TRIDENT

THE NEW FORCE!

A powerful new range of scanning receivers from the scanner specialists.

TR-2400
Top of the range with Ultra wide frequency coverage and all mode reception including SSB. Easy to use direct keyboard control.
- 100kHz - 2060MHz
- 1000 memory channels (including 10 search banks)
- All mode reception (s.s.b., c.w., a.m., n.f.m., w.f.m.)
- Rotary or keypad frequency control
- User programmable step sizes (1kHz - 999kHz)
- Fast Scan Speed (20 Channels per Second)
- Priority Channel Monitoring
- Supplied with NiCads & Charger, d.c. Cigar Lead, Earpiece, Carry Strap

£369

TR-1200
A fully programmable scanning receiver, with wide coverage & a sensitive receiver. Supplied with a complete range of accessories ready to use.
- 500kHz-600MHz & 800MHz-1300MHz
- 1000 memory channels (including 10 search banks)
- Reception of a.m., f.m. & w.f.m. modes
- Rotary or keypad frequency control
- User programmable step sizes (5kHz - 995kHz)
- Fast Scan Speed (20 Channels per Second)
- Priority Channel Monitoring
- Supplied with NiCads & Charger, d.c. Cigar Lead, Earpiece, Carry Strap

£299

TR-980
A compact and pocket sized handheld offering continuous frequency coverage that's simple to programme and has a triple conversion sensitive receiver.
- 5 - 1300MHz
- 125 channel memory storage
- Reception of a.m., f.m. & w.f.m. modes
- Direct keyboard/rotary control
- Five independent search steps (5, 10, 12.5, 25, 30kHz)
- Delay/Hold Function
- Priority Channel Monitoring
- Supplied with NiCads & Charger, d.c. Cigar Lead, Earpiece, Carry Strap

Recommended!!

£249

NOW! AVAILABLE FROM YOUR LOCAL AUTHORISED DEALER OR DIRECT FROM:
NEVADA COMMUNICATIONS
Order Hotline (0705) 662145 or Fax (0705) 690626
189 London Road, North End, Portsmouth PO2 9AE
Features

10 BBC Monitoring Service
   Philip C Mitchell

20 Mellow
   Jeff Harris G1WJR

24 World Weather Reports
   Philip C Mitchell

27 Trident TR2400 Scanner - Preview
   Kevin Nice

28 Quantek Hand Held Frequency Counter
   Kevin Nice

30 Restoring a B21B
   Michael York G1BKI

36 Listening & Language Learning
   Richard Howard

39 JPS NTR-1 DSP Review
   Mike Richards G4WNC

49 Special SWM Readers' Book Offer

Regular Columns

Airband 7,45,47 News
Amateur Bands Round-up 49 Obituaries
Bandscan Europe 74 Off the Record
Book Service 51 Propagation
Decode 4 Rallies
DXTV Round-up 57 Satellite TV News
Editorial 62 Scanning
Grandad 49 Special Offer
Grassroots 59 SSB Utility Listening
Info in Orbit 83 Subs Club
Junior Listener 77 Trading Post
Letters
LM&S

Disclaimer: Some of the products offered for sale in advertisements in this magazine may have been obtained from abroad or from unauthorised sources. Short Wave Magazine advises readers contemplating mail order to ensure whether the products are suitable for use in the UK and have full after-sales back-up available. The Publishers of Short Wave Magazine wish to point out that it is the responsibility of readers to ascertain the legality or otherwise of items offered for sale by advertisers in this magazine.
SWM SERVICES

Subscriptions

Subscriptions are available at £22 per annum to UK addresses, £25 in Europe and £27 overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both Short Wave Magazine and Practical Wireless are available at £36 (UK) £42 (Europe) and £45 (rest of world).

Components for SWM Projects

In general all components used in constructing SWM projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article.

The printed circuit boards for SWM projects are available from the SWM/PCB Service, Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield B74 4JF, Tel: 021-353 9326.

Back Numbers and Binders

Limited stocks of most issues of SWM for the past five years are available at £2.00 each including P&P to addresses at home and overseas (by surface mail). Binders, each taking one volume are available for £5.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where applicable.

Orders for back numbers, binders and items from our Book Service should be sent to: PW Publishing Ltd, FREEPOST, Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PV, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling.

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Broadstone (0202) 659930. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Poole (0202) 659950.

Letters

If you have any points of view that you want to air please write to the editor. If your letter is published you will receive a £5 voucher to spend on any SWM service.

Dear Sir

My name is Michael Osborn. I am a very keen short wave enthusiast here in Norfolk and have been a hobbyist since 1985, aged thirteen years.

I am at the moment attempting to set up a Listeners' Fellowship for Norfolk and possibly East Anglia, but my efforts to lift the idea off the ground have so far been disappointing. I am aware of the stature of your publication amongst enthusiasts - The British DX Club, which I am a member of, personally, reported a healthy surge in subscriptions after coverage in SWM. I just wonder if you would be kind enough to give over a small space to promote our Fellowship.

The aim of the group is very simple - to bind together radio listeners from Norfolk and surrounding counties in a spirit of friendly co-operation. There are no plans for a newsletter or journal, but the objective is to exchange information and ideas on individual bases or informal meetings for much the same purpose. I would like to stress that all spheres of interest would be welcomed and more so all levels of experience and knowledge, age, gender and related considerations-seasoned old-timers to absolute beginners.

You may have gathered that the group has been started, but has only two participants so far! The Norfolk Shortwave Listeners' Fellowship has provisionally been adopted as the name; I would gladly see this graduate to East Anglia. I'm hoping that you will be willing to help. My own address and telephone number are presently the contacts for those interested.

Greetings and Best 73s to you all.

Michael Osborn, 16 Banister Way, Wymondham, Norfolk NR18 0TY Tel: (0963) 605783.

Dear Sir

If any readers would like names, addresses, telephone/FAX Numbers, etc. of radio, TV, satellite and cable networks worldwide, embassies, media organisations, tourist and information offices, addresses of publishers of newspapers, magazines or periodicals throughout the world, or information concerning a particular area or country, they should write to me with as much information as possible enclosing a self addressed envelope and two first class stamps/or one IRC if outside the UK.

I am also compiling lists of DX clubs, clandestine and free radio stations from anywhere in the world and would appreciate information on these.

I enjoy listening to all broadcasts and finding out about the appropriate countries and it would be nice to think that, in some small way, I can help others enjoy this fascinating hobby even more and maybe broaden their knowledge of other countries.

My best wishes to you all.

Kimberley Clift
50 Dryleys Court
Northampton NN3 8XY

The Edigr reserves the right to shorten any letters for publication but will try not to alter their sense. Letters must be original and not have been submitted to any other magazines. The views expressed in letters published in this magazine are not necessarily those of Short Wave Magazine.
Dear Sir

I am completely new to short wave listening. I have read your magazine for the last three months and I wonder if you could help me. I do not think you have a query page, but you could perhaps publish part of this letter and put my address on it.

I am trying to receive Italian radio stations, principally because I am studying Italian and I want to listen to as many broadcasts as possible.

I had a short wave radio and on it I was able to receive Radio Vatican (5.882MHz) although it was a bit hiss and miss. The set is 15 years old! I then bought a Lowe HF150, put up along wire aerial (about 90 feet) and bought a Lake TVU3 a.t.u. I thought with the improved equipment I would be able to receive Milan (900kHz) and Rome (846) as their kilowatt output seems quite high. Unfortunately I can't. All I can get is Vatican Radio! The Lowe has a 20dB attenuation option, but I have tried that and using neither have I been successful. I just get a mish-mash of sounds with very occasional Italian.

I see from your May issue that some readers have in fact received both these stations. Is there anything further I can do? It may be course that they are using more sensitive equipment. Is this the answer?

My old radio has f.m. on it but I cannot get anything on this. Any help would be appreciated.

A. R. Davies, 133 Brookdale Avenue South
Greasy, Wirral, Merseyside L49 1SP

Dear Sir

Are we beginning to lose sight of what a radio rally is supposed to be about? I write this as someone who has just spent the last four weeks or so booking one of amateur radio's 'Special Interest Groups' into the rallies held up and down the country. I am usually greeted with one of two distinctly different reactions by the rally organisers. There are those organisers who view the presence of a 'Special Interest Group' at their rally as a positive advantage. They use the group's name or names in their publicity material which in turn encourages people to attend the rally who, perhaps otherwise, wouldn't bother. The presence of the group also shows that the organisers are in touch with the hobby and are committed to ensuring that all facets of the hobby are represented at their rally.

These organisers recognise the fact that most of the groups are operated on a voluntary basis and are only looking to make sufficient money as to cover their running costs and therefore either allow the group a table at special rates or, in some cases, waive the cost of the table altogether.

On the other hand there are those organisers who view the 'Special Interest Group' as a loss of revenue, a waste of time and table space which could easily be more gainfully occupied by a trader who would be willing to pay the full going rate for a table. These organisers are not willing to talk about special rates or free tables. 'You either pay the going rate or you don't attend, it's your loss'. What they don't realise or don't want to realise is that it's not just our loss, it's a loss to everyone that attends the rally. Maybe not everyone will be interested in our stand, but at least if the stand was there, they would have the opportunity to see for themselves. The last organiser I spoke to told me that the committee thought it unfair for the traders to subsidise the 'Special Interest Groups' and yet I've lost count of the amount of marques and hall I've wondered through with empty tables.

A radio rally is not just about buying new, second-hand equipment or junk, we can do that at our local emporium. It also serves as a meeting place, somewhere that radio enthusiasts of all interest can get together and talk radio. It's a place to meet friends both old and new and to make new friends. It's a place where one can gain access to as many facets of the hobby as is possible all gathered in one place, a nucleus of information. I appreciate that the 'Host Club' has got its overheads (marquee or hall hire, table hire, refreshments etc). I can also appreciate that a rally can be an excellent way of raising club funds for that new rig or antenna, but when the amount of profit that the 'Host Club' can make above its overheads, outweighs the overall content and quality of the rally itself, then I really think that we're losing sight of the whole point of the exercise.

We have all got to remember that, individually, the 'Special Interest Group' may not account for a large number of people, but together they represent a good nucleus of information. I

Dear Sir

I am totally in agreement with T.A. Smith's letters (May SWM) on the subject of r.f. noise pollution and the lack of interest in reducing it which is shown by the authorities and the manufacturers.

Recently, after using my Sanyo music-centre on v.h.f. to hear a stereo broadcast, I switched to medium wave and set the pointer to the 1.8MHz end of the dial, prior to searching the band.

Immediately, I was surprised to hear a very strong harmonic signal coming in. This fact that most of the groups are operated on a voluntary basis and are only looking to make sufficient money as to cover their running costs and therefore either allow the group a table at special rates or, in some cases, waive the cost of the table altogether.

...
The magazine page contains various articles and listings of events and gatherings. Here are some key points from the text:

- **Editorial Note**: The magazine features a variety of events and gatherings, including rallies, radios, and club meetings. The articles cover different aspects of amateur radio, such as technical discussions, club activities, and public events. The magazine is a valuable resource for enthusiasts looking to stay informed about the latest developments in the amateur radio community.

- **Upcoming Events**: The page lists several upcoming events, including rallies, contests, and social gatherings, with dates and locations provided. These events are a great opportunity for enthusiasts to connect with others in the community and to participate in various activities related to amateur radio.

- **Club Meetings**: The magazine also highlights various club meetings, including those in the UK (e.g., the South West Amateur Radio Society and the Bristol Amateur Radio Society) and in other parts of the world (e.g., the Swedish Radio Amateurs' Club). These meetings are open to the public and provide a platform for exchanging knowledge and experiences among radio enthusiasts.

- **Radio Contests**: The page mentions several radio contests, including the VHF Field Day and the Microwave Contest. These contests are a test of skills and equipment, and they attract participants from all over the world.

- **Technical Articles**: The magazine includes technical articles and discussions, such as those on antenna design and construction, software for communication, and various technical gadgets and accessories. These articles are useful for those interested in the technical aspects of amateur radio.

- **Advertisements**: The page features advertisements for various products and services, including software, antennas, and other equipment used in amateur radio. These ads provide leads for further exploration and resources for enthusiasts.

Overall, the magazine page is a rich source of information for those interested in amateur radio, offering insights into the latest events, discussions, and technical advancements in the field.
More Information

Carrying on from last month with useful sources of information, here’s a useful booklet for short wave listeners. Called the ISWLT’s Guide to English Language Short Wave Broadcasts to Europe - Summer Schedules 1994, the title alone explains what you can expect from it. Let me tell you about the price first. It’s just £1.30 including post and packing. Alternatively you can send either two IRCs or postage stamps to the value of £1.30.

The information provided in this guide is written quite clearly and presented in an easy-to-read format. You get all the information in time order with other details like country and station names, frequencies, programme details - whether it’s news, sport, religious or features, etc. Please note that all the frequencies in the programme details - whether it’s news, station names, frequencies, with other details like country and station names, frequencies, programme details - whether it’s news, sport, religious or features, etc. Please note that all the frequencies in the booklet are given in kilohertz.

You get all the information in time order presented in an easy-to-read format. You get all the information in time order with other details like country and station names, frequencies, programme details - whether it’s news, sport, religious or features, etc. Please note that all the frequencies in the programme details - whether it’s news, station names, frequencies, with other details like country and station names, frequencies, programme details - whether it’s news, sport, religious or features, etc. Please note that all the frequencies in the booklet are given in kilohertz.

If you’re not sure when you should be listening for your favourite type of station or programme, this booklet will certainly put you on the right track.

Send to: International Short Wave League, 10 Clyde Crescent, Wharton, Winsford, Cheshire CW7 3LA.

IRCs

IRC or International Reply Coupons are almost like an international currency to the short wave listener. They can be used to purchase a whole range of goods and services, not least of which is their true purpose of buying postage stamps.

You can buy your coupons from most local Post Offices - although I’m not sure that some of the smallest rural branches will have them, certainly all main Post Offices do. These days they cost 60p each and can be sent to just about anywhere in the world in place of postage stamps. If you have one sent to you and wish to use it, just take it along to your post office with the letter you want to send and you can exchange them for postage stamps to send a minimum weight letter airmail anywhere in the world, which I think costs 41p in the UK. So you can see how useful they are.

Many short wave clubs both in the UK and overseas request IRCs to pay for goods and services. So it’s worth saving up any sent to you and using them to pay for your next booklet or frequency guide. It’s also so much easier than trying to buy mint foreign postage stamps to send with your QSL cards. They don’t cost much, but they can make the difference when you are asking a station to send something back to you.

Oh yes, one last thing. They are only valid if they have no rubber stamp mark in the right-hand box!

Reading to Radio Amateurs

One aspect of short wave listening that many newcomers try is listening to radio amateurs. Whether you try your hand at Morse code or you listen to amateur signal sideband or f.m. signals you’ll come across abbreviations. Some of the most popular are Q Codes, these are an international codes used by just about every sort of radio operator, whether amateur or professional. Of course, the codes have been adapted a little by radio amateurs to suit their purposes and they also don’t use all the codes either. Some of the most common ones you’ll come across are shown here. They are used as a way to save time and energy when sending Morse code, but also as a speech shorthand.

QSO this means a radio contact or one sort or another. For example, I had a QSO with 54LM yesterday.

QRT this means to close down. For example, I am going QRT now as it’s getting rather late.

QRP this usually means using low power. For example, I am a QRP station using less than 1 watt.

QTH this means your location. For example, my QTH is Ringwood in Hampshire.

QRZ this means who is calling me? For example, QRZ? I can only make out the last letter of your call sign, please call again.

QRX this means this means stand by and often things go quiet for a short while after this has been used. For example, QRX please, I must go and answer the doorbell!

QSL Everyone’s favourite, this means the confirmation of a contacts, usually the sending and receiving of a card. For example, I will send my QSL via the bureau, hope to receive one from you too.

QSY this means change frequency. For example, let’s move from the calling channel and QSY to S22. S22 is 145.575MHz.

QRM this is used to describe man-made interference. For example, I am having trouble hearing you, there’s a lot of QRM on your signal.

Obviously, there are loads more I could list, but these will keep you going. If you would like a much larger list of Q codes and their meaning, send me an s.a.e and an extra stamp and I will send a copy back for your reference.
The AR8000 UK is the result of AOR’s long term ambition to produce a new breed of radio receiver which combines full computer compatibility with advanced wide-band radio receiver technology. With the introduction of the new AR8000 UK, AOR have broken the mould of conventional radio receiver design. At first glance the AR8000 UK in its static form may look no different to any modern hand-held scanning receiver, but the similarity ends there...just as soon as the receiver is switched on!! Initially you are greeted with the opening welcome message on the AR8000 UK multi-function liquid crystal display “WELCOME TO THE WORLD OF AR8000 RECEIVER”, in a similar way to a sign on message displayed by your personal computer. This new experience immediately demonstrates to the new user and discerning radio listener that the AR8000 UK is no ordinary radio but THE NEW CONCEPT in radio design. The modern new cabinet design measures approx 152mm (H) x 69mm (W) x 40mm (D) excluding projections and weighing only 350g including Nicads (but not aerial).

The AR8000 UK is a highly sensitive hand held receiver boasting a very wide frequency coverage of 500 kHz to 1900 MHz without gaps in the range (actual acceptable frequency input from 100 kHz). Step size is programmable in multiples of 50Hz for smooth tuning. The all-mode reception provides AM, USB, LSB, CW, NFM and WFM. An independent ±2.0 kHz SSB filter is fitted as standard and the USB/LSB modes use true carrier re-insertion with correctly calibrated frequency read-out (not offset by 1.5 kHz). A custom manufactured ferrite bar aerial is neatly internally installed at the top of the receiver’s cabinet to enhance receive performance when listening in population centres to Medium Wave services or when commentary is provided at airshows and motor sport events.

The high visibility LCD is of a new dot matrix format comprising of four lines of display so many new facilities may be provided and displayed at the same time, these include a signal strength bar meter and a band-scope showing band occupancy. Two VFO frequencies may be displayed on the LCD simultaneously, one providing a stand-by frequency available for quick transfer. When frequencies are entered, ALPHANUMERIC comments may be stored along with frequency, mode & attenuator status simplifying the job or recalling and identifying memory channels. Password protection, computer control, data clone between sets and almost every feature you could ever wish for is provided.

Supplied with Nicads, 240V ac charger, DC lead, hand strap, belt hook & screws, 16cm semi-flexible aerial, comprehensive operating manual and quick reference guide.
Interference from Unattended 23cm ATV stations

We have been notified by the Radiocommunications Agency of the following serious situation.

"Some instances have come to the attention of the RA's Radio Investigation Service of ATV stations working in the 23cm band (1245-1325MHz) which have been left operating unattended on sites remote from the main station address and have caused severe interference up to 40 kilometres away to air traffic control radars which are the primary users of the band. The Amateur Licence does not permit unattended operation of amateur TV on any band (except where a Notice of Variation has been issued for a repeater - but even these are subject to careful site clearance). Of course, amateurs need to be careful of how they operate on any band where they are a secondary user. Operation outside the terms of a licence however is unlicensed use and enforcement action (which could mean prosecution and/or revocation) can be expected in these cases. This is particularly so where a safety of life service, the security of which is the RIS's first priority, is at risk."

Jupiter on 20MHz

A very significant astronomical event is about to occur between 16 and 22 July. Comet Shoemaker-Levy 9, which is unusual in that it is in an elliptical orbit around the planet, not the Sun like most other comets, is due to collide with Jupiter.

Jupiter actually radiates on l.f., h.f., u.h.f. and s.h.f. The h.f. emissions sound similar to 'ocean waves' and are generated by the magnetosphere, which is a phenomenon caused by the planet's strong magnetic field trapping charged particles and extending to many times the diameter of Jupiter. The emissions range in frequency between 0.6 and 30MHz with a peak around 20MHz.

The best set-up for reception of this radiation is a directable beam that can be inclined to follow the planet's position relative to the Earth. However the radiation can be heard without this complication. As the emission is wide band a wide as possible bandwidth on the receiver is best.

To receive the radiation from Jupiter the planet must be above the horizon, and there are various sources of data on this aspect.

An important point to note is that you must locate a clear position relative to the Earth. The emissions range in frequency between 0.6 and 30MHz with a peak around 20MHz.

The set-up for reception of this radiation is a directable beam that can be inclined to follow the planet's position relative to the Earth. However the radiation can be heard without this complication. As the emission is wide band a wide as possible bandwidth on the receiver is best.

Jupiter actually radiates on l.f., h.f., u.h.f. and s.h.f. The h.f. emissions sound similar to 'ocean waves' and are generated by the magnetosphere, which is a phenomenon caused by the planet's strong magnetic field trapping charged particles and extending to many times the diameter of Jupiter. The emissions range in frequency between 0.6 and 30MHz with a peak around 20MHz.

The best set-up for reception of this radiation is a directable beam that can be inclined to follow the planet's position relative to the Earth. However the radiation can be heard without this complication. As the emission is wide band a wide as possible bandwidth on the receiver is best.

Jupiter actually radiates on l.f., h.f., u.h.f. and s.h.f. The h.f. emissions sound similar to 'ocean waves' and are generated by the magnetosphere, which is a phenomenon caused by the planet's strong magnetic field trapping charged particles and extending to many times the diameter of Jupiter. The emissions range in frequency between 0.6 and 30MHz with a peak around 20MHz.

The best set-up for reception of this radiation is a directable beam that can be inclined to follow the planet's position relative to the Earth. However the radiation can be heard without this complication. As the emission is wide band a wide as possible bandwidth on the receiver is best.

Jupiter actually radiates on l.f., h.f., u.h.f. and s.h.f. The h.f. emissions sound similar to 'ocean waves' and are generated by the magnetosphere, which is a phenomenon caused by the planet's strong magnetic field trapping charged particles and extending to many times the diameter of Jupiter. The emissions range in frequency between 0.6 and 30MHz with a peak around 20MHz.

The best set-up for reception of this radiation is a directable beam that can be inclined to follow the planet's position relative to the Earth. However the radiation can be heard without this complication. As the emission is wide band a wide as possible bandwidth on the receiver is best.

Jupiter actually radiates on l.f., h.f., u.h.f. and s.h.f. The h.f. emissions sound similar to 'ocean waves' and are generated by the magnetosphere, which is a phenomenon caused by the planet's strong magnetic field trapping charged particles and extending to many times the diameter of Jupiter. The emissions range in frequency between 0.6 and 30MHz with a peak around 20MHz.

The best set-up for reception of this radiation is a directable beam that can be inclined to follow the planet's position relative to the Earth. However the radiation can be heard without this complication. As the emission is wide band a wide as possible bandwidth on the receiver is best.

Jupiter actually radiates on l.f., h.f., u.h.f. and s.h.f. The h.f. emissions sound similar to 'ocean waves' and are generated by the magnetosphere, which is a phenomenon caused by the planet's strong magnetic field trapping charged particles and extending to many times the diameter of Jupiter. The emissions range in frequency between 0.6 and 30MHz with a peak around 20MHz.

The best set-up for reception of this radiation is a directable beam that can be inclined to follow the planet's position relative to the Earth. However the radiation can be heard without this complication. As the emission is wide band a wide as possible bandwidth on the receiver is best.

Jupiter actually radiates on l.f., h.f., u.h.f. and s.h.f. The h.f. emissions sound similar to 'ocean waves' and are generated by the magnetosphere, which is a phenomenon caused by the planet's strong magnetic field trapping charged particles and extending to many times the diameter of Jupiter. The emissions range in frequency between 0.6 and 30MHz with a peak around 20MHz.

The best set-up for reception of this radiation is a directable beam that can be inclined to follow the planet's position relative to the Earth. However the radiation can be heard without this complication. As the emission is wide band a wide as possible bandwidth on the receiver is best.

Jupiter actually radiates on l.f., h.f., u.h.f. and s.h.f. The h.f. emissions sound similar to 'ocean waves' and are generated by the magnetosphere, which is a phenomenon caused by the planet's strong magnetic field trapping charged particles and extending to many times the diameter of Jupiter. The emissions range in frequency between 0.6 and 30MHz with a peak around 20MHz.

