee on 160 one night.

My thanks to Chris, VK3JEG, for his recollections of the 101 series, and to Brian, G0VNU, for the copy of the handbook and the chance to photograph his set.

Ed's note; several mods and spares for the 101 series are available from Holdings in Blackburn, Tel. 01254 59595 - Proprietor Harry G3LLL seems to be a 'wizard' on these sets!

Specifications: Yaesu FT-101E HF Transceiver

Frequency range (MHz):	1.5-2.0, 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5, 28.0-30.0 (in 4 steps) 10.0-10.5 RX only
Power rating:	260W PEP SSB, 180W CW, 80W AM
Intermediate Freq:	1st IF 5.520-6.020MHz, 2nd IF 3.180MHz
Stability:	Less than 100Hz drift per 30 min period
Modes of operation:	AM, CW, USB, LSB.
Sensitivity:	Less than 0.3µV for 10dB SN/N for SSB
Sideband suppression:	-50dB at 1000Hz
Image rejection:	60 dB or better
Power requirements:	105-125V or 210-250V AC 50/60Hz at 350W TX, 21A at 12V
Rear apron connections:	HF aerial, 2nd RX aerial output (both 50 ohm) Speaker 8 ohm, Phone patch jack, in/out IF output, PTT output, Sidetone O/P, ACC socket, mains input socket, fuse.
Valve compliment:	1 - 12BY7A Driver, 2 - 6JS6C PA, plus some 50 semiconductor devices
Dimensions:	463mm wide x 152mm high x 292mm deep
Weight:	13.6kg

Equipment Reviews in HRT

Missed that review? Here's a list of the very large number we've featured!

Description	Issue	Description	Issue
ADI AT-200 2m handheld.....	May 95	Icom IC-W2E 2m/70cm portable.....	Jun 91
AEA PK-12 Packet TNC.....	Mar 95	Icom IC-4G UHF portable.....	May 88
AKD 2001 2m rig.....	Jul 91	Icom IC-4SRE handheld.....	Dec 91
Alan CT-145 2m portable.....	Oct 92	Icom IC-T21E 2m hand held.....	Jun 94
Alinco DJ-G1 2m portable.....	Feb 94	Icom IC-W21E dual band portable.....	Apr 93
Alinco ALR-22E 2m mobile.....	Dec 87	Icom IC-25E, IC-45E.....	Mar 83
Alinco ALD-24E dual band mobile.....	Feb 88	Icom IC-28E 2m mobile.....	Sep 86
Alinco DR-M06 6m mobile.....	Feb 95	Icom IC-32E dual band portable.....	Oct 88
Alinco DX-70 HF and 6m mobile previewed.....	Jun 95	Icom IC-R72 HF receiver.....	Sep 90
Alinco DJ-100E portable.....	Dec 88	Icom IC-U101 70cm PMR rig.....	Feb 94
Alinco DR-110 2m mobile.....	Nov 89	Icom IC-V200T 4m PMR rig.....	Feb 94
Alinco DR-130 2m mobile.....	Oct 93	Icom IC-228E 2m mobile.....	Dec 88
Alinco DR-150E 2m mobile.....	Jun 95	Icom IC-251 plus muTek front end.....	Oct 83
Alinco DJ-180 2m portable.....	Aug 93	Icom IC-271E plus muTek front end.....	Feb 84
Alinco DJ-480 70cm portable.....	Mar 94	Icom IC-275E.....	Apr 87
Alinco DR-500 dual band portable.....	Dec 89	Icom IC-290E 2m multimode.....	Jan 83
Alinco DR-510 dual band mobile.....	Dec 89	Icom IC-505 6m transceiver.....	May 86
Alinco DR-570E dual band mobile.....	Mar 90	Icom IC-707 HF transceiver.....	Jan 94
Alinco DJ-160E VHF handheld.....	Aug 90	Icom IC-735 HF transceiver.....	Dec 85
Alinco DJ-460E UHF handheld.....	Aug 90	Icom IC-737 HF transceiver.....	Jun 93
Alinco DJ-560 dual band portable.....	Feb 91	Icom IC-745 HF base transceiver.....	Jun 85
Alinco DR-112EM 2m mobile.....	Apr 91	Icom IC-781 HF 'super rig'.....	Jul 88
Alinco DR-590E dual band mobile.....	Jul 91	Icom IC-820H VHF/UHF base transceiver.....	Sep 94
Azden PCS 4000 (computer plus 2m FM transceiver).....	Aug 83	Icom IC-900 multi band mobile.....	Oct 87
Azden PCS 5000 2m mobile.....	May 87	Icom IC-970 VHF/UHF transceiver.....	Nov 90
Belcom LS-20XE 2m handheld.....	Feb 84	Icom IC-1200 1296MHz mobile.....	Sep 87
Belcom LS-202E 2m handheld.....	Sep 84	Icom IC-3220 dual band mobile.....	Jul 90
Commutech FCR 130 receiver (kit).....	Oct 84	Icom IC-3230H dual band mobile.....	Dec 92
Com Talk GEE-890 2m handheld.....	Mar 95	Icom ICR-7000 receiver.....	Feb 89
DCRX 20m direct conversion receiver (Howes Kit).....	Feb 87	Jandek 20m modular receiver with PSU (kit).....	Feb 90
Drake R8E Receiver.....	Feb 92	JIM MX-145 20m portable.....	Feb 93
DVR 2-2 dedicated packet transceiver.....	Apr 90	JST-125 HF rig.....	Jan 88
Eddystone 1650 receiver.....	Aug 87	JST-135 HF transceiver.....	Nov 88
FDK M-750XX budget 2m multimode.....	Jun 84	Kenpro KT-220EE 2m portable.....	Aug 87
Heathkit HW-9 CW transceiver.....	Jun 90	Kenpro KT-400EE 70cm portable.....	Mar 86
Icom IC- 1E triband portable.....	Sep 93	Kenpro KT-44 low cost 70cm handheld.....	Nov 91
Icom IC-Z1E 2m/70cm dual band portable.....	Jun 95	Kenwood TH-22E 2m portable.....	Apr 94
Icom IC-02E portable.....	Feb 86	Kenwood TH-25E 2m portable.....	Jun 88
Icom IC-12E 1296MHz portable.....	May 87	Kenwood TH-26 and TH-46 hand portables.....	Jan 91
Icom IC-2E VHF portable.....	Feb 87	Kenwood TH-27E 2m hand portable.....	Dec 90
Icom IC-2iE 2m mini portable.....	Jan 93	Kenwood TS-50S mobile HF transceiver.....	Jul 93
Icom IC-2SE 2m handheld.....	Sep 89	Kenwood TH-75E dual band portable.....	Oct 89
Icom IC-P2ET 2m handheld.....	Mar 92	Kenwood TH-77E dual band portable.....	Apr 91
		Kenwood TH-78E dual band portable.....	Sep 92
		Kenwood TH-79E dual band portable.....	Feb 95
		Kenwood TS-140 budget HF transceiver.....	Apr 88
		Kenwood TH-215E VHF portable.....	Jun 87
		Kenwood TM-221E 2m mobile.....	Jul 87
		Kenwood TS-690S HF/6m rig.....	Nov 91
		Kenwood TM-721 dual band mobile.....	Aug 88
		Kenwood TM-732E dual band mobile.....	May 92

Kenwood TM-741E triband mobile.....	Sep 91	Yaesu FT-23R 2m handheld.....	Feb 87
Kenwood TM-742E triband mobile.....	Sep 93	Yaesu FT-26 and FT-76 handhelds.....	Sep 91
Kenwood TS-790E base station.....	Apr 89	Yaesu FT-51R dual band handheld.....	Apr 95
Kenwood TS-850S HF transceiver.....	Mar 91	Yaesu FT-73R 70cm portable.....	Jan 88
Kenwood TS-950S HF Transceiver.....	Feb 90	Yaesu FRG-100 HF receiver.....	May 93
Kenwood TW-4100 dual band mobile.....	Sep 87	Yaesu FT-101E plus new bands.....	Jun 84
KW/Ten Tec Argosy.....	Aug 83	Yaesu FT-102 HF transceiver.....	Feb 83
KW/Ten Tec Century 22 transceiver.....	Jul 86	Yaesu FT-203R 2m handheld.....	Jul 84
KW/Ten Tec Corsair.....	Nov 84	Yaesu FT-209R and RH portables.....	Nov 84
KW/Ten Tec Corsair MkII.....	Jan 87	Yaesu FT-211 2m mobile.....	Aug 87
KW/Ten Tec Paragon.....	Jun 89	Yaesu FT-212 2m mobile.....	May 88
KW/Ten Tec Scout.....	Jan 94	Yaesu FT-270RH 2m transceiver.....	Aug 85
Lowe HF-125 receiver.....	Apr 87	Yaesu FT-290 MkII 2m mobile.....	Jan 87
Lowe HF-150 receiver.....	Sep 92	Yaesu FT-290R vs. C58.....	May 83
Lowe SRX-50 HF receiver.....	Oct 92	Yaesu FT-411 2m portable.....	May 89
Maplin reflex receiver kit.....	Aug 91	Yaesu FT-415 2m handheld.....	Apr 92
Mizuho MX-2 2m SSB handheld.....	May 83	Yaesu FT-470 dual band handheld.....	Aug 89
Mizuho MX-7S QRP handheld.....	Jan 90	Yaesu FT-480R 2m multimode.....	Jan 83
Mizuho SB-2X 2m SSB/CW TX.....	Nov 83	Yaesu FT-530 dual band portable.....	Apr 93
Navico AMR-1000 2m mobile.....	Nov 88	Yaesu FT-650 HF transceiver.....	Nov 90
Optoelectronics R10 Interceptor.....	Nov 93	Yaesu FT-690R 6m transceiver.....	May 86
Ramsey 2m transceiver kit.....	Oct 91	Yaesu FT-690 MkII and PA.....	Nov 87
Realistic PRO-2035 base scanner.....	Mar 95	Yaesu FT-708R 70cm handheld.....	Jun 84
Realistic PRO-39 scanner receiver.....	Apr 95	Yaesu FT-711H 70cm mobile.....	Jan 88
Rexon RL-102 2m portable.....	Nov 93	Yaesu FT-726R VHF/UHF multimode.....	Dec 83
Sony ICF-2001D.....	Jan 89	Yaesu FT-730R 70cm mobile.....	Dec 84
Sony ICF-7600D receiver.....	Jan 87	Yaesu FT-736 VHF/UHF base station.....	Mar 88
Standard C58 vs. FT290R.....	May 83	Yaesu FT-736 MuTek upgrade review.....	Jun 94
Standard C408 'credit card' sized 70cm portable.....	Apr 94	Yaesu FT-747 HF economy rig.....	Jun 88
Standard C500 dual band portable.....	Dec 87	Yaesu FT-757GX HF multimode.....	May 84
Standard C558 dual band portable.....	Jul 94	Yaesu FT-767 review plus upgrade.....	Nov 87
Standard C5800 2m multimode.....	Jun 83	Yaesu FT-767 further upgrade.....	Mar 89
Tatung TMR7602 receiver.....	Feb 89	Yaesu FT-770RH UHF mobile.....	Sep 86
Tokyo Hi-power 80m monobander.....	Feb 88	Yaesu FT-790R UHF mobile.....	Feb 83
Tokyo Micro-7 70cm budget handheld.....	Apr 85	Yaesu FT-890 HF transceiver.....	Jun 92
Trio TM-201A 2m transceiver.....	Apr 84	Yaesu FT-900 HF transceiver.....	Nov 94
Trio TH-205E.....	Mar 87	Yaesu FT-980 (computer aided).....	Sep 83
Trio TS-430S HF transceiver.....	Jun 83	Yaesu FT-990 HF transceiver.....	Jan 91
Trio TS-440S HF transceiver.....	Aug 86	Yaesu FT-2200 2m mobile.....	Dec 93
Trio TS-520 series update.....	Jun 85	Yaesu FT-2311R 23cms mobile.....	Mar 88
Trio TS-530SP HF transceiver.....	Jul 84	Yaesu FT-2400H mobile.....	Apr 92
Trio TS-711E 2m transceiver.....	Feb 85	Yaesu FT-2500M 2m mobile.....	Oct 94
postscript to TS-711E review.....	Mar 85	Yaesu FT-2700RH VHF/UHF mobile.....	Jul 85
Trio TR-751E 2m mobile.....	Nov 86	Yaesu FT-4700 dual band mobile.....	Oct 88
Trio TS-830S HF transceiver.....	Jan 86	Yaesu FT-5200 dual band mobile.....	Sep 91
Trio TS-930S HF transceiver.....	Jul 83	Yaesu FRG-9600 receiver.....	Oct 85
Trio TS-940S HF transceiver.....	Mar 86	FRG-9600 (updated) a reassessment.....	Dec 86
Trio TM-2550E 2m mobile.....	Sep 86	Yaesu FRG-8800 general coverage receiver.....	May 85
Trio TR-9000 retro (second hand).....	Nov 85		
Trio TS-9130 2m multimode.....	Jan 83		
TX20 CW transmitter kit (Howes).....	Dec 86		
Uniden 580XLT.....	Sep 88		
Uniden 2830 10m mobile.....	Aug 88		
Uniden UBC-70.....	Jul 88		
Yaesu FT-11R 2m mini portable.....	Apr 94		

Back issues of the magazine for the last twelve months are available from; Ham Radio Today Back Issues, Nexus Subscription Services, Tower House, Sovereign Park, Lathkill Street, Market Harborough, Leicestershire LE16 9EF. Subscriptions Hotline; 01858 435344, Enquiries Hotline; 01858 435322. Please telephone first to ensure the availability and price of the issue you require, as copies of some magazines, and of early issues in particular, have run out due to popularity. Photocopies of earlier articles are normally available from the Photocopies Dept, Nexus Special Interests Ltd., Nexus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST (we are sorry but we are unable to accept telephone orders and enquiries for photocopies), at a cost of £3.50 plus £1 UK P/P (overseas plus 30%, minimum charge £1.50) for the first article, £3.00 for follow-up articles, cheques payable to Nexus. When writing state HRT Magazine, article title, and issue it appeared in. Please allow up to 28 days for delivery.

SCANNERS

Bill Robertson dips into his postbag and finds a new scanners book plus a different way of using the 'HF Spectrum' frequency database



John Toland writes from Co. Donegal, saying he's just bought a Yaesu FRG-9600 scanner. He's particularly interested in Army, Navy, and Space Shuttle communications, and is looking for a few Irish Naval frequencies. He also asks whether 0-30MHz coverage is possible for the FRG-9600, as the set only covers from 60MHz upwards.

Well, John, there are plenty of frequency guides around, I'd suggest the 'UK Listeners Confidential Frequency List' as a good source of such frequencies in the HF spectrum. Which leads onto the question of adding HF coverage. The easiest way to accomplish this is by the use of an add-on in-line 'downconverter'. This is a small box which plugs in-line with your receiver's aerial feeder, at the rear of the set for example, and simply converts HF and lower VHF frequencies to a corresponding higher VHF range, e.g. 0-60MHz to 100-160MHz. Just the thing for an FRG-9600 with its SSB and CW reception facilities! For the benefit of readers in general, several years ago Raycom Ltd. in the West Midlands specialised in manufacturing an internally fitted add-on PCB for the

FRG-9600. This added 500kHz to 100MHz coverage to the scanner by the flick of a rear-panel mounted switch. Raycom have now concentrated on professional studio communications rather than the amateur radio market, but many such modified FRG9600s are to be found in use, often signified by 'Mk3' or 'Mk5' variants, and these are a very popular 'buy' amongst enthusiasts.

HF Spectrum

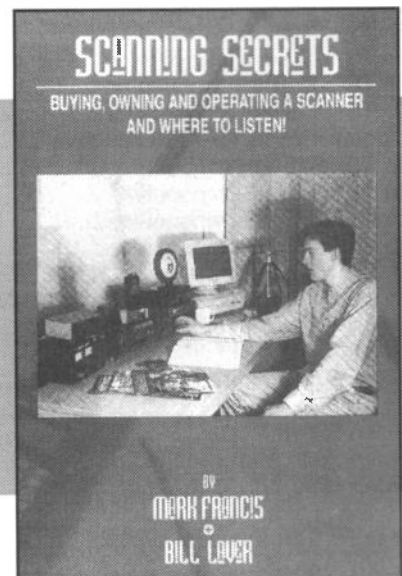
Another useful method of finding HF frequencies is with the 'HF Spectrum' PC database with its thousands of stored frequencies, in a recent Ham Radio Today software offer. Regarding this, Michael Hooker wrote in to say;

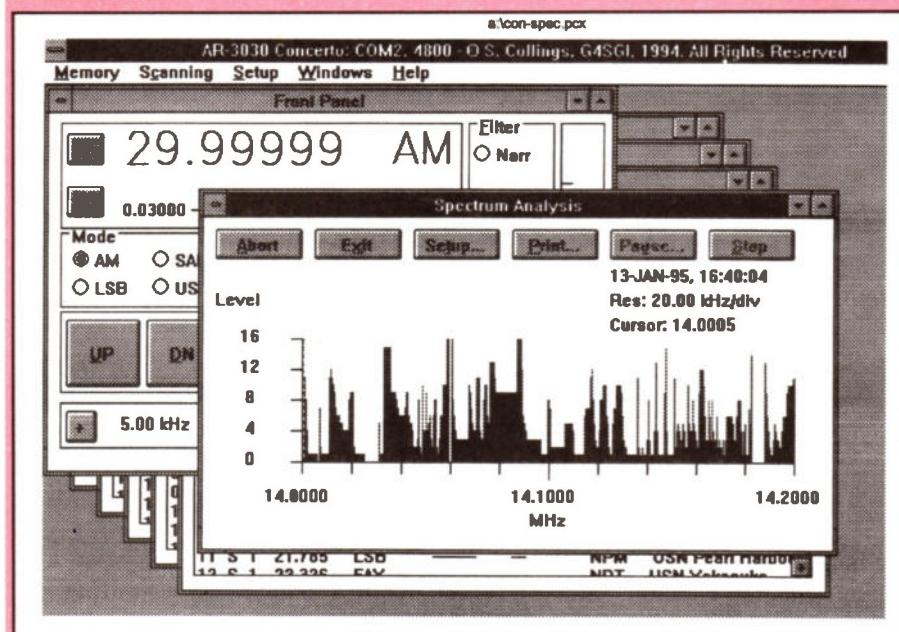
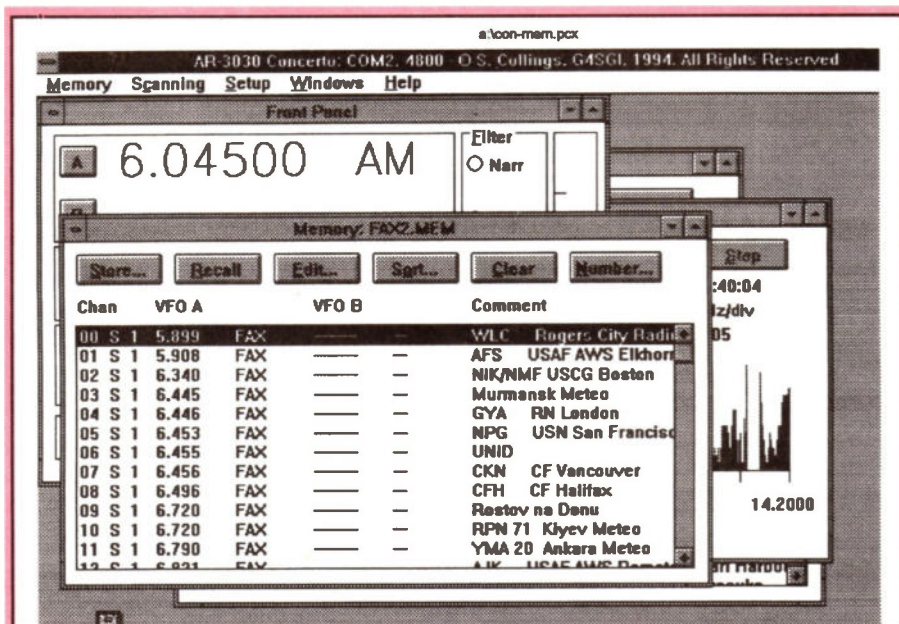
"The program is excellent "as is" but there is so much more you can do with the data with a more advanced database such as many readers must have. I use 'Approach for Windows', but there are plenty of shareware data managers around which will enable sorting, selection and display in whatever form suits the user best. I therefore decided to convert the data in file "fdata." to a format which any decent commercially available database should understand. The enclosed program will do this. "SpecTran.BAS" can be typed into the QBASIC editor supplied with MSDOS, and when run will output file "fdata.txt", a comma-delimited data format. The frequency field is converted to a numeric format, and multiplied by 1,000 - i.e. the frequencies are kHz not MHz. This avoids a problem of losing trailing zeroes. The destination database should enable users to display the number however you like, for example, 12,345.000 - but you'll have to consult your database manual to sort that one out. You will also have to tell your database what to expect

when importing the file: field 1 is "Frequency", numeric, length 10; field 2 is "Station", text, length 20; field 3 is "Mode", text, length 10; field 4 is "Country", text, length 20. Note that the new version of the data is two-thirds the length of the old, but contains the same information. The program looks for the file in c:\spectrum. If it's not there, put it there temporarily or change the obvious program lines to suit.