The best set-up for reception of this radiation is a directable beam that can be inclined to follow the planet's position relative to the Earth. However the radiation can be heard without this complication. As the emission is wide band a wide as possible bandwidth on the receiver is best.
LOWE ELECTRONICS
EVERYTHING FOR SHORTWAVE

LOWE RECEIVERS - SIMPLY THE BEST

HF225

- Probably the most cost effective receiver on the market today, our HF225 gives you the best combination of facilities, matched with performance and price.
- Excellent sensitivity
- AM bandwidths: 10, 7 & 4kHz
- SSB bandwidth: 2.2kHz
- Audio CW filter: 200Hz
- 30 memory channels
- 8Hz tuning steps

All for just £479.00

Optional enhancements:
- B225 Nicad battery pack
- W225 Whip amplifier kit
- D225 Synchronous detector
- KPAD1 Keypad controller
- C225 Leather carry case

HF150

- The world's most popular shortwave receiver! Our HF150 is ideal for the beginner or expert alike.
- Smooth 8Hz tuning steps
- Synchronous detector fitted as standard
- Built-in whip amplifier
- Compact size
- Excellent audio quality

All for just £389.00

Optional enhancements:
- AK150 Whip, nicads & carry straps
- KPAD1 Keypad controller
- IF150 Computer interface
- RK150 NEW! Rack’n’stack storage system
- MB150 Mobile / marine mounting bracket

EUROPA

- A “turbocharged” 225”! The HF225 Europa is probably the best receiver to use if you are a dedicated broadcast band DXer.
- We've replaced the standard AM filters with 7, 4.5 & 3.5kHz, giving excellent selectivity for winking out those weak tropical band stations. The SSB filter stays at 2.2kHz to allow for exhausted carrier reception. We’re also fitting magnetically shielded coils and low-noise switching diodes in the bandpass filters which reduces residual noise in the receiver. The Europa model includes the KPAD1 frequency controller and the synchronous detector fitted as standard

All for just £699.00

Lowe Electronics Ltd.
Chesterfield Road, Matlock, Derbyshire, DE4 5LE
Tel 0629 580800  Fax 0629 580020

IF YOU WOULD LIKE MORE INFORMATION ABOUT THESE AND OTHER PRODUCTS, JUST SEND US FOUR FIRST-CLASS STAMPS AND REQUEST OUR “SHORTWAVE INFORMATION PACK” WE’LL ALSO SEND YOU A FREE COPY OF OUR FAMOUS LISTENER’S GUIDE!
Although initially designed to compliment our own HF150 receiver, the PR150 can in fact be used with any receiver.

The PR150 preselector sits ahead of your receiver and pre-selects a narrow range of frequencies from the wide range arriving from the antenna. This can help to reduce image frequencies and spurious signals in a receiver, sometimes resulting in a spectacular improvement in performance! If you’re using a scanner like the MVT7100 for short-wave reception, one of these will really make it work!

Try one out today in any of our branches.

PR150............£235.00

What a great way to tidy up your HF150 station! Our new RK150 Stack’N’Rack provides the ideal solution to storing your HF150 and accessories. Available as a two tier model for the HF150 and PR150 combination, plus you can buy an extension kit to add another layer for your NIR10, NTR1 or FL3 audio filter, or perhaps for our next accessory.......

RK150.........£59.95
RK150EX......£19.95

MODEMASTER 2

Modemaster has fast become the standard software decoding package for the shortwave listener. Covering FAX, RTTY, Morse, NAVTEX and FEC, this will allow you to decode the majority of signals found on the shortwave bands today. With MODEMASTER 2 you have access to:

- Current and Forecast Weather Facsimile Maps.
- Weather Forecasts.
- Cloud Cover Pictures.
- NAVTEX and Marine Navigation Warning Broadcasts.
- News Broadcasts and Press Photographs.
- Amateur Radio Transmissions

New features in Version 2 include a new map driven front end and ability to apply false colour to fax pictures - great value at the new lower price - it’s now just £139.00!

Or upgrade from V1.0 for just £49.00

ALL THE GREAT NAMES IN SHORT-WAVE ARE HERE AT LOWE’S...

WATKINS-JOHNSON, KENWOOD, ICOM, YAESU, ROBERTS, SONY, RF SYSTEMS, GLOBAL, JRC, AOR, DRAKE,
Maybe a good many of us tend to think that the British Broadcasting Corporation is primarily, for what its name implies, one of the major radio broadcast organisations that provide us with entertainment, information and educational content 24 hours a day. However, a lesser known, but nonetheless important function of the BBC, is its extensive monitoring facility for the interception and processing of worldwide radio and TV broadcast signals. Such is the importance of BBC Monitoring (its official title) in this news gathering capacity, that a Grant in Aid of £15.9m is made by the UK Foreign Office for the running of this service, at present located both at Caversham Park, Nr. Reading, Berkshire and 7km north at Crowsley Park, Oxfordshire.

Wartime Origins

Originally established prior to the outbreak of war with Germany, in August 1939 at Wood Norton, Nr. Evesham, Worcs, as a potentially useful source of news and intelligence from non-UK sources, its reputation was legendary during World War II, with such 'scoops' as picking up signals from the Nazi's newest radio teleprinter network. Goebbels, the head of the German propaganda ministry at that time, had established an extensive 'Hellschreiber' (an advanced German form of radio teleprinter, forerunner of present day RTTY) network for the rapid transmission via the news agency DNB for the distribution of news and propaganda throughout Germany and occupied Europe. It was through the acquisition of some of these machines that BBC Monitoring was able to access invaluable information originating from Goebbels' ministry. After translation and editing at Evesham, the bulletins would be immediately dispatched via direct teleprinter line to Churchill and his cabinet at No. 10 for analysis. Quite apart from this specific scoop, other information gathered from monitoring was of invaluable use to the Allies during the war. Thus its contribution to the war effort should not be underestimated and it should also be remembered that all the monitoring was performed on what we would now view as some pretty primitive radio receiving equipment, mostly home-brew receivers developed by BBC engineers. No luxuries were available then such as synthesised receivers with digital read-outs and multi-frequency memory banks. Audio filtering was unheard of, which says much for the skilful copying and translation by the multi-lingual monitors. Recording, when required, of the more important material received, was performed on early recorders using wax cylinders which were subsequently 'shaved' to be re-used, the average life being about 50 recordings. But due to increasing unevenness of the cylinder surface during use, playback quality would inevitably suffer.

A New Home

Due to the problem of ever increasing electrical interference and the need for better accommodation, a move was made in April 1943 from Evesham to its present imposing headquarters at the former Oratory School, Caversham Park, Reading for the editorial and administration staff and nearby Crowsley Park for the remote reception and extensive antenna systems needed for the primary interception of signals. The latter side being carefully chosen at the time, for optimum reception conditions such as good earth conductivity and low levels of electrical interference. At its peak wartime compliment of 600 staff, the Caversham operation monitored over one million words every 24 hours and since then, extensive monitoring has taken place of world-wide sound and television broadcasts providing valuable news to the media and Government.
sometimes during conflict, as in the Falklands and Gulf Wars, when the building up of accurate pictures is required of the political and military scene in the enemy camp and changes of political structure are needed. Today, BBC Monitoring with a total of 450 staff, forms part of the BBC World Service and apart from Government defence communication monitoring, it is one of the largest and best operations of its kind in the world. An agreement signed in 1948 with its American counterpart, the Foreign Broadcasting Information Service (FBIS), a United States government agency, has further strengthened the effective exchange and distribution of primary global monitored news and as the BBC World Service, BBC Monitoring, together with FBIS currently monitors radio broadcasts in over 70 different languages from over 140 countries.

The End Product

Quite apart from the invaluable use to the BBC as a world-wide news gathering organisation, its Monitoring Services publishes three editorials. A rapidly accessed daily teleprinted news summary Newsfile, via facsimile, telex or direct line, of up to 12 000 words, customised to subscribers requirements, two printed publications, a four part 100 000 word Summary of World Broadcasts. On a more technical level, a weekly published World Broadcasting Information, giving a veritable mine of information on transmission schedules and general broadcasting news, including satellite broadcasts, is of particular interest to the DXer. As a commercial marketing operation, all of these services are available worldwide on subscription from BBC Monitoring, Caversham Park, Reading, Berks RG4 8TZ.

Finding The Signals

As previously mentioned, the initial interception of broadcasts is made at Crowsley Park, Oxfordshire, 7km to the north of Caversham Park at the former Baskerville estate, where it is said Conan Doyle was first inspired to write The Hounds of Baskerville. It is here that the main receivers are housed with their associated extensive antenna systems to receive the required broadcasts and correctly route them via land line to Caversham Park for translation and editing.

Crowesley Park

The primary interception of signals at Crowesley Park, Oxfordshire is conducted on a level, isolated rural sight of some 240 acres in what is becoming a rarity these days; a comparatively electrically quiet area with low interference levels. This large site was also chosen to accommodate the extensive antenna systems needed, some of which are nearly 1km in length, together with the satellite dishes installed later.

Signal Interception

The main purpose-built building, receives and processes the signals before being relayed by land line to Caversham Park. With a total of 32 operational and engineering staff to maintain and operate the complex on-site equipment, Crowesley is undoubtedly a DXers paradise! Within the main building, the primary reception and correct routing is carried out in the Engineering Interception Room in accordance with the requirement schedules received from Caversham.
practical Wireless

BRITAIN’S BEST SELLING MAGAZINE FOR THE RADIO AMATEUR

For the Latest and Most Comprehensive News and Reviews From the World of Amateur Radio

REGULAR FEATURES INCLUDE:
❖ Novice Natter
❖ Antenna Workshop
❖ Bargain Basement
❖ Focal Point – The World of ATV
❖ Bits & Bytes – The Computer in Your Shack
❖ Valve & Vintage

ON SALE on the Second Thursday of Every Month

short wave magazine

REGULAR FEATURES INCLUDE:
❖ News & Reviews
❖ Grassroots - Club Diaries
❖ Satellite TV - News & Gossip
❖ Scanning – The latest news & views
❖ Propagation, Data Decoding & Info in Orbit
❖ Junior Listener
❖ What to Buy
❖ Where to Buy &
❖ How to Listen

ON SALE on the Fourth Thursday of Every Month

SHOW STOPPERS!

SHOW SPECIAL SUBSCRIPTIONS & RENEWALS
14 issues for the price of 12

DECODE CLINIC
MIKE RICHARDS G4WNC
Our popular Short Wave Magazine columnist will be on the stand to answer your queries

BARGAIN BINDERS
NORMALLY £5.50
SHOW OFFER £5.00

AIR & METEO CODE MANUAL
13th Edition
Normally £18
Show Offer £10

FERRELL’S CONFIDENTIAL FREQUENCY LIST
9TH EDITION
NORMALLY £17.95
SHOW OFFER £15.00

DISCOUNTED AND DAMAGED BOOKS at BARGAIN PRICES

pw publishing ltd.
Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW
Tel: (0202) 659910 Fax: (0202) 659950
and ensures that the correct signals are routed on the right lines to the main monitoring area. The main signal racks contain a total of 35 Racal 1792 and 1772 receivers which can be fed from any one of a total of nine different antenna systems by the operations staff for optimum reception conditions. Selection of these can be made from six Beverage long wire antennas of varying lengths up to 1km, two Curtain Arrays of different heights and a Rhombic aerial. Within the reception area, the output from an additional RA1792 receiver is used to prepare a 'Band Scan' to record in graphical form, the occupancy of each band or broadcast frequencies in current use. The information obtained enables the BBC World Service to choose the best location of their frequency slots in future planning. Also installed is a pen recorder continuously monitoring signals via a good stable source, in this case Suddeutcher Rundfunk 6030kHz, to indicate the existence of SIDs, (sudden ionospheric disturbances) during transmission times. Fig. 1 shows a trace of a SID between 1115 and 1205UTC on 27 June 1993 and will be significant in confirming interruption in the reception of signals at that particular time of day. It is proposed that in 1994 the present Racal receivers will be replaced by Watkins-Johnson receivers, remotely controlled by the monitoring staff from Caversham. The front control panel only (WJ8711) will be installed there, whilst the receiver (WJ8712-1) will be fitted into the Interception Room at Caversham Park. This will ease communication problems at present arising on the receiver side of things between Caversham and Crowle.

### Current TV & Radio Satellites that BBC Monitoring can receive.

<table>
<thead>
<tr>
<th>Satellite</th>
<th>Elevation</th>
<th>Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTELSAT 602</td>
<td>63°</td>
<td>E</td>
</tr>
<tr>
<td>INTELSAT 604</td>
<td>60°</td>
<td>E</td>
</tr>
<tr>
<td>INTELSAT</td>
<td>57°</td>
<td>E</td>
</tr>
<tr>
<td>GORIZONT 12</td>
<td>40.5°</td>
<td>E</td>
</tr>
<tr>
<td>ARABSAT 1C</td>
<td>30.5</td>
<td>E</td>
</tr>
<tr>
<td>DFS 2 KOPERNICUS</td>
<td>28.5°</td>
<td>E</td>
</tr>
<tr>
<td>DFS 3 KOPERNICUS</td>
<td>23.5°</td>
<td>E</td>
</tr>
<tr>
<td>EUTELSAT 1 F5</td>
<td>21.5°</td>
<td>E</td>
</tr>
<tr>
<td>ASTRAS</td>
<td>19.2°</td>
<td>E</td>
</tr>
<tr>
<td>EUTELSAT 11 F3</td>
<td>16°</td>
<td>E</td>
</tr>
<tr>
<td>EUTELSAT 11 F1</td>
<td>13°</td>
<td>E</td>
</tr>
<tr>
<td>EUTELSAT 11 F2</td>
<td>10°</td>
<td>E</td>
</tr>
<tr>
<td>EUTELSAT 11 F4</td>
<td>7°</td>
<td>E</td>
</tr>
<tr>
<td>TELE-X</td>
<td>5°</td>
<td>E</td>
</tr>
<tr>
<td>TELECOM 2</td>
<td>3°</td>
<td>E</td>
</tr>
<tr>
<td>THOR</td>
<td>0.8°</td>
<td>E</td>
</tr>
<tr>
<td>INTELSAT 512</td>
<td>1°</td>
<td>E</td>
</tr>
<tr>
<td>TELECOM 2B</td>
<td>5°</td>
<td>W</td>
</tr>
<tr>
<td>TELECOM 2A</td>
<td>8°</td>
<td>W</td>
</tr>
<tr>
<td>GORIZONT 11</td>
<td>11°</td>
<td>W</td>
</tr>
<tr>
<td>GORIZONT 14</td>
<td>14°</td>
<td>W</td>
</tr>
<tr>
<td>INTELSAT 515</td>
<td>18.5°</td>
<td>W</td>
</tr>
<tr>
<td>OLYMPUS</td>
<td>19°</td>
<td>W</td>
</tr>
<tr>
<td>TOP 1/2</td>
<td>19°</td>
<td>W</td>
</tr>
<tr>
<td>TV-SAT 2</td>
<td>19°</td>
<td>W</td>
</tr>
<tr>
<td>INTELSAT 601</td>
<td>21.5°</td>
<td>W</td>
</tr>
<tr>
<td>INTELSAT</td>
<td>24.5°</td>
<td>W</td>
</tr>
<tr>
<td>INTELSAT V1</td>
<td>27.5°</td>
<td>W</td>
</tr>
<tr>
<td>HISPASAT 1A</td>
<td>30°</td>
<td>W</td>
</tr>
<tr>
<td>MARCOPOLO 1</td>
<td>31°</td>
<td>W</td>
</tr>
<tr>
<td>INTELSAT 504</td>
<td>31.4°</td>
<td>W</td>
</tr>
<tr>
<td>INTELSAT</td>
<td>34.5°</td>
<td>W</td>
</tr>
<tr>
<td>PAS-1</td>
<td>45°</td>
<td>W</td>
</tr>
<tr>
<td>INTELSAT 513</td>
<td>53°</td>
<td>W</td>
</tr>
</tbody>
</table>

### Satellite Reception

Extensive monitoring of satellite radio and TV signals also takes place at Crowle. Signals from four main satellite dish antennas (two C band, one Ku band and one C and Ku band) receiving signals from over 35 satellite programme sources are fed to a separate console for selective display and analysis by a Hewlett Packard spectrum analyser (which aids the location of signals) and re-routing via eight video lines to Caversham. Fig. 2 shows the position of satellites which could be monitored. Additional dishes are also installed at Caversham for direct radio and TV reception there.

### Caversham Technical Operations

Signals routed from Crowle are distributed to various monitoring staff for translation as dealt with earlier in this article. However, two console
suites are located in the 'Listening Room' at Caversham under the control of a Senior Technical Operator. One to check and verify incoming signals from Crowsley and the other a research console. The latter is fully operational for 16 hours daily and maintains a listening watch for new frequencies and alterations in schedules to be passed on in the form of a listening log to editorial staff for publication. One technique in use is that of split headphones to determine the position of simultaneous h.f. broadcasts and their relative movement from time to time. Two standard Racal 1772 receivers located at Crowsley but remotely controlled at the research console, are fed to a headset. The input from one receiver is fed to the left earpiece and the other to the right. The known reference broadcast frequency is tuned into one ear and the particular frequency of interest is manually scanned by using the other receiver in the other ear. An identical signal received will be checked off against existing frequency schedules of verification or logged as a new frequency.

RTTY Reception

Other technical operations at Caversham include a News Agency Section receiving RTTY broadcasts from European and overseas sources such as Romania (Rompress), Yugoslavia (Tanjug) and Moscow (Itar-Tass), the latter via Intelsat, 12 Crowsley based receivers feed via landlines into 12 Hagenuk 7223 demodulators, the output of which is stored within a mainframe computer database prior to editing by the newsroom. All non-English RTTY broadcasts need to be translated before editing.

Whether in peacetime or in periods of crisis, the gathering and processing of news is an essential part of life and in no other way is it performed so efficiently and with such speed as though the medium of broadcasting. BBC Monitoring has, through its professional staff and technical ability, developed this service to a high degree and has acquired a world-wide reputation in so doing. Assistance from all the staff of Technical Operations BBC Monitoring in the preparation of this article is gratefully acknowledged.
WARNING!
Your scanner is only as good as your antenna

SKY SCAN
Magmount MKII
£24.95

SKY SCAN
V1300 Antenna
£49.95

SKY SCAN DESK TOP
ANTENNA MODEL DESK 1300
£49.00

THREE OF THE BEST FROM GRUNDIG
A radio to suit all users

Yacht 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

Satelitt 700
TOP OF THE RANGE RECEIVER
1.6 - 30MHz complete with P.S.U, RDS
• full s.s.b • up to 2048 Memory channels
£369.99 + £5 p&p

Yacht boy 400
40 Memory Channels • Signal meter &
carrying case • 1.6 - 30MHz • full s.s.b.
£119.95 + £5 p&p

FREE S.W. ANTENNA worth £14.99

THFIE.E. OF THE BEST FROM GIRUNIDIG
A radio to suit Eall users

Yacht boy 500
£189.95 + £5 p&p

Satelitt 700
£369.99 + £5 p&p

Yacht boy 400
£119.95 + £5 p&p

PRO-50
20 Channel Scanner, full search and scan
68-88MHz, 138-174MHz and
380-215MHz.
£99.95 + £5 p&p

PRO-2032
Mobile/Base
Scanner
68-88MHz, 108-136MHz,
137-174MHz, 380-215MHz
and 806-950MHz
RRP £219.95 our price £199.95

PRO-44
50 Channel Scanner
65-88, 108-136.975(AM)
137-174, 380-512MHz
£129.95 + £5 p&p

PRO-46
100 Channel Scanner
65-88, 108-136.975(AM)
£199.95 + £5 p&p

PRO-2006
25-1300MHz
Mobile & Base Scanner.
RRP £299.95 our price £249.95

MVT 7100
Specifications
• NFM / WFM / AM / LSB / USB
• 530 kHz – 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 THIS MONTHS SPECIAL PRICE

NEW 3RD EDITION. UK SCANNING DIRECTORY.
PRICE £16.95 P&P £2.75

PRO-43
200 Channel Scanner
10 Monitor Channels
£199.95 + £5 p&p

SHORT WAVE MAGAZINE, JULY 1994

RING FOR THIS MONTHS SPECIAL PRICE
Second Post!

Our postbag was so full last month that we’ve put an extra page of letters in this issue.

Dear Sir
Re: The review of the Philips model AE3905/00 World receiver and information regarding ICF SW100 Sony digital world receiver.
I have been listening to short wave stations around the world for some time now, using my Philips AE3905/00 digital world receiver. To be very frank with you I have been unknowingly dragged or simply sucked into 'The Vortex of Black Hole DXing'.
I have been a regular reader of Short Wave Magazine since January 1994 when I got hold of a copy by accident. I would like to take this opportunity to thank you for your hard work in maintaining the standard of Short Wave Magazine.
I read the May 1994 issue and I very much appreciated the article that was published in it regarding the review of the Sony ICF SW100 World Band Radio. And it was regarding this receiver that I wanted to ask you certain questions.
Firstly, at the back of ICF SW100 there is the strange symbol shown below.
Would you be kind enough to tell me, what is the meaning of this symbol - technically or otherwise?
As I said earlier, I have been using the Philips AE3905/00 digital world receiver, and this miniature radio has also a similar symbol on the back of the radio, but it has different characters. I would be very much obliged if you could shed some light on this symbol.
I hope you will consider this letter of mine sympathetically and do the needful, until then, happy DXing to all.
S.K. Nathalal
Slough
Berkshire

Dear Sir
I reply to a letter from a T. A. Smith in the May 1994 edition of Short Wave Magazine. I can, after 24 years, 'dial twiddling' as my late mother once called it, appreciate the problems that this reader is having with interference.
I would agree that there is too much pollution of the 'r.f. spectrum' from all sources. It does not matter if it's domestic or industrial, 'r.f. pollution' is much too high and not just in towns and cities, it is spreading like an unstoppable cancer across the country, and the world.
And every new gadget that comes on the market makes more, mainly to i.f., m.f. and h.f., although I understand v.h.f. and u.h.f. get affected with this 'r.f. spectrum' pollution.
When I first began 'dial twiddling', the solution seemed easier. One just moved the shack and/or the aerial and that helped. But today, with so many gadgets, both domestic and industrial, it's not so easy as I have found.
I have another problem, with over five televisions within four metres of my shack. I have attempted to move the shack three times, only to find that I am getting interference from the house next door, either from their television, computer, or some other domestic gadget. I have also noted that there is some interference from some sorts of street lighting as well as telephone lines and even my own cordless phone, mainly around 3.364MHz which is in the middle of the 90m band (3.2-3.4MHz). The list is never ending. Even those electronic lighters for cigarettes can cause a loud click, even on the television next door as my wife found when lighting her cigarette. So it's not only radio enthusiasts that put up with pollution of the 'r.f. spectrum', it's everybody who uses it.
As we all must be aware, radio enthusiasts or 'dial twiddlers', as we were once called, are in a minority as users of the 'r.f. spectrum' compared to television viewers and yes, I know there are over 340 million radio's compared to only 160 million television viewers in Europe. But, I did write 'Enthusiasts' which does not include those people who listen for purely domestic reasons. Also, if you add onto the 160 TVs, the computer games, computers etc., then we are in a minority. So, to expect people to listen to our talk of woe is going to be an uphill climb, all the way to the top.
Add to Mr T. A. Smith's comments about hearing 'what programme they are watching', he mentions a frequency of 5995kHz, this is close to, from what I can remember, the sound i.f. of (nominal) 6MHz of a television set. I would think that this TV needs an i.f. re-tune or trim. As it's sound i.f. stage is off frequency.
It is my personal view, that the powers-that-be might turn a blind eye to this type of interference is that they need this output from the i.f. strip to detect TV licence dodgers. As they need to know what programme they watch before they take action.
But who is to blame? Is it the government or its departments, the manufacturers, the designers or the humble or innocent owner of the offending equipment.
So, if a group was set up it would need, in my opinion, all interested parties, us, the ‘dial twiddlers’ as well as those mentioned above as the 'r.f. spectrum' belongs to everyone, users and offenders alike.

Furthermore, if one takes a look at the back of a TV licence, it states that TVs should not cause interference etc. to other users. Also, on making enquiries with the DTI they will investigate such interference, I would think at a cost, so that could be of help in the future if all else fails.
Perhaps a small amount of space in a respectable magazine like Short Wave Magazine would be of help with advice, etc. to us ‘dial twiddlers’, but that would be up to the Editor!
On another matter on providing your readership with a more complete magazine, with the Propagation Forecasts. We’ve waited too long for this service. I hope you will continue with these, but could someone at SWM give an explanation of which each line means as this might help your junior readers to understand them and increase their usefulness.
R. J. Reynolds
Guildford
Surrey

We have complied with the last request - see page 51. Ed.
We aim to give the best prices on all major brands and we will endeavour to match any competitors genuine offer on Icom, Kenwood, AOR & Yaesu receivers.

BUY FROM SMC and SAVE MORE CASH.

NEW

AOR

AR 8000

An exciting new Handheld Scanner

- 500kHz-1900MHz
- 1000 Memory Channels
- All Modes including true ssb
- ssb filter fitted
- Alpha-numeric display
- Band scope facility

£449

SMC Price £499

EX DEMO AND USED EQUIPMENT BARGAINS

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AX ICF2001D Sony shortwave RX</td>
<td>£179</td>
<td></td>
</tr>
<tr>
<td>AX 800XLT Bearcat scanner</td>
<td>£169</td>
<td></td>
</tr>
<tr>
<td>AX FRG7 Yaesu HF Rx</td>
<td>£189</td>
<td></td>
</tr>
<tr>
<td>AX ICR100 Icom wideband Rx</td>
<td>£266</td>
<td></td>
</tr>
<tr>
<td>AX ICR70 Icom HF Rx</td>
<td>£449</td>
<td></td>
</tr>
<tr>
<td>AX R1000 Kenwood HF Rx</td>
<td>£249</td>
<td></td>
</tr>
<tr>
<td>AX R2000 Kenwood HF Rx</td>
<td>£245</td>
<td></td>
</tr>
<tr>
<td>AX R8E Drake HF Rx</td>
<td>£699</td>
<td></td>
</tr>
<tr>
<td>AX R5000 Kenwood HF Rx</td>
<td>£669</td>
<td></td>
</tr>
<tr>
<td>AX ICF5700 Sony HF/VHF Rx</td>
<td>£215</td>
<td></td>
</tr>
<tr>
<td>CX FRG7700 Yaesu HF Rx</td>
<td>£299</td>
<td></td>
</tr>
<tr>
<td>CX ICR2001D Sony shortwave RX</td>
<td>£189</td>
<td></td>
</tr>
<tr>
<td>CX ICR7000 Icom scanning RX</td>
<td>£339</td>
<td></td>
</tr>
<tr>
<td>CX ICR71 Icom HF Rx</td>
<td>£255</td>
<td></td>
</tr>
<tr>
<td>CX ICR7100 Icom scanning RX</td>
<td>£875</td>
<td></td>
</tr>
<tr>
<td>BX NRD525 JRC HF receiver</td>
<td>£875</td>
<td></td>
</tr>
<tr>
<td>LX FRG8800 Yaesu HF Rx</td>
<td>£475</td>
<td></td>
</tr>
<tr>
<td>LX ICR100 Icom scanning RX</td>
<td>£379</td>
<td></td>
</tr>
<tr>
<td>PX R2000 Kenwood HF Rx + VHF</td>
<td>£450</td>
<td></td>
</tr>
<tr>
<td>PX ICR1 Icom scanner</td>
<td>£295</td>
<td></td>
</tr>
<tr>
<td>PX FRG100 Yaesu HF Rx</td>
<td>£459</td>
<td></td>
</tr>
<tr>
<td>PX FRG9600 Yaesu scanning RX</td>
<td>£379</td>
<td></td>
</tr>
<tr>
<td>RX AOR2002 Scanning Rx</td>
<td>£299</td>
<td></td>
</tr>
<tr>
<td>RX FRG9600 Yaesu scanning RX</td>
<td>£299</td>
<td></td>
</tr>
<tr>
<td>RX CIF 7600DS Sony shortwave RX</td>
<td>£110</td>
<td></td>
</tr>
<tr>
<td>RX IRC1 Icom scanner</td>
<td>£315</td>
<td></td>
</tr>
<tr>
<td>RX NRD505 JRC HF receiver</td>
<td>£475</td>
<td></td>
</tr>
<tr>
<td>RX NRD535 JRC HF receiver</td>
<td>£1075</td>
<td></td>
</tr>
</tbody>
</table>

Optional filters SSB & CW £89 each

AOR Receiver AR-3030
30kHz-30MHz

- am, s.am, fm, usb, lsb, cw, fax
- Collins mechanical filters
- Optional VHF converters
- Adjustable B.F.O.
- Mains power unit included

AR-3000A 100kHz-2036MHz

SMC Price £849

AR-1500EX 500kHz-1300MHz

SMC Price £314

AR-2000 500kHz-1300MHz

SMC Price £279

AR-2800 500kHz-600MHz
800-1300MHz

SMC Price £399

Special Offers subject to availability

Carriage B=£5.00  C=£7.50  D=£12.50  E=£16.50

Service Department Direct Line Monday – Friday 9am – 5pm (0703) 254247

Personal callers and mail order welcome at all branches

Southampton SMC HQ
5 M House, School Close
Chandlers Ford Ind Estate
Eastleigh, Hants SO5 3BY
Tel: 0703 251549/255111

Leeds
ARE Communications
6 Royal Parade
Ham Lane, Elding
London S03 1ET
Tel: 081 997 4476

Leeds
Reg Ward & Co
1 Western Parade
West Street
Aaxminster EX13 5XY
Tel: 0297 34918

Leeds
SMC (Northern)
Nowell Lane Ind. Est.
Nowell Lane
Leeds
Tel: 0532 350606

Chesterfield SMC (Midlands)
102 High Street
New Whittington
Chesterfield
Tel: 0246 4533407

Chesterfield
SMC

Birmingham
504 Alum Rock Road
Alum Rock
Birmingham B8 3XH
Tel: 021 327 1997

VISA

Short Wave Magazine, July 1994
YUPITERU

As Yupiteru's authorised distributor in the UK, we stock their full range including accessories and spares & will, without hesitation, match any genuine advertised price. Call us now - we guarantee you won't be disappointed!

MTF-7100 500kHz-160MHz all modes £289
MTF-7700 AM, FM & VHF 200 memories £325
MTF-8000 Mobile with PSU £369
MTF-325 Civil/Air VHF Band, 100 masts £249
MTF-125 Civilian Air Band, 30 masts £189

FOR MORE DETAILS SEE OUR FULL COLOUR AD ON INSIDE REAR COVER

NEW YUPITERU – MVT-3100
A quality, low cost scanner offering Marine, PMR, UHF, Military and 900MHz high VHF bands. Easy to use and programmed with 100 memory channels. Supplied with a full range of accessories including UK Main Charger and Easy Read Handbook.

Price \pounds 1,199

AOR SCANNERS

AR8000 - NEW
Why not buy by these post dated cheques for this new scanner from AOR. One cheque dated today for \pounds 1,400.60 and two more post dated 1 month apart. See details. Alternatively part exchange your old scanner.

\pounds 500KHz to 30MHz

\pounds 1,000 memory channels

\pounds Many new features

\pounds 440

AR300A
A super wide band base/mobile all mode scanning receiver. Full coverage from 100KHz - 2036MHz with a host of features including RS232 interface for computer control, USB, LSB, CW, AM, FM and VHF modes are catered for. New available from stock at only \pounds 849 - save an incredible \pounds 50 off list price!

AR1500EX
\pounds 1000 Ch. Mem. 100KHz - 1300MHz with tab £349

AR2000
\pounds 1000 Ch. Mem. 100KHz - 1300MHz £269

REVEX HEADPHONES

HP20 - NEW FROM REVEX JAPAN
High sensitivity pair of communication headphones, suited for the needs of shortwave enthusiasts. A wide dynamic response and lightweight design makes these the ideal accessory. As factory appointed distributors for the Revex range of accessories we are able to offer these headphones at this introductory price \pounds 29.95 plus \pounds 2.75 p&p

THE BEARCATS ARE BACK!
As well as their recently introduced NEW HP20 - NEW from Revex JAPAN models, we now have them stock the Beacat UCC220XT Handheld which is the easiest of all to programme and use. Look for our special re-introduction offer.

BEARCAT 220XT
A complete handheld scanner covering right up into the high 900MHz Bands.

\pounds 200 - NEW FROM REVEX JAPAN

BEARCAT 65XT
A very simply to use budget handheld, offering general VHF & UHF band coverage. 10 memory channels with 2 digital channel display. An ideal beginners model!

Price \pounds 99.95

BEARCAT 890XT
A tabletop base covering 29955MHz in all the usual bands. 200 memories with additional VFO control and Auto Store facility. Includes Mon's 12V supply

\pounds 299

BEARCAT 2500XT
A redesigned case 400 programmable memories, wideband coverage

\pounds 349

TRIDENT SCANNERS

TR-2400 H1000 Ch. Mem. 100KHz - 1300MHz with fixed VFO £399

TR-1200 H M1000 Ch. Mem. 500KHz - 1300MHz No Gaps £299

TR-980 H 125 Ch. Mem. 5KHz - 1300MHz (111 miff. £249

FOR MORE DETAILS SEE OUR FULL COLOUR AD ON INSIDE FRONT COVER

COMTEL SCANNERS

COMTEL 205 Base 400 Ch. Mem. 100KHz - 1300MHz with gap £344.00

COMTEL 204 H1000 Ch. Mem. 500KHz - 1300MHz no gaps £344.00

COMTEL 203 H1000 Ch. Mem. 500KHz - 1300MHz with gap £199.00

COMTEL 102 H and gap. 10 Ch. Mem. 66 - 512 MHz with gap £99.95

BLACK JAGUAR
BJ200 Hag. 16 Ch. Mem. 30 - 220 MHz with gap £199.00

BOOKS...

VHF/UHF Scanner Frequency Guide New 160 page update 1994 \pounds 12.95

Shortwave Conversion Freq List 300KHz £19.95

Marine Freq Guide Near the Coast £4.95

Short Wave Communications £8.95

Flight Routing Guide Book £9.95

NEW THIRD EDITION UK SCANNING DIRECTORY

Now with spiral binder and even more frequent! This book is the last word for scanner enthusiasts - order your now.

Price \pounds 16.95 plus \pounds 2.75 p&p

SCANMASTER - HIGH QUALITY ACCESSORIES

SCANMASTER BASE ANT.

New high quality wide band receiving antenna uses fibre glass/stainless steel with 4 small radials. 'N' type connector. Length 1 1/2 m. £39.95

SCANMASTER DISCONE

A Quality, wideband stainless steel disccone. Range 25-1300MHz with 'N' type connector. Transmits on 2m, 70cms. £49.95

SCANMASTER DOUBLE DISCONE

A High performance wideband antenna offering gain over a conventional disccone. Stainless steel construction with mounting kit and short pole.

\pounds 25-1300MHz

\pounds Wide TX range £59.95

SCANMASTER MOBILE

A Complete, ready -to -go mobile scanner. Suitable for most handhelds fitted BNC and Coaxial fly lead. £99.95

SCANMASTER MOBILE MOUNT

Warrants on all v.gdt. units on the car dashboard. Allows easy and safe operating of handhelds. £9.95

WIDE BAND PRE-AMPLIFIERS

A very useful accessory for the scanner enthusiast. These low noise preamps help improve the reception on many brands of base/mobile & handheld radios.

SCANMASTER GW-2

Low noise GaAs FET pre-amp covering 1-1400MHz with variable gain of 3 to 20dB (requires PP3 battery) £59.95

M-75

Similar to the GW-2 but with selectable band pass filter for improved performance. 25-1200MHz coverage £89.95

PSU101 MK IV

A combined desk stand and power supply / charger for handheld scanners. Suitable for most popular models. Special versions available to cater for your specific needs.

\pounds 29.50

PSU101 TA

A 9V version for most Tandy and new Comtel scanners. £29.50

ERAD R8E

\pounds 1000KHz - 30MHz wide coverage

\pounds Passband tuning

\pounds Built-in Pre-Amp & Selectable AGC

\pounds Twin VFO’s & Tuner Functions

\pounds Dual Noise Blanker

\pounds RS232 Interface for Complete Control

DraRse R8E - Designed by Perfectionists for Perfectionists!

This receiver is everything you could ever want and more. The R8E's performance is truly staggering; it has a full compliment of filters, synchronous AM detector, multiple scan facilities, 100 memory channels, plus all mode coverage. All this and more - with no hidden extra costs! Why not try exchange your old receiver for this latest model from the USA, we offer excellent PX deals call our hotline now!

Available Optional Extras

Percentage Speaker £49.95

PC Drive Software £59.95

Full Win/Stop Manual £29.95

VHF Converter (Internal) £225.00

ORDER HOTLINES:

TEL: (0705) 662145
FAX: (0705) 690626

SAVE £10

NOW V4.2

ERAD MICROREADER

For years the Microreader has been one of the most successful and widely used decoders in Britain. It allows reception of CW, AMTOR, RTTY, SITOR. It even has a built-in tutor to help you learn RTTY, SITOR. It even has a built-in tutor to help you learn RTTY, SITOR. It even has a built-in tutor to help you learn RTTY, SITOR.

\pounds 29.95

£189
NEW SW8 DRAKE, PORTABLE

Now, for the first time, a truly versatile Short Wave Receiver with additional coverage of both VHF Airband and VHF Stereo FM. Microprocessor controlled and back-lit LCD display ensures easy access to its enviable range of facilities. Recognising what's needed in modern receiver design, Drake have incorporated a quality large front-mounted speaker, direct frequency access keypad, four antenna inputs and complete portability with a fitted telescopic whip antenna and optional NICads. Also included are 70 programmable memories, a dual mode clock timer, synchronous AM detector and, of course, a 240VAC adaptor.

AOR AR3030
We waited and waited and finally it arrived - this excellent receiver has a host of facilities including the famous Collins TCXO, TUNER NITCOM and TCXO styled as Brandrud. It is obvious from the start that they had two criteria in mind when developing the 3030 -SELECTIVITY and STABILITY - and they achieved their goal. The AR3030 is an ideal match for the digital guys. A free copy of the S/wave Conf. Freq. Newsletter and SSB will be delivered with your order.

PRICE
£595.00

MAGNETIC LONGWAVE BALUN (MLB)
The MLB makes longwave random antennas at 500kHz+ Cable reduces noise & helps when using unbalanced wire. Price
£325.00

UPGRADE YOUR DSR-9
Replacement RCM Chip turns your old model into New Version 2 for just
£29.95

STEEPLETONE MR8
A few of this "jumbo" Radio left in stock. Works perfectly in Multi-band mode. Complete with Aerial kit and radio, covering the usual LW, MW, VHF and 80m bands. Price
£495.00

STEEPLETONE MB 89 MKII
Pocket Size, Complete radio, receiver, and MW bands. Price
£279.00

SAKE SH6CSTANI3A
A genuine Short Wave Receiver with AM, FM & SSB reception. This model is an ideal choice for the newcomer to short wave listening. It features excellent sensitivity and filtering - couple this with easy push button programming and direct SFO tuning for the discerning listener. Price
£199.95

TRADING POST
Scanning Receivers
AOR AR900 Pocket Hand Scanner... £199.00
Baird DR 900 High band scanner... £195.00
Cereon 344 tuner scanner... £185.00
Femmette MINI500 Frequency Counter... £135.00
Squadron 430T 800k S.W. scanner... £179.00
AOR AR 600 + Automatic Tuning... £135.00

CHECK NOW FOR LATEST STOCKS!

MAIL ORDER:- 189 LONDON ROAD, PORTSMOUTH P02 9AE

Shortwave receivers
Icom IC - 27 (100kHz - 30MHz)... £279.95
Icom IC - 7100 (25-2500MHz)... £125.00
IC - 7500 (50kHz- 1GHz)... £565.00
IC - 7810 VHF handheld scanner... £95.00
Icom R71 18 Watt Shortwave... £89.00

PAY BY THREE POST-DATED CHEQUES
Simply divide the price into 3 equal payments. Write 3 cheques dated in consecutive months starting with today's date. Use your telephone number and cheque card number on the back of each cheque. Post them to us with your name and address and we will (subject to status) send you your goods immediately. The hardest part is deciding what to buy!
Mellow Radio is a member of the Southern Sound Radio Group of companies who operate stations in the south of the UK. The studio and offices of Mellow are located in a modern building at Frinton-on-Sea, Essex, and serves a broadcasting area bounded by Felixstowe, West Mersea, Colchester and Manningtree. The transmitter and antennas are sited at Little Clacton, some 5km inland from Frinton-on-Sea. The building that contains the studios was originally custom made to house a production company specialising in audio tapes for commercial advertising and is therefore very well suited to its present use. Going through the reception area, the ground floor is divided into two areas.

**Broadcasting Studio**

A Pye TVT Broadcast Station Console dominates the Broadcasting Studio. A boom-mounted microphone with its wind shield is mounted just above the control position. The Presenter on duty has complete control of the audio output of the station. Inputs, again under control of the Presenter, consists of outputs from the Microphone, Twin Turntables for conventional records, CD Player, Cartridge Tape Player for Commercials, BT 'Music Line' to Input programmes from Invicta Radio and input from a satellite for direct off-air ITN News broadcasts. Inputs for real time interviews from the telephone or radio links could easily be set up, but at present this is not carried out and is not permitted under the terms of Mellow's licence. The presenter has peak audio VU meters to check the audio levels. In addition he can monitor the audio output line and off-air monitor on the stations frequency. In a small radio station, the Presenter is the compiler and editor of his own programmes and these have to be carefully planned but still give the impression of spontaneity.

In the hard commercial world of today, a local radio station will only survive if it attracts sufficient advertising. Naturally a wide range of local adverts are broadcast. These can consist of simple announcements to a fully produced advert either produced by Mellow in its own studio or from a tape supplied by the client. Networked radio advertising is now carried out in a very modern manner. Let's assume that a market leading confectionery company has just launched a new chocolate bar and they wish to raise customer awareness on a national level. The advert is produced and air time booked. Digital audio tapes are then sent to one of the satellite operators. At a predetermined time, the advert is broadcast on a dedicated sound channel and recorded by all the local radio stations participating in the campaign. The individual radio stations are advised by Satellite Media Services of the time that the commercial will be transmitted. The information is available on an audio sub-carrier via the Intelsat V1F4 Satellite, on Channel 69 Horizontal. The audio is digitally encoded using the DAT200 Digital MPX System. This information is presented on a dedicated printer. The commercial is recorded on a digital audio tape machine and then transferred to a conventional cartridge for transmission by the station at the required time.

A licence requirement demands that the output from the station is recorded and retained for a period of six weeks. Dedicated equipment for this purpose is expensive so Mellow utilise a modified video tape recorder using standard four hour video tapes to record the audio output of the station but running at a reduced speed to give eight hours of recording time. As the start and stop time of these tapes is noted, it is an easy matter to find any required section that might contain suspect material!

**The Studio**

A small, but fully equipped, studio can produce advertisements or features. These are recorded on standard /4in audio tape and full editing features are available. The satellite receiver, digital audio tape machine and other equipment are located next to the studio.

**The Rack Room**

The name 'Rack Room' is taken from the old days of broadcasting when radio stations would have a room with a number of Post Office racks. Well, there is a rack in the rack room! This contains a Racal RA17 receiver to monitor off-air 1557kHz signals and circuitry to interface the Input and Output signals to dedicated BT 'Music Lines'. These are private rented lines that are designed to carry Broadcast Quality (a.m.) signals from the studio to the transmitter. The bandwidth is 10kHz, noise, crosstalk, intermodulation, impedance and level are closely, controlled, meeting the requirements of BT Specification EPS81 (see later). Peak level audio clipping is introduced at this point on the outgoing signal. This line is routed to Frinton Exchange, then to Clacton before eventually terminating at the transmitter site.

---

**Mellow Fifteen Fifty Seven!**

There is at least one G1 who can transmit on frequencies below 50MHz, in fact he can legally transmit on frequencies that, possibly, no other radio amateur can use! Bill Rollins G1WJR is a Presenter at Radio Mellow, broadcasting on 1557kHz in the medium wave band. Jeff Harris G3LWM explains some of the technicalities of a local radio station.
Antenna and Site

It was originally intended to locate the transmitter on a coastal site at Holland-on-Sea (MF on map) but this site was required by TNS (Thames Navigation Service) for a radar installation, so the present transmitter is at Little Clacton.

The antenna is a 49m mast radiator fitted with a 140° wire reflector. This reflector was originally fitted to minimise propagation over the sea. However, in its present position, whilst certainly affecting the polar diagram, it has the unfortunate result of reducing the signal to such an extent in Clacton and Frinton that, during the hours of darkness, continental stations are received at greater strength than the local radio. This will come as no surprise to radio amateurs! As the mast is also the radiator, the problem of r.f. feeding back into the mains 230V a.c. supply is overcome by using a special toroidal transformer. The r.f. is fed to the base of the mast via 50Ω coaxial cable.

Transmitter

The transmitter is an American MW-1 1kW unit manufactured by Harris. It is operated at the much reduced power of 125W e.m.r.p. to comply with the licence requirements. An OPTIMOD-AM Compressor/Limiter is fitted between the Audio Input and the transmitter modulator. This consists of a broadband compressor, followed by a six-band (a.f.) limiter to produce the highest average modulation levels into the transmitter modulator. Included in the Optimod is a sharp cut-off audio filter at 4.5kHz, which is the standard adopted by European broadcasters.

The Radio Authority lay down the rules for Independent Radio Companies to observe. The spectral occupancy of the signal is set by the sidebands not exceeding -20dB at more than ±7.5kHz from the normal carrier and -40dB at ±9kHz from the carrier. Spurious and harmonic emissions must be better than 40dB below the carrier. The carrier must not drift more than ±10kHz. A monitor point must be provided on the transmitter to observe the r.f. output. In spite of commercial pressures technical standards are being maintained and improved. The future of local broadcasting will keep in step with future developments.

Receive Station

Terminal Amplification undertaken by BT with amplifiers and equalisers. Equipment is installed within racks at larger site and at smaller sites within an equipment case. Exceptionally, circuits can sometimes be pre-equalised to the customer from the last BT exchange, requiring only isolation/matching transformers to be installed at the customer's premises.

Information courtesy of British Telecommunications Visual and Broadcast Services Division, 1992.

Radio Authority Incremental ILR Stations.

Specification for MF Transmitting Equipment.

Incremental stations are those that provide additional coverage in areas already served by a Local Radio Station.

Specification for BT Music Circuit EPS81

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandwidth:</td>
<td>0.01 - 10kHz</td>
</tr>
<tr>
<td>Terminal Impedance:</td>
<td>600Ω</td>
</tr>
<tr>
<td>Gain/Freq Response:</td>
<td>0.05 - 0.125kHz 0.125 - 8.5kHz 8.5 - 10.0kHz</td>
</tr>
<tr>
<td>Group Delay/Frequency Response:</td>
<td>0.05kHz 0.1kHz 10.0kHz</td>
</tr>
<tr>
<td>Single Tone Interference:</td>
<td>(Unweighted) 0 - 40km</td>
</tr>
<tr>
<td>Noise:</td>
<td>(Weighted)</td>
</tr>
<tr>
<td>Insertion Loss:</td>
<td>±1.0dB ±1.5dB +0.75 to -1.0dB +0.75dB ±0.75dB ±0.75dB ±0.75dB</td>
</tr>
<tr>
<td></td>
<td>26ms 8ms 3ms</td>
</tr>
<tr>
<td></td>
<td>-73dBmO -35dB -45dB</td>
</tr>
</tbody>
</table>

The EPS 81 10kHz Mono Circuit is perfectly adequate for speech and TV sound and is also used for medium and long wave transmitter feeds.
The control console in the studio.

Bill GTWJR spinning a plater!

The actual carrier frequency will be a multiple of 9kHz to conform with international channel spacing. It must remain within ±10kHz of the specified frequency at all times. The transmitter shall be provided with an internal control to allow the frequency to be adjusted over a range of ±100Hz.

Modulation

Double sideband amplitude modulation (A3B) shall be used. The carrier must not be modulated beyond 100%.

Effective Radiated Power

The transmitted e.m.r.p. (relative to a short monopole), derived from the transmitter...
output power and the Antenna System gain shall not exceed the value specified in the contract.

**Connection to the Public Telecommunications Circuits.**

Where the studio and transmitting equipment is connected together by circuits provided by Public Telecommunications Operators (eg British Telecom or Mercury), the equipment must comply with the requirements of British Standards BS6328 Part 6, Sections 1 and 2.

**Control**

Any controls which, if maladjusted, might result in any of the requirements being transgressed, shall not be accessible without the use of a tool.

**Environmental Conditions**

The performance shall be maintained over the following range:
- Ambient Temperature: 5 to 35 °C
- Relative Humidity: 0 to 95%

**Power Supply**

The performance shall be maintained with variations of supply voltage within the range +6% to -10% of the nominal value.

**Documentation**

Operating instructions for the correct use of the transmitter must be carried out by qualified personnel, and details reported to the Radio Authority.

**Sound Performance Requirements**

**Audio Frequency Response**

For a good quality broadcast service, the audio frequency response of the transmitter, measured through a high quality demodulator, shall not vary more than ±1dB over a range 40Hz to 5kHz.

**Audio Distortion**

With a single modulating frequency in the range 40Hz to 5kHz, and with the modulation depth set to 75%, the total r.m.s. distortion shall not exceed 2%.