I am also sending the Editor a compiled .EXE version of the program for those who do not have QBASIC or QuickBASIC, and a ready-converted copy of "fdata.txt" which he may be persuaded to offer on disk. I claim no copyright for what amounted to five minutes reading of the examples in the QuickBASIC manual! Let's hope for a VHF/UHF supplement to the database in due course...

Now, can anyone tell me how to use the PC internal timer to measure frequencies like HamComm does? I can't find any assembler texts detailed enough. Call me on CompuServe ID Michael Hooker 100045,1625."





Scanning software from AOR

Thanks very much for your work on this Michael, I've arranged with the Editor to have this included in this month's Ham Radio Today software collection, (available for £1 inclusive of the disk and UK p/p - see the 'CQ de G8IYA Editorial' for ordering details - Ed). Now, would anyone like to offer a few tens of thousands of VHF/UHF frequencies and their users on disk to add to this?

'Scanning Secrets'

I was hoping to review this book last month, unfortunately it was published a little late. However I've just received.

The book is written by Mark Francis and Bill Laver, the latter

being a well known name in frequency guide books. In some respects, 'Scanning Secrets' is similar to any other good and up-to-date scanning book, in that it gives an introduction to scanners, aerials, basic radio theory, how to choose the right scanner for your personal interests and budget, a review section of a number of current sets, and a selection of frequency listings to give you an idea what you can hear and what to tap into your set to do so. It also gives an authoritative guide to the UK law of scanning, adding that most people would be breaking the law in some respects with their scanner!

After having a good 'read', I found the book to be very

interesting and informative. It gives a well-researched guide to scanners, it's packed full of information on many aspects of the hobby, and, not surprisingly as it's just been published, it's very up to date. The scanners detailed cover all makes and models, including 'manually tuned' HF receivers, and a significant 'chunk' of the book is devoted to accessories for your scanner, i.e. what you're likely to be interested in after you've bought your first (or second, or third) set!

The 273 page book, ISBN 1 873076 05 3, is available at £16.95 plus £2.00 p/p, and my thanks go to the publishers, Spa Publishing Ltd. in Hockley, Essex, for the review copy.

AOR scanner software

Elsewhere in this issue you'll see a short review of the AR-3000A 'Plus' used with AOR's 'Searchlight' software for Windows. The Ham Radio Today Editor kindly sent me AOR's 'demo' versions of 'Searchlight' and the 'Concerto' Windows software (the latter for use with the AR-3030 HF receiver), plus AOR's 'Spectrum Coordinator', which gives control of the AR3000/3000A under DOS and which has a useful frequency 'bandplan' and scanner 'logbook' facility included. These programs can certainly add a great deal of versatility to your set. If you'd like to try any of these, you can obtain a demo version disk (fully functional but limited to a short operating session each time it's run for the Windows programs, the Spectrum Coordinator being fully functional including the logbook and band lists but having the RS-232 control disabled) for £1.50 each plus £1.50 p/p direct from AOR (UK), remember to state which one you require. Ham Radio Today's 'Software Service' also has all three available on one HD disk for £1 inc UK p/p, as a service to *Scanners* readers, with thanks to AOR UK who've given Ham Radio Today permission for this. Just request the 'AOR' disk, no 'corner flash' needed, ordering details are otherwise as for the collections each month (see elsewhere in this issue).

That's it for this month, you can contact me by post or fax c/o the Ham Radio Today Editor, and I'll be pleased to answer queries through this column from readers.

From My Notebook

Geoff Arnold G3GSR lends a guiding hand in helping to understand circuit diagrams

If you want to get anywhere in radio or electronics, you need to be able to read and understand circuit diagrams. That isn't always the easiest of tasks, not least because some drawings will have been produced in a drawing office or studio at an original size of around 600 x 1000mm or larger. When such mammoth circuits are reduced in size for inclusion in handbooks and service sheets, parallel lines come very close together and lettering can become quite unreadable if the likely scale of reduction was not taken account of by the draughtsman or artist. Luckily, not many original drawing-office circuits reach the size of one for an early solid-state communications receiver which I once saw in a development lab - that required a surface 60cm wide by around 4.25m long to unfold completely, and it was still jam-packed.

Circuit diagrams are supposed to be drawn to recognised conventions or standards, both in the way they are laid out and for the symbols used to represent the various types of component. Unfortunately for the poor user, these conventions have varied considerably over the years, and also differ from country to country. Even in these days of so-called harmonisation, differences still exist in the house-styles used by equipment manufacturers and magazine publishers. I have my own views on what is good practice for producing clear drawings, so I guess I'm as guilty as anyone!

Although it would be very nice to have just one style of layout and symbols to learn, we have to accept the real world as it is. The important thing is that the circuit diagram should be easy to follow.

Overall Layout

In the UK, it has long been the convention for circuits to be drawn so that, as far as possible, the signal progresses from left to right across the page, whilst power supplies enter at the right and progress across the page from right to left. Feedback, whether of signals (negative feedback) or of control voltages (automatic gain control, etc.) naturally goes right to left as well. The idea is probably most clearly conveyed by a simple block diagram of a receiver, drawn to the same convention (Fig. 1). We would not usually expect to see supply rails on a block diagram, but they can be useful in understanding a circuit where switching between different bands, functions or modes is performed by applying or removing supplies from various stages.

If the circuit diagram is of a power supply on its own, the power is usually

considered to be the signal, and it then flows from left to right; typically with AC mains coming in at the left and the various DC and AC rails leaving at terminals on the right. (Fig. 2)

This left-to-right signal flow convention is generally fairly well observed, although the size of some circuits means that strings of stages have to be folded back on themselves, zig-zag fashion, down the page. (Fig. 3)

Stage Layout

Within each stage, hopefully having its signal flow from left to right, there will usually be a power-supply flow as well. Logically, this will be vertical in general direction, though sometimes having to be folded in some way or other, to accommodate the number, size and shape of the various component symbols. Whether the current flow is upwards or downwards depends on

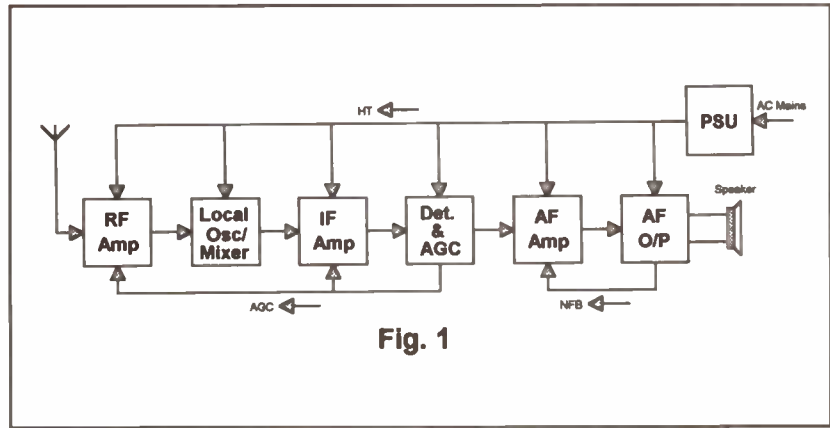


Fig. 1

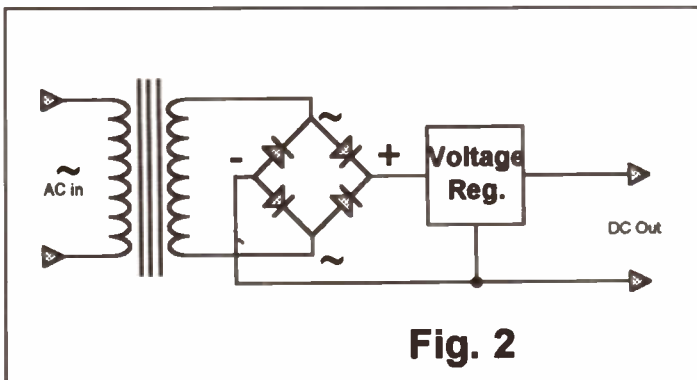


Fig. 2

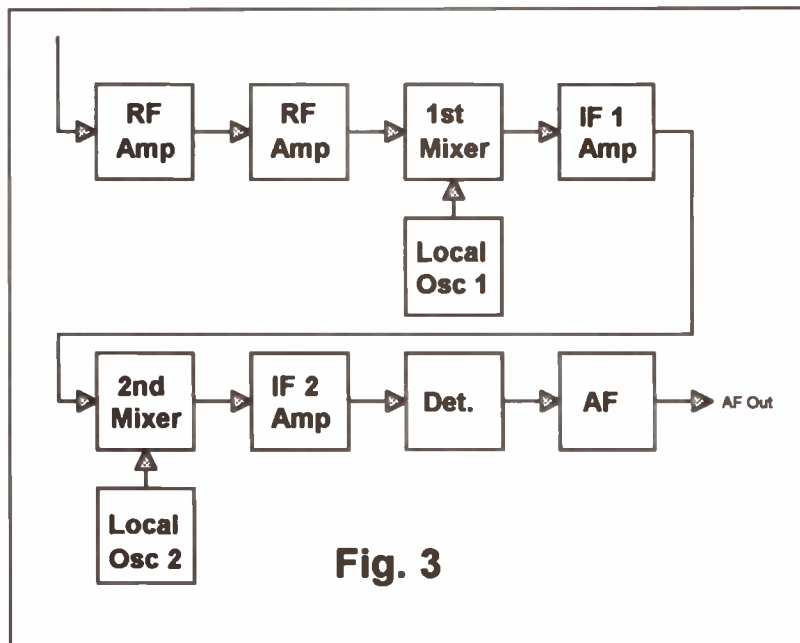


Fig. 3

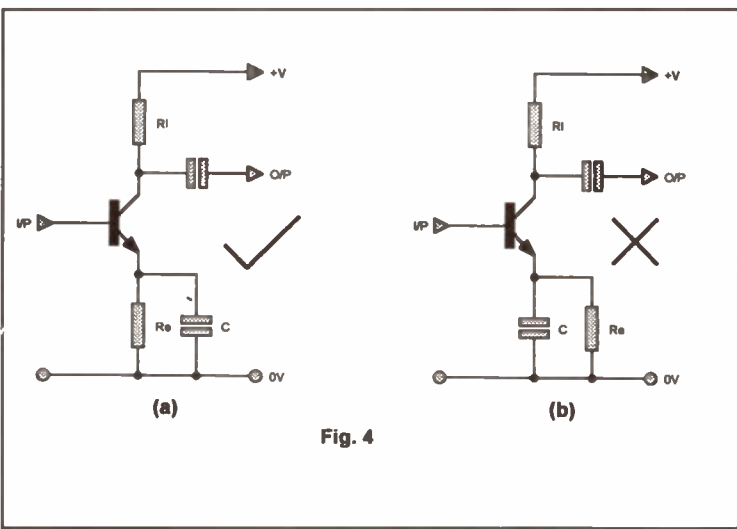


Fig. 4

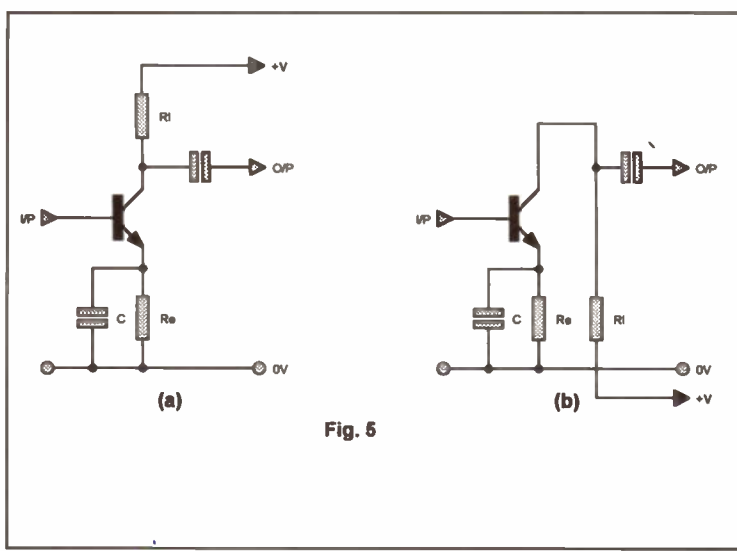


Fig. 5

the amplifying device used, and (for transistors) its polarity. Also, of course, on whether you're a devotee of 'conventional current' or of 'electron flow'!

Regardless of that, the components carrying the main signal or power flow should be drawn 'in line', with those having some secondary function attached to one side. An example will show what I mean;

Consider a simple small-signal voltage amplifier (Fig. 4) using a single NPN transistor (it could just as well be a valve). Between its emitter or cathode and the negative supply rail, we need a resistor (Re) to give DC feedback to aid stability, to control the gain (and, in the case of the valve, to generate cathode bias as well).

That resistor, if left to its own devices, would also introduce AC negative feedback, and will reduce the AC voltage gain of the stage to virtually nothing, which rather negates the idea of having the stage

in the first place. To remove the AC feedback, we need to decouple Re with a capacitor (C), thereby preventing the emitter from waving around in the breeze.

To make it easier to understand the function of each component, the circuit diagram of this stage should reflect the fact that Re is the main path; C is merely a bypass to hold the potential at the emitter steady when the stage is handling an AC signal. Figure 4(a) does just this. Figure 4(b) is electrically the same, but it seems to be trying to tell us that the capacitor is the principal component, and the resistor just an incidental 'add-on'.

Supply Rails

Another convention of UK-drawn circuits is that the various supply rails should be laid out so that the most positive is at the top of the diagram (though when PNP transistors and their negative collector supply ruled the roost, that convention was stood on its head). The most negative rail should be at the bottom of the diagram, and the rest arranged in logical order in between positive and negative, with 0V, chassis or earth at or near the bottom (Fig. 5(a)).

Circuit diagrams drawn in the United States (or schematics as they are wont to call them over there), and in parts of the world where the USA had a founding influence on the radio and electronics industries, are drawn in a very different way. They bring all their supply rails, including HT+, down to the bottom of the diagram, folding the anode or collector loads (resistors or inductors) downwards to lie between the stages.

To my mind, this convention always makes American circuit diagrams much harder to understand, and for a long time I wondered why on earth they did it. A couple of years back, I raised the question in *Radio Bygones* magazine, which generated quite a bit of correspondence on the subject from readers. The general drift of this was that the Americans similarly think we Europeans are crazy for drawing our circuits in the way that we do!

Their view is that it is not the supply rails which are important, but the lines carrying the signal flows. As the HT+ line is (or should be) fully decoupled in the power supply, then from an AC-signal standpoint it is at the same potential as 0V, earth or chassis. The Americans argue that it is therefore logical to tuck the HT+ line out of the way down near that earthy rail, leaving the top of the drawing uncluttered to display the signal flow (Fig. 5(b)).

I must admit that, explained like that, the US practice makes a lot of sense, though I'm not sure that I could ever get totally used to it.

Of course, on modern circuit diagrams largely based on digital or analogue integrated circuits, this argument on the pros and cons of various ways of laying out the supply rails can become somewhat academic. To join up all the device pins and circuit points to their respective supply rails would tend to turn the whole drawing into an incomprehensible muddle. Instead, the connections are simply chopped off short, rather like the tail on a Manx cat, and labelled to show the rail they are to go to. Often, supplies to ICs are dismissed from the circuit diagram altogether, being relegated instead to a table in the corner, listing pins connected to Vdd, Vss, 0V or whatever. This works well, always providing that the artist remembers to include the table!

You may never need to know how to go about laying out a circuit diagram correctly yourself. However, it will help you to follow a circuit given in a handbook or magazine if you understand the conventions that should have been observed in its drafting.

The conventions of circuit diagram layout are straightforward compared with the variety of component symbols which have been used over the years. These symbols will be the subject of my column next month.

QRP corner

Dick Pascoe G0BPS has a giggle at an unusual form of band watching

I had a huge giggle recently when a good friend rang for a chat. Now David is a man who knows his stuff, not just very well but exceptionally well. He designs his own complex equipment and loves building, especially finding obtuse uses for the more usual items of ham equipment. Also whenever I (or many others) have a problem that we find difficult to solve, we shout for David, he's the 'resident expert'. Those who know him will recognise this description immediately!

David, like many of us loves to monitor the HF bands to see if any rare DX is about, especially to see if there is any activity of special interest to him. He hates to sit in front of the rig though to tune up and down to check for this activity. Lateral thinking comes into play. One spectrum analyser with video output is connected to his HF aerial, the other end is fitted to lounge TV. Most TV owners have just four channels, one for BBC 1, another for BBC 2 and ITV 1 and 2 etc., David has five!

Can you visualise the scene? He sits watching 'Neighbours' or 'Baywatch' for example, "Lets check the bands", switch to channel five and watch the output of the speccy on the TV! Some people are just too lazy for words.

Slovakian QRP Convention

I was disappointed to hear that the Slovakian QRP club had organised a QRP convention over the weekend of the 27th and 28th May this year. Not because they had organised it, but because I can't attend! Readers will be aware that I love getting to these types of events as they are usually of great interest, not only to the low power operator but also to the homebrewer.

This event is very different to many others in that any builder can attend and give a twenty minute talk on his or her favourite subject. Whether anyone will listen is not stated, but it should be good fun if nothing else. The content of the talk will be also reproduced in the convention booklet. Language should not be a problem as the business languages of the region

are Slovak, Czech and English!

If this event is again planned for next year, then I expect that a few UK QRP operators will get there come hell or high water! More information can be had from Alex Korda G4FDC, 5 Windmill Court, North Street. Royal Tunbridge Wells, Kent TN2 4SU. If a reply is requested I suggest an SAE should be included.

NorCal

My NorCal (Northern California QRP Club) magazine, *QRPp* arrived recently, with lots of interesting articles. I was surprised to see that in the two years since it's inception, it has now grown to 1000 members. Most are American of course, but a sprinkling of non-US members shows a good spread. Included are several from the UK, together with Norwegians, Indians, (no, not the red ones!) Canadians, Czechs, Germans, Belgians, plus amateurs from Singapore, Taiwan and the USSR. If any reader requires more information about the NorCal club drop me a line with an SAE for full details.

It never fails to amaze me how fast information travels around the world, and how much our aspect of the hobby is held in high esteem. The intrusion of Email into the world of amateur radio has brought a huge increase of interest in the hobby.

The Americans have now started a new way of foxhunting. Open only to those who are on the *QRP-I* list, each weekend one member pops up and the others try to find him on the amateur bands. A great idea to promote more QRP activity on the bands. My only gripe is that they tend to send mail in general to all subscribers to the group, so even those of us not interested in this get twenty or thirty mailshots three times a week on who bagged what!

By now, readers may be aware of the British QRP group starting on the net. It has been introduced quietly with just a few to start the thing off. By the time you read this all the bugs should have been ironed out and the system working properly. The main input has come from Paul G1PJJ, and the system is run by Peter G4MJS. This list is for the passing of

messages that have a real interest to low power enthusiasts. For those on Email who wish to subscribe, send a message to: majordomo@insite.parasoft.co.uk, in the body of the message only put: subscribe gqrp-l (that's a small L not a 1). For those not too familiar with the system this address must be in small typeface.

There are very few rules, and no-one to police it if you break the rules. But for all our benefit it is better that we all follow them to ensure an easy flow of information. Only direct information of interest to members should be sent. Do *not* send your reply to an individual message to everyone on the list (as many on the US one do). This should prove an ideal way to promote very fast exchange of information to those hooked on.

If you are not already on the fastest growing way of exchanging mail I suggest you join in?

Having got your computer and modem, you will need to subscribe to a system (*or see the March 95 issue for details of a free service for readers - Tech Ed*). I use Demon in London who are expanding at the last count at 10,000 new subscribers a month! From Folkestone I have to dial a London number to log in and my usual time on is five minutes three times a week. My subscription is £10 per month, plus the telephone calls of course.

The best bit is that I can mail my friends in the USA or anywhere else and have a reply in the same day. Any readers who are interested in trying out the Internet, then I'd suggest reading the articles in HRT by Don Field G3XTT on page thirty four of the March edition.

If you require more information, a note to me with your full name and address will get an information pack from Demon. (I get nothing for this, it's just a service to readers).

CQ Contest

Readers will remember that each June there is the annual QRP day. This usually coincides with the VHF QRP contest, which is on 18th June this year. This is an opportunity for all

Book Review - Radio Amateurs and Listeners Data Handbook

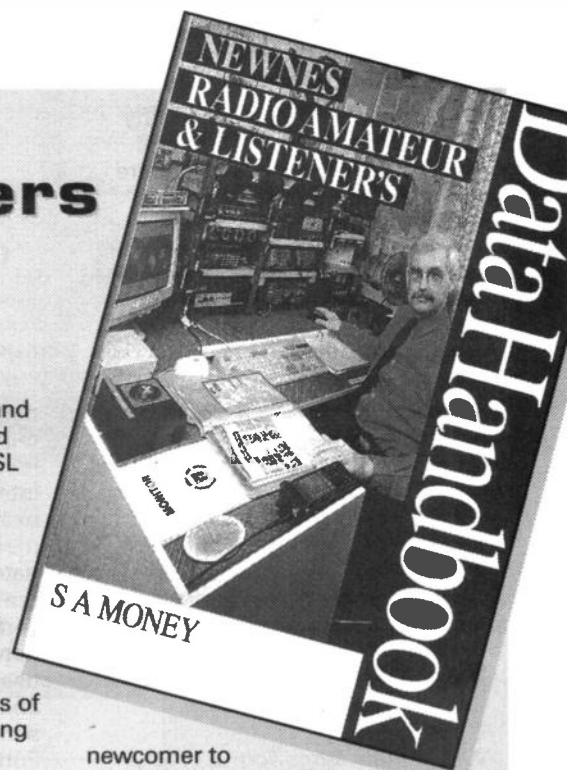
Reviewed by the Ham Radio Today Editorial staff

From its title, the newly published Radio Amateurs and Listeners Data Handbook is obviously aimed at the 'hobby radio' users and listeners amongst us. It does, however, go a lot further, because as well as giving a very comprehensive amount of information on the national and international amateur radio scene, it also covers the broadcast bands, satellite TV, weather satellites, HF 'utility' stations, 27MHz and 934MHz CB, even medium-wave DXing.

In all, chapters are included on; radio wave bands and signals, amateur radio licences, amateur radio bands, mobile operation, radioteletype, packet radio, picture communication, utility stations, space communications, the broadcast bands, radio wave propagation, aerials, transmitters, receivers, instruments and measurements, electromagnetic

compatibility, callsigns, countries and zones, world time zones, codes and abbreviations, logs, reports and QSL cards, radio news bulletins and magazines (yes, Ham Radio Today gets a nice mention), contests and awards, power supplies, and electronic components.

Although having been published this year, some of the information in the book is unfortunately dated, sometimes rather much so in terms of satellites and amateur radio licensing (at least one example in the latter section being several years out of date), although in other sections up-to-date modes such as PACTOR are described, quite well in fact. Even so, there's plenty of useful information within its pages, this being presented in a very 'readable' form and which is certain to be of interest to the



newcomer to our hobby.

317 pages, ISBN 0 7506 2094 3, it's published by Newnes Butterworth/Heinmann Ltd. and is available from bookshops and specialist hobby radio dealers. Our thanks go to Newnes for the provision of the review copy.

QRP operators to get on the air and have some fun. You do not have to stay all the time, pop in for a couple of hours and enjoy!

The whole purpose of the day is to promote our favourite aspect of the hobby, both on HF and VHF. The contest is for VHF only, 3W out maximum, from the transmitter. Ideal for the FT290 owner. For those who think it may be a waste of time should remember that in the second contest, the Dover club stopped operating in mid contest so that everyone in the contest caravan could work 9H1GB on Malta. Just a 19 element with 3W out and S9 both ways. Pity it only lasted a couple of minutes but that's what Sporadic 'E' is all about.

This year, the Dragonslayers QRP club will be at Chez Moi for this event. Previous Dutch visitors to my house, more used to a high spot of a couple of metres, were amazed to find me at over 200m ASL with a clear take-off in all directions (my first 2m SSB contact from here was Sweden!). I was instantly coerced into hosting the club for the contest, but as I am also a member I suppose I had to! We shall be using a pair of 9 element yagis at 20m AGL and a real QRP rig, the IC202S that has been 'worked on' to really brighten up the receive side.

Listen out for our callsign, G0ROO, you may recognise a few Dutch accents in there.

Rochdale 1995

The date of annual G-QRP Club's gathering at the church of the Rev George Dobbs (St. Aidans in Sudden at Rochdale) is Saturday 14th October. Non-members of the club will still be made very welcome, with perhaps a slight twisting of the arm to persuade you to join.

For those readers who have never been, this is *the* QRP event of the year, and one not to be missed. About 350 visitors turn up, not huge numbers by normal rally standards but this is definitely not a rally. It is a gathering of like-minded folk to chat about our own aspects of the hobby. A few traders are present, but only those with a clear-cut association with QRP are permitted. Lots of junk is offered with other items found in the free Bring and Buy. One portion that I love to browse through is the man from the sheds (he has a profusion of sheds in his garden). He has a large selection of test equipment and other useful bits that make the builder's eyes water with delight.

Last year we had visitors from nine different countries, so the news is travelling worldwide. Needless to say all being well I shall be there, camera in hand to snap some of the visitors as for this column well as some of the bargains.

One other event that has become a standard for those of us who live in the south of England has been the summer party at the home of Chris G4BUE. A change of circumstances has forced Chris to cancel the party for the time being. Those of us who have been going to Steyning for several years have always found the welcome exceptional. With many visitors coming from all over the world we were able to put the face to many QRP callsigns. This annual event will be sadly missed. But grateful thanks to both Chris and Pam for all the very hard work they both put in over the years that the party has been held.

Well, once again we reach the end of a column. Please do let me have your comments and ideas. News and views to me via the editor or direct via....Packet to GB7RMS, Email to: Dick@kanga.demon.co.uk or post to Seaview, Crete Road East Folkestone CT18 7EG.

DATA CONNECTION

Chris Lorek G4HCL looks at 7-plus file problems plus a guide to the 'whys' and 'hows' of TCP/IP

Many of us have seen various 'iffy' messages and files on the packet network, although very seldom are these of the extreme as those on other forms of electronic communication! The amateur packet '7 plus' system is an excellent method of transmitting binary files through a BBS network, providing it's 'up to' handling the volume of traffic of course. Recently, another crop of 'Season' software has appeared on the 'distribution network', this not being limited to packet by any means, which is intended to let you decode certain encrypted video transmissions. This is nothing new, but our licence conditions tell us what we can, and cannot send, over the amateur airwaves.

The DCC line

A statement from Tom G1YAA, Chairman of the RSGB's Data Communications Committee, says; "Following advice from the RA the DCC are asking all packet users to stop sending Seasons and DMAC software over the amateur packet network. Both the RA and the RSGB deem such software to be illegal, and as such should not be transmitted over packet radio. Further more the DCC are recommending that all sysops hold all locally generated bulletins until they are reviewed by the sysop or remote sysop. It is also recommended that all 7PLUS messages uploaded onto BBS's should be held until the whole file can be decoded and checked for content, before release into the packet network. All seasons, DMAC and associated software should be removed from BBS files area's."

Discussion

The SysOps of my local BBSs in the SUNPAC area already hold locally entered bulletins, but the above not surprisingly generated much discussion at the last SUNPAC Node and BBS SysOps meeting which I attended (I usually get 'lumbered' into hosting the venue for the monthly meetings!)

Again, not surprisingly, Tom received a number of queries on this, which he clarified with;

"Once all the 7plus parts have been decoded by the first BBS, there is no need for all the BBS's down the line to do the same, as this would be a very long process and would slow the

mail down somewhat. The first sysop must decide whether to allow the message into the network or not. International gateways must take extra care in vetting and filtering messages passing through their gateway from abroad. The RSGB/DCC are very worried about the content of certain messages going around the network, and feel that ALL packet users should think long and hard about the content of messages they send over the packet network. Furthermore we also feel that all sysops should use some sort of filter software on their BBS to trap key words in messages passing through. I use one on my BBS and trap all sorts of messages that have travelled great distances over the network. At recent talks with the RA, they expressed concern about the content of packet messages, and we may find that steps will be taken to clean our network up once and for all. So let's try to do it ourselves before legal restrictions are placed upon us."

Higher and higher speed!

If you thought 9600 baud was high speed, how about this?

A bulletin from Darren G8LWT says that for the past two months he's been running a 2Mbit link over an eight mile hop from Manchester, to G4GCO in Rochdale. The two stations are using Gunn diodes with 10mW into flat plate aerials (Squarials) having approx. 30dB gain. A test with some equipment on loan showed that a 12.5Mb file took just 94 seconds to transfer, which is just 8 seconds slower than a local PC to PC transfer using a thinnet segment and Windows for Workgroups 3.11! Darren is now looking to beg/borrow remote bridges and data/voice muxes that use X.21 at 128k or higher, although he can run some equipment at 64k though, or alternatively devices that talk G.703 directly. Darren travels all over the UK (from Aberdeen to Bracknell) and could arrange

collection of any old equipment that is being ditched. He'd like to think that a 2Mbit backbone up the country could provide a good start for a sensible packet infrastructure, with the possibility of providing voice circuits for repeater linking/trunking. (BBSs and nodes would access at 64k+), and in the not too distant future the same sort of pipe could be used to interlink ATV repeaters by using MPEG encoding. If you can help in these efforts, maybe you're a digital engineer who isn't already on packet and would like to see things 'speeded up' for all of us, you can contact Darren on Internet; darren@g7lwt.demon.co.uk or packet; G7LWT@GB7BEV.#16.GBR.EU.

The Why? and How? of TCP/IP

With the potential of higher speeds and better links, we may increasingly be seeing a faster and faster network more capable of 'real time' communication and larger file transfers, which packet systems such as TCP/IP (as used on the landline-based Internet) are superb at handling. Despite the advantages, TCP/IP is, however, a 'black art' to many amateurs! Which is why I offered a 'help' and 'get-you-going' disk for 2 readers in a recent issue! David Norris, G4TUP, tells us that in Ham Radio Today he read that G7MJV had trouble in getting to grips with the NOSintro book. David said "so did I" and he's now written a booklet

**The
WHY?
and
HOW?
of TCP/IP**

DAVID NORRIS
G4TUP

specifically for the newcomer to TCP/IP, which he kindly sent me a copy of.

David has been running TCP/IP for about five years, and is the North West Region IP coordinator. He felt that something for the newcomer was needed, hence the book. It's a A4 sized spiral bound volume of 37 pages plus a three page index, and it's presented in a very refreshing and enthusiastic form. I must confess to actually having been 'sold' onto TCP/IP after just the first few pages!

Specifically intended for newcomers, it starts with a background to the mode, where great similarities to the 'Internet' are found, and gives the advantages of TCP/IP over AX25. Then, David's 'guiding hand' shows you how to get a fully working system going in the chapter 'Starting From Scratch', together with listings of the most-used commands and even a 'Quick Reference' section.

The guide booklet, which gives a very readable introduction, costs £5.95 inc. UK p/p and is available from David at 148 Sefton St., Southport PR8 5DA.

PacTOR BBSs

Werner DJ2HZ, who is the SysOp of the DK0MHZ and DL0YB BBSs, tells us that DK0MHZ is in standby mode on PacTOR Mode 14.0745MHz (mark). He adds that all messages will be forwarded to the European packet network, if you use the correct syntax.

A newcomer to PacTOR-2 is 7Z1AB in Riyadh, Saudi Arabia. I fondly remember working that station whilst I was also in Riyadh, operating from a local residence as a 'guest operator' using a private callsign. So, if you're after a bit of 'DX' you can connect to 7Z1AB on 14.0800MHz (mark), which also carries a 'gateway' station occasionally. Traffic for Asia is carried on 14.0695MHz (mark).

On the 80m European front, SM7DLZ has added another channel to its BBS activities, on 3.579MHz (mark). This BBS carries mainly DX and technical related bulletins, and has 'open access' for anyone interested. It uses WinLink software, and has forward links to VHF on the Scandinavian Forward Net.

G7JJF software

I'm frequently asked 'What's the best software for packet?' This is often down to personal choice, but one PC

program that I've found is many people's 'favourite' is the fully-featured G7JJF software, complete with its automatic 'script' facilities plus other 'bells and whistles' galore. It is, indeed, the software I use myself, and have done so for several years in my own packet station. As well as a 'normal terminal' version for use with stand-alone TNCs, versions for BayCom modems and for running with a BPQ node (e.g. if you've a plug-in TNC card in your computer) are also available. Together with amateur use, I know it's recently also been used for disaster relief stations in use by international aid agencies and the like.

I reviewed this software in the April 1993 issue, where you can read further about its facilities. Alternatively, if you'd like a copy of all three G7JJF programs (for TNCs, BayCom, and BPQ nodes), all on a 1.44Mb 3.5in disk, I've arranged for it to be included in this month's Ham Radio Today 'software offer' service. It'll cost you just the usual £1.00 to cover the disk and return UK p/p to you - ordering details as given elsewhere in the 'software offer' in this issue of the magazine.

BARTG Multyterm OK for EMC

Many of us know the problems of connecting up our super all-mode terminal unit to a HF rig, and as soon as you go into 'transmit' mode on high power the thing either throws a 'wobbly' with RF feedback and distorted tones, or worse still just locks up completely. Good screening of the interconnecting leads is vital of course, but if the terminal unit is designed to withstand high RF fields in the first place, it'll have a far better chance of operating correctly when you use it from your shack.

The BARTG (British Amateur Teledata Group) tell me they're proud to announce that their 'New Improved Multyterm' terminal unit for PacTOR, AMTOR, RTTY, SSTV, CW and Fax has just passed the rigorous EMC testing in compliance with the EEC standard

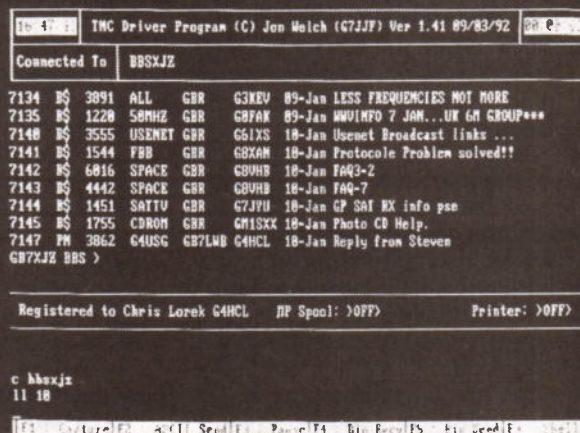
EN 50082-1:1993. These tests were carried out by the York Electronics Centre at the University of York, who tested the unit for radiated immunity, and immunity to electrostatic discharge and electrical fast transient bursts. The RF field generated to test the Multyterm to the mandatory requirements went right up to 1000MHz, and with a field strength of 3V/m. Static discharges were applied to the unit in both 'air space' and 'full contact' up to 8kV (no more static problems from your outdoor aerial?)