**Audio Noise**

The audio signal to noise ratio, measured using a peak programme meter and weighting network as defined in CCIR Recommendation 468 shall exceed 50dB, relative to 100% modulation at 1kHz.

**Transmitter Protection**

The transmitter shall be designed such that it will not suffer damage when operated continuously with the r.f. output connector either open or short-circuited. Precautions shall be taken to minimise the possibility of damage due to lightning or static discharges, resulting from the use of an m.f. antenna which is normally insulated from earth.

**Transmitter Antenna Impedance Match**

The transmitter must be capable of meeting the specification when working into an aerial return loss of 20dB carrier, falling to 10dB at ±6kHz from carrier, which is a characteristic that should be readily achievable for an m.f. antenna.
World Weather Reports
from Broadcast Stations and Others

Although the study of meteorology is in itself a fascinating hobby, combining this with DXing is even more informative for the weather buffs. The sources of global weather patterns at any one time are many and vary from the simple everyday television weather maps to the complex Admira!ty facsimile charts of maritime conditions. Philip C. Mitchell explains.

Weather

Weather stations and forecasts from official radio sources for professional users i.e. aircrew, mariners, etc., has already been covered in the SWM Weather Watching supplement given away free with the April 1991 issue. This article, however, will cover weather information derived from broadcast bands although reference will be made of some other official sources not mentioned so far. Most broadcast stations regularly include weather reports in their schedules, but not all English language schedules do just that. Patience is needed to record the exact timings of weather reports, which usually occur at the start or finish of English transmissions, but some transmissions from other broadcast stations are extremely low power and are, therefore, excellent tests as to the efficiency of receiver equipment and the skill of the DXer.

Geography Lesson

Radio Australia in their Pacific broadcasts on 21.755MHz conclude at approximately 0845 each day with extensive weather coverage of the Pacific Ocean areas including North Cook Island (Tonga), South Cook Island (Rarotonga), Gilbert Islands and Tuvalu (Funafuti), Fiji Islands (Viti Levu), etc., also Coral and Bismark Sea areas. A veritable geography lesson in itself and if time permits, weather states and forecasts for principal Australian towns from tropical Darwin in the north to the more temperate region of Tasmania in the south of the continent. Otherwise, the mainland reports are given at 1130UTC on the same frequency. An excellent overview of Australia's varied climate can thus be obtained from these broadcasts.

Moving eastwards, Honolulu, Hawaii broadcasts aviation weather on 8.828MHz (s.s.b.) covering extensive eastern United States and eastern Canada from Los Angeles, San Francisco, Las Vegas in the States to Vancouver and Ontario in the cooler regions of Canada. A more esoteric source of weather information can be found from stations WMV and WWH. These are primary standard time signal stations operated by the National Institute of Standards and Technology located at Fort Collins, Colorado, USA and Honolulu, Hawaii respectively, but relay weather sea conditions, warnings and direction of developing storms in the Atlantic (WWV) and Pacific (WWVH). The frequencies, shared by other world-wide standard time signal stations, are 2.500MHz (2.5kW) 5.000, 10.000 and 15.000MHz (10kW), 20.000MHz (2.5kW) and the weather states from WWV are broadcast between 8 and 11 minutes past each hour and from WWVH, the weaker signal in the UK, between 48 and 51 minutes past each hour. Those developing Atlantic storms that may effect the UK can thus be identified and predicted with some accuracy.

Ecuador, South America, with the equator bisecting the northern part of the country, has great weather contrasts between the northern part of the country, the tropical rain forest and Andean perpetual snow. This weather pattern can be gathered from HCJB, which itself is 2850m above sea level.

Complete Contrast

Moving to mainland Europe, most principal areas have been covered by VOLMET broadcasts referred to in Weather Watching, but most broadcast band stations, during their English broadcasts include at beginning or end of news bulletins a local forecast. Almost in the Arctic Circle, Helsinki, Finland 17.799MHz conclude their English broadcast with local weather at approximately 0938 and also on 15.240MHz at 0938. As a complete contrast in climatic terms, United Arab Emirates Radio 15.435, and 21.605MHz broadcast a general report of Gulf weather and sea states at approximately 1035 and 1335 UTC at the end of their English news broadcast. For those readers about to holiday in the Mediterranean area, RAF Cyprus broadcast weather from selected stations in that region on the 'Architect' network - 18.018MHz s.s.b. only - at about 0715 UTC daily and occasionally at 15 minutes past the hour for Akrotiri and Larnaca, Cyprus.

For the short wave listener who has an interest in weather and climatic patterns, there is much useful information to be obtained world-wide on the broadcast bands. Add to this source the VOLMETS previously mentioned, weather map reception via satellite, FAX and RTTY modes, then the global meteorological picture becomes very much more comprehensive.
SONY ICF-2001D FULL KIT INCLUDING: AN1 £275

AWARD WINNERS
071-637-0353/0590
AN AWARD WINNING MASTERPIECE

ICF-2001D Kit ... £275 only

Finest all-round pro-receiver in the business.
FM/LW/MW/AIR multi-band reception • 32 station preset memory • Synchronous detector circuit • PLL-quartz-locked synthesiser circuit • Digital/anolog change tuning • 2-way scan tuning • Memory, broadcast, define • 2-position tone control • Direct meter band access • 4-event programmable timer • Dual conversion system • 2 step tuning: 10 memory presets, auto scan, manual tuning, 10 key direct tuning • Sleep function • Display clock • Digital clock • Programmable time • Stop time control • Antenna input socket • Headphone socket • Operates in 3 modes • LCD display • Twin conversion system • Supplied with compact antenna, stereo earphones, shortwave guide and compact aerial • Power: 2×AA size battery.

ICF-SW7600 £149.95
ICF-SW16 £149.95

SONY ICF-SW55 "SUPERADIO"

• World time zones • SSB
• Full digital p/sets • Multi-band £249 only

ULD ULTRA-COMPACT SHORTWAVE RADIO WITH PLL SYNTHESIZER CIRCUITRY
FM/LW/MW/AM/SSB reception • PLL-synthesised circuitry • FM stereo • Continuous AM frequency coverage • 4-way tuning: 10 memory presets, auto scan, manual tuning, 10 key direct tuning • Programmable time • Sleep function • Digital clock and alarm • LCD display with light function • Dual conversion system • 2 step tuning control • Key protection • Record out socket • Supplied with compact antenna, stereo earphones, shortwave guide and compact aerial • Power: 2×AA size battery.

ICF-SW100S Kit £239.95
ICF-SW30 £89.95
ICF-SW33 £119.95
AN-1 ANTENNA £54.95
ICF-SW22 £69.95

NEW ICF-SW77 Similar specification to ICF-2001D but with jog-shuttle dial tuning for accuracy ... £349

ALINCO

RT-810 World band receiver — pocket size £69.95
RT-815 8000 multi-band digital radio — memoprotection £209.95
RT-845 Digital in/band radio £139.95

ICOM SCANNERS/TRANSCEIVERS

IC-R1 15 1300 kHz 100 memories only £374.95
ICP-211 £310.00
ICP-7100 £1299.00
ICW-2E £429.95

FULL RANGE STOCKED

ICF-146 £269.00
ICF-21E £299.00
ICF-9 £199.00
ICF-2 £349.00
ICF-2C £359.00
ICF-2G £369.00
ICF-2C £369.00
ICF-21ET Dual Band £459.00
ICF-2200M £675.00

GROUNDRUP

SATELLIT 100 £349.00
YACHT BOAT 222 £329.00
YACHT BOAT 230 £65.95
YACHT BOAT 500 £159.95
YACHT BOAT 400 £100.00
YACHT BOAT 205 £56.00
YACHT BOAT 206 £17.00
CONCERT BOAT 230 £35.95

SUONOIC

RC-81 £129.00
RC-82 £149.00
RC-83 £199.00
RC-84 £249.00
RC-86 £299.00
RC-87 £399.00
RC-88 £499.00
RC-89 £499.00
RC-90 £699.00
RC-91 £899.00

FOR YOUR DEAL CALL: 071-637-0353

Sony ICE-2001D FULL KIT INCLUDING: AN1 £275

AWARD WINNERS
071-637-0353/0590
AN AWARD WINNING MASTERPIECE

ICF-2001D Kit ... £275 only

Finest all-round pro-receiver in the business.
FM/LW/MW/AIR multi-band reception • 32 station preset memory • Synchronous detector circuit • PLL-quartz-locked synthesiser circuit • Digital/anolog change tuning • 2-way scan tuning • Memory, broadcast, define • 2-position tone control • Direct meter band access • 4-event programmable timer • Dual conversion system • 2 step tuning: 10 memory presets, auto scan, manual tuning, 10 key direct tuning • Sleep function • Display clock • Digital clock • Programmable time • Stop time control • Antenna input socket • Headphone socket • Operates in 3 modes • LCD display • Twin conversion system • Supplied with compact antenna, stereo earphones, shortwave guide and compact aerial • Power: 2×AA size battery.

ICF-SW7600 £149.95

SONY ICF-SW100S Kit £239.95
ICF-SW30 £89.95
ICF-SW33 £119.95
AN-1 ANTENNA £54.95
ICF-SW22 £69.95

NEW ICF-SW77 Similar specification to

ICF-2001D but with jog-shuttle dial tuning for accuracy ... £349

ALINCO

RT-810 World band receiver — pocket size £69.95
RT-815 8000 multi-band digital radio — memoprotection £209.95
RT-845 Digital in/band radio £139.95

ICOM SCANNERS/TRANSCEIVERS

IC-R1 15 1300 kHz 100 memories only £374.95
ICP-211 £310.00
ICP-7100 £1299.00
ICW-2E £429.95

FULL RANGE STOCKED

ICF-146 £269.00
ICF-21E £299.00
ICF-9 £199.00
ICF-2 £349.00
ICF-2C £359.00
ICF-2G £369.00
ICF-2C £369.00
ICF-21ET Dual Band £459.00
ICF-2200M £675.00

GROUNDRUP

SATELLIT 100 £349.00
YACHT BOAT 222 £329.00
YACHT BOAT 230 £65.95
YACHT BOAT 500 £159.95
YACHT BOAT 400 £100.00
YACHT BOAT 205 £56.00
YACHT BOAT 206 £17.00
CONCERT BOAT 230 £35.95

SUONOIC

RC-81 £129.00
RC-82 £149.00
RC-83 £199.00
RC-84 £249.00
RC-86 £299.00
RC-87 £399.00
RC-88 £499.00
RC-89 £499.00
RC-90 £699.00
RC-91 £899.00

FOR YOUR DEAL CALL: 071-637-0353
YUPIERU’S BIGGEST UK DEALER!

**MVT-7100 - NO FRILLS - NO GIMMICKS - PURE QUALITY**

**MVT-7000**
0.1-1300MHz inc. Nicads & Charger. **SAVE £100**

**MVT-7100**
0.1-16.50MHz All mode. Out performs any other H/Held. 9 payments £35 = £379 (Zero Apr)

**MVT-8000**
8-1300MHz inc. PSU. **£449**

**NETSET PRO-44**
68-88, 108-174, 380-512MHz **£109**

**ALINCO DJ-X1D**
0.1-1300MHz INCL'S NICAD & CHARGER etc. **£299**

**AOR AR-1500EX**
0.5-1300MHz UNBEATABLE VALUE, incl all Acc. **£349**

**AR-8000**
Now in stock! Almost an AR-3000A in a H/Heldy. **£379**

**TSC-2602**
Calling all Yupiteru owners. Need a good rubber Antenna for your Scanner! **£19.95**

**NEW**
AR-1500EX UNBEATABLE VALUE. incl all Acc. **£349**

**NEW NEW NEW**
TSC-2602:- 10' Long (Flexible) **Free P&P**

**OTHER MODELS ON OFFER INCLUDE:-**
VT-125/VT-225/MVT-3100/AR-2000/R-1/R-100 & MORE

**DRAKE R-8E**
The ULTIMATE RECEIVER. **£1189**

**AR-3030**
Superb SW receiver. Quality✓, Performance✓, Looks✓, Value for money✓ **£689**

**YAESU FRG-100**
W.R.T.V. RECOMMENDED **£599**

**JRC NRD-535**
Our best selling LOW PRICED PORTABLE **£129.95**

**AOR AR-3000A**
You won’t miss out on those signals with this month’s offer. **£849**

**BSS-1300 LOW PROFILE**
Double nest of dipoles 10-1300MHz supplied with pole mounting and flat wall mounting plate. 10m Coax & BNC lead supplied. 34 inches high (outdoor/loft) **£169.95**

**DSS-1300**
Desk top nest of dipoles (low profile) Rx 10-1300MHz 16° high. Supplied with coax & BNC fitted. **£44.95**

**NEW**
NEW 3rd EDITION UK Scanning Directory **£10.95**

**NEW**
TG-5100 7' on glass Scanner antenna (10-1300MHz) **£22.95**

**NEW**
**JULY SPECIAL**
**SPECIAL OFFER**
**FREE HEADPHONES & P&P**

**FED UP TRYING TO FIND AN ANTENNA FOR YOUR SCANNER? HERE’S THE ANSWER OUR NEW ANTENNAS**

**NEW DSS-1300**
Desk top nest of dipoles (low profile) Rx 10-1300MHz 16° high. Supplied with coax & BNC fitted. **£44.95**

**NEW BSS-1300**
Car magnetic mount. Version of above with coax & BNC plug fitted. **£44.95**

**NEW**
**NEW**
**NEW**

**FREE PARKING**

**OPEN FROM**
MON-SAT 10-6PM

**CINEMA DRIVE**

**IT’S EASY WHEN YOU KNOW HOW!**

**SHORT WAVE RECEIVERS WE SPECIALISE PART EXCHANGE YOUR OLD GEAR, TOP PRICES GIVEN**

**FEED BACK**

**44.95**

**FREE DELIVERY (UK MAINLAND) 24HR £10 / 48HR £7.50**

**VISA **

**TAX**
Nevada Communications have recently introduced three new scanners under the Trident label. Kevin Nice looks at the top of the range TR-2400 and listens to a mixture of frequencies.

Not having previously used any scanners in anger, I agreed to preview this receiver from a novice users perspective, a viewpoint which I am sure is that of many prospective owners. If you fall into this category and are not sure whether to invest in a scanning receiver then perhaps this article will help you make that decision.

The Trident TR-2400 offers wide coverage from long wave through to the top end of the u.h.f. band. The exact coverage is shown in the Specification table. The TR-2400 is a hand-held unit with the now familiar format for controls and display. that is power switch/volume control, combined squelch threshold and b.f.o. frequency, rotary channel control, buttons for attenuator, display backlight, and b.f.o. finally sockets for antenna (BNC) and ear piece. The front panel features the clear easy to read liquid crystal display, the speaker, and the main user interface - keyboard. The right hand side sports a socket for the charger, and lastly the rear of the receiver is fitted with a substantial pocket clip.

So I set off equipped with the User Manual, the UK Scanning Directory and VHF/UHF Scanning guide, both available from SWM Book Service and, of course, the radio.

Modes of Operation

First on my agenda was to receive some signals. At first the receiver seems a little daunting but this soon wears off as you get to grips with the way things work, it is after all very intuitive. There are three ways to use the Trident scanner, Manual Mode, Scan Mode and Search. Before I detail the modes of operation it is important to understand the way in which a scanner is organised as this may not be entirely obvious to the newcomer - after all, it wasn’t to me!

Memories

The heart of any scanner is the memory, allowing the storage of frequencies of interest. But there’s more. In addition to the frequency you can also store the mode of operation, i.e. a.m., n.b.f.m., and v.b.f.m. The TR-2400 has 1000 of these memories such as these. They are organised into 10 banks of 100. Its is these memories (channels) that are used when the receiver is used in scan mode. There are also 10 range memories these are used by the receiver in search mode. Range memories are programmable with the following information, lower frequency, upper frequency, step size, and mode.

In manual mode the memories are not used and the receiver behaves similar to a conventional receiver with continuously variable coverage, the operating frequency can be entered directly from the keypad, or if the manual button is depressed whilst listening to either a search or scan channel then that frequency remains selected. Both mode and step size can be set and reset any number of times during manual mode the lower limit for step size can be set to 1kHz, which is essential for resolving s.s.b. signals, the upper limit is 999kHz not that I can think of an application for a step size this high. The frequency can be incremented or decremented by using either the rotary control on the top of the receiver or the up and

Speciation

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency Coverage:</strong></td>
</tr>
<tr>
<td>100kHz - 2.060GHz</td>
</tr>
<tr>
<td><strong>Modes:</strong></td>
</tr>
<tr>
<td>s.s.b., c.w., a.m., n.b.f.m., w.b.f.m.</td>
</tr>
<tr>
<td><strong>Frequency Stability:</strong></td>
</tr>
<tr>
<td>±5p.p.m. -10°C to +50°C</td>
</tr>
<tr>
<td><strong>Receiver Circuitry:</strong></td>
</tr>
<tr>
<td>Triple Superhetrodyne</td>
</tr>
<tr>
<td><strong>Frequency Increment:</strong></td>
</tr>
<tr>
<td>1-999kHz, and multiple of 1kHz or 12.5kHz (under 100kHz)</td>
</tr>
<tr>
<td><strong>Memory Channels:</strong></td>
</tr>
<tr>
<td>1000 (100ch x 10 banks)</td>
</tr>
<tr>
<td><strong>Search Banks:</strong></td>
</tr>
<tr>
<td>10 programmable by user</td>
</tr>
<tr>
<td><strong>Frequency Lockout:</strong></td>
</tr>
<tr>
<td>10 programmable by user</td>
</tr>
<tr>
<td>50 per search bank, 1000 total</td>
</tr>
<tr>
<td>50 per scan bank, 1000 total</td>
</tr>
<tr>
<td><strong>Priority Channel:</strong></td>
</tr>
<tr>
<td>1, programmable by user</td>
</tr>
<tr>
<td><strong>Priority Sampling:</strong></td>
</tr>
<tr>
<td>Every 2 seconds</td>
</tr>
<tr>
<td><strong>Receiver Sensitivity:</strong></td>
</tr>
<tr>
<td>n.b.f.m.</td>
</tr>
<tr>
<td>12dB SINAD 10dB S/N</td>
</tr>
<tr>
<td>40dB S/N</td>
</tr>
<tr>
<td>a.m.</td>
</tr>
<tr>
<td>3dB e.m.f.</td>
</tr>
<tr>
<td>3dB e.m.f.</td>
</tr>
<tr>
<td>37dB e.m.f. or better</td>
</tr>
<tr>
<td>w.b.f.m.</td>
</tr>
<tr>
<td>3dB e.m.f.</td>
</tr>
<tr>
<td>3dB e.m.f.</td>
</tr>
<tr>
<td>37dB e.m.f. or better</td>
</tr>
<tr>
<td><strong>Antenna Connection:</strong></td>
</tr>
<tr>
<td>50 Q unbalanced, BNC</td>
</tr>
<tr>
<td><strong>Audio Output:</strong></td>
</tr>
<tr>
<td>More than 120mW into 80Ω load, 10% t.h.d.</td>
</tr>
<tr>
<td><strong>Power Source:</strong></td>
</tr>
<tr>
<td>4.8Vd.c. NiCad batteries</td>
</tr>
<tr>
<td>12V d.c. external</td>
</tr>
<tr>
<td>100V a.c., 120V a.c., 220V a.c. (with a/c/d.c. adapter)</td>
</tr>
<tr>
<td><strong>Memory Backup:</strong></td>
</tr>
<tr>
<td>Non-volatile memory</td>
</tr>
<tr>
<td><strong>Dimensions:</strong></td>
</tr>
<tr>
<td>78 x 41 x 184mm (W x D x H)</td>
</tr>
<tr>
<td><strong>Weight:</strong></td>
</tr>
<tr>
<td>410g</td>
</tr>
</tbody>
</table>
Trident TR-2400 Scanner

It is very easy to enter frequencies into both scan and search memories and the method used is very intuitive.

Virtual receivers

The receiver performs exceptionally well. I was most pleased withowy in which, effectively, bands of frequencies can be stored in the search banks, thus creating a set of virtual receivers that can be selected at will. I used the set to monitor Airband, 144 and 43OMHz amateur, v.h.f. marine and various other bands. By using the Link capabilities of the scanner it was possible to include or exclude the banks and therefore concentrate on the specific areas of interest at any given time.

I noticed several birdies, as is to be expected with a receiver that is controlled by a microprocessor driven synthesiser. By using the lockout function this annoyance was removed.

The receiver's ability to either continue scanning or remain monitoring a given channel that had been occupied is extremely useful and this facility is selected by using the hold/delay toggle.

Should you wish to maintain a close watch on a specific frequency the priority function is very useful. Assigning any one of 800 memories as the priority channel (bank zero cannot be selected) will instruct the receiver to check this channel every 2 seconds if it is found to be active the receiver will cease activity and switch to the priority channel until it is cleared or until the user instructs it to do something else.

Competent

Overall I found the TR2400 a very pleasing receiver to operate. It is a very competent receiver indeed many services and bands have been monitored. I was surprised by the performance offered by the supplied rubber duck antenna, which gave an acceptable signal to noise ratio on most frequencies. I also used a table-top discone type antenna and this gave improved results over the rubber duck, as you would expect.

Ease of use could not have been better. I do have one minor niggle, however. The case is not up to the job, the stitching was coming undone after a couple of days of use and it is very awkward to remove with the pocket clip fitted. Mind you, not that it impairs the receiver performance one little bit. Thanks go to Nevada Communications, 189 London Road, North End, Portsmouth PO2 9AE Tel: (0705) 662145 for the loan of the receiver which costs £369.00.

Review

The Assistant Editor takes a look at this extremely portable frequency counter.

If you don't want to use up too much precious shack space, but you do want to measure frequency in the range 1MHz to 2.4GHz, then here is the solution - an easy-to-use, portable counter from Quantek. It's so compact, in fact, that it is smaller than the combined power supply and charger supplied with the counter.

The unit is housed in a black anodised case and is powered by internal NiCads. The counter may be operated whilst power is being supplied by the combined charger and power supply. The charging time for the internal power source is approximately 14 hours and don't forget to cycle the battery periodically to maintain full capacity.

Operation of the robustly designed unit is very straightforward. One simply switches on the unit, selects the appropriate gating speed (FAST 0.25s or SLOW, 2.5s, for improved accuracy), connects either the antenna supplied or a suitable cable to the source to be measured and then reads the frequency on the display. The display can be frozen if desired and the measured frequency retained by the use of the hold feature.

This useful and compact portable frequency counter can be obtained for £119.00 + £5 p&p from: Quantek Electronics, 1678 Bristol Road South, Birmingham B45 9TQ. Our thanks are extended to the for the loan of the review unit.

Specifications

Frequency Range: 1MHz to 2.4GHz
Sensitivity (typical): 800µV @ 10MHz
Timebase accuracy: ±1 count I.s.d.
Gate time: 0.25s resolution 1kHz
Power: 12V d.c. output, centre pin positive
Size: 100 x 8 7 x 28mm

Quantek FC2000 Frequency Counter

Made in England

Short Wave Magazine, July 1994
JRC NRD535 -
The best receiver you can buy for under £2000?

In the course of a day I get asked many questions about shortwave receivers but the most common is “Should I spend more money - what will I get if I do?” I’ve always believed that the more you pay, the more you should get and in receivers, this doesn’t strictly mean you’ll hear more stations - a popular misconception! Spending more money will normally get you a receiver designed and manufactured to a much higher standard. In the case of the NRD535, this starts with the fact that it is made by the Japan Radio Company. They’ve been in business far longer than some of the other household names and as most of their other products (HF transceivers, radars, marine electronics) are used professionally, you can be assured of the pedigree.

A more expensive receiver can normally be upgraded to suit the needs of listeners who may have very different needs. For example, the IF filters fitted are excellent giving good selectivity that will probably suit most people but optional SSB and CW filters can be fitted to tailor the receiver to your particular needs. The CW buff may fit the 500 or 300kHz filter and the datacoms purist may want the 1.8 or 1kHz SSB filter. Personally, I’d rather fit the CFL243W Bandwidth Control Unit as it gives me a continuously variable IF bandwidth right down to 500kHz - superb for the wide range of listening that I do, coping with weak SSB signals, both data and voice, suffering badly from strong stations on adjacent channels.

In its basic form, it is an excellent receiver which will more than please most listeners. However, if the type of listening you do changes or perhaps if you become more experienced, the fact that you can upgrade without having to trade in will protect your investment. To help protect your investment, we are now offering a full two-year warranty on JRC receivers purchased from ourselves.