The BARTG is an amateur radio group, and they believe they're the first to have obtained compliance to this standard, which applies to residential environments. You can get further details on the Multyterm and the BARTG from Ken Godwin, 11 St. Lukes Way, Allhallows, Kent ME3 9PR, Tel. 01634 271548.

CTRL-Z, End of message

0000GMT Sat/Sun July 8/9th to 0000GMT Sun/Mon July 9/10th is the BARTG's AMTOR and PacTOR contest on 80m, 40m, 20m, 15m and 10m, so look out for some good data DX! Messages consist of RST/serial number/time. Use FEC for calling, ARQ for contest exchange. Full scoring details are available on packet or from the BARTG as above.

Please do keep me in touch with what you're doing, and as always if you've any thoughts on data modes over ham radio that you feel would be of interest to others, do let me know. You can contact me either by packet direct, or via Ham Radio Today Editorial by fax or email. Until next month, it's 73 from Chris G4HCL @ GB7XJZ.#48.GBR.EU.



G7JJF Packet, yours for the cost of a disk.

VHF/UHF Message

*Geoff Brown GJ4ICD presents an interesting diary of VHF
- Sporadic E activity 'down under'*

In this month's column I've included part one of a two part, up-to-date, 50MHz beacon listing. Many letters and email/packet messages have been sent out around the World to update the old information that was available.

Other news

A welcome letter from Arvo, ES5MC to Neil G0JHC relays news that plans are under way for an operation from KO17 during the Estonian VHF Open Field Day, during the last weekend of July. More details later. It might also be that KO28 and KO39 will be QRV soon, with some ES7 stations showing interest in six.

If you are unhappy with your FT650 noise blanker, here is a quick mod. The mod involves shorting diode 4013 which will increase the gating time of the AGC line to the noise blanker. This is located on the IF board. This mod improves the noise blanking by several S points under heavy power line noise.

Sporadic 'E' in VK

Here's some interesting info from the guys down under, 5200km on 50MHz ES!

January Sporadic-E report from Australia de VK5LP & VK3OT.

The continent of Antarctica which for years remained "too difficult" for six metre operators to work, or so it was thought, has proved to be more accessible than ever imagined. All that was required was someone to be available to operate from the Antarctica, and for amateurs elsewhere to be dedicated enough to make the effort to respond. The first definite response came in November 1993 when Steve, VK3OT was instrumental in spanning the distance of 3750km and being the first ever to work VK0 on six metres by working VK0AQ. He was quickly

followed by VK3LK and VK5NC and together they formed an exclusive club of three to have worked there on six metres.

Since then the club has extended to more than 30 members with the addition of Melbourne stations, more VK5s and VK7ZMF on 31st January. The following information is a mixture of that supplied by VK5LP and VK3OT, and commences on 13th January 1995 at 0730 with the VK0IX beacon varying from 319 to 519 with rapid QSB, plus VK6ZAK, VK6JJ, VK6AS and FK1UH heard. From that which follows, readers can see how a chain of events unfolded at VK3OT leading to a possible contact warning being issued.

0731: Worked VK6JJ, VK6ZAK.

0740: TV video and sound on 45.46/50.51/57.62/64/69 MHz.

0745: Beacons on 50.042/056/057/076, 52.325/345/420 MHz.

0746: VK0IX/b 539 fast QSB.

0755: VK0IX called on 50.110 and heard unidentified CW.

0800: Video 45.240/250/260,

46.2396/2400, 55.2396,

57.240/26035/2607.

0801: Video 62.2396/240/2502, sound 62.760.

0802: Video 64.240/250/260, sound 69.740/750.

0805: FM sound 80.070, 90.105, 91.820, 94.660, 96.320, 97.080.

0810: VK0IX/b back and faded out within two minutes.

0845: VK6ZAK heard.

The above set of circumstances was sufficient to alert those interested so some stations were ready the next afternoon, 14/1. It was also the first day of the VHF/UHF Field Day, so more stations were on air. Much TV video below and above 50MHz, six metres to everywhere, two metres ES again to VK2 and VK4. ZLs were in and so were the VK7 beacons, the early afternoon pointers were right. The only problem seemed to be the impending storms, gale-force winds, dust, then thunderstorms (just like a UK summer!).

The beacon did not get to VK5LP on 13/1 but on 14/1 he was on the alert from 0600 after the huge storms and lightning had subsided - all antennas were disconnected from 0300. At 0730 VK7RNW/b was 599, at the same time VK4BRG/b was 579. VK0IX/b was heard from 0745 through to 1100 at 519, at which hour it commenced to improve. Soon after, I worked VK0 at 52 at 1135. At 1140 he was 56 for about five minutes but I resisted the temptation to work him again in case I spoilt it for someone else. Darin then slowly dropped down until disappearing around 1155.

14/1/95 as supplied by VK3OT:

0608: VK2BA in Sydney copied VK0IX/b weakly (4471km).

0633: Beacon into Sydney again. VK2BA alerted people on 6m.

0645: VK8LM, VK8VF/b, VK8AH, VK1DO short skip.

0730: VK0IX/b to VK3OT, alerted stations.

0750: VK3OT CW copied in ZS1 via South Pole (details to follow).

0755: VK0IX copying 55.250 video from ZL and sound carriers from VK.

0759: VK7ZIF short skip S9+.

0800: VK3OT made two-way 55 SSB QSO to VK0IX (3750km).

0802: VK2QF Mudgee worked VK0IX 51 (4544km).

0808: VK5ARC/P copied VK0IX/b weakly.

0820: VK2BA hearing beacon again, also at 0844.

1105: VK0IX/b heard weakly in Adelaide (3934km).

1134: VK5ARC/P worked VK0IX 51 (who by now was very stable), followed by VK5PO/P, VK5NY, VK5LP, VK5ZTX, VK5ZIP, VK5ZTV, VK5ZWI, VK5ZBR, VK5UBJ, VK5ZBK, VK5GRS. 1145: VK3OT heard VK0IX on CW but no QSO.

1155: Band closed.

15/1/95: Band opened to ZL at 2200 with TV on video and audio frequencies. Call signs and beacons logged up to 0200: ZLs 2TPY, 2KI, 2UJH, 3NE, 3TY, 1THQ, 1AXB; VKs



WORLDWIDE BEACONS

FREQ	CALL	LOCATOR	POWER	
50.000	GB3BUX	IO93	15	TURNSTILE
50.003	7Q7SIX	KH74	05	
50.004	PJ2SIX	FK52	22	2 D/POLE
50.004	VE8KM	DP79		
50.005	VK9RNI	RG30	25	
50.005	ZS2SIX	KF25	25	
50.007	SR5SIX	KO02	10	
50.008	DX1HB	PK04	20	
50.008	K0GUV	EN26	18	HALO
50.008	VE8SIX	DP79	80	COLINEAR
50.008	XE2HWB	DL44	01	
50.010	VE7SIX	DN09	130	QUAD
50.010	SV9SIX	KM25	30	VERTICAL
50.010	JA2IGY	PM84	10	5/8 G/PLANE
50.011	ES6SIX	KO37	10	
50.011	VP2EA	FK88	50	ANGUILLA
50.013	CU3URA	HM68	05	VERTICAL
50.013	JD1ADP	QL17	01	D/POLE
50.013	8R1SMC	GJ07	10	VERTICAL/NOT QRV
50.014	S55ZRS	JN76	10	G/PLANE
50.014	9M6SMC	OJ85	03	G/PLANE
50.015	PJ4B	FK52	15	5/8 G/PLANE
50.017	JA6YBR	PM51	50	TURNSTILE
50.018	V51VHF	JG87	50	1/2 G/P QRT
50.019	P29BPL	QI30	25	1/4 GP
50.019	CX1CCC	GF15	05	
50.020	GB3SIX	IO73	25	3 EL @ 58m
50.021	OZ7IGY	JO55	30	TURNSTILE
50.0215	FR5SIX	LG78	02	HALO
50.023	4N0SIX	KN04	01	
50.023	LX0SIX	JN39	05	DIPOLE
50.023	SR5SIX	KO02	05	
50.0245	ZP5AA	GG14	05	G PLANE
50.025	OH1SIX	KP11	45	X/DIPOLES
50.025	YV4AB	FK50	15	RINGO
50.0255	9H1SIX	JM75	07	5/8 G/PLANE
50.027	ZS6PW	KG44	30	TEMP QRT
50.027	JA7ZMA	QM07	10	2-TURNSTILE

FREQ	CALL	LOCATOR	POWER	ANTENNA
50.028	SR6SIX	JO81	10	DIPOLE
50.028	XE2UZLD	M10	25	2 SQ/LOOPS
50.030	CT0WW	IN61	40	DIPOLE 700M
50.032	JR0YEE	PM97	02	LOOP
50.0325	ZD8VHF	II22	40	5/8 JVL
50.0335	LU8YYO	FF50	1.5	1/2 VERTICAL
50.035	V31SMC	EK57	10	VERTICAL
50.035	ZB2VHF	IM76	30	5 EL
50.037	ES0SIX	KO18	15	X/DIPOLES
50.037	JR6YAG	PL36	08	5/8 GP
50.038	FP5EK			PLANNED 1995
50.039	FY7THF	GJ35	100	G/PLANE
50.040	CX8BE	GF15	08	BEAM QRV?
50.040	SV1SIX	KM17	25	VERTICAL
50.040	VO1ZA	GN37	10	
50.042	GB3MCB	IO70	40	1/2 DIPOLE
50.043	ZL3MHF	RE66	20	VERTICAL
50.045	OX3VHF	GP60	15	G/PLANE
50.045	YV5ZZ	FK60	10	VERTICAL
50.046	VK8RAS	PG66	15	X/DIPOLE
50.0472	4N1SIX	KN04	10	VERTICAL
50.048	JW7SIX	JQ88		
50.050	ZS6DN	KG44	1000	5EL
50.050	GB3NHQ	IO91	15	TURNSTILE
50.051	LA7SIX	JP99	20	4 EL BEAMING
50.052	Z21SIX	KH52	08	1/4 G/PLANE
50.0535	VK3SIX	QF02	10	9 EL
50.054	OZ6VHF	JO57	25	TURNSTILE
50.0555	V44K	FK87	03	D/POLE
50.0567	VK7RNW	QE38	20	X/DIPOLES
50.057	TF3SIX	HP94	08	GROUND PLANE
50.057	VK8VF	PH57	20	1/4 VERTICAL
50.058	VK4RGG	QG62	06	
50.059	VE3UBL/B	FN03	10	TURNSTILE
50.060	PY2AA	GG66	10	
50.060	K4TQR	EM63	04	D/POLE
50.060	WA8ONQ	EM79	02	X/DIPOLE
50.060	W5VAS	EM40	25	QUAD
50.060	GB3RMK	IO77	40	DIPOLE @ 240M
50.061	KH6HME/B	BK29	20	DIPOLE

3DTO, 3DUT, 3DUQ, 3ATQ, 4DO, 4BRG, 4EZ, VK7FP/MM etc. ZL3MHF/b 50.043, ZL4AAA/b 50.097, ZL2MHB/b 51.028, VK4BRG/b 50.076, VK4ABP/b 52.345, VK7RST/b 52.370 from 0300 short skip.

0700: VK5 to VK3 strong opening, VK1RX worked VK0IX 51 (4256km).

0830: VK2BA et al to FK8 on two metres.

25/1: 2300 FO5DR using FM heard in VK2,3,4.

26/1: ZLs all day. Short skip VK2 to VK3.

0700: TV on 49.750, VK5BC on backscatter.

0730: VK0IX/b 539 using TS660 connected to 50m of RG58 and beam on Brisbane!

0745: VK0IX/b 50.200 559 with fast fading.

0920: Beacon off and VK0IX calling CQ on 50.110 - VK3OT 51/52

exchanged in QSO. VK5NC and VK5LP hearing beacon 519 at 0830. No copy in ACT or Melbourne. VK5LP alerted VK5RO, VK5BC, VK5AKM, VK5NY, VK5KK.

27/1: 0835: VK0IX/b 529 at VK5LP.

alerted VK5AKM and VK5BC.

29/1: 1011 to 1021 VK0IX/b 519 heard by VK5NY, VK5LP and VK5ZBR.

31/1: 0904 VK0IX/b into Melbourne. 0937 to 1145 worked by many VK3s, several more VK5s and VK7ZMF. Signals were up to 57.

The VK0IX beacon has been received over a wide area covering VK4AFL in Brisbane (5195km), VK2APG and VK2BA in the Sydney area, VK2QF at Mudgee, VK3OT Hamilton, VK5LP Meningie, VK5NY Mount Wilson, Adelaide stations and VK1RX in Canberra, but no Melbourne stations in the first instance, but fortunately they were rewarded on 31/1. It's odd that there are no reports of any contacts from VK6 - Perth is 3833km from Casey. They have been alerted.

VK0IX/b was heard in VK5 on seven days during January! The mode of propagation is difficult to define with any certainty. It appears that weak beacon signals arrive around local sunset then gradually increase in strength, sufficiently to allow SSB operation.

On 31/1, Melbourne stations had contact before Adelaide but soon it was open to both areas simultaneously. Signals in Adelaide rose to S7. The Tasmanian beacons were very strong during the opening, suggesting some Es content. But the VK0IX signals are usually steady with occasional small fades, so there may be some tropo component.

VK0IX uses a 50m per leg V-beam pointing to Adelaide, connected to an Icom-575H running 100W. He has access to a three element beam, and he also uses 14.335MHz. The beacon operates on 50.200MHz and Darin chooses his actual operating frequency usually close by, but can also be heard on 50.110MHz.

Thanks to Martin G3USF, ZS6PW, G0JHC, JA1VOK, K1TOL, the UKSMG and others for the info this month. News/views and photos please to: Geoff Brown, GJ4ICD, TV Shop, Belmont Road, St. Helier, Jersey. Channel Islands or phone/fax 01534 877067 anytime, also you can E-Mail m at: equinox@business.co.uk

HF Happenings

Don Field G3XTT gives a reminder of the Radiosport and IOTA contests this month, and shows what you can work on the 15m band

Although we may not hit the bottom of the present sunspot cycle for another year or so (expert opinions still vary on this), conditions during March were well down on a year ago. During the CQ WPX SSB Contest there was a reasonable amount of activity on 10m, but most of this was from Africa and South America. In contrast, 15m was much more lively with some quite nice DX to be worked during the contest. But in the RSGB Commonwealth Contest a couple of weeks earlier, even 15m had been dismal, with 20 and 40 carrying the bulk of activity. None of this boded well for the Conway Reef expedition, and that proved to be the case. The expedition, signing 3D2CU and 3D2CT, was worked in the UK on 40, 30, 20 and 17m, but that piece of information needs to be qualified by the fact that signals were invariably weak, and I suspect very few UK stations actually made their way into the 3D2 log on any of those bands. The group had a number of problems due to bad weather. Firstly, they lost a Zodiac load of equipment as they tried to take it ashore. Later, when on the reef, further bad weather severely hampered their activities.

Despite the disappointing propagation, I did have two very nice contacts on 17m in late March. One, on SSB, was with P29VMS in Papua New Guinea, running low power to a simple wire aerial. This was Bernhard, DL2GAC, on another of his island hopping trips. The second was on CW and with XE1/AA6RX in Mexico City. David, a keen contester and a professional French Horn player, was using 100W to a 40m dipole, but we were able to ragchew for several minutes with no problems.

I perhaps should also mention that by the end of March I had worked 190 DXCC countries since 1st January, so despite the poor conditions there had been no shortage of DX to be found if you were prepared to dig for it. At that stage my best band of the year was 40m, with 123 countries worked, this with a quarter wave vertical and, for part of the time, a multiband rotary dipole at 18m.

One expedition that particularly impressed me during March was an

effort from Cyprus by some German amateurs. I think there were only two of them, but for about three weeks it seemed you couldn't go on the air without hearing them on whichever band happened to be open at the time. They must have spent every waking hour in front of the radio, to the point where they really were running out of people to work. A very good effort indeed.

By the way, while talking about operations from holiday destinations, do remember that the CEPT licence agreement now allows UK amateurs to operate from Portugal and Portuguese territories (Macau, Azores, Madeira), so even more reason to pack the radio when you go on holiday!

To complete the picture, just as March and April brought most varieties of weather, so we had pretty much all varieties of HF propagation. As I was completing this column shortly before Easter there was a big aurora, which will no doubt be reported in the VHF columns, but this also enabled UK amateurs to work over much of Scandinavia and down as far as Ireland and Belgium on 10m.

Kids contest

For the second time, some US amateurs have run a "Kids" contest. The event, which lasts for an hour on the 20m band, is to give children the opportunity to take a turn at the microphone. The "contest" exchange is Name, Age, Favourite Colour and State. Apparently these events are proving popular with contesters, obviously hoping their young offspring (some as young as four have taken part) will grow up to become avid contesters themselves. It's a pity that our licensing regulations in the UK do not allow such an activity, except from a club station.

Band of the month

We are almost at the end of my tour around the HF amateur bands, with 12 and 15m still to cover. This month I want to look at 15m which, until the

so-called WARC bands were allocated to us in 1979, was the newest of our HF bands, being made available to amateurs in the late-50s if I recall correctly.

15m is the second widest of the HF bands, with 450kHz available. As a result, even at peak times there is usually empty spectrum in the top 100kHz where you can find space for a ragchew.

The internationally agreed bandplan for 15m is shown in the table. UK Novice licensees have use of 21100 - 21149kHz, and this is also a novice allocation in a number of other countries.

15m propagation varies dramatically with the sunspot cycle, and right now we are in the worst situation. Even so, propagation to the Pacific area occurs quite often, but at the peak of the sunspot cycle 15m is probably the most reliable HF band for propagation to the Pacific. Typically, expect the band to start opening after dawn, with a reliable long-path to Japan and the Far East. Later, the short-path to those areas will start to open up. The Far East, and the Pacific when the band is open, can then be worked for several hours, often overlapping with propagation to the Caribbean and North America, which will start around midday and carry on until after dusk. Africa and South America should be workable throughout the day. But remember, these are just generalisations. On a good day at the peak of the sunspot cycle there will be propagation to large areas of the world pretty much around the clock, and reliable communications can be achieved with modest power. I well recall many solid SSB contacts with Australian Novice operators who were running just 10W or so.

DXpeditions tend to use 21295kHz on SSB, while IOTA operations congregate around 21260kHz. It is also worth noting that, as US amateurs are not allowed below 21200kHz on phone, the segment from 21150 to 21200kHz is often a good spot to find rare DX. In particular, stations from the Francophone countries are often to be found around 21155kHz, so brush up your French and look for some interesting ones near that frequency.

Kuwaiti calls

A bizarre situation developed in Kuwait in late March when foreign residents had their 9K2 callsigns taken away and were asked to sign portable with their home callsign. So, for example, 9K2ZZ became 9K2/N6BFM. This wouldn't have been so bad, except that the callsigns released by doing this were promptly reallocated to Kuwaiti nationals, which caused great confusion all round. So much so that within a matter of about a fortnight the Kuwaiti authorities had an 'about face' and went back to square one!

DX news

DX News Sheet and other sources report that the Russian base on Franz Josef Land will soon be closing down, with the result that amateur radio activity will become much less frequent. At the time of writing both R1FJL and RX1OX/FJL were very active and easy to work. If you hear them, I suggest to try to get them in the log as quickly as possible.

Barry Fletcher G4MFW was expecting to be active during May from Kermadec Island, signing G4MFW/ZL8. Barry was going there as part of a scientific team, with permission for amateur radio operation for just a few hours each day. I don't believe Barry has expedition experience, so I suspect he would have been in for something of a shock when he appeared on the air. Kermadec is near the top of the Most Wanted Countries list, and I would expect the pile-ups to be pretty fierce.

Q Codes

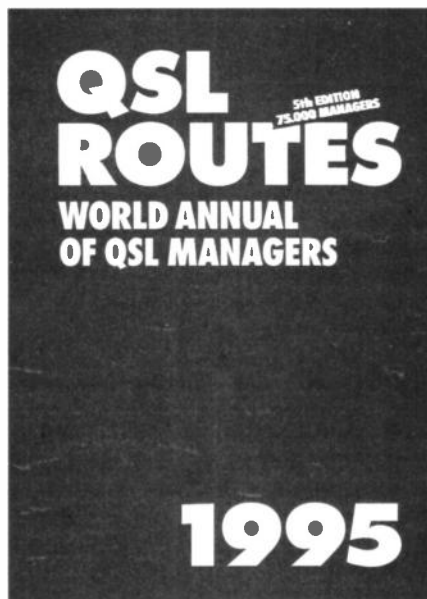
I was amused at some novel, tongue-in-cheek interpretations for common Q codes which were posted by AA5UO on the Internet on 1st April. Just to give you a flavour (remember that Q codes take the form of a question only when followed by a question mark):

- QRL** I'm taking this frequency
Are you taking this frequency?
- QRM** I don't have anything else to say to you, so 73
Am I boring you, too?
- QRN** Sorry, the XYL wants me to stop operating. She's vacuuming the shack
Is your XYL vacuuming now?

- QRP** Please reduce your power below that necessary to maintain communications
Shall I make your life miserable during this QSO?
- QRT** Ignoring the vacuum cleaner didn't work. Must go.
Is she still vacuuming?
- QSO** Net control said we had a good contact.
Net control, was that a good contact?

QSL Routes

Knut DG0ZB has kindly sent a sample copy of his publication "QSL Routes" which is the 5th annual edition, containing QSL routes for roughly 75,000 different DX and DXpedition stations. There are also over 65 pages of actual addresses of DX stations and the more frequently encountered QSL managers. In some ways, a publication like this has been overtaken by having QSL information available from the PacketCluster network, but this book does provide a one-stop reference and has lots of historical QSL routes which you won't find on the PacketCluster. This is especially useful if you are trying to chase up cards from contacts made several years ago. I checked a



QSL Routes' from DG0ZB

number of QSL routes, both old and new, for which I already knew the answer, and can confirm that the information in this book appears to be accurate and up-to-date. *QSL Routes* is available for \$15, 20DM or 20 IRCs from QSL-Routes, Theuberger Verlag GmbH, PO Box

73, 10122 Berlin, Germany. Send cash, or quote your VISA or AMEX number.

A reminder that the IARU Radiosport Contest takes place over the weekend of 8/9th July. It had been intended that this year's running of the contest would coincide with a second running of the World Radiosport Team Championship, in which two-man teams from around the world descend on the Washington DC area to operate from similar stations under controlled conditions. The idea being to level the playing field as far as is possible, to see who really are the world's contesting champions. The first event was held in Seattle in 1990, the winners being K1AR and K1DG. Latest news, however, is that the WRTC element of the contest has been postponed until 1996 to allow time for greater publicity and the selection of teams (up to 30 in all). For this year, do pitch in and enjoy the IARU contest itself, which includes both SSB and CW activity. The contest exchange is signal report plus ITU zone which, in the case of the UK, is 27.

Remember that summer is the best time to get that aerial work done, and make some time to drop me a line (and photos) about your HF band activities, especially if you have been operating away from home. Which reminds me to remind you of the RSGB Island on the Air Contest, which continues to gain in popularity. This one runs from 1200 GMT on 29th July for 24 hours, and will undoubtedly be used as an excuse for many island expeditions. Many European amateurs are already planning their summer holidays around this one and it should be a lot of fun. The contest exchange is signal report plus serial number and, if you are on an island, the IOTA reference number. Mainland UK is EU-005.

As always, my address for correspondence is 105 Shiplake Bottom, Peppard Common, Henley on Thames, Oxon. RG9 5HJ.

15m bandplan

21000 - 21080kHz	CW only
21080 - 21120kHz	Digimodes and CW
(21100 - 21120)	preferred for packet
21120 - 21149	CW only
21149 - 21151	Beacons only
21151 - 21450	Phone and CW
(21335 - 21345)	used for SSTV/FAX

Satellite Rendezvous



Here's some of the story of the Techsat/Unamsat flight (which was detailed in last month's *Satellite Rendezvous*), as told to me by 4X1AS. Anyone relaying this story is requested to acknowledge Amsat-UK as source.

Flight failure

The Techsat/Unamsat flight was on a converted ICBM as has been reported elsewhere. Liftoff and everything was nominal until the time came for the 5th stage to fire (all stages were solid-fuel rockets). After that time the telemetry went flaky and signals were lost. Russian flights appear to be downlink-only without any in-flight command facility, so there was no way to attempt manual command of the fifth stage. The Russians admitted it was their fault at about midday today (30th May 1995). It is not known whether any salvage will be attempted; probably everything burned up in re-entry as the flight was in the vicinity of 600km altitude (but slow) at the time of failure. This was, apparently, the first time that a fifth stage has been attached in this flight configuration although the fifth stage module has flown on other missions as an add-on stage. *Techsat* and *Unamsat* were the only 'real' payloads on this flight, the third payload was a dummy.

It had been reported previously that *Techsat* and *Unamsat* were to have been attached to a Resurs-class spacecraft, but that was an earlier flight configuration which was changed some months ago. The three payloads were all separately attached to the upper stage of the vehicle. It is obvious that a replacement flight will be offered by the Russians. The Israelis will, apparently, rebuild and have another unit ready in a matter of months, but it is not known whether the Mexicans are able to do this. There was no insurance.

Oscar 10

It's still operational in Mode-B. Despite good signals from the transponder, there are very few stations using it. Its currently available when in view but *please do not* attempt to use it if you hear

AMSAT-UK news plus details on the failed launch of the Techsat/Unamsat flight, compiled by Richard Limebear G3RWL

the beacon or the transponder signals FMing. It seems that AO-10 is coming back to life, thanks to improving solar illumination.

Russian Satellites

It appears that the explanation of the wildly erroneous orbital data that we had for RS-15 in its early days. NORAD report that three and a half hours after launch, the third stage of the launch vehicle exploded scattering some thirty pieces of debris, some of which appear quite large to radar trackers.

Astronaut Dr. Norm Thagard and two new cosmonauts were launched to Mir recently. Dr. Thagard has been heard on 2m using ROMIR as his callsign. QSLs for contacts with Norm are available via the following address:

*Dr. Norman Thaggart,
Mail Code CB
Johnson Space Center
Houston TX 77058
U.S.A.*

Norm will not be available to respond to QSL card requests for about three months, so please be patient.

Digital Satellites

Dove is currently carrying a message dated 9th March stating that the Voice experiment is OFF and S Band has been turned OFF due to power restrictions.

Webersat is still broadcasting new images and light spectrometer data weekly. Software for the extraction, decoding, and display of spectrometer data, written by Bob KB7KCL, is available by request on AO-16/KO-23, or directly from Weber State University. Monday UTC, continues to be the day for the broadcast of the most recent spectrum, along with the

week's WOD.

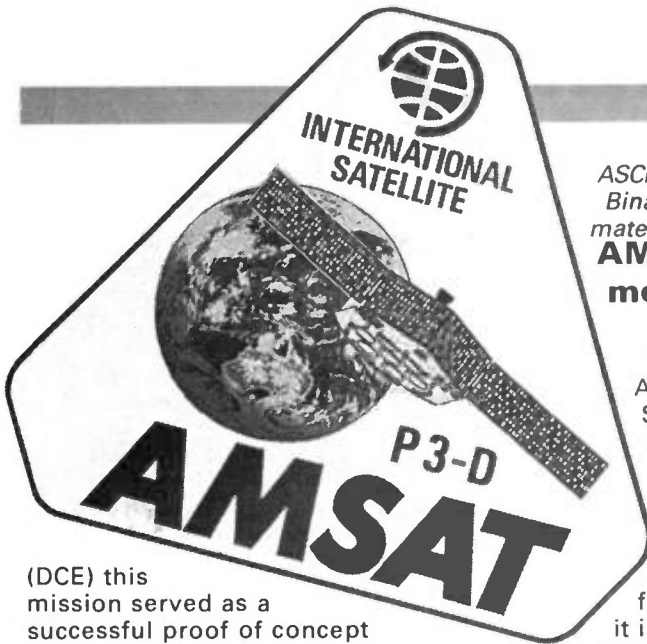
WeberWare 1.0, 1.2, 1.3, or a similar program is required for picture extraction, decoding, and display. WeberWare 1.3 is the current software version, and is available from AMSAT-UK. The satellite now has a weak and relatively steady tone of about 1200Hz in the downlink signal, which can cause reception problems with some modems. If this problem occurs, a ground-based solution is to adjust the IF-shift of the receiver to suppress the carrier into the skirts of the IF filter.

UoS

The on-board computer on *UO-22* has now had three crashes in just over a month. While one of the crashes has been completely explained, the other two have not. As a result, ground controllers have spent some passes over the UK dumping the computer memory.

Unlike the anomaly reported last month, in which a hardware problem was found, the two most recent outages have proven to be software related. In both cases, appropriate software modifications were undertaken and the multi-tasking system aboard the spacecraft was reloaded. Software developers have taken this opportunity to upload and exercise a new, enhanced version of the satellite RAMDISK filing system used on all SSTL satellites.

UO-11 passed a major milestone on March 1st which was the 11th anniversary of its launch, it has completed in excess of 58,800 orbits of the Earth to date. Produced in an unbelievable six month program, UoSAT-2 was the predecessor of current UoS micro-satellites. Supporting a Digital Communications Experiment



(DCE) this mission served as a successful proof of concept for LEO store-and-forward micro-satellites.

Spacecraft data is transmitted on a downlink of 145.825MHz FM. In addition, a secondary unmodulated beacon is operated on 'S' band at 2401.5MHz with an output power of 180mW. The schedule of data transmitted by the 'DIARY' software on the downlink includes the following data formats:

- ASCII telemetry
- Binary telemetry

ASCII WOD
Binary WOD ASCII bulletin material
AMSAT-NA annual meeting

The 1995 AMSAT-NA Annual Meeting and Space Symposium, will again be held in Orlando, Florida at the Orlando Airport Holiday Inn.

Although the meeting is scheduled for October 6th to 8th, it is not too soon to start thinking about presenting a

paper. The Chairman for Papers this year is Bob Walker N4CU. Please contact him if you can honour our American cousins with your knowledge on a subject appropriate to amateur satellites. Bob can be reached at n4cu@amsat.org.

Keplers

The latest satellite Keplers are

available by fax from the Ham Radio Today fax-back line, 01703 263429, request fax document 76 from the satellite menu for this month's. They're also available by post by sending an SAE together with the corner flash from this page to the HRT Editor, stating whether you want *all* satellites (10-15 A4 pages), or just *all amateur* satellites (one A4



AMSAT-UK

page). AMSAT-UK Keplers are also put out on packet fortnightly, sent to KEPLER @ GBR.

If you're interested in amateur satellites and would like further information about Amsat-UK, contact: AMSAT-UK, c/o Ron Broadbent MBE, G3AAJ, 94 Herongate Rd., London, E12 5EQ. Big SAE gets membership info. SWL's are welcome. All new joiners get the USAT-P tracking program on a 5 1/4 in disk.

ARE YOU MISSING OUT EVERY MONTH?

Are you having trouble getting a copy of your favourite HRT magazine every month? Are you missing out on the great news, views and features that we pack in these pages? Are you losing the race to grab the new issues? Do you want to help yourself or a friend keep in touch? If the answer to any of those questions is yes then simply fill in your name and address on one of these coupons and hand it to your local newsagent and he will order or save a copy just for you!



HAM RADIO TODAY

Dear newsagent,

Please deliver / save me a copy of Ham Radio Today Magazine every month.

Name

Address

Ham Radio Today is available from: SM Distribution, 6 Leigham Court Rd., London SW16 2PG
Tel: 081 677 8111
(ISSN No: 0269-8269)



HAM RADIO TODAY

Dear newsagent,

Please deliver / save me a copy of Ham Radio Today Magazine every month.

Name

Address

Ham Radio Today is available from: SM Distribution, 6 Leigham Court Rd., London SW16 2PG
Tel: 081 677 8111
(ISSN No: 0269-8269)

Club News

Aberdeen ARS meets every Friday in the RC Hall, 70 Cairngorm Crescent, Kinloch, meetings start at 8.00pm, visitors are welcome. Planned talks and events;
 Jun 2nd Junk sale
 For further details on the club, contact Martin GMOJCN, Tel. 01569 731177

Aylesbury Vale RS meet on Wednesday evenings in the Village Hall in Hardwick, located off the A413 between Aylesbury and Buckingham. Club diary;
 Jun 7th Packet radio and DX cluster, A Ralph
 Jul 5th Operating techniques
 Jul 19th Discussion evening
 For further details and meeting times, contact Ivan Earnus G3KLT, Tel. 01296 437720

Bristol (South) ARC meet every Wednesday at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol. Club diary of events/talks;
 Jun 7th 80m activity evening
 Jun 14th DX TV reception demonstration
 Jun 25th Longleat Rally
 Jun 28th Judging of home construction contest
 For more information and meeting times, Tel. 01275 634282 24hr answerphone.

City of Bristol Group meet on the last Tuesday in the month, 7.00pm for 7.30pm, at New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. Club diary of events/talks;
 Jun 27th Half yearly EGM
 Jul 25th The Internet, by G4FRO
 Further details can be obtained from Dave Bailey G4NKT, Tel. 0117 9672124

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;
 Jun 20th Direction finding hunt
 Jul 18th Short talks
 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;
 Jun 13th HF night on the air
 Jun 27th Talk - how to go about DF hunting
 Jul 11th 2m mobile DF hunt
 Jul 25th Talk on test equipment
 Further details from Barry Taylor G0TPG, Tel. 01527 542266

Bury RS meet every Tuesday, 8.00pm, at the Mosses Centre, Cecil Street, Bury, Lanc's. CW classes available. Planned club diary;
 Jun 13th Equipment specifications, G4KLT
 Jun 20th Shack night
 Jun 27th Technical forum
 Jul 25th Shack night
 Further details from Laurence G4KLT, Tel. 0161 762 9308

Buxton ARC meet at the Lee Wood Hotel, Buxton, at 8.00pm on the second and fourth Tuesdays each month. Club diary of events/talks;
 Jun 13th Treasure Hunt, Peter G0KLR
 Jul 11th PMR/Eprom conversion, G0TGS
 For further information contact Derek Carson G4IHO, Tel. 01298 25506

Cornish RAC meet on the first Thursday each month, 7.30pm, at

Perranwell Village Hall, Nr. Iuro. Planned club events/talks;
 Jun 1st HF aeriels
 Jul 8th Club rally
 For further details contact Robin G0MYR, Tel. 01209 820118

Denby Dale and District ARS meet at the Pie Hall, Wakefield Road, Denby Dale, W. Yorks, every Wednesday at 8.30pm. The first and third Wednesdays are lecture nights, alternate Wednesdays 'Noggin and Natter' nights. The club run RAE, Morse and NRAE courses, and is an accredited City & Guilds Examination Centre, at Shelley High School, Tel. 01484 424776 for details and application form. Planned club talks/events;
 Jun 18th Club rally
 Jun 21st Aerial clinic, Dave G0EVA
 Jul 5th Simple and unusual aeriels, G3SDY
 Jul 19th 'Free and easy' - Huddersfield holiday
 Further details from the secretary, Kevin G1FYS, Tel. 01484 547553

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;
 Jun 5th Uganda, Ted Evans
 Jun 19th A spectrum analyser and 1001 uses for an oscilloscope, GW0ETF
 Jul 17th Secretary's evening, GW0FMQ
 Further details from the Secretary Tony Rees GW0FMQ, Tel. 01248 600963

Edgeware and District RS meet at the Watting 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;
 Jun 3/4th NFD, Cophall Stadium
 Further details from Rod Bishop G0SQL, 99 St. Pauls Ave, Kenton, Harrow, Middx, Tel. 0181 204 1868

Farnborough and District RS meet on the second and fourth Wednesdays of the month in the Elles room at the Farnborough Community Centre at 8pm. Planned club events/talks;
 Jun 28th VHF NFD planning
 Jul 1/2nd VHF NFD
 For further details contact Andy Pevy G4XYW, Tel. 01344 761184

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;
 Jun 20th Magnetic loop aeriels, Desmond G3ABS
 Jul 4th Visit to Menwith Hill
 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;
 Jun 21st Talk on the Global Positioning System (GPS) entitled "where are we going?"