NRD535........................£1549.00

PS We are aware of a quantity of these in circulation with incorrect mains transformers for the UK market, and with Japanese manuals.
Michael York
G1BKI set about
restoring an
Admiralty Pattern
W1516B, Tuner
Amplifier B21B
back to working
order.

The receiver was in
a very poor
condition with
large scratches on
its black metal
case and solder splatter all
over the front metal cover.
The accompanying power
supply was housed in a
grey painted, wooden box
inhabited by a large spider
and woodworm. Wires of
multiple colours and a
combination of electrolyte
from the leaking reservoir
capacitor protruded from
the back in an electrically
unsafe manner. Further
examination and the poor
quality of construction
convinced me that the
power supply was not the
original one for the receiver
and needed replacing.

External Connections
The receiver is quite large,
measuring 570 (w) x 360 (h)
x 410mm (d) with two small
metal boxes, attached to the
left hand side, carrying
twelve antenna sockets. The
right hand side of the
cabinet are six terminal
marked HT 200V, +, -, AC
230V and PHONES - no
provision for a loudspeaker
or an accompanying
transmitter. This at the time
seemed unusual, as my
previous restoration
projects all had additional
transmitter connections for
muting purposes.

Front Panel Removal
The solder-splattered front
panel was for transmit
purposes and designed to
protect the relevant control
knobs. On the reverse side,
to my amazement, was a
full circuit diagram partially
destroyed by rust stains
from the badly flaking
panel. Taking off the panel
by removing two wood
screws and a rusty nail, I
found to my delight a
complement of controls and
identification plates with
markings Admiralty Pattern
W1516B, Tuner Amplifier
B21B and the year of
manufacture, 1944. No
manufacturer's name was
marked, but this was
common with many
Admiralty Receivers.

Controls
All the controls I expected
to find were there, neatly marked with screw-fitted identification plates and perfectly readable. Centre left was a large T-handle that resembled a demolition detonator plunger. This selected one of the four bands: I. 1 - 2MHz, II. 2 - 4.5MHz, III. 4.5 - 10MHz and IV. 10 - 20MHz with overlapping band edges. Directly below this was a large black tuning knob with a small central tuning adjustment. To the right hand side, directly below the Bakelite panel meter, was a red knob that selected the meter to read h.t. volts, audio level and the current of the selected valve. A logging chart for all the valves was attached centrally to the receiver and had the valve currents written down in pencil.

The carrier frequency insertion oscillator can be switched into circuit by a BT (GPO) style toggle switch, but no c.f.i. fine tuning control as would be expected on modern receivers. The left bottom corner was an elongated tin plated metal knob with a white backing plate lettered SEARCH, D/F, FORWARD & REVERSE SENSE. The switch led me to believe I had discovered something special and what all the antenna sockets did became apparent. The receiver was obviously used for direction finding and was never intended to be used with a transmitter.

Stumbling Block

There appeared to be no a.f. volume control, but the last remaining control was marked GAIN. This particular control puzzled me as it was numbered 1 to 10 anticlockwise From where it was situated near the two headphone sockets, it was assumed to be some form of a.f. gain.

Detective Work

Four thumb screws should have released the control panel to allow access to the inside, but this was not so as the panel was jammed solid and to avoid damaging the receiver, forced entry was abandoned. After hearing from work colleagues of anti-personnel devices being fitted to some government equipment I decided on the cautious approach.

At this stage, the receiver was left alone until further information was sought from the previous owner. Unfortunately, although he was extremely co-operative, the only information he
could give me was about the alterations carried out in 1953, when the receiver was modified to include a loudspeaker matching transformer and 'Speaker Off' switch. This was confirmed by the additional components drawn in pencil on the original circuit diagram and dated 1953. To try to obtain more information I wrote and made several phone calls to HMS Mercury and the Naval Historical Branch with no result - until some weeks later a brown A4 size envelope arrived on the doorstep. To my delight it contained an Operating Manual and book of instructions.

### Birth Certificate

According to the Operating Manual the B21 is a Marconi RG42 commercial superheterodyne receiver, designed in 1940 and adapted as a high frequency D/F receiver. The information sent was so detailed that it resembled a birth certificate. To my relief no anti-personnel device was fitted and if I had removed an inspection plate earlier I would have found four additional screws to release the control panel.

### Valve Line Up

The control panel effortlessly slid out of the cabinet and revealed a full compliment of original valves as shown in Table 1.

The receiver was complete in every detail, even the tuning scale pilot lamp part numbers matched the parts list in the manual. The modification for loudspeaker was neatly done and there was no sign of any soldering or modern parts having been fitted. The receiver had, apparently, not been opened since 1953.

### Restoration

With the operating manual and other information I decided to attempt to restore the receiver to working order. The receiver required 230V a.c. and a high tension voltage of 200V d.c. to operate correctly, as I had only the woodworm ridden power supply available, I had no other choice but to repair the unit first. The case was removed and promptly stored in the dustbin.

Inside the power supply was an Octal base rectifier and a 32+32pF reservoir and smoothing capacitor which had leaked all over the interconnecting wires. The wiring was removed and electrolyte washed away with soapy water. When dry, the power supply was rewired with pvc insulated wire and a replacement capacitor was found in my junk box.

However, its date code indicated that it was 20 years old and although it had never been soldered, it would need reforming before it could be safely used. The reforming process was performed on a variable 0 to 40V d.c. supply and the voltage gradually increased over a 60 minute period whilst monitoring the series current on a digital multimeter. When the current remained steady at below 5µA it was assumed to be reformed. It was then simply soldered into the circuit.

For safety reasons extra earth connections were added to all metal parts and all existing earth points were checked to make sure that there was no paint under screw heads. Star washers were then fitted to ensure earth continuity.

Mains voltage creepage distances were checked by measuring between all live connections and associated components and was found to be over 3mm, as required by today's standards. The mains input to the power supply was switched and then fed back out to the receiver 230V a.c. connection.

At this stage, as all the valves to the receiver were original, I decided to try to prolong the valve life by limiting the initial switch-on current by a minor modification. Electromail stock a range of inrush current limiters (Stock Nos: 210-667 to 210-757) that function in a similar manner to a thermistor, but are manufactured from modern metal oxide materials. These devices limit the inrush current by their resistance when cold. When warmed by the current flowing through them they have a low resistance, thus letting full current flow.

### Switch On

With the minor modifications complete it was time to switch on and being cautious I loaded the power supply with a large wire-wound resistor instead of the receiver. After the initial rectifier warm-up period the h.t. rose to 265V d.c. as I was uncertain of the power supply capability I assumed it to be correct under resistor load conditions.

After switching off and allowing for the rectifier to cool, it was time to connect to the receiver and again power-up with the digital meter in series with the h.t. supply.

On initial switch-on the valves glowed dimly for a fraction of a second, proving that the inrush limiters were working correctly, so I monitored the h.t. current until it exceeded 100mA.

Immediately the power supply was switched off...
and all interconnecting wires checked. At this stage I realised there was no antenna or speaker connected. How I expected the receiver to work without these I don’t know! The speaker and antenna were connected and the power-up procedure was repeated. This time the current drawn was approximately 50mA - within the total valve current as written on the logging chart on the front of the receiver, but there was still no audible noise from the loudspeaker.

At this stage I temporarily disconnected the antenna and speaker to see if the current drawn changed. Puzzled by this I operated the speaker switch and watched in amazement as smoke appeared from the switch. The switch itself was in series with the h.t. side of the matching transformer and was leaking to earth. It was easily replaced with a double pole switch with both poles connected in series for additional safety. This time the receiver burst into life at full volume on power-up and a foreign station was heard.

Simple Mistake

The gain control on the front of the receiver, according to the manual, should have varied the a.f. output by changing the negative voltage on the valves, but made no difference. Checking all the relevant voltages showed that there was no negative supply rail and following the supply rail back to the input stage I realised the fault had been made by myself. By replacing the smoothing capacitor with a non-insulated case type I had inadvertently grounded the negative h.t. to chassis, which shorted out the negative rail and removed the bias voltage, as shown in Fig. 3. The capacitor was desoldered, fitted with a heat shrink sleeve and promptly soldered back into circuit.

Final Test

The receiver was now ready to be powered up and all the interconnecting wires and terminals were insulated, because at this stage I had an audience of the whole family.

I switched on and everything burst into life - with controllable audio level. All the wavebands functioned correctly and the ability of the receiver to pick up distant stations showed that I had a very sensitive receiver. The panel meter showed exactly the valve currents as written down on the log and lightly tapping each valve showed no signs of flash over or microphony.

Conclusion

The receiver was in excellent condition internally and not as bad as I first thought. The faults on the receiver were mainly the modifications done in 1953 and the ones I put on myself. Restoring and modifying the B21B receiver has been very rewarding and has taught me a great deal about vintage receivers. It is always pleasant to rescue any well made equipment from possible scrap. The receiver is used regularly and since owning it, the only component failures in twelve months have been pilot lamps.

I would like to thank HMS Mercury for supplying the Operating Manual and helping to identify the B21B receiver.

Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.c.</td>
<td>alternating current</td>
</tr>
<tr>
<td>a.f.</td>
<td>audio frequency</td>
</tr>
<tr>
<td>BT</td>
<td>British Telecom</td>
</tr>
<tr>
<td>c.f.i.</td>
<td>carrier frequency insertion</td>
</tr>
<tr>
<td>c.i.o.</td>
<td>carrier insertion oscillator</td>
</tr>
<tr>
<td>d.c.</td>
<td>direct current</td>
</tr>
<tr>
<td>D/F</td>
<td>direction finding</td>
</tr>
<tr>
<td>GPO</td>
<td>General Post Office</td>
</tr>
<tr>
<td>h.t.</td>
<td>high tension</td>
</tr>
<tr>
<td>i.f.</td>
<td>intermediate frequency</td>
</tr>
<tr>
<td>mA</td>
<td>milliamperes</td>
</tr>
<tr>
<td>MHz</td>
<td>megahertz</td>
</tr>
<tr>
<td>mm</td>
<td>millimetres</td>
</tr>
<tr>
<td>V</td>
<td>volts</td>
</tr>
<tr>
<td>µA</td>
<td>microamperes</td>
</tr>
<tr>
<td>µF</td>
<td>microfarads</td>
</tr>
</tbody>
</table>

Short Wave Magazine, July 1994
0702 206835

Waters & Stanton

NRD-535 Short Wave Receiver £1549 Carriage £6

This receiver offers exceptional performance and is probably the ultimate sub-£2000 receiver. We like it a lot and have no hesitation in recommending it to the serious enthusiast. Features 100kHz - 30MHz, 200 memories, superb dynamic range, Variable Bandwidth 7.4 kHz - 50kHz, notch Filter, RS-232 option, 10 pipe tuning, IF tuning. Noise Blanker, SSB CW AM FM. Squelch control, built-in 230V AC supply. Send for colour brochure.

VHF/UHF Scanning Frequency Guide

* 26MHz - 12GHz
* Full Frequency Info.
* Duplex Info.
* Masses of Data
* 160 A4 pages!

£9.95
Carriage £2

The complete range from stock!

R5 5 band no radius 20 - 10m £99.95
R7 7 band no radius 20 - 10m £399.95
AV-3 3 band vertical 20 - 10m £99.95
AV-5 5 band vertical 80 - 10m 2kw £179.95
APFA 8 band vertical 80 - 10m 2kw £239.95
A3S 3 band 3 element beam 2kw £165.95
A4S 3 band 4 element beam 2kw £495.95
ARX-2 2m Ringo Ranger 6db vertical £49.95

Free Carriage if ordered before 31st July

MFJ-1024 HF Active Aerial 100kHz - 30MHz inc. 50ft coax and external whip. Ideal for small gardens. Requires 12V DC.

£149.95
Carriage Free

ERA Microreader MK-II £189.95

CW - RTTY - Amtor - CW Tutor Carr. £4.50

Ever wondered what all those strange sounds were on the short wave bands? Now you can read them on the built-in LCD panel. 12V operation with 232 output.

Scanning Short Wave Aerial System
* 50' Wire
* Tuner
* Patch lead

Greatly enhances reception between 500kHz and 30MHz. The 956 tuner gives good matching and excellent pre-selectivity. Simply connect between wire aerial supplied and your scanner. Includes 50ft of aerial wire, end insulator and patch lead terminated BNC to match your scanner.

DJ-XID Scanner 200kHz - 1300MHz AM - NFM - WFM £299

"A real gem of a receiver - fits easily into the pocket"

* No gaps
* 100 Memories
* Ni-cads & Charger
* Fully programmable
* Helical when
* LCD readout
* Rotary tuning knob

Offer ends 30th June

Lowel HF-150 Receiver £389

Short Wave 30kHz - 30MHz AM - SSB - CW

"The best of British!"

include AC supply & Internal Battery Hood

Yupiteru

With UK warranty cards

Plus the proper chargers!

MVT-7100 SSB-NFM-WFM-AM 530kHz - 1650MHz £389.95

12 Month Warranty

Factory direct supplies from Japan mean you get the latest model from us with our own service engineers to give you added reassurance. We introduced Yupiteru to the UK as the first appointed distributor. Nothing much has changed apart from our prices

Latest Versions

MVT-7000 NFM-WFM-AM 100kHz - 1300MHz £329.95

12 Month Warranty

A great value receiver that covers the entire spectrum of HF, VHF and UHF. Its reliability and sensitivity are outstanding and as at this special offer price you have an absolute bargain! We don't know of a more sensitive receiver. Full 10 days approval.

Ramsey Kits - USA

SA-7 RF Pre-Amp £19.95 Carriage £1

100kHz - 1.3GHz

Super low noise performance with up to 20dB of gain. Ideal for peaking up those older scanners and short wave receivers. Uses 2 image feedback design for ultra stability. Includes 13 page educational manual.

AA-7 Active Aerial £29.95

1.6MHz - 400MHz Carriage £2

A set-top aerial kit that features dual amplifiers to meet the differing needs of HF & V/UHF. You get a low noise MOSFET and a microwave bipolar device. Includes rf gain control, selector switch, and telescopic antenna. Needs 9V battery. Matching case CAA £14.95

AT-2000 New Model with "Q" switch

£99.95
Carriage £4.50

The ultimate set for 500kHz - 30MHz. With "Q" switch, * Long Wire * Balanced Feed * Coax feed

MEJ-16101 Random Wire Tuner "An amazing little box that matches any length of wire, perfectly to your receiver or transceiver. 1.6 - 300MHz. Pen War, QSO's are regularly one PS running QRP or 100 Wats!"

£49.95
Carriage £4.50

MEJ-959B £109.95 Carriage £4.50

HF Receiver Pre-selector

Wideband Scanning Aerials - The Best!

D-707 .. £129.95
D-505 .. £99.95

Great Value

HX-7000 .. £20.95
HX-9000 .. £32.95

Wideband Scanning Aerials - The Best!

£293.95
Carriage £0.95

Wideband Scanning Aerials - The Best!

£329.95
Carriage £0.95

Wideband Scanning Aerials - The Best!

£399.95
Carriage £0.95

Wideband Scanning Aerials - The Best!

£499.95
Carriage £0.95

Wideband Scanning Aerials - The Best!

£699.95
Carriage £0.95

Wideband Scanning Aerials - The Best!

£999.95
Carriage £0.95

Wideband Scanning Aerials - The Best!
21st Birthday 1973 - 1994

DT-1 Dual - Time Quartz Station Clock £24.95 Carr. £2.50

This smart dual-time clock gives you local and DX time. Measures 10" x 8" with brushed alloy "world-map" panel mounted in wood hanging frame. Requires 2 AA batteries.

MFJ Short Wave Regenerative Receiver Kit
AM/SSB/CW/RTTY Super Sensitive
As reviewed in QST. Amazing value and sensitivity. Just 10ft of wire will bring in the DX and you can build it yourself. £71.95 Carr. £4.50

Ramsey AR-1 Airband Receiver Kit £29.95 Carr. £2
As reviewed in Maplin Magazine. You get everything you need to build this receiver. Features squelch and loudspeaker output plus AGC and superhet circuit. All you need to add is a PP3 battery. Covers 108 - 136MHz AM

Yupiteru VT-125 VHF Airband Scanner £189.95 Carr. £4.50
Probably the best dedicated scanner there is for VHF airband monitoring. Covers 108-142MHz AM with 30 memories and steps of 25, 50, 100, kHz. Ultra sensitive, we thoroughly recommend this one!

AOR-8000 Scanner 500kHz - 1.9GHz £Phone
We shall be stockisting this scanner as soon as it arrives in UK. Like all scanners, we test them before we take them into stock. If we don't stock a model it could be because we don't like it! Give us a ring and discuss your needs.

Sangean ATS-803A Short Wave Receiver £128.95 Carr. £4.50
150kHz - 30MHz SSB, CW, AM. Runs from 6 x AA cells and gives digital frequency display to 1kHz. 10 memories, built-in clock and alarm make this ideal for those who want to keep in touch with the world

New! 24 Hour Clock £24.95 Carr. £2.00
This new clock from MFJ gives you a true 24-hour readout with sweep second hand. Powered from an internal AA cell (not supplied) and measuring 26cm, it will grace the wall of any radio shack. Order: MFJ-105B

W9GR Digital Audio Filter £299.95 Carr. £4.50
Reduces: * Static * Power Line Noise * Ignition Pulses * 'TV Time Base' * Computer Hash The top seller in USA. Need we say more? There's a full review in our catalogue.

AOR ABF-125 Airband Receiver Filter Dramatically cleans up spurious responses in any scanning receiver when operated between 118 - 137MHz £24.50 Carr. £2

Magnetic Longwire Balun MLB £39.95 Carr. £2
10kHz - 30MHz, lets you feed your long wire receiving antenna with coax cable. Reduces noise and improves matching automatically.

Yaesu FRG-100 Receiver On demonstration. Call in and hear it on a decent aerial. Let us give you a good PX on your old receiver or a cash deal. Phone today.

Packet on a Budget! £59.95! Carr. £2.00
Free Software!
P-IBM Kit
This Ramsey kit can be put together in an evening. Self powered from IBM computer RS-232 port. Just connect to scanner or transceiver audio output and watch the data appear on the screen. Also can be used to transmit Packet.

21st Birthday Party
Saturday 23rd July 9-6pm
Free Food & Drink

Sony ICF-SW55 Great Value £279 Carr. £239
This top range portable gives you a complete station in a single package. On-board computer lets you store frequency and station name. You direct dial your frequency for high quality SSB or AM reception. Includes mains AC supply etc.

SONY ICF-SW55

Magnetic Longwire Balun MLB £39.95 Carr. £2
10kHz - 30MHz, lets you feed your long wire receiving antenna with coax cable. Reduces noise and improves matching automatically.

Yaesu FRG-100 Receiver On demonstration. Call in and hear it on a decent aerial. Let us give you a good PX on your old receiver or a cash deal. Phone today.

Packet on a Budget! £59.95! Carr. £2.00
Free Software!
P-IBM Kit
This Ramsey kit can be put together in an evening. Self powered from IBM computer RS-232 port. Just connect to scanner or transceiver audio output and watch the data appear on the screen. Also can be used to transmit Packet.

21st Birthday Party
Saturday 23rd July 9-6pm

Free Food & Drink

Sangean ATS-803A Short Wave Receiver £128.95 Carr. £4.50
150kHz - 30MHz SSB, CW, AM. Runs from 6 x AA cells and gives digital frequency display to 1kHz. 10 memories, built-in clock and alarm make this ideal for those who want to keep in touch with the world

New! 24 Hour Clock £24.95 Carr. £2.00
This new clock from MFJ gives you a true 24-hour readout with sweep second hand. Powered from an internal AA cell (not supplied) and measuring 26cm, it will grace the wall of any radio shack. Order: MFJ-105B

W9GR Digital Audio Filter £299.95 Carr. £4.50
Reduces: * Static * Power Line Noise * Ignition Pulses * 'TV Time Base' * Computer Hash The top seller in USA. Need we say more? There's a full review in our catalogue.

AOR ABF-125 Airband Receiver Filter Dramatically cleans up spurious responses in any scanning receiver when operated between 118 - 137MHz £24.50 Carr. £2

Magnetic Longwire Balun MLB £39.95 Carr. £2
10kHz - 30MHz, lets you feed your long wire receiving antenna with coax cable. Reduces noise and improves matching automatically.

Yaesu FRG-100 Receiver On demonstration. Call in and hear it on a decent aerial. Let us give you a good PX on your old receiver or a cash deal. Phone today.

Packet on a Budget! £59.95! Carr. £2.00
Free Software!
P-IBM Kit
This Ramsey kit can be put together in an evening. Self powered from IBM computer RS-232 port. Just connect to scanner or transceiver audio output and watch the data appear on the screen. Also can be used to transmit Packet.

On-Glass Scanning Aerials £30 - 1200MHz Black Finish
* 22" whip * 17ft Coax * BNC plug * Screw-on whip * High performance

Just the job for scanner owners. Gives superb reception and fits the modern ear in seconds.

Shop and Mail Order: 22 Main Road, Hockley, Essex. SS5 4QS. Tel: (0702) 206835/204965 Fax: 205843
Branch Shop: 12, North Street, Hornchurch, Essex. Tel: (0708) 44765

VISA MAIL ORDER To Hockley - 24 Hour Answerphone and Fax. Open 6 Days 9am - 5.30pm ACCESS
Learning a Language by
Short Wave Listening

You've heard all the arguments, I'm sure. All the advantages of being able to speak another language. Have you perhaps been unwilling, or maybe unable, to join an evening class? Not to worry, Richard Howard offers you some useful advice!

Did you realise that as a short wave listener you have every opportunity to bring the classroom into your shack? Learning language by radio is certainly nothing new. BBC English by Radio is proof of this. Other broadcasters are engaged in similar ventures. While listening on the short waves you, too, must have heard the German language courses aired by Deutsche Welle. The Spanish lessons broadcast from Madrid. The Chinese from Beijing. My Czech out Czech transmitted by Radio Prague. But have you ever considered making up your own course? Beginners, intermediate or advanced students can all get assistance in their attempts to learn foreign languages with a little imagination and a fair helping of patience. I used short wave radio to learn Czech, to gain confidence in French and I'm using it now to keep up my Chinese.

Just pause a minute to consider what you hear during a thirty-minute transmission in English on the broadcast bands. Call-sign, identification, programme reviews, news, commentaries, features, schedule and sign-off. The uniformity is not peculiar to English-language programming. It is repeated in just about every language conceivable. And this can be exploited to the full to make up your own language course.

Intonation Patterns

You'll need a textbook on grammar of some sort and sooner or later you'll also need a dictionary. Before you've read through the inevitable introductory notes on pronunciation you should begin your listening. Even listening to programmes you can't understand is generally considered beneficial. You start to notice the intonation patterns of the new language, the way the voice rises and falls in individual sentences. It won't be long before you begin to pick out individual words and phrases that you've met in your textbook. For learners at all levels your radio can be constantly at your beck and call, giving you as much practice as you can take! The advanced student of Russian, French, Spanish and Arabic could feasibly spend twenty-four hours a day at the receiver. Other languages demand more selective schedules. And the newcomer to any language would soon get tired of 'total immersion'.

For Beginners

If you're a beginner or near-beginner this is what you should do. Study the table of contents and the index in your textbook very carefully. Find the list of numerals. You will need to be able to listen out for these. This can be your first project. Remember that the short wave spectrum is divided nicely into segments or metre-bands. Your most important numbers will be the 'names' of these, 11, 13, 16, 19, 21, 25, 31, 41, 49 and 75. Next, you'll need to make out the times of the transmissions. Usually beginning on the hour or the half-hour. Then add a couple of greetings - Good morning, good day, good afternoon, good evening, good-bye and good night. Once you have jotted these down you can put your ears to the test!

Limitations

Of course, there are limitations to this method. Here in the UK it would be very unrealistic, for example, to expect to be able to learn the Pidgin English spoken in Papua New Guinea relying on short wave broadcasts. I have been disappointed in my attempts to hear anything in Afrikaans - apart from some rare programming from Radio Moscow. But for most, dare I say, major languages, it should be no problem to use your receiver as a teaching aid. Complete listings of times and frequencies of virtually all broadcasts in all languages are to be found in the World Radio and TV Handbook. You should not restrict yourself to seeking transmissions from the country to where they actually speak your new language. Don't overlook the broadcasts targeted to the country from which you originated 'greats'. The BBC, Voice of America, Radio Moscow, Deutsche Welle, Radio Free Europe, Radio Liberty and Radio Vatican. All these broadcast in dozens of languages.

When I started to learn Czech I tuned to Deutschlandfunk, BBC, VOA, Radio Canada International and Radio Vatican. I was particularly glad to take advantage of the BBC's mini-English lessons with explanations in Czech and with short sentences to be translated by my Czech counterparts into English! I made full use of these for my listening comprehension exercises!