Jul 9th SMR at Brighton Race Track
 Jul 19th Summer auction of equipment
 For further details contact Reg Kemp G3YFF, Tel. 01424 830454

Hoddesdon Radio Club meet alternate Thursdays at the Conservative Club, Rye Road, Hoddesdon from 8.00pm. Visitors very welcome. The club run Morse training classes. Club diary of talks/events;
 Jun 8th Night on the air
 Jun 22nd Barbecue at Tolmers Scout Camp, Cuffley
 For more information contact Dave G1CAY, Tel. 01992 460841

Hordean and District ARC now meet on the first and fourth Tuesday of each month, 7.30pm, at Lovedean Village Hall, Lovedean Lane, Lovedean, Hants. The first Tuesday is usually a 'Natter Night'. Club nets are Sundays 1955kHz 0900hrs CW, 0930hrs SSB, and Wednesdays 145.350MHz at 1930hrs. Planned Club events/talks;
 Jun 11th Club Special Event Station at the RNARS Rally, HMS Collingwood Sports Field
 Jun 27th Microwave comms. operating, by G3JVL
 Jul 25th Low power radios for telemetry
 Further details can be obtained from Stuart Swain, Tel. 01705 472846

Ipswich Radio Club meet at 7.30pm every Wednesday at the Rose and Crown, and hold regular CW practice evenings. Planned club events/talks;
 Jun 7th Experimental on air night
 Jun 18th 2m foxhunt
 Jun 21st Rig check and test evening
 Jul 5th Contest Logging Software practice
 Jul 12th Barbecue at Hallowtree
 For further details, contact IRC Secretary Andy G7SMN, Tel. 01473 212891

Itchen Valley ARC meet on the second and fourth Fridays each month, at the Scout Hut, Brickfield Lane, Chandler's Ford, Hants (just up the road from SMC), 7.30pm for 8.00pm. Planned club events/talks;
 Jun 9th EMC, by Nigel G7CAW
 Jun 23rd Treasure hunt
 Further details from Sheila G0VNI, Tel. 01703 813827

Keighley ARS meet at the Cricket Club, Ingrow, near Keighley every Thursday at 8.00pm. Many club meetings are 'Natter nights' and 'nights on the air', other events/talks include;
 Jun 8th Treasure hunt
 Jun 29th Cameo evening
 Jul 27th Fox hunt
 Further details from Kathy Conlon G1IGH on 01274 496222

Leicester RS meet every Monday, 7.30pm, at The Chantry, Gilroes Cottage, Groby Road, Leicester. The HF and VHF shacks are available at each meeting, and have regular HF/VHF nights on the air combined with a general natter evenings. The club also run RAE, NRAE and Morse courses. Planned club events/talks;
 Jun 5th Japanses Morse, Norman G3CSG
 Jun 26th Ascension, 'The Radio Active Island'
 Jul 17th Shareware swap evening
 Jul 31st IBM Pcs, how do they work?
 For further details contact Stan Hay G3HYH, Tel. 0116 239 4367

Lincoln Short Wave Club meets every Wednesday night at the City Engineer's Club, Waterside South, Lincoln at 8.00pm, all are welcome. Their forthcoming diary of activities includes;
 Jun 28th 'The man who was Q' - a video and talk by Mrs Fraser-Smith the widow of the James Bond star
 Further details from Pam G4STO, Tel. 01427 788356.



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;

Jun 6th QSL discussion
Jun 13th GX3AHD on the air
Jun 20th Soldering techniques (PL259 etc.), G3PDC
Jun 27th Surplus sale
For further details contact Ian Mant G4WWX, Tel. 0151 722 1178.

Lothians Radio Society meet on the second and fourth Wednesdays each month, 7.30pm, at Orwell Lodge Hotel, Colinton Road, Edinburgh. Planned club events/talks;
Jun 14th AGM
Jun 28th Skittles night, members and partners
For further details contact Brian Howie GM4DJ, Tel. 0131 337 7311

Maidstone YMCA ARS Meet at the YMCA Sports Centre, Melrose Close, Maidstone, Kent ME15 6BD. They run a Novice course on a Wednesday, and RAE and Morse courses every Friday. GB2CW is on Sundays, 8.30pm, 144.25MHz USB/CW, club net on same frequency at 9.05pm. Other nets of interest are 14.33MHz, 8.30am (Wed, Sat, Sun) USB/CW. 1.984MHz (+/- 20Hz), all modes net, 9.30am daily. Planned club events/talks;
Jun 9th AGM
Jun 16th Repair it - practical evening
Jun 23rd GX3YSC, GX3TRF, GX8TRF operator training evening
Jul 16th Barbecue and QRP Field day
For further details call Brenda on 01622 850277

Mansfield ARC meet on the second Monday every month, 7.30pm, at The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. Visitors welcome. Planned club diary of events/talks;
Jun 12th Amateur Radio satellites, by David G4CUO
For further details contact Howard G1JGY, Tel/Fax. 01623 423697, or Mick G0UYG, Tel. 01623 792243

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;
Jun 9th Junk sale
Jun 23rd Barbecue and Romanian evening
Further details from Gloria G3VUN, 40 Linwood Ave, Strood, Rochester, Kent ME2 3TR, Tel. 01634 710023

Newbury and District ARS meet on the fourth Wednesday each month at the Buckdebury Memorial Hall, Buckdebury near Thatcham, at 7.30pm. They also hold regular pub natter nights at Donnington Valley. Planned club events/talks;
Jun 28th Mini talks
For further details contact R. Jolliffe, Tel. 01635 46241

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;
Jun 3/4th CW National Field Day
Jun 14th Visit to Norwich sorting office
Jun 28th Amateur Radio reminiscences, Victor G3JNB
Jul 12th DF hunt
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;

Jun 1st Radio and electronic beams
Jun 8th Forum and night on the air
Jun 15th Fox hunt/activity
Jun 22nd Visit to J. Needles power station
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;
Jun 3rd Barbecue and Field Day
Jun 4th Field Day
For further details contact the Public Relations Officer, F. P. Russell, Tel. 01752 563222

Reading and District ARC meet on the second and fourth Thursdays, 8.00pm, at The Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading, Berks. They run RAE and NRAE courses and are a registered C&G examination centre. They have a club library with a wide range of books on all aspects of Amateur Radio and related disciplines, a cross section of books are available at club meetings. Diary of events/talks;
Jun 3/4th HF NFD
Jun 22nd Electronic detectives, 'what's in the box', bring a DVM
Jun 29th Visit to Martin Lynch
Jul 1/2nd VHF NFD
Further details can be obtained from secretary Tony Canning G0OPB, Tel. 01734 698274 evenings.

Salop Amateur Radio Society meet at the Oak Hotel, The Mount, Shrewsbury every Thursday. They run regular RAE tuition and workshop evenings. Planned club diary of events/talks;
Jun 15th 3rd Fox hunt
Jul 1/2nd Nation Field Day (location to be confirmed)
Jul 13th Packet Radio with SPUG
Jul 20th 4th fox hunt
For further details contact Ian G7SBD, 56 Roselyn, Harlescott, Shrewsbury SY1 4LP or via packet @ GB7PMB

Shefford and District ARS meet every Thursday, 7.45pm, at The Church Hall, Amphill Road, Shefford, Beds. They have regular activity nights. All newcomers are welcome. Planned club events/talks;

Jun 8th Members activity night
Jun 15th Fibre Optics, by Don G4LOO
Jun 20th Gliding evening at Cambridge University Gliding Club
Jun 22nd Pedestrian DF hunt
Jul 1/2nd VHF/UHF Field Day
Jul 6th Members activity night
Jul 13th Mobile DF hunt
Jul 20th Barbecue
Further details contact Paul Bradfield, Tel. 01462 700618

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), and occasional Tuesdays for social events (times and venues set as required). The club runs both RAE and Novice courses on Mondays starting at 7.30pm, plus Morse tuition when required. Planned club diary;
Jun 12th Annual DF hunt for club trophy, also DF quiz for members not in cars
Jun 26th Mid summer dinner, venue to be set
Jul 3rd Talk on DF hunting, by Don G4KXW
Jul 10th Talk by S.Yorks Police or RSGB
Jul 17th Visit to Radio Sheffield
Jul 24th Club quiz

Further details via P. O. Box 365, Sheffield S1 1BY or Tel. 0114 2446282, or via packet to G0JJR (or G0TYO) @ GB7CWS

Silverthorn RC meet every Friday, 7.30pm, at the Adult Education and Community Centre, Friday Hill House, Simmons Lane, Chingford, London E4 6JH. A warm welcome is given to everyone. They have a fully equipped shack with packet radio facility for members to use. Planned club diary of events/talks;
Jun 2nd On air night
Jun 9th HF activity night
Jun 23rd Inter-Club quiz
Jun 30th Club camp meeting
For further details contact Andrew Mowbray, G0LWS/G1NPT, at above address, or Dave G0KHC, Tel. 0181 505 1871, or packet to G1NPT @ GB7HSN.

West Somerset ARC meet on the first Tuesday each month, at the West Somerset School 6th Form Block, Minehead, Somerset. Planned club events/talks;
Jun 6th Talk by Air Traffic Control
Jul 4th Video evening
For further details contact Alan. C. Elliott, Tel. 01643 707207

Southdown ARS meet on the first Monday each month (second Monday if first Monday is a Bank Holiday), 7.30pm, at Chaseley Home For Disabled Ex-Servicemen, Southcliff, Bolsover Road, Eastbourne, Sussex. Please enquire about RAE and Morse classes. Club net every Thursday, 9pm on 145.250MHz. Planned club talks/events;
Jun 5th QRP - see it, buy it, build it, by G3TUX
Jul 3rd Barbecue
Further details from John Vaughan G3DQY, Tel. 01323 485704

Southgate ARC meet on the second and last Thursdays of each month at the Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. Meetings are held each 2nd and 4th Thursdays of the month, between 19.30 and 22.00. The club also runs Novice licence courses and have regular 'on air nights'. Planned club diary of events/talks;
Jun 8th History of the Royal Navy Signals, by Ted G4NLR
Jul 27th Brains Trust Panel
For further details contact M. E. Viney G0ANN, 20 Auckland Road, Potters Bar EN6 3ES, Tel. 01707 850146.

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;
Jun 5th Portable on air night, venue somewhere high
Jun 19th
Jul 3rd Portable on air night, venue somewhere high
Jul 17th
Further details from James French, G7HEZ, 2 Pepper Hill, Stourbridge, West Midlands DY8 1BJ, Tel. 01384 374354, or via packet G7HEZ @ GB7PZT

Stratford upon Avon & District RS meet on the second and fourth Mondays, at the Home Guard Club, Main Road, Tiddington, Stratford upon Avon, at 7.30pm. Club events/talks include;
Jun 12th Open house/night on the air
Jun 26th Top Band fox hunt
Jul 10th Summer social
Jul 24th Construction competition
Further details from Martin Rhodes G3XZO, Tel. 01789 740073

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;
Jun 5th Digital broadcasting, by the BBC
Jul 3rd Acoustic audio, by G3OYU



For further details contact Beml Wynn G8TB, Tel. 0181 660 7517

Mid Sussex ARS meet on the first and third Fridays each month, 7.45pm, at Marie Place Further Education Centre, Leylands Road, Burgess Hill, West Sussex. Club shack open all other Friday evenings. Club net; Sundays 8.00am 3.740MHz (+/- QRM), 11.00am 145.350MHz FM, 8.00pm 70cm Novice net on GB3HY, Mon & Fri 9.00pm 28.400MHz SSB. Planned club events/talks:
Jun 16th Windmills evening, Jack and Jill Clayton Hill
Jul 1/2nd VHF NFD weekend
Jul 9th Brighton Rally
Jul 21st Slow Scan operation from G3ZMS on 80m
Further details from Chris GOGMC, Tel. 01273 842937

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;
Jun 2/3rd HF National Field Day
Jun 15th Junk sale
Jul 1/2nd VHF NFD
Jul 20th Moonbounce, by Peter G3LTF
For further details, Tel. 0181 644 9945

Three Counties ARC meet at the Railway Hotel, Liphook, Hampshire on alternate Wednesdays. Planned club events/talks;
Jun 7th Direction finding aeriels, GOKUF
Jun 21st Talk by Siskin Electronics
Jul 5th Fibre Optics
Jul 8/9th Club trip to France
Jul 19th Global Positioning System
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;
Jun 23rd Modem telecomms., by G3YCH
Further details can be obtained from Walt G3HTX, Tel. 0803 526762, or Peter G4VTO, Tel. 01803 864528 (Day Works no.)

Wakefield and District RS meet every Tuesday, 8.00pm, in the first floor rooms, Ossett Community Centre, Prospect Road, Ossett, W. Yorks. We're told the club has a well equipped station and run both Morse and Novice classes. The club net is on 2m FM on Mondays. Club diary;
Jun 6th 2m fox hunt
Jun 13th Guinea Pigs, by G0ISJ
Jun 20th On the air
Jun 27th Annual open pitch and putt in Holmfield Park
Jul 4th Video show (Northern Cross Rally '95)
For further details contact Bob Firth G3WWF, 6 Eastfield Drive, Woodlesford, Leeds LS26 8SQ, Tel. 0113 2825519, or via packet @ GB7WRG

Welwyn and Hatfield ARC meet on the First and Third Mondays each month, 8.00pm, at The Hyde Community Association Hall, Holly Bush Lane, Welwyn Garden City, Herts.
Jun 3/4th HF Field Day
Jun 5th QSL Bureau - RSGB John Hall G3KVA
Jun 19th Foxhunt
Jul 1st Ware Carnival, 11.30-15.00
Jul 1/2nd VHF Field Day
Jul 3rd Mystery Tour
For further details Tel. 01920 462241 (evenings) or 0181 982 7298 (day)

Wigan - Douglas Valley ARS would like us to inform readers, that

they still meet on the first and third Thursdays each month, 8pm, at their temporary QTH of The Hesketh Arms, Shevington Moor, Shevington, Wigan. At the moment, they currently meet for general chatting, idea swapping and a drink. For further details contact D. Snape G4GWG, 30 Culcross Avenue, Highfield, Wigan, Lancs WN3 6AA, Tel. 01942 211397

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;
Jun 9th On air, general activity evening
Jun 30th How does it work, questions and answers
Jul 14th Construction display, general activity
For further details contact Michael McCarthy G0AWQ, 32 Hillside, Banstead, Surrey SM7 1HF, Tel. 01737 351313

Winchester ARC meet on the third Friday of the month, 7.30pm, at the British Red Cross Centre, Dumgate House, Winchester (adjacent to North Walls Police Station). Club diary;
Jun 16th Radio control in Falconry, Jim G4NWJ
Jul 21st Aeriels, by Dave G0AYD
For further details contact Peter Simpkins G3MCL, Tel. 01962 865814

Wirral ARS meet 8.00pm, at The Club Room, Ivy Farm, Arrow Park Rd., Wirral L49 5LW, on the first and third Wednesdays each month, meetings besides those below are usually 'natter nights'. The club tell us they don't have an RAE course running at the moment, but plan to start one in early August on a Thursday evening. Planned club events/talks;
Jun 7th Visit to Liverpool C.E Cathedral, see the highest VHF/UHF point in Liverpool
Jun 21st Visit to the Mersey Tunnel control room
Jul 5th Manned DF Contest
Jul 19th Gordon Adams part 2 of noise
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;
Jun 7th Ron's travels in the USA, G8VEH
Jun 14th Playing aeriels, G3NDJ
Jun 28th Club history, G8MSQ
Further details from Roy Bannister G4GPX, Tel. 01903 753893

Yarmouth RC meet on Thursdays, 7.30pm, at Drill Hall, York Road. They run Novice and RAE courses, with instruction by David G3OEP the Senior Instructor for Norfolk, and Les G3YYQ. The club have regular informal evenings, other planned club events/talks;
Jun 1st Contest preparations
Jun 3/4th National Field Day
For further details contact Tony Besford G3NHU, Tel. 01493 721173

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;
Jun 8th Short Wave Listening, by G3KSK & G3ICO
Jun 15th Club visit to Royal Signals Museum
Jun 22nd A Brains Trust, by G7RGT
Jun 29th Club station on air
Jul 30th Barbeque and fun day at the QTH of G3PCJ, all radio clubs within easy reach invited
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 two 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 Amot 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. They would like us to let readers know that they plan to have a stand at the following rallies during 1995; Norbreack (Blackpool), All Micro Show (Staffs), Plymouth, Elvaston Castle, Longleat, Cornish ARC rally, Staffordshire Hamfest and TARRG in Telford. ISWL members will be on hand to answer any questions, and ISWL guides and publications will also be on sale. 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, they also have a video library. Their annual AGM and dinner dance is to be held at the Rinn Ronain Hotel, Cobh, Co. Cork on the 8/9th April. 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 4th August must reach us by the 22nd June (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, 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.

June 4th

Spalding Amateur Radio and Computer Fair, Springfield Exhibition Centre, Spalding, Lincs. Admission £1. Refreshments available from 7.30am, car boot pitches, two large halls, ample parking, plus visitors can also visit the Springfield Gardens at no extra charge. Open 10am until 5pm. For further details contact the Spalding & District ARS, Chespool House, Gosberton Risegate, Spalding, Lincs PE11 4EU, or Tel. 01775 750382

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), The organisers have informed us that this event has been cancelled.

Denby Dale and District ARS Rally, Shelly High School, Skelmanthorpe, Huddersfield, West Yorkshire. Bring and buy, refreshments, bar, Morse tests, single level, talk-in on S22 and SU22. Further details from the secretary, Kevin G1FYS, Tel. 01484 547553

Newbury Boot Sale, Aciand Hall, Cold Ash, Nr. Thatcham, 9am to 3pm (set up after 8am), plots £8, no advance bookings. Free admission and parking. Talk-in on S22. For further details contact George, Tel. 01488 682814

June 23rd-25th

International "Ham Radio '95" Rally at the Messe, Friedrichshafen, Germany, on the banks of the Bodensee (Lake

Constance). Widely recognised as Europe's largest gathering of amateurs, the event features a huge trade exhibition, lectures, on-site camping and caravanning available. Details from Messe Friedrichshafen GmbH, Meistershofener Str. 25, D-88045 Friedrichshafen, Germany, Tel. INT+49 7541 7080, Fax. INT+49 7541 75290.

June 25th

Longleat Amateur Radio Rally, follow brown signs for 'Longleat House' (not the Safari Park) from the A36. 150 trade stands, 20 club stands, free parking, catering and bar, large bring and buy, camping and caravanning facilities, plus all the attractions of the Longleat Estate. Admission £2.50 adults, £2.00 OAP and 50p for children. For further details contact Gordon GOKGL, Tel/fax. 0117 940 2950

July 2nd

6th York Radio Rally Tattershall Building, York Racecourse, York. Doors open 10.30am, admission £1.50, children accompanied by adult free. Amateur radio, electronics and computers, Morse tests, repeater groups, refreshment and licensed bar, talk-in on S22, ample free parking. Information and booking details from Ken, Tel. 01209 821073.