Headway

After making some new headway in my studies using the textbook I armed myself with a medium-sized dictionary. I had already started listening to news bulletins. At first I could not tell where one word ended and the next began. After a relatively short time, however, I recognised words meaning 'American', 'Soviet', 'British'. I searched in the dictionary for equivalents of 'United Nations', 'NATO', 'Security Council', 'Communist Party', 'International' and for the Czech names of some countries and their capitals. I would tune into the BBC or to the VOA in English to see what news was carried in their bulletins. Then I tuned to the Czech service hoping to hear the same items - often thwarted in my attempts to use the broadcasts from Washington because the bulletin was read in Slovak!

Pop Music

Another source of material came in the features playing pop music. More often than not, the title of a British or American song would be translated into Czech and very often a brief summary of the text was given, also very conveniently translated.

While on the lookout for DX we s.w.l.s have set our ears some mean tasks. In comparison, learning a language via the ionosphere is child's play! I have learned some Chinese by the method I have outlined. And now, while conditions permit, I may even take up Indonesian, courtesy of the Breakfast Show type programmes audible on 11.695MHz after 2100UTC - all the way from Melbourne!
**AOR AR 8000**

**A Brilliant New Handheld Scanner**
- 500kHz–1900MHz
- All Mode inc. true s.s.b.
- 1000 Memory Channels
- s.s.b. filter
- Alpha–numeric display
- Computer control facility
- Bandscope facility

£449 inc. FREE DELIVERY

**AOR AR3030**

**High Quality HF Receiver**
- 30kHz–30MHz
- Collins mechanical filters
- Optional VHF converters
- Adjustable b.f.o.
- Mains power unit included

£699

---

**HF150**

The world’s most popular shortwave receiver. The HF150 is ideal for the beginner or expert alike.
- Smooth 8Hz tuning steps
- Synchronous detector fitted as standard
- Built–in whip amplifier
- Compact size
- Excellent audio quality

**EUROPA**

A "turbocharged '225"! The HF225 Europa is probably the best receiver to use if you are a dedicated broadcast band DXer.
- 30kHz-30MHz
- Collins mechanical filters
- Optional VHF converters
- Adjustable b.f.o.
- Mains power unit included

£699

---

**Yupiteru MVT-7100**

- s.s.b., n.f.m., w.f.m., a.m.
- 530kHz–1650MHz
- 12 Month Warranty

£369.99 Carriage £5.00

---

Optional enhancements:
- AK150 Whip, NiCads & carry straps
- KPAD1 Keypad controller
- IF150 Computer interface
- RK150 NEW! Rack’n’stack storage system
- MB150 Mobile/marine mounting bracket

---

Authorised Agents for Kenwood, Icom, Yaesu & Alinco. Full Service Facilities Available

Spend up to £1,200 Instantly with a Photo Acoustics Ltd. Credit Charge Card

Part Exchange Welcome. Ask for Kerry G6IZF or Andy G4YOW

Retail Showroom Open Monday - Friday 9.30 - 5.30, Saturday 9.30 - 4.30

Goods normally despatched within 24 hours. Please allow 7 banking days for cheque clearance. Prices correct at time of going to press - E&OE

---

Short Wave Magazine, July 1994
RC818 (SSP £219.99)
Multi-band Digital Preset Stereo World Radio with Cassette Recorder
This flagship model demonstrates the leading edge of Roberts technology. With a clear LCD display of all functions, it has 5 tuning methods, 45 preset stations, dual-time display, standby and clock/alarm plus a cassette section for timed recordings from the radio. Provision is made for single sideband and CW transmissions as well as stereo FM on headphones and stereo record/playback of cassettes. Comes complete with a mains adaptor.

R817 (SSP £189.99)
Multi-band Digital Preset Stereo World Radio
Offers all the outstanding features of the RC818, minus the cassette section.

R808 (SSP £119.99)
Multi-band Digital Preset Stereo World Radio
The R808 has all the advanced features of the R817 with the exception of BFO (Beat Frequency Oscillator) but in a more compact case specially designed for the regular traveller.

R621 (SSP £69.99)
10-Band Compact Stereo World Radio (FM/MW/SW1-8)
All the functions of a much larger model are combined in this compact radio with clock/alarm. Easy SW bandspread tuning with LCD tuning/stereo indicator and FM stereo on ear or headphones. The clock/alarm shows dual time on a backlit display with up to 60 min sleep timer and snooze with wake to radio or buzzer. Comes complete with soft carrying pouch and stereo earpieces.

For your nearest stockist contact:
ROBERTS RADIO CO. LTD
127 Molesey Avenue, West Molesey, Surrey KT8 2RL
Tel: 081 979 7474 Fax: 081 979 9995

Short Wave Magazine, July 1994
Mike Richards takes a look at the workings of the latest technology to hit the consumer market with a series of d.s.p. reviews and tutorials. This month he takes a look at the NTR-1 from JPS Communications.

Digital Signal Processing (d.s.p.) is certainly not new, but it is causing quite a stir at the moment. At the top end of the d.s.p. market is the impressive new HF-1000 receiver currently being imported by Lowe Electronics. But perhaps more significant is the range of accessories that use this technology. You may well have noticed the new noise reduction units being advertised in SWM and wondered what's so special about them. The common factor in all these units is the use of d.s.p. technology. This enables some remarkable performance achievements to be obtained with minimum effort from the operator. This latter point is where d.s.p. really scores, as the processor effectively frees the operator from having to make fiddly manual adjustments to the receiver.

To help give you an insight into the potential of d.s.p., I'll try and combine a technical description with a review of the NTR-1 noise and tone reduction unit from JPS Communications.

The Conversion

In order to link this new digital technology with our analogue world a conversion stage is required. If we take the NTR-1 noise reduction unit as an example. This takes an audio input from the receiver and produces an audio output for connection to a speaker. In order to do this whilst using digital processing, the audio signal has to first be converted into a digital format and then back to analogue again.

Before I move on, I ought to explain what I mean by a digital signal. Quite simply, this is a series of numbers that represent the original analogue signal. Like most things in life, compromises have to be made and here it is with the accuracy with which the digital signal tracks its analogue partner. The key points are the digit length and the sample rate, but I'll cover these in more detail later.

The conversion is performed by a device that is logically called an analogue to digital converter or A-D converter. The reverse process is carried out by a digital to analogue or D-A converter. In many modern d.s.p. units these two functions are combined into one.
integrated circuit that then becomes known as an Analogue Interface Converter (a.i.c.). Let's now take a closer look at just how this conversion system works.

**Sampling**

At the heart of the conversion process is a technique called sampling. This is where the A-D converter freezes the incoming signal for an instant and takes a measurement of the voltage - much as you would with a voltmeter. It's this measured voltage that forms the digital equivalent of the analogue signal. This is fine, but you're probably wondering how an occasional voltage measurement can be used to digitally represent your favourite radio station. Well the secret's in the frequency of the voltage measurements. Obviously the more measurements that are taken, the more accurate will be the digital representation of the signal.

As you would expect, a lot of scientific work has been directed to finding the optimum sampling rate. The optimum being the lowest rate that will give a realistic representation of the original signal. However, the generally accepted rule is that the sampling rate must be at least twice the highest frequency of the signal you want to measure or process.

If we wanted to digitise a signal the result is greater the number of digits, the higher the accuracy. The same is true of our analogue conversion process. The only difference is that binary numbers are used instead of the more familiar decimal system. The accuracy of the A-D or D-A conversion is still dependant on the number of digits, but in this case it's Binary digits, or bits. At the bottom end of the range are simple 8-bit converters but, more commonly, 14-bit converters are used for d.s.p. devices like the JPS NTR-1.

To illustrate the difference we need to think about the signal is measured. When the A-D converter takes its sample of the signal, the result is given a value within its measurement range. In the case of an 8-bit converter this has to be one of the 256 available levels. However, the 14-bit unit has 16384 levels so it can provide a much more truthful representation of the original signal.

Once the signal has been successfully digitised it is passed to the main d.s.p. as a stream of serial data. This means that a single wire connection is used with each of the fourteen bits sent one after another. From all the information we've covered so far we can also work out the speed of this data stream. The bit rate becomes the sample rate of 8800Hz multiplied by the number of bits (14) = 95200 bits per second.

Once the stream of numbers representing our signal has been sent to the d.s.p. device it can perform all manner of mathematical manipulations to alter the original signal. When the d.s.p. has finished a serial data stream is sent back out to the a.i.c. for conversion back to an analogue signal.

A block diagram of a typical d.s.p. system is shown in Fig. 1 and in the next session I'll delve a little deeper into the workings of the processor itself. I think that's enough technicalities for this session so let's now turn our attention to the more practical features of the JPS NTR-1.

**Noise Reduction with the NTR-1**

As you can see from the photograph, the NTR-1 has a very simple layout with push-button selection of the appropriate mode. As the NTR-1 operates on the audio output of your receiver you simply plug it into the external speaker socket and connect a separate speaker to the NTR-1's output. If you prefer headphone operation, there is a standard 6.3mm jack on the front panel. In addition to automatic speaker cut-off this jack was wired to handle both mono and stereo headphones. There was no internal power unit so an external 11 to 16V d.c. supply was required.

With such simple interconnections it's not surprising to find that there was virtually no setting-up required. All I did was set the receiver's volume control for a comfortable level. The only disadvantage with this...
system was that there was no line output facility for the connection of a tape recorder or utility decoder. However, Lowe's are able to offer a simple modification to overcome this, if specified when ordering a unit from Lowe Electronics.

In use there are three basic facilities offered by the NTR-1 - Tone removal, noise reduction and bandwidth control. Each of these modes takes full advantage of d.s.p. The notch filter for tone removal is unlike any other analogue systems as it completely automatically tracks and removes multiple tones within the passband. Not only is the depth of the notch excellent at around 50dB for 1 to 4 tones, but it responds in less than 5ms. The end result is completely trouble free removal of interfering tones. If, for example, a RTTY signal was to appear on a channel you were using, all you would notice is a few modest clicks in the speakers - the NTR-1 would automatically cut-out the RTTY tones.

The noise reduction mode was equally ingenious and used a technique known as dynamic peaking. With this system the d.s.p. analyses the incoming data for coherent signals such as speech components or RTTY/c.w. tones. It then forms tracking band pass filters around each one. In this way it extracts all the wanted information and leaves behind all the random clicks, bangs and hisses! Although there is no front panel adjustment of the noise reduction, there was an internal jumper setting. This could be used to optimise the NTR-1 for your listening preferences. The three options were a.m./f.m. music, a.m./f.m. voice and s.s.b./utilities.

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Wide</th>
<th>Narrow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Input:</td>
<td>22Ω or 47kΩ impedance</td>
<td></td>
</tr>
<tr>
<td>Audio Bandwidth:</td>
<td>160Hz - 6.6kHz -6dB</td>
<td>90Hz - 3.4kHz -6dB</td>
</tr>
<tr>
<td>Input Level:</td>
<td>100mV to 2V r.m.s.</td>
<td></td>
</tr>
<tr>
<td>Notch Response Time:</td>
<td>&lt;1ms</td>
<td>&lt;5ms</td>
</tr>
<tr>
<td>Notch Rejection:</td>
<td>6 to 12dB</td>
<td>10 to 20dB</td>
</tr>
<tr>
<td>Noise Reduction:</td>
<td>&lt;0.5% for 0.5W at 1kHz</td>
<td></td>
</tr>
<tr>
<td>Speaker Output:</td>
<td>2W into 8Ω 10% distortion</td>
<td></td>
</tr>
<tr>
<td>Input Power:</td>
<td>11 - 16V d.c. at 800mA</td>
<td></td>
</tr>
<tr>
<td>Dimensions:</td>
<td>43 (h) x 166 (w) x 128mm (d)</td>
<td></td>
</tr>
<tr>
<td>Weight:</td>
<td>910g</td>
<td></td>
</tr>
</tbody>
</table>

The degree of noise reduction available depended very much on the prevailing conditions but was typically 6 to 12dB using the wide setting and 10 to 20dB when narrow was selected. From a practical point of view, this gave a very worthwhile improvement.

The final push button provided audio bandwidth selection of wide or narrow. The actual bandwidths were very well chosen with the WIDE setting providing 160 to 6600Hz - just right for short wave broadcast reception. The NARROW setting, on the other hand, was set for utility and s.s.b. reception covering 90 to 3400Hz. One of the great advantages of d.s.p. bandpass filters is that they have excellent out-of-band rejection.

Each of the three facilities can be used in combination to provide a very versatile and dynamic noise reduction system.

Summary

The NTR-1 from JPS Communications certainly breaks new ground in d.s.p. for the man in the street and the simple layout belies its powerful features. One of the most important of which is its ability to automatically adapt to a wide variety of signal types. During my tests it was equally at home with both utility and broadcast signals. For more information contact Lowe Electronics Ltd. at Chesterfield Road, Matlock, Derbyshire DE4 5LE. Tel: (0629) 580800. The NTR-1 costs £199.00 inc VAT. Lowe Electronics can supply their own 12V 1A regulated supply (PSU JPS), which is specially designed to run the NTR-1, for £29.95 inc VAT.
AOR always lead with technology in scanner design and every time details are 'leaked' to the press, the phone doesn't stop ringing for months. A detailed specification sheet is now available for this truly amazing item and is available to those of you who call in or phone.

**MrP £449.00**

**AR 3000A**

Still the best selling base scanner/receiver and at a price that's unbeatable. If you want ZERO FINANCE, we can arrange that too!

**MrP £499.00**

**Kenwood R5000**

Built like a rock but looks and feels decidedly more beautiful. The R5000 is offered this month with an easy payment plan that I think you will find attractive. If we get your order by the end of June, claim your additional £25 worth of MARTIN LYNCH GIFT VOUCHERS - FREE!!

Deposit only £99 with 12 payments of £75 (total £999), INTEREST FREE FINANCE.

**LowE HF150**

Since Lowe Production introduced their receiver range, I've been proud to sell literally hundreds of pieces and say 'they're British'.

If you used to use an R1 155, AR88D (or LF), HRO or B40 and want to get back into listening, then wait no longer. The HF150 is not just an FM broadcast band, but also a built-in telespic antenna. All for £499 Have they got the price wrong? Buy one before the price goes up!!

**MrP £399**

**LowE HF225**

Now in its third year, the HF225 is a milestone to which others are compared. It can take an optional FM board, (the HF150 cannot), covers 30kHz to 30MHz and has 30 memories. Available from stock. £479, also available on interest free finance.

---

**Scanners & Receivers**

**LIMITED SUPPLY NOW IN STOCK**

**AOR 8000UK**

AOR always lead with technology in scanner design and every time details are 'leaked' to the press, the phone doesn't stop ringing for months. A detailed specification sheet is now available for this truly amazing item and is available to those of you who call in or phone.

**MrP £449.00**

**MVT 7100**

The new AR800 has arrived but sales of the MVT7 100 will continue as strong as ever - especially as the price is slashed to only £389! All mode, no gaps and it's available from stock.

**AR 1500EX**

I remember when you had to wait almost six months to get your hands on this one - no more, they're in stock and excellent value.

**VT125**

The nononsense, simple to use Air Band handle. It only retails at £189.00 and it comes complete. Give yourself a birthday present. Order one today and I'll pay the delivery charge. (U.K. only mind).

**VT225**

The same as it's little brother, but this ones matured to enable you to listen to Military Air Traffic as well a civil. Just a touch more green backs and I'm still throwing in delivery charge. (U.K. only mind).

---

**ARR3030**

At last!, I've got stock. AOR3030 with a distinctive AOR style, the new 3030 stands out amongst the crowd. Not because of its looks, but the feel and performance. The maximum selling price is £699. Phone for yours.

**FRG100**

Counting sales of receivers last month, this one scored very high up on the list. Now fitted with better AM filters giving extra selectivity. Deposits from as little as £50.

**DRAKE R8E**

The only receiver with all the major options fitted as standard. Compare the prices of accessories for the JRC NR053S and you can see why suppliers have to discount the receiver by £300. For a maximum selling price of under £1000, you get the following:

* All filters fitted. S1, S2, S3, 4kHz * Synchronous detector for AM fitted * Notch and Pass band fitted * 10kHz readout * Keypad operation * 100 memories * much more!

---

**NEW RANGE OF SCANNERS FROM TRIDENT, THREE MODELS TO CHOOSE FROM. PHONE FOR DETAILS**

---

**Martin Lynch**

**THE AMATEUR RADIO EXCHANGE CENTRE**

Tel: 081-566 1120 Fax: 081-566 1207

---

**For The Best... Wouldn't you rather**

---

**NOW THE SUMMER MONTHS ARE HERE, WHY NOT SPEND A DAY OUT VISITING THE NORTHFIELDS AMATEUR RADIO EXCHANGE CENTRE.**

I've pitched my new 'Superstore' in a convenient place surrounded by the M25, M40 and M1 Line), is just up the road linking you to the rest of the country's network.

As a reminder, Northfields now sports a first class computer store, an excellent 'Ex-PM', hasn't visited us before, you will be surprised at the friendly welcome and the wealth of items are usually in stock.

My prices and service offered to my customers have never been so good. The huge quantities my suppliers and they're always passed on to you. Choose what you want, give my sales staff a call, £200 are available on finance, (either very low or even interest free) and subject to approval. **£200 are available on finance, (either very low or even interest free) and subject to approval.**
The "Eavesdropper" From The USA. The ultimate in SHORT WAVE LISTENER ANTENNAS

Direct from the USA, the EAVESDROPPER is a fully developed multi-band receiving antenna for the dedicated listener including 1000 of 72 omni-directional bands plus 4500 point nylon support rope. Automatic bandswitching by trap circuits. All connections soldered & enclosed in dustproof & weather resistant trap covers. Heavy 145WG (hard drawn, standard wire) flared terminal design. Only 42ft long. Full 12 month warranty & built like no other wire antenna you've ever seen! £199.95

The U.K. SCANNING DIRECTORY
Compiled by Interproducts and now in its 3rd edition, this is the definitive "bible" for the intrepid scanner enthusiast. Thousands of frequencies listed between 25 to 130MHz. Order one today, before it's taken off sale again! £19.95

MyDEL TPA Tuneable PreAmp Antenna
Housed in one neat unit, the MyDEL TPA is the latest innovation from the USA. Ever wished you could increase the input signal just a little bit when the going gets tough? MyDEL thought so, and for the first time, the TPA offers an effective ATU for short random wires together with a preamp, and as an alternative a telescopic whip for the occasional indoor short wave listening. Powered by one 9V PP3 type battery, it could be the answer to your tuner problems! Ideal for listeners who only have limited space for antenna systems. £69.95 incl. VAT, (9V battery not supplied)

MyDEL ATU-1
A more conventional approach to resonating that length of wire or centre fed dipole for an antenna system is the NEW MyDEL ATU-1. Built in the U.K. to our own specification, the ATU-1 is housed in a strong metal case and employs two good quality tuning capacitors with a tapped coil in the standard "F" configuration. Almost identical to a similar Japanese model costing nearly 40% more, isn't it time you bought British? £59.95 incl. VAT and patch lead to your radio.

The new MyDEL SCAN-2513 Wide band scanner antenna
Ideal as a direct replacement to the telescopic antenna offered with the Yupiteru models, the NEW MyDEL SCAN-2513 fibre antenna covers 25 - 1300MHz. It's a far more effective ATU for short random wires together with a preamp, and as an alternative a telescopic whip for the occasional indoor short wave listening. Powered by one 9V PP3 type battery, it could be the answer to your tuner problems! Ideal for listeners who only have limited space for antenna systems. £69.95 incl. VAT, (9V battery not supplied)

Without a Lowe shop in London, I've agreed to stock as much of their excellent range as possible:

ModeMaster, Data decoder software
$139.95

Magnetic Balun
$199.95

WireMatch antenna system
$699

HF-150
$389

HF-225
$479

HF-225 Europa
$699

A 10" VGA HIGH RES COLOUR Monitor
$529.95 incl. VAT, (PSU extra at $19.95).

M-900
A must for the HF1000 receiver, all their DSP Audio Filters
$399.95 incl. VAT, PSU extra at $19.95.

M-1200
A 10" VGA HIGH RES COLOUR Monitor
$529.95 incl. VAT, (PSU extra at $19.95).

M-400
A 10" VGA HIGH RES COLOUR Monitor
$399.95 incl. VAT, (PSU extra at $19.95).

M-8000
The ultimate in all mode code converters, mainly used by commercial organisations throughout the world. UNIVERSAL have managed to engineer the package at a price within reach of the true hobbyist. A true colour VGA output is given to enhance the incredible definition obtainable in all modes by this advanced piece of hardware. Its ease to use makes you wonder how you ever managed without one. Add to this a few hours will bring decoded data to your own screen from around the world. Open your eyes to a new world just waiting for you to explore. Put your MID535 or RS500 or Drake R8E to real use today! £1299.95 incl. VAT.

NEW IMPROVED OPERATING FIRMWARE AND MORE MODES

On All Products.

For a complete and up to date brochure contact...

RSGB 18 Indoor Oval Antenna

RSGB

Super Low Finance Available

On All Products
**THE REALISTIC SPECIALIST**

**PRO 2006**

25-520 & 760-1300MHz AM/FM

- **PRO 39**: 66-88 108-174 380-512 806-960 200ch H/H £?
- **PRO 40**: 66-88 108-174 220-512 806-999 AM/FM 200ch £?
- **PRO 41**: 66-88 108-174 406-512 806-956 200ch H/H £?
- **PRO 50**: 66-88 108-174 380-512 806-960 200ch BASE £?
- **PRO 2032**: 66-88 108-174 380-512 806-960 200ch BASE £?

**MKII (V4.2) MICROREADER** £199.50

**SYNOPTIC DECODER** £19.50

- **MKII Microreader** £199.50
- **Synoptic Decoder** £99.50
- **Computer Terminal Program** £10.00
- **Upgrade old MkII Microreader** £20.00

P.S. What's your next move?

**GCCCZ** All scanners include FREE p&p in the U.K. 12 months warranty

**LINK ELECTRONICS**

216 Lincoln Road, Peterborough PE1 2NE Tel: (0733) 345731

Send large S.A.E. for details.
Receiver in a PC?

ComFocus of San Diego, have just launched an exciting new product that is a marriage of radio and computer technology.

The new product is called SoftWave and consists of an external receiver box with no controls at all, a DSP card and Software. Power is supplied by the PC, which totally controls all the receiver functions.

The software is a Windows application which enables a graphical display of the control panel, frequency display, pass band characteristics, and spectrum analyser to name a few.

Frequency coverage is continuous between 0.5 to 30MHz and 108 to 174MHz. DSP is integrated at the second i.f. at 450kHz, all controls are digitally implemented.

Resolution is 1Hz, and there is an accurate display of signal strength in dBm.

Seven digital demodulators including a.m., synchronous a.m., f.m.-XP (cross product), f.m.-p.II (phase locked loop), c.w., c.w.n.b. (narrow band), c.w.t.t (tone tag).

Standard digital i.f. filter bandwidth from 1kHz to 49Hz. Tunable notch filter with 60dB attenuation. Digital audio controls including volume and low filters.

Frequency selection can be accomplished by typing the value, clicking the slide bar, choosing from the database, or clicking directly on a signal shown on the spectrum analyser display.

Lowe Electronics have been appointed as the sole UK distributor for this fascinating product.

We will be featuring a review just as soon as we can get our hands on a unit!

For more information, contact: Lowe Electronics Ltd. Chesterfield Road, Matlock, Derbyshire, Tel: (0629) 580800.

National Channel Transmitter News

Radio 1 FM

April 14 Chesterfield, Derbyshire using a frequency of 98.6MHz sited 5km north of the town centre providing good stereo reception to over 10000 people in and around Chesterfield.

April 14 Cornholme West Yorkshire located 1km north of Lydgate using a frequency of 99.3MHz serving over 9000 people in the Calderdale district of West Yorkshire.

April 19 Walsden South, West Yorkshire sited 8km north east of Rochdale transmitting on a frequency of 98.0MHz, giving good stereo reception to more than 3000 people in the Walsden and the surrounding rural area.

April 19 Todmorden, West Yorkshire using a frequency of 98.5MHz this transmitter is located at a site 2km east of Todmorden, providing good stereo reception to over 6000 people in Todmorden and the surrounding area. This site uses vertical polarisation, not the usual horizontal as with most other f.m. stations.

May 3 Northampton, sited 3km north of Northampton using a frequency of 98.5MHz. It offers good stereo reception to over 25000 people in the town and the surrounding area. All these transmitters carry Radio 2, 3, and BBC local stations.