July 8th

Comish Radio Rally and Computer Fair, At Penair School, Truro. Doors open 10.30am, large hall, trade stands, bring and buy, official Morse tests, free parking. Admission £1. For further details and booking information contact Ken GOFIC, Tel. 01209 821073

July 9th

Sussex Amateur Radio and Computer Fair This will be held at Brighton Racecourse, Sussex, 10.30am to 4.00pm. The organisers say the event brings together the best in amateur radio and computer technology. Admission £1.50, free car park, giant bring and buy, bar, talk-in on S22. Information and traders booking details from Ron Bray G8VEH, tel. 01903 763978 or 01273 417756 office hours.

July 16th

12th McMichael Rally and Car Boot Sale at the Haymill Youth and Community Centre, Bumham lane, Slough; near Bumham Railway station. Talk-in S22, doors open 10.30am, admission £1.50, car boot sale (no advanced bookings) is £7.00 per pitch on the day. Further details from Dave G3SET, Tel. 01628 486554

July 23rd

The Outdoor Boat and Leisure Show, Powderham Castle, Exeter, Devon, expect to have a large amateur radio section of new and used equipment for sale. A special callsign has been applied for. For further details, Tel. 01626 890243

July 30th

Scarborough Radio Electronics and Computer Rally, The Spa, South Foreshore, Scarborough, doors open 11am. Many traders, bring and buy, refreshments and bar. For further details contact Ross Neilson G4ZNV, Tel. 01377 257074

August 6th

RSGB Woburn Rally Woburn Abbey, Bedfordshire. For further details contact Norman Miller, G3MVV, Tel. 01277 225563

August 13th

Flight Refuelling ARS Hamfest '95, Flight Refuelling Sports Ground, Merley, Wimborne, Dorset. 10am to 5pm. There will be taders, bring & buy, craft stalls, car boot sale and field events. Overnight camping facilities available for Saturday 12th. Talk-in will be on S22, with new traffic routing. Please follow signs. For further details contact Richard Hogan G4VCQ, Tel. 01202 691021 (**HRT Voicebank should have latest updates during week prior to rally)

August 18th

Cockenzie & Port Seton ARC Junk Night, bring along your own junk and sell it yourself. Tables will be provided on a first come first served basis (no charge for table). Time 6pm to 9pm. Entry £1 for all persons, refreshments available, there will also be a raffle. All money raised is being donated to the British Heart Foundation. For further details contact Bob GM4UYZ, Tel. 01875 811723 or via GB7EDN

August 19th/20th

Stafford Computer and radio show, The County Showground, Weston Road, Stafford. Open 10am to 5pm both days, large trade presence, special interest groups, Morse tests, bring and buy, lectures each day, free parking, bars and catering. Free stands available to radio/computer clubs and societies. 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

August 27th

East Coast Amateur Radio and Computer Rally, Clacton Leisure Centre, Vista Road, Clacton-on-Sea, Essex. Major suppliers and manufacturers of radio equipment, computers, computer software, accessories, aerials and second hand gear are said to be attending. There is also the leisure centre facilities available, plus other nearby attractions. For further information contact Sharward Promotions, Upland Centre, 2 Upland Road, Ipswich IP4 5BT, Tel. 01473 272002, Fax. 01473 272008

Torbay ARS Annual Mobile Rally, Clenon Valley Leisure Centre, Paignton, Devon. Doors open at 10.00am. Trade stands, bring and buy, special interest displays, use of leisure facilities, restaurant and bar. For the family - beach, boating lake, steam railway and flume water park only 4 mins walk. For further details contact John G3YCH, Tel. 01803 842178

August 28th

Huntingdonshire Amateur Radio Society 7th Annual Bank Holiday Monday Rally at St. Peter's school, St. Peter's road, Huntingdon, Cambridgeshire. doors open 10.00am, admission £1.00, refreshments available. the event features two halls plus a car boot sale on hardstanding outside. Talk-in on S22. Further details from david leech G7DIU, tel. 01480 431333.

used mobile, as new condition, £210. Kenwood TR-751E 2m multimode, never used mobile, mobile bracket, DC lead, mint condition, £475. Manuals, circuit diagrams for above included. D. McGill (Lincoln), Tel. 01522 567790
Marconi TF893A AF power test meter, 5 ranges, with manual, £15. Grid dip meter model TE15, covers 360kHz to 240MHz, in very good condition, with instruction manual and boxed, £15. Len GOINU (Plymouth), Tel. 01752 343074
Yaesu FT-101 complete radio station, £1000. M. Stammers (Welling, Kent), Tel. 0181 304 8830

Amiga 500 computer, PSU, modulator, manuals, some software, £98. Stormo 5000 mobile PMR, 70cm EPROM fitted etc., small work to complete 25W FM transceiver, £39. KW EZ match ATU, £29. PSU, variable voltage, 9/12A, £30. G4ANW (Hampshire), Tel. 01730 261859

Ailco DR-590 VHF/UHF dual band mobile transceiver, £345. Diamond SX400 SWR/PWR meter, 140-525MHz, £65. P. Wilson (Leeds), Tel. 01374 845394

Rexel WS70 professional SWR meter, 2/5/200W, 1.4 to 1300MHz, cost £249 six months ago, immaculate FRG-7 no mods. Wanted - Marine HF receiver, digital readout and 70cm linear, cash adjustment marine receiver. Bill Symes, 135 Moreton Road, Upton, Merseyside L49 4NT

Microphone reverb unit, £6. Realistic PRO-2908 VHF/UHF scanner, £65 ono. BNC type connecting leads on low loss cable, quantity of coax, £10. 10 to 20 metres UR67 coax, £15 ono. Wanted - TNC or any packet or amateur TV equipment. A. Thompson (Devon), Tel. 01884 257487

Yaesu FT-757GX, MH1-B H/mic, Yaesu FC-757 full auto ATU, all leads, manuals, original packing, excellent condition, never mobile, £675. Yaesu FT-101E, H/mic, manual, DC leads, clean condition, £275. May exchange for 2m multimode, WHY? Derek GMOUEL (Clacks), Tel. 01259 752968

AOR 3000A top of the range receiver, with box and manual, as new, £650.

Cash only, no cheques. D. Thomas (Elstree, Herts), Tel. 0181 207 0706
Kenwood TS-50 plus matching auto tuner AT-50, top condition, with boxes and manuals, £900. John (Birmingham), Tel. 0121 477 8163 anytime

KAM all mode, fully updated to version 7.1, £240. Briam GOUJR (Bristol), Tel. 01454 881147 after 6.00pm.

Trio R1000 general coverage receiver,

£200. Matsui MR4099 receiver, £50. Both items to be collected. Bryan Hayes (Northampton), Tel. 01604 401800
Kenwood TH-78E 2m/70cm handheld, ext. receive, SMC32 spk/mic, CTCSS and ext. memory boards, nicad pack and extra pack fitted with nickel hydride 1.2Ah AA rechargables, with charger, case and manual, boxed as new, £350. T. M. Rose, 41 Keats Way, Hitchin, Herts
Yaesu FRG-9600 scanner, 60 to 905MHz, boxed, PSU, manual, CAT interface system, Scanmaster aerial, mint condition, 4 months old, still under guarantee, books - Scanners 1, 2 & 3, UK Scanning Directory, Short Wave Communications, £450, can send COD. Rigby (Morecambe), Tel. 01524 833506

WANTED

Aerial, longwire or anything else considered, suit internal roof or loop if reasonable. Also 20A power supply. J. Tarleton (Derby), Tel. 01283 221870
Matching loudspeaker for TS-520, willing to pay for postage. Contact Peter G4VUN (Cleveland), Tel. 01287 634397 (9.00am to 5.00pm, works QTH)
Any unwanted PMR transceivers, or any other type, must come with a power cable of some sort, I need one for my technology project for my GCSE. I can only afford postage. Contact Philip Black, 37 Aughintober Rd, Dungannon, Co. Tyrone, N. Ireland, Tel. 018687 67730
SSTV disk and interface required for Amiga 600 computer, up to £50 paid for the two. L. Stockwell (Essex), Tel. 01375 383867

Yaesu FT-690 Mki, MkII, must be in good working and physical condition. G0CGZ (Grimsby), Tel. 01742 827829
FM board for Kenwood TS-430S. Also speaker for the 430S, will pay for postage. Andy G0VUH (Sheffield), Tel. 0114 2423697

Drake TR-4C microphone plug. Also Shure D444 or Drake 5100 desk microphone. Mr. Biles (Wimbome), Tel. 01202 880194

500Hz CW filter (YK-88C) for Kenwood TS-440S, or part exchange for 270Hz filter (YK-88CN). D. Taylor (Canterbury), Tel. 01227 464157

Scanner wanted, wide coverage, and discone, cash waiting. Weather satellite equipment wanted to get started. Packet radio TNC required, cash waiting, can collect or post. Any PC amateur radio bits that may be interesting for beginner. A. Thompson (Devon), Tel. 01884 257487

Eddystone EC10, EC10Mk2, EB35, 870, 870A, 960, plus diecast speakers 652

and 688. Clarke and Smith schools radio, wartime civilian receiver for cash. Collection possible. £10 each offered for scrap sets! Peter Lepino (Surrey), Tel. 01374 128170, Fax. 01372 454381 anytime.

KW2000 with power supply etc. Reasonable distance. Please contact J. Shaw G3ZKZ (Bury St. Edmunds), Tel. 01284 810620

WW2 Military or clandestine sets. MK328 and other SAS sets. HRO complete. AR77, AR88, WHY? For trade; Collins SJ4, Soviet block army sets. Contact OZ8RO Rag, Otterstad, Hosterkobvej 10, DK-3460 Birkerod, Denmark, Tel. 00 45 4281 5205, Fax. 00 45 4497 3366, E-mail; c/o danmec q inet.unic.dk

Satellite board for FT-726R, must be in working order. Alan G0PHT (Leics), Tel. 01509 231289 after 5.00pm.

Control heads for Bosch rigs KF453, KF163 and KF83. Also can anyone blow me an EPROM for the rigs mentioned? Andy G6OHH (Cambs), Tel. 01354 693791

Pair of VHF handhelds, 2m, preferably with details. Also preferably unmodified Command receiver, 3-6MHz. Also Pye SSB 125/130. Bill Symes, 135 Moreton Road, Upton, Wirral, Merseyside L49 4NT

Yaesu FC-102 ATU, must be in good working order. Also wanted 2m 30W linear. For sale - Yaesu G-400 rotator. Mark Taylor G0LGJ (Norfolk), Tel. 01362 691099

HRO type receiver with a set of coil packs. Power supply for a KW Viceroy transmitter. Old CW/AM transmitters, home made or commercial. Information, handbook for Hygain 14AVT aerial. G4GDR (Swindon, Wilts), Tel. 01793 762970

Heathkit HW16, RG1, working or non-working. Please send details and realistic price to; Richard Marris, 35 Kingswood House, Farnham Road, Slough, Berks SL2 1DA

Icom IC-502 50MHz QRP SSB/CW transportable rig (similar to IC-202), VXO controlled. Has anyone got one, or knows of one for sale? Almost any condition considered. Vince (Wimbledon area), Tel. 0181 788 3151 late evening, or leave message on answerphone.

Active aerial. Either Vectronics AT100 or MFJ-1020A. Must be excellent condition with no modifications. Sensible price please. M. Swift (Co. Durham), Tel. 0191 389 2822 after 6.00pm.

Good TS-430S, IC-720A or FT-757GX with PSU. Tony G3MKB (Hereford), Tel. 01531 636158

Bumdept BE544, 143 to 156MHz

remote mount transceivers plus control units for same (BE 536). Also Bumdept repeater control unit, (sorry don't know model number), or any info about them. Thank you. Ian (Camberley, Surrey), Tel. 01276 26491 after 8.00pm

19 Set grilles and control boxes, particularly No's 1 and 17. 18 Set aerial sections and canvas, operating instructions for WS 18, 19, 21, 22, 31, 38, 62. Some ex-WD swaps available, or will buy. Chris (Belfast), Tel. 01232 796755 evenings

EXCHANGE

Diamond V2000 triband base colinear aerial, 6m, 2m, 70cm, with triplexer unit, for Diamond X5000 or X7000 2m 70cm 23cm equivalent. Tony (Liverpool), Tel. 0151 280 0882

IBM Compatible XT 640kB RAM, 3.5in 1.44Mb floppy, 40Mb hard drive, VGA colour monitor, many packet progs on hard disk, exchange for 70cm handheld or WHY? Contact Alistair GM4UQD (Livingston, West Lothian), Tel. 01506 467351

Shortwave receiver wanted, anything considered, exchange for my Amstrad 1640 computer with colour monitor and hard drive. Contact Richard Burrows, 1 Oakbank Crescent, Keighley, Yorkshire BD22 7SZ, Tel. 01535 600667

IBMXT 5106, 21Mb HD, 640k RAM, 360k 5.25in floppy, CGA colour monitor, 102 keyboard, hard drive stacked double, various software. Swap for communications receiver, or weather satellite gear, WHY? M. Taylor (Mansfield), Tel. 01623 640605

FT/FP 200 new PA valves, c/w mic, handbook, half size G5RV, VGC. Swap for 2 or 6m multimode, with aerial/accessories for 6m if 2m multimode. Can collect within 50 mile radius. Trevor Gale (Upavon, Wilts), Tel. 01980 630003 after 6.00pm.

Yaesu FT-11 handheld, with 9.6V battery and charger, up to 5W out and airband receive. Exchange for decent ATU, particularly would like FC-102 or similar. Peter (Wellingborough, Northants), Tel. 01933 404730 daytime, or 01933 270408 evenings.

Icom IC-551 6m multimode, fitted FM, PBT unit, boxed, manual, service manual, as new condition. Also Icom IC-251E 2m multimode, manual, mic, MuTek fitted, also in excellent condition. Exchange for FT-767GX or FT-726R. Ian (Norfolk), Tel. 01692 582099

Free Readers Ads!

Name Signature

Address Date

Send this form to:

Free Readers Ads, Ham Radio Today, NEXUS, NEXUS House, Boundary Way, Hemel Hempstead HP2 7ST.

You can also fax this coupon on (01703) 263429

The above details will not be published, enter all that is to be published in the boxes below (AMATEUR RADIO EQUIPMENT ONLY PLEASE)

*Delete as appropriate

(BLOCK CAPITALS OR TYPED PLEASE, ONE WORD PER BOX)

HELPLINES/FOR SALE/WANTED/EXCHANGE*

Due to limited space, your ad will appear in HRT as room becomes available on a first come first served basis, please be patient.

Free Readers Ads Conditions

1. These advertisements are offered as a free service to readers for the sale, exchange, wants, or help with, amateur radio equipment only. Ads from traders, or apparent traders, will be rejected.
2. You should use our classified ads section (rear pages of this magazine) for ads not fulfilling these conditions. Our advertising department (Tel. 0442 66551) will be pleased to accept prepaid ads.
3. All that is to be reproduced in the advertisement should be entered on the form printed periodically in the magazine. Advertisements must be no longer than 40 words, including contact information. Ensure you mark your form either 'Helplines', 'For Sale', 'Wanted', or 'Exchange'.
4. All advertisements must include either a contact telephone number (with STD code) and location (e.g. town or county) or a full address, or both for readers to reply, these details must be included within your advertisement. The Editor reserves the right to add a town/county location where this has been omitted. The term QTHR will not be published as many readers cannot use this. If entered the Editor reserves the right to either reject the advertisement or to add any published callbook address, however no guarantee of this nor its accuracy is given.
5. Advertisements which are suspected of including illegal equipment and/or any equipment which transmits only outside of amateur bands will not be published. The magazine reserves the right to either refuse to accept in entirety, or to delete any sections, of such advertisements.
6. Advertisers must fill in their names, addresses and (optionally) telephone number in the space provided, these details will not be published. Advertisers must sign the form to indicate acceptance

- of these conditions. Ads submitted without a form (a posted photocopy or alternatively a faxed coupon is acceptable), full address, or a signature will be rejected.
7. The submitted advertisement must be either written in block capitals or typed.
8. Advertisements will be inserted as and when space becomes available, on a first come first served basis, subject to these conditions. Please be patient though, we have limited space in which to publish free ads each month. If you cannot wait and require a guaranteed insertion, you should use the pre-paid classified ads section at the rear of the magazine.
9. We cannot be held responsible for printers' errors, however we will attempt to ensure that legible submissions are reproduced correctly. In the event of a gross error, at the request of the advertiser and at the Editor's discretion, a corrected version of the advertisement will be printed in the earliest issue in which space is available.
10. Neither the magazine nor its publishers will accept any responsibility for the contents of the advertisements, and by acceptance of these conditions the advertiser undertakes to indemnify the publisher against any legal action arising out of the contents of the advertisement.
11. Advertisements are accepted in good faith, however the publisher cannot be held responsible for any untruths or misrepresentations in the advertisement, nor for the activities of advertisers or respondents.
12. As this is a free service, no postal or telephone communication regarding publication of ads can be accepted unless an error is involved. Please remember, all ads fulfilling these conditions will be published as space permits.

RETAIL NETWORK

AVON

Open Mon-Sat 9.30AM - 5.00PM
 Bristol & Avon Independent Retailer
 ICOM - YAESU - ALINCO - AOR
 Packet Radio Equipment Satellite Tracking Equipment
 Sole Agents for DRSI Packet PC cards/L.L. Grace DSP-12
 Junghans MSF Controlled Clocks
 Accessories - Books - Magazines

AMDAT 4 Northville Road, Northville,
 Bristol BS7 0RG
 Tel: 0117 9699352 Fax: 0117 9236088

BIRMINGHAM

HEWARD'S HOME STORES LTD.
 (Est. 1963)
 822/4 Kingstanding Rd., Birmingham
 B44 9RT
 Tel: 0121-354 2083
 G4RJM with over 41 years in The Radio Trade
 Ham Equipment urgently wanted!
 Open: Mon-Sat 9-6

**THIS SPACE
 COULD BE
 WORKING FOR
 YOU.
 FOR DETAILS OF
 OUR COST
 EFFECTIVE
 ADVERTISING
 CALL ALISON ON
 01442 66551**

CORNWALL

For All Your Marine Radio Communications

Try us first for all your Radio amateur and marine communications
 ICOM YAESU NAVICO JAYBEAM

Give Mike G1DDK a call today!