Radio 1 & 4 Stereo for Ayr

May 3 Lethanhill, located 15km south east of Ayr, serving 18000 people in the Doon valley including the residents of Dalmellington, Waterside and Patna. Frequencies Radio 1: 97.9MHz, Radio 4: 94.9MHz. Lethanhill also broadcasts Radio 2 & 3, and BBC Radio Scotland on f.m.

Television Relay Stations:

May 10 Broadbottom, Greater Manchester provided jointly by the BBC and the Independent Television Commission (ITC). Located 16km east south east of Manchester city centre, it brings good television and Teletext reception to approximately 600 people in Broadbottom.

Station Details

Channels: BBC1 North West 39
BBC2 North West 45
ITV Granada 42
Channel 4 49
Antenna Group: B
Polarisation: Vertical
Effective Radiated Power 2.5W (to the NE only)

May 14 Eastbourne Old Town, East Sussex provided jointly by the BBC and the Independent Television Commission (ITC). Located 1.8km north west of the centre of Eastbourne, it brings good television and Teletext reception to over 400 people in the old Town Centre along Parsonage Road, High Street, Lawn Avenue, Star Road, Most Croft Road and Ocklingy Road.

Station Details

Channels: BBC1 South 40
BBC2 South 46
ITV Meridian 43
Channel 4 58
Antenna Group: E or W
Polarisation: Vertical
Effective Radiated Power 4W (to the S & W only)

Both the new Broadbottom relay and the Eastbourne Old Town relays have been built jointly by the BBC and NTL (acting on behalf of the ITC) and information on them is available from: NTL, Crawley Court, Winchester SO21 2QA. Tel: (0962) 823434. BBC Engineering Information, White City, 201 Wood Lane, London W12 7TS. Tel: 081-752 5040.
At last something to consider against the MVT-7100. Basic Features: 100kHz - 2060MHz (2GHz!!) continuous coverage, 1000 channels, 10 search banks, increment steps 1kHz - 999kHz, modes AM/NFM/WFM & SSB with BFO. Same size and dimensions nearly as the AR2000.

Supplied with all accessories including 4 x AA Nicads & charger.

CAMNIS HSC-010
Exactly the same as the AOR AR2000
£249

If aviation is your interest and you are looking for advice on a new scanner or perhaps an antenna then please feel free to give us a call and have a chat. We are more than happy to talk with you about your interests whether they be civil, military or HF. If you would like a catalogue please send a large sae and we will get one to you by return - Thanks.

Many Radio Amateurs and SWLs are puzzled. Just what are all those strange signals you can hear but not identify on the Short Wave Bands? A few of them such as CW, RTTY, Packet and Amtor you'll know - but what about the many other signals?

HOKA ELECTRONICS HAVE THE ANSWER! There are some well-known CW/RTTY decoders with limited facilities and high prices, complete with expensive PROMs for upgrading etc., but then there is CODE3 from Hoka Electronics! It's up to you to make the choice - but it will be easy once you know more about Code3. Code3 works on any IBM-compatible computer with MS-DOS 2.0 or later and having at least 640K of RAM. The Code3 hardware includes a digital FSK Convertor unit with built-in 230V AC power supply and RS232 cable, ready to use. You'll also get the best software ever made to decode all kinds of data transmissions. Code3 is the most sophisticated decoder available and the best news of all is that it only costs £329!

<table>
<thead>
<tr>
<th>Mode</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morse - Manual/Auto</td>
<td>Follow. On screen NPM Indicator</td>
</tr>
<tr>
<td>SITOR RAW</td>
<td>(Normal SITOR but without synchronisation)</td>
</tr>
<tr>
<td>ASCII</td>
<td>(Variable character lengths/parity)</td>
</tr>
<tr>
<td>Hellscriber</td>
<td>Synch./Asynch.</td>
</tr>
<tr>
<td>SWED-ARO/ARO-SWE</td>
<td>CCIR 519 variant</td>
</tr>
<tr>
<td>AR06-90/98</td>
<td>200 Baud Simplex ARQ</td>
</tr>
<tr>
<td>AR(16-70 Baud)</td>
<td>F78BN</td>
</tr>
</tbody>
</table>
| ASCII Storage         | Save to disc any decoded ASCII text for later processing. £35. 2) Piccolo Mk 6. British multi-tone system that only we can decode with a PCD £35. 3) Ascii Storage - Save to disc any decoded ascii text for later processing. £35. 4) Coquelet - French multi-tone system, again only on offer from Hoka! £35. 5) 4 Special ARQ and FEC systems i.e. TORG-10/11, ROU-FEC/RUM-FEC, HC-ARQ (ICRC) and HNG-FEC £35. 6) Auto-classification - Why not let the PC tell YOU what the keying system is?! £65. 7) SYNOP Decoder for AAXX & BBXX formats. £35. 8) PACTOR (both Amateur and ICRC). £25.

Please add £5 to the above prices for carriage by fully insured First Class Postal delivery (default method).

Call or write for our comprehensive information leaflet - there is just not enough room here to tell you everything about Code3!

Professional users - please ask about our new CODE30 DSP unit available now! (Piccolo down to -12dB S/N!) Prices start from £1715 (includes all options).
Radio and TVDX News

An experimental 3 station digital audio broadcasting (DAB) network has been established North of Stockholm in the Enkoping and Uppsala region. The transmitters each 30-40km apart will eventually include Stockholm and encompass nearly 2 million people. All transmitters operate in Band 3 ch.E12 up to 2kW e.r.p.. The experiment is likely to be the start of a future DAB network opening late '95/'96 in the main cities of Stockholm, Gothenburg and Malmo - nearly 40% of the country's population. New legislation in Sweden will allow an expansion of broadcasting, offering two new national TV channels and up to 60 local TV stations. The two new proposed national channels will be called 'M4' and 'M5' and will cover virtually the whole population. Twenty towns will have new local TV across the country and extending into Northern Lapland.

With several CIS states either reducing or terminating the transmission hours of the national Moscow Ostankino TV channel after Moscow demanded payment for the service, Lithuania has now paid up and transmissions have resumed. Look for the corner logo 'LTV' upper left in the programmes. The text service is called 'Teleteksto Tarnyba'. Latvia has also started its own Teletext service called 'Text-Inform' and using the English alphabet, any Latvian characters are displayed without accents.

Bad news for Sunspot maximum TVDXers who in recent years received several Australian ch.0 transmitters. The expansion of TV aggregation has meant more conversion of existing v.h.f. services to u.h.f. Latest move is ABNT-0 at St. Helens and several ch.1 transmitters closing and moving to u.h.f.

A limited start to private TV in Malta with 'Super One Television' on ch.E29 operating from Gharhur Hill. Other relays will follow though limited in power and on the same frequency. This and a second channel, now allocated to Malta, are being used by Italian private stations in Sicily and negotiations are in progress to clarify the situation.

Changes with Dutch TV - from early September the breakfast and morning programmes will move from NED-1 to NED-2; sports programmes, now on NED-2, will move to NED-3 and the text-TV network will move from NED-3 to NED-1. For DXers this means that NED-1 is on 24 hours a day and the FM5544 card is radiated at night. Scrambled business programmes will be transmitted 0200-0700 in their 'Biz-Net' service. And in Germany a new private transmitter - 'TV-Hamburg - Hamburg 1' will open on ch.E34 in the Autumn.

New transmitter listings:

France -
- Bordeaux: TDF-5 ch.E65 150kW e.r.p. horizontal;
- Aurillac TDF-6 ch.E67 80kW e.r.p.

Luxembourg -
- closed - Dudelange RTL ch.E24 200kW horizontal

Christian Amateur Radio Conference 1994

The annual gathering of the members of the World Association of Christian Radio Amateurs and Listeners will take place over the weekend of 7 - 9 October 1994, at the Wirral Christian Conference Centre at Merton, Liverpool.

A lively programme of Christian fellowship and amateur radio activities is planned, with members and their partners expected from all over the UK and Europe. The AGM of WCRAL will be held on Saturday morning.

For more information and bookings contact G4EZU on (0474) 533686 or join the regular Sunday morning WACRAL NET at 8am on 3.762MHz.

Hoka Electronics Appoint Distributor

Due to time constrains and therefore difficulties in providing the level of high service deserved by their customers, Hoka Electronics have appointed Neil Thomson of NTech Communications to take over support for all retail sales of the CODE3 and CODE30 products, upgrades and enquiries from existing customers.

Hoka Electronics (UK) will continue to act as sole importer for all the decoder products from HOKA Electronik. The change will allow them to concentrate their technical support for Government and Military customers.

Neil Thompson, NTech Communications, 36 Dalling ton Road, Hampton Park, Eastbourne, BN22 9EG. Tel/Fax: (0233) 5007249.

Paint Used For Screening

We have received the following from Peter Longhurst, G3ZVI at Garex Electronics.

Regarding the review of the Garex Tunable Aerial Filter. Whilst they are very pleased with the favourable comments from our reviewer, they wish to respond to one point that was raised.

The product was criticised for being housed in a plastics rather than a metal box, raising concerns that the interfering signal could be picked up again at the output.

Garex are pleased to confirm that this is not a problem since the filter has been very carefully designed. The interior of the plastics box is sprayed with an r.f. shielding paint and the filter construction is in the form of a screened trough.

Listen With Grandad by Leon Balen & David Levett

Grandad always gets the best results from Classic FM.
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.

FACT. NOT FICTION.

The ABC allows professional buyers and sellers of advertising space in national and regional newspapers and consumer magazines to buy and sell better. It does so by providing an independent, authoritative circulation audit that is the single most obvious indicator of a magazine's self esteem and a publisher's confidence in his title.

An ABC certificate is your guarantee of integrity. So, if your next schedule includes titles that aren't audited - ask why. For details of ABC's activities relating to the consumer press and the benefits of ABC membership contact Anthony Peacham, Consumer Press Manager, on 0442 870800.

Klingenfuss Publications
Hagenloher Str. 14
D-72070 Tuebingen
Germany
Phone 01049 7071 62830
Fax 01049 7071 600849

CD RECORDING OF MODULATION TYPES

71 emissions • 2½ hours • £ 43 or DM 100

This unequalled product is based on 25 years of experience in the radio monitoring and publishing field. Two standard audio compact discs include 71 different recordings with superior digital quality. These CDs allow rapid access to the typical sound of all conventional and exotic radio communication systems found nowadays on HF. Connect your audio CD player to state-of-the-art decoding hard- and software and practice tuning these professional teleprinter and radio paging systems for easy analysis and display. Synchronization is perfect as a result of digital recording techniques that prevent any play-back speed deviations. Registered airmail within Europe included! Major credit cards accepted - please fax or mail your order to 68
Obituary - Geoff Watts

On Monday May 9, Geoff Watts BRS 3129, died of a heart attack. He was 75. He was contributing to Short Wave Magazine from the moment it was restarted by the late G6FO after Hitler's War.

He founded DX News Sheet in 1962 and ran it until 1982. In 1964 he founded the 'Islands On the Air' award. When his eyesight began to deteriorate and he had to give these activities up, both were taken over by the RSGB with Geoff's active support. Geoff also produced those exceedingly useful Prefix Lists - probably the best bargain in Amateur Radio - right up to the day he died. These varying activities led to him being inducted into the American CO Magazine's Hall of Fame in 1977, the only listener ever to be so honoured.

In his quiet sort of way, Geoff did these things from knowledge. Geoff was the first listener to have the Forty Zones confirmed - at the time of his death he had them all confirmed, a tremendous achievement.

In his earlier years, he was involved in radio and TV servicing, but he had to give up this business as transistorisation, smaller components and tighter packing densities defeated his weakened sight. His wife supported him in everything, but alas she predeceased him. Just before he passed DXNS over to the RSGB Geoff confessed to me that on every Tuesday evening when he processed each week's DXNS, he would need to use three increasingly strong pairs of spectacles before that issue could be taken to the post.

There was not an ounce of crude ambition in Geoff Watts. G3KMA, who now handles the IOTA programme, and I would agree with the present DX News Sheet Editor, G4DY0 when he said 'The World of DX has lost a truly incredible member'. I would add, probably the greatest shortwave listener ever, and to all who knew him, a great friend.

Paul Essery GW3KFE

Obituary - Simon Hamer

It is with sadness that I must report the death of Simon Hamer on Friday May 27th 1994. I had known Simon for many years, both from his reception reports and from personal visits. To me he was the true enthusiast and gained great joy and satisfaction from his reception, be it radio, TVDXing or in recent times, his first moves into satellite TV. He was well known in his local expeditions to the nearby mountain tops in an old Land Rover with Band 3 and u.h.f. Yagis and a portable TV to scour the aether for DX. As a Welsh mountain farmer, he led a tough, basic life, a hard working life and he worked hard at his DXing, for which, of course, he is acclaimed. As a friend, he was honest, reliable and a 'character'.

Only in his late 30s, and Simon was suddenly taken - it seems in many ways unfair. Yet above the mountains of North Wales, in that wide blue infinity, the spirit of Simon will live on as an encouragement to us all.

Rest in peace, Simon.

Roger Bunney

SWM SPECIAL OFFER

Book offer to all readers

Air and Meteo Code Manual Thirteenth Edition
Kling enfuss

The most comprehensive, reliable and up-to-date manual in existence.

Meteorological AIR, ARFOR, BATHY, METAR, PILOT, ROFOR, SHIP, SPECI, SYNOP, TAF, TEMP, TESAC, TRACKOB and WINTEM codes forms the detailed decoding examples.

More than 10000 meteorological station index numbers and 10000 ICAO aeronautical station location indicators.

Aeronautical message format, ATS and NOTAM/SNOWTAM code forms with detailed decoding examples.

810 aeronautical telecommunication abbreviations.

2900 aeronautical company and 1000 aircraft type designators.

Solar and geophysical URSIGRAM (radio propagation) codes ALFRED, GEOALERT, PRESTO, RECUR, TENCAM, UOFH and UMUFH with detailed decoding examples.

£11.00 + £1.00 carriage UK
£11.00 + £1.75 carriage overseas surface

Offer closes 28 July 1994

PAYMENT DETAILS

Please send me, copy(s) of Air and Meteo Code Manual(s)
£11.00 + £1.00 p&p UK, £1.75 p&p overseas surface mail.

Name: ..................................................
Address: ...........................................................................
Telephone No. ..................................................
Postcode: ..................................................

I enclose cheque/PO (Payable to PW Publishing Ltd) £

Or

Charge to my Access/Visa Card the amount of £

Card No. ...............................................................
Valid from .......................................................
Signature: ..............................................................

Offers are normally despatched by return of post but please allow 28 days for delivery. Prices correct at time of going to press. Please note: all payments must be made in Sterling.

CREDIT CARD ORDERS TAKEN ON (0202) 659930
FAX ORDERS TAKEN ON (0202) 659950
1994 Catalogue

Apart from being an excellent reference source, listing and describing in detail over 200 components, our new catalogue answers many of your most asked questions.

Bang up to date with sections on fixed and motorised systems, distributing UHF and HF signals and much more. Probably the best *£1.95 you'll ever lend.

*Inc. post and packing. Refunded on next purchase

---

Last few Ferguson SRB1 D2MAC converted BSB receivers at the exceptional price of £29.95!

Brand new boxed Ferguson SRB1 receivers with TRAC D2MAC software for reception of CLEAR D2MAC transmissions - currently 4 German channels from TSAT, plus ARTE and occasionally MCM from the French sat TF1, all with digital sound. On-screen graphics, 16:9, Audio Mix, and other usual MAC refinements.

P&P £6.90 Matching squarials £20.00

---

JF VAX - HAMCOMM - PC HF FAX and PKTMON12

Read Mike Richard's review in SWM DECODE March'94 Demodulator for these popular programmes - connect to audio output and plug the 25 way connector into your PC then monitor

Fax RTTY Morse and Packet at an AFFORDABLE price.


Clubs and Groups save or make money by bulk purchase! 5 off £7.60 inc. 10 off £14.40 inc.

25 way to 9 way adaptor UK/Eire £3.00 inc. Overseas £5.00. All products carry full money back guarantee.

Pervissell Ltd, 8 Temple End, High Wycombe, Bucks HP13 5DR.
Tel (0494) 440333 Fax (0494) 448236

---

FLIGHTDECK

The Airband Shop

THE NORTH'S PREMIER AVIATION STORE

☆ ALL types of Airband Radios - Civil, Mil, HF ☆
☆ Nav Charts ☆ Aerials ☆ Videos ☆ Books ☆
☆ Display Models ☆ Telescopes/Binoculars ☆

For catalogue send 50p or 2 I.R.C. to Dept. SW5
192 Wilsmoor Road., Heald Green, Cheadle, Cheshire SK8 3BH. - 3 miles from MAN Airport.
Telephone: 061-499 9350 Fax: 061-499 9349
RUN BY ENTHUSIASTS, FOR ENTHUSIASTS

Open Monday to Saturday, 9.30 am to 5.30 pm. Note: Closed Christmas

---

THE VINTAGE WIRELESS BOOK LISTING

Published monthly every two months. containing 100s of out of print, old and collectable wireless and amateur radio books. magazines etc. Send for our list of titles for catalogue £2.50 for first four issues.

NEW BOOKS


WINNING THE RADAR WAR. A new book on World War 2 radar. The suspense filled story of the experiments and electronic countermeasures. Author was one of the key technicians. 224pp. Illus. £9.95 * £2.00 pop.


WANTED FOR CASH: Pre 1975 Amateur Radio and Wireless and TV books, magazines. Also valve communication magazines and domestic sets, working or not. Government surplus items and obsolete test equipment and valves.

(Dept S) CHEVET SUPPLIES LTD.
157 Dickson Road, BLACKPOOLS FY1 2EU
Tel: (0525) 731586 Fax: (0525) 302379 Telephone orders accepted.

---

SPECIAL OFFER

1992 Edition of "POOLEY'S FLIGHT GUIDE" This "Aviator's Bible" contains details of all UK airfields, all ground, tower, approach and radar frequencies, all lower airspace and radar information, all UK aviation addresses and phone numbers, airways frequencies, private airstrip and helipad locations and much, much more. This is last year's edition but almost all data is still correct. Normal price: £17.50.

OFFER PRICE ONLY £4.00
plus £2.00 post & packing (It'sheavy with information!!)

Just send a cheque for £5.00 or phone with your credit card details to:

LOWE ELECTRONICS LTD
Chesfield Road, Matlock
Derby DE4 5LE
TEL: 0629 580800

---

Got a Scanner?... VHFR/ UHF Airband Frequency Guide

Need a Frequency?

VHF/UHF Airband Frequency Guide

UK Military & Civil App. Gnd, Ope, PAR, Range, SRE & TWR.

Updated every 3 months. £3.95.

Short Wave Airband Guide. This guide lists Military & Civil, Air to ground, Rescue & many other frequencies. £4.95.

VHF UHF Frequency Guide 27 to 1,300MHz. Services covered include air, and, sea & space £2.95

All prices include VAT. Other guides available. Send SAE for further details.

Please make cheques payable to:
D.G. Antill 1 Church Lane, Maudesley Noritch, Norfolk NR11 8AU

---

Advertisements are expected to conform to rules and standards laid down by the Advertising Standards Authority. Most do.

The Advertising Standards Authority helps to regulate advertisement which is not in the public interest. If you make a complaint about, for example, an advertisement in a newspaper, magazine, poster and cinema advertisements, please send for our booklet. It's free.

The Advertising Standards Authority. We're here to put it right.

ASA Ltd, Dept. Y, Broad House, Tummingdon Road, London W11 7HN.

---

Short Wave Magazine, July 1994
DURING THE LATTER HALF OF MARCH, Ron Livesey (Edinburgh), using a 2.5in refractor telescope and a 4.0in projection screen, identified one active area on the sun's disc on days 15, 16, 19, 22, 26, 29, 30, and 31 and two on the 17th. This trend continued into April. "Not a sunspot sighted", wrote Patrick Moore (Selsey) on his report for the period April 1 to 9 inclusive. He located a single spot on his projection screen at 0800 on the 10th again at 1000 on the 11th and at 1400 on the 19th. Patrick kindly made a drawing from his screen of the three he saw at 0920 on the 25th. Fig. 1. However, once again he had nothing to report from his early morning observation on the 29th and 30th.

Eclipse

There are strong words to describe the following, but I will not use them here. Throughout the afternoon of May 10 the sun was mainly bright and clear. At 1815, just before the solar eclipse was due to begin, I was projecting a good clear image of the sun's disc on a white paper screen hanging on the wall. My plan was to photograph the image at one stage during the event ready for this column. Having carefully set the stage the sky began rapidly clouding over so, like many others, I saw nothing of the eclipse.

Auroral

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received reports of visual aurora described as 'glow' during the overnight period on March 5/6, 11/12, 13/14 & 15/16; 'quiet arc or band' on March 5/6, 11/12, 13/14, 16/17 and 20/21; 'coronal structure' on 5/6 & 7/8; from many observers ranging from Scotland to North America. These include the Met. stations at West Munich, RAF Kirkeno, Kirkwall and Sumburgh and the American Continental Met. stations at Alexandria, Broadview, Helena, Houlton, Jamestown, Kelowna, Meadow Lake, Prince George, St. Leonard, Sioux Lookout, Timmins, Thomson and Wabush Lake. Between them: Ford White (Portland) and Ern Warner (Plymouth) tell me that the German beacon, DK0WCY, on 144MHz, gave strong auroral warnings at 1630 on March 7, 1400 on the 14th and 1247 on April 17. Bob Evans of the RNZAS told Ron Livesey that April was a very busy month for aurora in the southern hemisphere. Judging from various adverts in astronomical and computer magazines, there are some good astronomy programs on the market for computers from which you can familiarise yourself with the night sky in both hemispheres.

Magnetic

The various magnetometers, used by John Fletcher (Mount Tuffley), Andy Hollis (Winsford), Tony Hopwood (Upton-On-Severn), Karl Lewis (Saltash), Ron Livesey, David Pettitt (Carlisle) and Tom Rackham (Goostrey), between them, recorded strong disturbances to the earth's magnetic field on March 2, 5 to 15 inclusive, 17, 18, 21 and 25. In addition, Tony Hopwood and Tom Rackham reported "reduced h.f. propagation" on days 3 & 8-13 and partially on the 22nd and 26th.

Propagation Beacons

As always, my thanks are due to Gordon Poole (Bristol), Cmdr. Henry Hatfield (Sevenoaks), Ted Owen (Malton), Ern Warner and Ford White for their 28MHz beacon logs and comments about band conditions. From these reports I compiled the chart seen in Fig. 2. Ern, Ford and Ted added LU4XS, to the list at the end of March and Gordon caught that lone signal from ZS5VHF on March 26. Ian McDermid (Comrie) found the 28MHz band 'dead' from April 14 to 18. However, for about 10 minutes around 1430 on the 14th, he heard a few East European amateurs, operating c.w. on 29.410MHz. Could have been a short burst of sporadic-E, Ian. It seems that the path between South Africa and the UK was the only one that showed any consistency throughout the period covered by Fig. 2. There were strong auroral warnings at 1630 on March 7, 1400 on the 14th and 1247 on April 17. Bob Evans of the RNZAS told Ron Livesey that April was a very busy month for aurora in the southern hemisphere. Judging from various adverts in astronomical and computer magazines, there are some good astronomy programs on the market for computers from which you can familiarise yourself with the night sky in both hemispheres.

Atmospheric Pressure

Details of the daily changes in atmospheric pressure for the period March 26 to April 25 can be seen in my "OXT News" column elsewhere in this issue.

Propagation Charts Explained

Last month we featured our pilot propagation forecasts, and the day that the magazine went on sale we received a considerable amount of positive feed back. One aspect mentioned was that we had not given any instructions on how to interpret the charts, so here we go.

The charts contain three plots. The lower dashed line represents the lowest usable frequency (LUF); the bold middle line indicates the optimum working frequency (OWF) and the upper dashed line represents the maximum usable frequency (MUF). To make use of any of the charts you must select the chart most closely located to the region containing the station that you wish to hear. By selecting the time chosen for listening on the horizontal axis, the best frequencies for listening can be determined by the values of the intersections of the plots against frequency. All the charts are for a listener in the UK, of course.

Example

Using the June 94 charts on page 65. Listening to stations from South America at 1400 UTC, the minimum usable frequency is about 11MHz the maximum is just over 25MHz, with the optimum being roughly 17.5MHz. We hope that makes it a little more clear to those of you who have not used this kind of chart before.
**Amateur Bands Round Up**

**Listening to the Amateurs**

Many readers go out and buy a new bit of gear every so often. However, whether new or second-hand, modern equipment needs to come with the instruction book - particularly if it is to be trusted by repeated gardeners that lacks a tuning-knob. However, do beware of the precise words used in the instructions, and if the specified button storesh in the produce the specified result, don't instantly give up!