47 TREVARTHIAN RD, St. AUSTELL, CORNWALL PL25 4BT. TEL. 0726 70220 TEL. 0374 996595

KENT

WANTED
 Amateur equipment bought & sold
Collection & Delivery service available
 Send a A5 SAE for our full equipment list.
Ring now for a quote on your clean used gear.
**KP Trading, Seaview House, Crete Rd East,
 Folkestone CT18 7EG Tel/Fax 01 303 891106**


KENT

KANGA PRODUCTS
The UK's leading supplier of QRP kits
 Why not build a simple transmitter such as the *ONER* at only £4.95 or a receiver to listen to the bands. Our L.C.K. Superhet receiver is just £34.95. The KIRSTA Iambic Keyer is £19.95. 100 watt Dummy Load is £9.95 and the Wattmeter £19.95. (Please add £1 to cover UK postage & packing others by request)
 Send an A5 SAE now for our free Catalogue to:
**KANGA PRODUCTS Seaview House, Crete Rd East,
 Folkestone CT18 7EG Tel/Fax 01 303 891106**

**KINDLY MENTION HAM
 RADIO TODAY WHEN
 REPLYING TO
 ADVERTISEMENTS**

LANCASHIRE

AMATEUR ELECTRONICS/HOLDINGS G3LLL.
 YAESU, JAYBEAM, DATONG, ICOM, ETC. FT 101 EXPERTS


 6JS6C 6146B 12BY7A Original type approved valves & our own Double Balanced Mixer and new band WARC Kits for original FT101 MK1-E. S.A.E. List Full Yaesu range. 15 mins Junction 31 M6. Free parking. Call and consult G3LLL without obligation. Holidays? Phone, check we are open before calling. Lunch 12-1.30pm.
**45 JOHNSON STREET, BLACKBURN BB2 1EF
 (0254) 59595. CLOSED MON. & THURS.**

G3LLL

SCOTLAND

JAYCEE ELECTRONICS LTD
 20 Woodside Way Glenrothes
 Fife KY7 5DF
 Tel: 01592 756962

Open: Tuesday-Friday 9-5; Saturday 9-4
 Good range Kenwood, Yaesu & Icom etc,
 plus quality secondhand equipment

USA

From U.K.
 Tel. 0101-203-666-6227
 Fax. 0101-203-667-3561



LENTINI COMMUNICATIONS INC.
 AMATEUR • SHORTWAVE • SCANNERS •
 COMMERCIAL • TWO-WAY • MARINE
 DAILY EXPORT TO THE U.K.
 YAESU, KENWOOD, ICOM, STANDARD,
 ALINCO
 MARTIN COOK, N1FOC/GOTPO
 Sales
 21 GARFIELD ST., NEWINGTON, CT 06111
 U.S.A.
 Visa & M.C. Accepted

NORTH WEST & NORTH WALES

AMATEUR RADIO COMMUNICATIONS LIMITED

OPEN We are official factory appointed stockists and approved Service Centre for all the major brands.
Tues to Sat ICOM - YAESU - KENWOOD - ALINCO
10-5pm **TEL/FAX: 01925 229881/2**

We are 1 mile from J23 M6,
 4 1/2 miles off J9 M62



38 Bridge Street, Earlestown, Newton le Willows, Merseyside WA12 9BA

READERS PLEASE NOTE that some telephone dialling codes may recently have changed, if you experience any difficulty in contacting advertisers, ring our Advertising Department on 01442 66551



Lineage: 70p per word + VAT (Min Charge £14.00) Semi-Display: (Minimum 2.5cm x 1 col) £12.40 + VAT per single column centimetre per insertion. Ring for information on series bookings/discounts. All advertisements in this section must be prepaid. Advertisements are accepted subject to the terms and conditions printed on the advertisement rate card (available on request).

TO ADVERTISE CALL 01442 66551

Send your requirements to:
Ham Radio Today, Classified Department,
Nexus House, Boundary Way, Hemel Hempstead, Herts HP2 7ST.

SOFTWARE

SCIENTIFIC SHAREWARE

Discover the true wealth of PD & shareware for the PC. Since 1982 PDSL have supplied the best and latest programs covering all interests *Business, Leisure, Engineering, CAD, DTP, Maths, Stats, Chemistry, Education, Electronics, Ham Radio, Esoteric, Medical, Raytracing, Programming & Languages, Tools, Utilities, WP, Editors, Comms, Special applications, Esoteric, Novelty, Astronomy & hundreds more.*

All software can be provided on Floppy disc or CD ROM.

Whatever your interest we probably have it. Send today for our PC Shareware reference guide. It runs to more than 250,000 words and is probably the most comprehensive catalogue currently available. Send £2.50 (voucher provided refundable on first order) or phone/fax using Access/Visa/MC to:

**PDSL, Winscombe House, Beacon Rd,
Crowborough, East Sussex, TN6 1UL.
Tel 01892 663298
Fax 01892 667473**

COURSES

RADIO AMATEUR LICENCE

Start training now with the specialists for the following courses. Send for our brochure - without obligation or Telephone us on 01626 779398

HRT 7/95

Name _____ Telecomms Tech C&G 2710
 _____ Radio Amateur Licence C & G
 _____ Micro-processor
 _____ Introduction to Television

Radio & Telecommunications Correspondence School,
12, Moor View Drive, Teignmouth, Devon TQ14 9UN

BUY/SELL EXCHANGE

THE "BRING & BUY" DATABASE Buy, Sell, Exchange - Introductory offer ONLY £1 to advertise for 3 months - For details Tel/Fax 01763 262443 NOW!

COMPUTERS

G0LOV/G4LUE UK
Callbook for PC. Data April 1995. Database includes amateurs, repeaters, mailboxes, nodes, European repeaters, WAB £12.50. £1.50ppi
Hamfax, TX/RX FAX, SLOWSCAN, RTTY, MORSE.
KIT £21.00 BUILT £25. £1.50ppi
Bailey, 8 Hild Avenue, Cudworth, Barnsley, S/Yorks

TO ADVERTISE IN HRT PLEASE COMPLETE THE COUPON BELOW OR CALL ALISON ON 01442 66551 FOR DETAILS



Rates: Lineage 70p per word + VAT, minimum 15 words. Semi-display £12.40 + VAT per single column, per insertion, min. size 2.5cm x 1 column. No reimbursements for cancellations. All advertisements must be pre-paid.

Name

Address

Day Time Tel No

Signature..... Date

EXPIRY

DATE - □□□□

CLASSIFIED COUPON

FOR SALE SOFTWARE WANTED EQUIPMENT AERIALS OTHERWISE STATE

Editor;
Sheila Lorek, G8IYA

Consultant Technical Editor;
Eur Ing. Chris Lorek BSc.(Hons) C.Eng. M.I.E.E.,
G4HCL, AA0RX

Creative;
Design Manager; Peter Kirby
Designer; Mark Thornicroft
Photographer; Manny Cefai

Advertising;
Senior Advertisement Sales Executive; Alison Weatherill
Tel. 01442 66551 Fax. 01442 66998
Advertisement Copy Control; Marie Quilter

Management;
Managing Director; Terry Pattison
Circulation and Promotions Manager; David Pagendam
Production Manager; Tony Dowdeswell
Group Advertising Manager; Claire Jenkinson
Managing Editor; Stuart Cooke

HRT Address;
Ham Radio Today, Nexus Special Interests Ltd., Nexus House,
Boundary Way, Hemel Hempstead, Herts HP2 7ST

24hr Editorial Voicebank and fax-back information line;

Tel. 01703 263429

Email; chris@radshack.demon.co.uk

Fax; 01703 263429 (same as voicebank) for Club News, Radio Today
and Free Readers Ads (Readers queries, please see below)

Reader's Queries;
Our voicebank usually gives an immediate verbal and written (faxed) answer
to most queries.

We're sorry but the publishers, and the Editorial staff, cannot accept phone
calls for reader's queries, remember these are often answered by the
voicebank. Written queries, which must be accompanied
by an SAE for reply, will however be dealt with as time allows.



Member of the
Audit Bureau
of Circulation
ISSN No.
0269-8269



Subscription rates; UK £21.80, Europe and Eire £28.40, Sterling Overseas
£29.80 US Dollars Overseas \$53, Airmail rates available on request. Cheques
payable to Nexus

Subscriptions and Back Issues; Nexus Subscription Services, Ham Radio
Today, Tower House, Sovereign Park, Lathkill Street, Market Harborough,
Leicestershire LE16 9EF. Subscription Hotline; 01858 435344, Enquiries
Hotline; 01858 435322

USA Subscription Agent; Wise Owl Worldwide Services, 4314 West 238th
Street, Torrance CA90505-4509 USA.

USA Visa/Mastercard orders; Tel. (310) 375 6258 Fax. (310) 375 0548. Pacific
Time; 9.00am-9.00pm weekdays, 10.00am-6.00pm weekends.

HRT Photocopies; If the back issue you require is not available, then
photocopies of articles can usually be obtained, the price is £3.50 plus £1.00
P/P (UK) for the first article (overseas add 30%, minimum charge £1.50),
£3.00 for follow-up articles. Multiple parts count as separate articles, cheques
payable to Nexus. Please write to; HRT Photocopy Service, Nexus House,
Boundary Way, Hemel Hempstead, Herts HP2 7ST, stating HRT magazine,
article title and issue it appeared in (if you do not have this information
please include an additional £3.50 search fee). We are sorry, but we are
unable to accept telephone orders, enquiries, or personal calls at the main
office for photocopies. Please allow up to 28 days from receipt of order for
delivery.

HRT Binders; HRT binders are available from Reader Offers Dept., Nexus
Special Interests Ltd. Nexus House, Boundary Way, Hemel Hempstead, Herts
HP2 7ST, Tel. 01442 66551. £6.95 inc. UK P/P (Overseas add £1.50), Cheques
payable to Nexus. Please allow up to 28 days for delivery.

HRT is published by Nexus Special Interests Ltd., Hemel Hempstead. UK
newstrade distribution by SM Distribution Ltd., 6 Leigham Court Road,
London SW16 2PG, Tel. 0181 677 8111. Overseas and non-newstrade sales
by Magazine Sales Dept. Nexus House, Boundary Way, Hemel Hempstead,
Herts HP2 7ST, Tel. 01442 66551. Typesetting by Ebony, Liskeard, Cornwall.
Printed in Great Britain by Wiltshire Ltd., Bristol.

Ham Radio Today is normally published on the first Friday of the month
preceding the cover date. The contents of HRT including all articles, designs,
plans and photographs and all copyright and other intellectual property
rights therein belong to Nexus Special Interests Ltd. All rights conferred by
the Law of Copyright and other intellectual property rights and by virtue of
international copyright conventions are specifically reserved to Nexus
Special Interests Ltd., and any reproduction requires the consent of the
company ©1995 Nexus Special Interests Ltd.

All reasonable care is taken in the preparation of the magazine contents,
but the publishers cannot be held legally responsible for errors. Where
mistakes do occur, a correction will normally be published as soon as
possible afterwards. All prices and data contained in advertisements are
accepted by us in good faith as correct at the time of going to press. Neither
the advertisers nor the publishers can be held responsible however, for any
variations affecting price or availability which may occur after the publication
has closed for press.

ADVERTISERS INDEX

Amateur Electronics .....	.55
Amdat .....	.55
AM Holdings .....	.55
AOR (UK) .....	.14
Ask Electronics .....	.11
Mr. Bailey .....	.56
Bring & Buy Database .....	.56
Cirkit Holdings .....	.25
Coastal Communications .....	.IFC
Cricklewood Electronics .....	.28
Datong Electronics .....	.4
DIY Radio .....	.25
GWM Radio .....	.25
Hately Antenna .....	.28
Hewards Homestores .....	.55
Icom (UK) .....	.OBC
Jaycee Electronics .....	.55
Kanga Products .....	.55
KP Products .....	.55
Lenitini Corps.. (USA) .....	.55
PDSL (Public Domain Shareware Library) .....	.56
Radio & Telecommunications Correspondence School .....	.56
Skywave Marine .....	.4, 55
SRP Trading .....	.58, IBC
Venus Electronics .....	.25

New Stolen Equipment Register

- 24 hour accessibility by fax
on the Ham Radio Today
Voicebank and Fax-back Information Service
24 hr: 01703 263429

We're pleased to introduce a new service to the Ham Radio
Today 24 hour fax-back service, this being a stolen equipment
register for ham radio, SWL, and scanner equipment, from
received information from any source, i.e. readers as well as
ham radio dealers. It is available to **anyone** on a 24 hour basis
on a normal rate (non-premium!) fax line. So if you're worried
about an 'iffy' piece of gear offered to you, the answer is just
seconds away, **anytime**.

If you'd like any gear you've had stolen in this list, just post,
fax, or email any such information to us including the
equipment type and serial number, contact Tel. No. and
reference, or if available the police crime reference number
and local station contact information.

Please send to;
Post; Ham Radio Today Editor (Stolen Equipment), Nexus,
Nexus House, Boundary Way, Hemel Hempstead,
Herts HP2 7ST
Fax; 01703 263429 (same No. as the fax-back service),
Attn: 'Stolen List'
Email; chris@radshack.demon.co.uk

We welcome all readers to publicise this service through your
radio club, on the air, and of course to rally and exhibition
organisers! This is a **free** service by Ham Radio Today
magazine for the benefit of our hobby.

S.R.P. TRADING

SKY SCAN

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



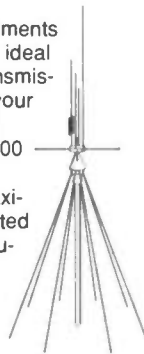
£24.95

+ £3.00 p&p

SKY SCAN

DX V1300 Discone

Most discones only have horizontal elements and this is the reason that they are not ideal for use with a scanner. Most of the transmissions that you are likely to receive on your scanner are transmitted from vertically mounted antennas. The Sky Scan V1300 discone has both vertical and horizontal elements for maximum reception. The V1300 is constructed from best quality stainless steel and aluminium and comes complete with mounting pole. Designed and built for use with scanners.



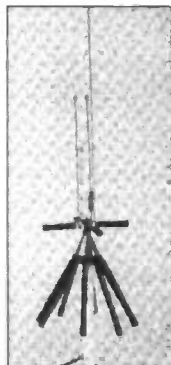
£49.95

+ £3.00 p&p

SKY SCAN

Desk Top Antenna Model Desk 1300

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



£49.00

+ £3.00 p&p

GrundigYacht Boy 500



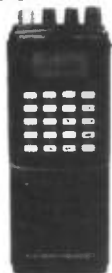
40 Memory channels with RDS
• 1.6 - 30MHz • full s.s.b • complete with P.S.U & carrying case

£189.95 + £5 p&p

MVT 7100

Specifications

- NFM / WFM / AM / LSB / USB
- 530kHz - 1650 MHz
- 1000 memory channels
- 500 search pass frequencies
- 10 search bands
- 30 channels per sec. scan speed
- 12v d.c. or 4 x AA power supply
- Back lit l.c.d. & buttons



RING FOR SPECIAL PRICE

GrundigYacht Boy 400



40 Memory Channels • Signal meter & carrying case • 1.6 - 30MHz • full s.s.b.

£129.95 + £5 p&p

FREE S.W. ANTENNA worth £14.99



AOR AR8000

The elusive one.
Ring for details.

New Carry Case for
PRO-44 COM 204
PRO-43 COM 203
PRO-39 COM 202

£14.99 + £1 p&p



Clip-on Mini Speaker

Ideal for portable scanners. Swivel clip attaches to your collar or lapel for easier listening while you carry your portable on its belt-clip. With 3.5mm plug.

£7.99

+ £1.00 p&p

PRO-44

50 Channel Scanner
66-88, 108-136.975(AM)
137-174,
380-512MHz

£129.95 + £5 p&p



inc NiCads and charger worth £20

Telescopic scanner antenna

Extends portable scanner range. Nine sections, centre loaded. For 1-1300MHz. BNC connector.

£8.99 + £1 p&p



PRO-43

200 Channel Scanner
10 Monitor Channels

£229.95

+ £5 p&p



inc NiCads and charger worth £20



PRO-2039

£179.99



PRO-2036

£349.99



PRO-2006

£239.99

FREE UK SCANNING DIRECTORY WORTH £16.95 WITH THESE THREE WINNERS



Mail Order: SRP Trading, Unit 20, Nash Works, Forge Lane, Belbroughton, Nr. Stourbridge, Worcs. Tel: (01562) 730672. Fax: (01562) 731002

Shop: SRP Radio Centre, 1686 Bristol Road South, Rednall, Birmingham B45 9TZ. Tel: 0121-460 1581/0121-457 788



A REAL BASE STATION SCANNING RECEIVER

PRO-2035



1000 channel with hyperscan

£349.99 Free P&P

**SPECIAL
PART
EXCHANGE
DEAL,
ON THIS
RADIO
Phone for
details**

FREQUENCY RANGE AND MODE:

Freq (MHz)	Step	Mode
25.000-29.995	5.0kHz	a.m.
30.000-87.495	5.0kHz	n.f.m.
87.500-107.995	50.0kHz	w.f.m.
08.00-136.995	12.5kHz	a.m.
37.000-224.995	5.0kHz	n.f.m.
225.000-400.000	12.5kHz	a.m.
400.005-520.000	12.5kHz	n.f.m.
760.000-1300.000	12.5kHz	n.f.m.

- **1000** memory channels
(100 channels x 10 banks)
- **10** limit search banks
- **100** monitor channels

■ **Accessory:**

Telescopic antenna and
owner's manual

■ **Display:**

Large l.c.d. with l.e.d. backlighting

- **Large rotary or keypad** frequency control

■ **Dimension:**

Approx 232 (W) x 210 (D)
x 90 (H) mm

■ **Receiving wave mode:**

- Wide f.m. > TV sound
- > f.m. broadcast
- Narrow f.m. > Business
- > Communication
- > Ham radio
- a.m. > Aircraft
- > CB radio

■ **Scan and search speed**

Approx 50 channels/sec.
and 50 steps/sec.

Available now from: **SRP TRADING**

Mail Order

SRP Trading, Unit 20, Nash Works,
Forge Lane, Belbroughton,
Nr. Stourbridge, Worcs.

Tel: (01562) 730672
FAX: (01562) 731002

Shop

SRP Trading, SRP Radio Centre,
1686 Bristol Road South, Rednall,
Birmingham B45 9TZ.

Tel: 0121-460 1581/0121-457 7788
FAX: 0121-457 9009

ICOM

706

HF all band + **50** MHz + **144** MHz!

Powerful 100 W from HF to 50 MHz and 10 W for 144 MHz

101 memory channels with dotmatrix display

All mode including SSB, CW, RTTY, AM and FM.



Detachable front panel mounts any where.

The front panel photo is **Actual size.**

Super compact at 167(W) x 58(H) x 200(D) mm



For more information,
call your authorized Icom dealer.

Full functions to compete with big rigs

HF/50/144 MHz ALL MODE TRANSCEIVER

IC-706

Icom (UK) Ltd.

Unit 9, Sea St., Herne Bay, Kent, CT6 8LD, U.K.

General operator : 01227 743000

Sales & Service : 01227 741741

Fax : 01227 741742