I recently got hold of a v.h.f. 'handy' and wished to program in the eight evening (224UTC) simplex channels. No problems! Just a string of button-presses. One snap; the display resulting after the button-pressing was totally different from the one expected. It was only after repeating the exercise several times that I rumbled that in fact the information had been accepted, but that a further button needed to be pressed before the display came right. The 'book of words' made no reference to either the display or to the need for another press. A complete paragraph seemed to be absent. Note back from the maker who is normally noted for good instruction books.

Manufacturers all, please take heed!

**Heat-wave**

As I write, the early-May Bank Holiday heat-wave has turned into the usual breezes-and-showers of Spring. When, for Pete's sake, will the Clerk of the Weather realise that short wave listeners do not wish to hear about the 'handy' chores?? Or should we just blame the Government?

**Harry Richards** in Barton-on-Humber reports that the morning when the Americans come on, he likes to listen to the European-American traffic. However, he did have a listen round late one evening and the band came across W5RRR, the Houston Space Centre knocking off a pile-up. However, as Harry sadly remarks, not only can the band open, but it can close too! I might ask that possibly the W5RRR operators may have sensed that propagation was changing and turned their beam in a new direction as a result.

Next, **Paul Clark** in Rochford has a puzzle for us. He used to live in the 'service area' of GB3NL (I sympathise)!! but now he is thirty or more miles away; his scanner stopped on R7 and he heard what he copied as GB3TE. There is indeed a GB3TE repeater, on the other side of the Thames although the map in the RRSB Call Book shows it as being on channel R3. I understand, though, that this particular machine has since moved to R7.

It is true that v.h.f. signals are normally 'line-of-site' over flat country, one must recall that there are some strange lines of sight(!). Thus, taking the local GB3PV, it is not too far away, W2; it appears to 'open the box' from as far away as the high stretches of the M62. The ops themselves, of course, are getting the strong GB3FR signal as well, and aware they are opening more than one repeater. Between Shrewsbury and Market Drayton one may well find that one hears GB3PV, GB3FR and GB3RR, one竟ently near Burnley, and one in Lincolnshire.

One of the prime tasks of the RRSB's Repeater Management Group is to try and organise things so this happens as little as possible. However, that having been said, if a high-pressure weather area creates a 'lift', the best-laid plans can come unstuck until the lift is over, as the Do not adjust your TV set notices on your picture testify.

Up to Hawick in the Borders to **Murray Dick** near Kelso found the state of the bands somewhat depressing - though at the time of writing in the early part of May things seemed to be improving a bit - but was cheered by QSLs invades from J08RD, SU1MT, Y11HS and CS3HG. On Top Band, Mark logged C31U and C31SD plus SP and SM. The best on 3 MHz was 4X4FX, while 7MHz came across with SV9ANH, 4X4BE, 4X6SL, OD5ZJ, EABVBG, EABTH, VA2ZV, VE8MV, OH3XU, OH7FU, HJ5W0H, 7X1JR, BQ5TR, A292BE, CV2K0F, Z44DO, PXN4, ZK2NQ, YB6INU, VK4MZ and VK5KV. On 14MHz, V63SD on Yap was the prize, followed by 4X4FR, 4Z4FX, 4X2A, 4X4FE, 4X1TD, 4ZOSI (for a 'special'), TLU0J, a low-power signal from 194JUA, OD5SM, ODSPL, OD5VTP, OD5FRZ, IK20CEE5EG, K92CC, K92ZM, JAYO, SBE5, SB4ADA, V01M2Z, YB6AJA, YB6HOF, VK4AHU, VK2AU, VK3FKD, VK2BHR, VK4GO, VK5HA, 4K2/2SJJL, 4K2MAL (Franz Josef Land), E28DX (Thailand), YU2RAK, 5BN6DP, 9Q5TR, S212G, 9X9T, V85CA, V85BG, 4U11TU, 4U1UN, WP4WS, 89IFC, 9H1S, 9H4B, 7X5VBK, I4AFQ on low power, EABTA, 5B4KH, 9V1ZI, 9V1X6, 9V2H6B, 9M22A, YU70DAH for another special, HG27SBSCS for another and W6X2Z7 in the May issue. For 18MHz 4X1M0 was noted, and on 21MHz JB6UJ on Okinawa, 9K2Z2, AA3HA, WOGC, 7X2RO, PY20 and assorted Eastern repeaters.

**Geoff Crowley**'s move from Iceland to Ecuador didn't come off, so he's living in Aberdeen and working in the North Sea. At this time of the last few weeks, Geoff has been able to get up a half-sized G5RV, and having compared it against the Datong AD3JO active antenna he used in Iceland, Geoff reckons he's well impressed with the Datong. The antennas feed into a home-brew tuner, an r.f. notch filter, FRG-7700 and a dual: MFJ audio filter to make a effective listening point. Incidentally, while Geoff is managing to get a call in Iceland - TF3XXT - he has not done so here as yet, simply because SSL have done their usual thing and twice shipped him the wrong papers. (As I closed, I heard that at least he now has the correct papers - getting it right once out of three seems a bit better than usual for SSL!!)

On a point of operating, Geoff Crowley and others mention 9K2ZZ asking for complete call-signs from the pile-ups and being impressed with idiots giving the last two letters of their calls. To be fair to the idiots, though, it is up to the DX station to make the best of things you are 'stuck with' whatever spots the sun gives, and even at the very bottom of the cycle world-wide that a given band starts to open, so to make the best of things you are hoping for a low value of A or K. A K value over three is decidedly unhelpful. Coronal holes are often the cue. However, Geoff's paragraph gives the very latest details on 10MHz; if your Morse isn't up to copying it down direct, record it on tape and 'undo it' bit by bit. I know this paragraph is a gross oversimplification, but it if helps someone to get a better grip on the bands, I'll be happy!

**Ted Trowell** of the Isle of Sheppey in Kent is out of the bandage-factory and comments that they are fitting so much plastics into him he is auditioning for Bionic Man! Still, being on the mend and back in the shack is the main thing, even if it is 'take it easy' for a while. Bringing up the rear is **Luciano Marquez** from Herford, he notes 8F9GG on 7MHz; 9Q5TR on 14MHz and 9Q5KM plus X5BYZ both on 21MHz for new ones. On 28MHz Luciano found Z56PW, CE3MCJ and Z5FZD, and even on 21MHz propagation was mainly north-south with 7X2WAK, CN2GF, LUF7PI, D2SA, Z32A, ZS6YA and KP4IX. On 14MHz there were times when the band opened to Japan, VK and ZL, and into North America - much more east-west propagation. This brings out another point about propagation in that if the m.u.f. is, say, rising so rapidly into a north-south path is a hint to watch out for the first signals which will usually be north-south paths. Then as the m.u.f. rises more still the band starts to carry signals in east-west propagation. On the falling trend, the same thing occurs, so often the presence of signals on a north-south path is a hint to watch out for the band closing.

**Finale**

That's it for another time. Letters to Box 4, Newtown SY16 1ZZ to reach me by the beginning of the month please. Till then, let's hope the band conditions improve and the grass doesn't grow!
Dear Sirs,

I think this advertisement breaks some rules.

Advertisements are expected to conform to rules and standards laid down by the Advertising Standards Authority. Most do. The few that don’t we’d like you to write in about.

ASA Ltd., Dept. Y, Brook House, Torrington Place, London WC1E 7HN.

The Advertising Standards Authority.

We’re here to put it right.

ASA Ltd., Dept. Y, Brook House, Torrington Place, London WC1E 7HN.

POP ALONG TO ONE OF THE 3 RADIO HAMSTORES AND TRY THESE SUPERB HF RECEIVERS FOR YOURSELF - WE KNOW YOU’LL BE GLAD YOU MADE THE TRIP!

IC-R71E HF RECEIVER
ICOM’s IC-R71E is a great shortwave receiver with the following features: • All-mode and general coverage • DFM circuitry • 32 memory channels • Notch-filter system • Passband tuning • Direct frequency entry • Optional remote-control • 3 scan functions.

IC-R72E HF RECEIVER
ICOM’s compact IC-R72E has more than lived up to expectations, features include: • Frequency range 30kHz-30MHz • USB, LSB, CW, AM and optional FM • Direct keypad entry for improved programming versatility • 99 memory channels and 2 independent scan-edge channels • Built-in 24-hour clock and timer • Advanced DDS system • 100dB dynamic range • Level-selectable noise-blanker and much more.

TWO OF THE BEST

KANSAI TVR81K 21”
Multisystem Colour TV main features

- Personal Preselection, memory function
- Violence, Colour, Contrast and Font
- Channel, PAL/B, PAL, PAL/C, SECAM, SECAM, 13EURC 2.4-4.43
- Internal Remote Control
- 10 Preset Channels
- Automatic Tuning
- On Screen Display - Volume, Colour, Brightness, Contrast, Font and Channel
- EURO-AV (SCART) Socket
- Sound Make Function
- Presettable Off Timer
- Automatic Power OFF Function - when no broadcasting signal is received within 10 minutes
- Full VHF/UHF Coverage
- Cable Tuner
- Video or Dual Digital Control

Price £7.95 including p&p - cheques payable to PhotAvia Press

Photavia Press, 21 Downlands, Pulborough, West Sussex RH20 2D0

NEW PRODUCTS

AERIAL TECHNIQUES

ICOM

11 Kent Road, Parkstone, Poole, Dorset BH12 2EH
Tel: 0202 738232  Fax: 0202 716951

Short Wave Magazine, July 1994
Long distance (DX) television signals, arriving by all modes of propagation, have featured in this column and in its predecessor in our sister magazine Practical Wireless, for a long time. In recent years I have gradually introduced, where applicable, astronomy, computing, satellite, slow scan and vintage television and, of course, the weather. All of these subjects began with a comment, report or request for information in one or more of your letters.

Data Transfer

In the lower half of my briefcase I carry a Tandy WP2 tap-top word processor and the latest issues of PW and Short Wave Magazine. Recently, I had work for this column on the portable, but, before making a start, I opened my briefcase and went back downstairs to fetch a newly purchased computer magazine. On my return, Henry, our eight cat (1), Fig. 1, was asleep on the tap-top, which meant that the transfer of data from the WP2 to the Packard Bell PC in my office had to wait several hours until our bone idle cat awoke. When he was a kitten and spotted snooker on the TV he would jump up and pat the kitten and spotted snooker on the table.

Satellite TV

From the picture archives of Peter de Jong (Leiden, Holland) comes a couple of captions that he received from Eutelsat II F3, Fig. 2 and Astra l.b, Fig. 4, on June 26 and 28 December 1992, respectively. For the benefit of the radio buffs among you, Simon Hamer tells me that, via the ASTRA satellite, "RTE Radio 1 is on Transponder 22/subcarrier 7.56MHz, with RTE 2FM being carried overnight" and that the local Irish Limerick 95FM, also on Transponder 22, is on subcarrier 7.92MHz.

Weather

During April, I recorded 3.45in of rain compared with 4.93in for the same period in 1993. This was spread over 16 of the 30 days in the month with amounts of more than 0.50in on days 1, 4 and 9. April began dull and cold and ended sunny and warm. After a sudden short lived hail storm on day 2nd, I took a random selection of stones from the garden and found that they measured between 7 and 10mm. We had approximately 1.0in of snow before it turned to rain on the 9th. "After blizzards in Easter week we have since had some nice warm sunny weather," wrote Ron Livesey (Edinburgh) so it seems that both ends of the UK had similar conditions in April.

George Garden (Edinburgh) refers to the predominantly low pressures we've had nearly all this year. It's worth taking a look at the press weather for the period March 26 to April 25, Fig. 10, were taken at noon and midnight from the recording chart on my own barograph.

SSTV

John Scott (Glasgow) is a member of the radio clubs in Glasgow and Paisley and, while at the latter, he arranged for GMONAF to send him slow-scan television pictures on 144.5MHz at 2300. All went well and the caption, transmitted via a Spectrum computer, Fig. 3, was received by John at good strength. This test shows that the now elderly Spectrum is a very useful tool and that there is a good v.h.f. path between Glasgow and Paisley.

During April John copied a variety of slow-scan captions, between 14.227 and 14.233MHz, from stations in France, Fig. 5, Hungary, Fig. 6, Portugal, Fig. 7, Spain, Fig. 8 and Russia. For the benefit of newcomers to this mode of communication, the lines across the mouth in Fig. 5 and below the ears in Fig. 6 are caused by interference. These two signals must have been strong and John's receiver accurately tuned to allow the pictures to appear against such hefty and perhaps locally generated electrical noise.

405 Line

lifelong radio engineer, had first hand knowledge of the pre-1939 television service from London's Alexandra Palace and his following comments should interest and caution the collectors and 405-line enthusiasts among you. He says, the "Receivers were heavy by weight and price" and that "the extra high tension voltage required by the cathode ray tube" was provided by a large mains transformer in the bottom of the console cabinet and "properly labelled 'lethal'". (I have also enjoyed reading this book and a review will follow in a future issue of SWM - Ed).

Collectors

Vintage TV receivers often come to light during the summer months at 'Junk' sales, car-boot sales, various rallies and ousted from the loft or garage by people on the move. Many of these sets, like the Philips, Bush and Pye, left to right respectively in Fig. 9, are now over 40 years old and must be handled both electrically and mechanically with great care. Please keep in mind that most of these sets were designed to work with a LIVE chassis and this really means that every metal part, including chassis bolts and control knob fixing screws will be at mains potential relative to earth. That is why the makers went to great lengths to conceal knob screws, protect exposed bolts with an insulating material and isolate the antenna sockets with special capacitors. Also BEWARE of the kilovolts of Extra High Tension around the cathode ray tube and the line-time-base circuits. There are at least two reasons why it is wise to keep your hands away from a set while it is running. The first is the risk of lethal electric shock and the second is that the valves run very hot and will burn your skin if touched.

Not For DXing

In general, the three sets in Fig. 9, made in the late 1940s, were restricted to channel 1 (45MHz) in Band I. You may find some later models that can tune though the band with some form of five channel tuner. However, don't get excited, they are unsuitable for DXing because they were made for 405-line signals, not the 625-line transmissions currently used on all the TV bands. Each of the three televisions in Fig. 9 have 9in cathode ray tubes and their screens fit into a flexible rubber moulding which is bolted to the front of the cabinet. This may be perished, but it should be in good condition. The tube is supported when it pulls clear of the clamp. Before removing the chassis study the tube carefully and if it appears even slightly WHITE inside, be cautious because this is a sign that the tube is 'soft' and the cracked glass could shatter in your hands.

EF50

In the late 1930s Mullard developed and produced the famous EF50 valve for v.h.f. receivers. Multitudes of them were used in Radar equipment throughout WWII under the RAF number VR91, (Valve Receiving 91 = CV1091 = EF50). If you have not met this valve before, it has a silver or red metal case, nine tiny pins and a large locating spigot in the centre of the base. For a short period after the war the EF50 was commonly used in a range of television including those in Fig. 9. I mention this because, after 40 years and possibly damp storage, the renovators among you may find corrosion on the valve's pin connections and in its holder. In some sets, the EF50 was held into its socket by a threaded collar which slid over the top of the valve and screwed to a fixed thread around its base. Alternatively, a circular spring clip was used to hold the valve when it was pushed home. Before it can be unplugged, both sides of the clip must be held down to allow free movement. Once clear of the clamp the valve should come out without trouble. At this point closely examine each pin and its associated socket for tarnish or corrosion.

Cabinets

The Philips and the Pye have wooden cabinets and the Bush is made of Bakelite. When these sets were built we were still in the era of 'father's wireless' which was expensive and stood in the corner of the living room and was the family's only entertainment. Money was not plentiful at the end of the war and television was new and expensive to the average family. However, there were many who could afford to buy a television at a set price and were then to pay a quarter of the cost each week. Money was not plentiful and a 'niche' market was created. The other was made for console cabinets. Its adjusters were similar to the one in the picture but had a more robust, floor standing, framework. One comes your way after all these years watch where you keep it. Do not let sunlight at it for two important reasons, the first it will discolor the liquid inside the magnifier and the second, it could act like a 'burning glass' and set something alight. The magnification of the photograph on the tube in Fig. 9 is a good example of how well they worked.
The new enlarged Catalogue is out now!

Included in this issue:

- A further 16 extra pages
- £200 worth discount vouchers
- 100's new products
- 256 pages, 26 sections, over 4000 products from some of the worlds finest manufacturers and suppliers
- Expanded entertainment section with in-car amps, speakers, crossovers and low cost disco equipment
- Further additions from Europe's leading kit manufacture - Velleman
- Available from most large newsagents or direct from Cirkit
- Send for your copy today!
The latest from the Clarke Bell

The main satellite activities across the Clarke Bell since the last edition included: T'e Latest fro (Alton) advises that this caption in the May '94 column, Chris Booth query on 'slant track' that I mentioned atmosphere!

Formally, the Esso crowd were relaxed hookups that are generally conducted around the UK. Unlike most corporate remote inserts and 'phone-ins from staff were having a wonderful time that in straight PAL and not SIS - 'Superfest Eutelsat 2 F4 at 7°E - well within the International digitally compressed detailing the upcoming Orbit 4.08GHz a clear PAL downlink has received via Arabsat 1D 20°E at Town insert one evening, again SIS.

No matter how low uplink powers and smaller their African uplinks - this enabled use carried more news feeds and certainly digital circuits on 502 could have total. Ian also feels that additional digital circuits on 502 could have brought more news feeds and certainly the 'newsworth' C Band-based SNG crew used digital compression for their African uplinks - this enabled use of lower uplink powers and smaller dishes. Though most of the originating feeds were ex Jburg, I noted a Cape Town insert one evening, again SIS.

While in the C Band mode, Ian has received via Arabsat 1D 20°E at 4.08GHz a clear PAL downlink detailing the upcoming Orbit International digitally compressed services available on this bird shortly.

May 13 heralded a remarkable social event at 10.08GHz vertical on Eutelsat 2 F4 at 7°E - well within the EBU leased section of this bird though in straight PAL and not SIS - 'Superfest 94'. This seemed to be a corporate video occasion of general wining and dining, socialising and joking. The staff were having a wonderful time that seemed to be a nation-wide event with remote inserts and 'phone-ins from around the UK. Unlike most corporate hookups that are generally conducted formally, the Esso crowd were relaxed and happy in a very informal atmosphere!

In answer to a John Locker (Worrall) query on 'slant track' that I mentioned in the May '94 column, Chris Booth (Alton) advises that this caption originated from the ABC News Centre in Washington and the 'slant track' referred to a videotape machine, most likely a Tin Canform reel-to-reel made by Ampex, Sony or RCA. The slant track itself relates to the actual recording tape that wraps around the tape head and is helically scanned across the tape (at an angle). Generally Beta SP is now used for news gathering.

And going back into the archives and our September 1993 issue and John Locker again - he received a BBC Glasgow caption and VT clock by satellite with identification numbers 'LBP R 0661'. This indicates that it's a London based religious programme and the R 056 identifies the programme People on the Way and the final R is a check digit to ensure the number is valid - this type of programme clocking is now used within the computerised library and costing environment of the BBC. 'A Roll means that there is a 'B roll', i.e. at least two video tapes, this enables two tapes to be run simultaneously and mixed between the 2 for a programme output. So now you all know! My thanks to Chris for his help.

John Locker himself now takes the stand - good news for sat-zappers as he has received very strong carriers from the new Russian GALS-1 satellite at 44°E. In total 4 Ku band transponders were seen with levels thought in excess of 55dBW - that is very strong and up to Astra levels. Previously only very weak signals had been seen in the UK.

John was heavily involved with the educational Jason project in Liverpool so if any readers visited this event/satellite hookup then you would have seen John. He worked on the project for 12 days early March with linkups between Belize and the UK - Coughton and the Liverpool Maritime Museum. The rainforest uplink was via Galaxy 7 at 51°W into the PanAmSat facility in Florida where it was further uplinked via PAS-1 at 45°W into Eutelsat. All audio, video and computer uplinks were carried on this devious route using digital compression. The UK end (and John Locker) received great help from Steve Cuddin and colleagues at PanAmSat, the Liverpool Maritime Museum staff were also very hospitable - in all a good time was had by all.

It is perhaps worth advising SWM readers to check out 1995's Jason project as Doctor Ballard is considering involving NASA and orbiting Astronauts and Cosmonauts. Barclays Life sponsored the 1994 and will back the '95 project again - end of commercial!

From Dusthaughlin, Republic of Ireland, Aidan Murphy EISHW writes to tell of his satellite aspirations and experiences. Aidan uses a 1.2m offset Channel Master dish, a 0.7dB noise Ku band LNB and Manhattan 9900 receiver. On his trip across the Clarke Bell May 6 he came across no less than 4 Eutelsat I F4 transponders (a mature satellite at 25°E but still giving good service) fired up and offering various outside broadcast feeds of the official Channel Tunnel opening from Calais.

Earlier in the month Dover had featured in a live programme insert concerning booze trips and day trippers evading (avoiding perhaps) UK tax on wines and spirits. Another May 1 signal Aidan logged was at 11.1600GHz of a University hookup via Eutelsat II F3 16°E, between the Universities of Nottingham, Leeds, Uster and Amsterdam concerning the use of AV techniques in business. Incidentally its well worth checking out Eutelsat I F4 at 11.01GHz horizontal since ITN have now taken a permanent lease on this transponder for UK/European SNG work.

Help! I've had a query from

Below, left: Two years ago a German SNG truck operating within the USSR would have been unheard of! Now special bargain prices are offered! TVRO refers to a 'TV Receive Only' terminal which many broadcast stations now own. Below, right: Unstable pictures, such as occur with the use of SIS (Sound in Syncs), can be locked solid using a 'sync inserter', such as the clever unit seen here, made by Premier Video Products, Wolverhampton.
A sea-change is occurring in European international radio stations. Radio Netherlands has announced the results of a far-reaching review of its operations. The result is that the station will in future be concentrating on providing services to Europe, at the same time cutting back on its overseas operations.

The station plans to stop broadcasting in Arabic, in French to Africa, in Indonesian to the Asia-Pacific region, in Portuguese to Brazil. At the same time, English services will be expanded, and more effort will be put into serving East European audiences. Additional money will be put into getting Radio Netherlands programmes on local stations through re-broadcasting deals.

Bert Steinkamp, Director of Planning and Development at the Hilversum-based broadcaster, told me: “Our budget is secure for the time-being. We do not face budget cutbacks. But we must use our resources in the most efficient way. Audience research shows that only 1 million people listen to our Indonesian broadcasts. The expenditure for the Indonesian service cannot be justified with such small audiences.”

The English language service increased the length of time it is on the air by starting three hour blocks instead of the 55 minute transmissions established many years ago. That makes tuning in more worthwhile for listeners. It is likely that Radio Netherlands will find additional ways of reaching its audiences in Europe instead of simply relying on short wave out of the Flevo transmitting station. Perhaps an audio sub-carrier on Astra will be put into serving East European audiences.

The RVI monthly broadcast in French-speaking countries, including a media programme, including a media programme, to present a French satellite service on Eutelsat. Since May 2, SRI has been working with Radio Romaride, La Premiere, Espace 2 and Cinquième TV to present Switzerland to a pan-European audience in another principal language of the continent.

Maintaining Faith

Some European broadcasters continue to operate as much as they have done for years, maintaining their faith in short wave as the most appropriate, and probably cost-effective way, to reach audiences overseas. RAI, Italy’s state broadcaster, has started to hire time on the BBC’s Atlantic Ocean Relay station on Ascension Island to beam its Italian language programmes to South America. The station signs-on at 0130 on 15.390 and 11.765MHz after the closedown of the BBC’s Spanish Service. I wonder, however, how many Italian speaking short wave listeners there are in Latin America.

DAB

Digital radio is just around the corner in Europe. As I have reported in past Bandscan Europe columns, the BBC has been testing Digital Audio Broadcasting or DAB in the London area. A service relaying the five national BBC channels is likely to be launched in a year’s time.

In Sweden, DAB is likely to be used to launch a Finnish-speaking channel to called Radio Siu. There is a sizeable Finnish-speaking minority of about 400,000 in Sweden where the total population is just 8 million.

In France, DAB is up and running in the Paris region, relaying ten separate stations, including Radio France International.

The only drawback for potential listeners at present is that there are no DAB receivers on the market. The first sets are likely to be available next year, costing around £1000. Car receivers will go on sale soon after the first domestic sets are launched, and the price structure is likely to follow that of the CD player, dropping rapidly as the market expands.

Radio Netherlands short wave transmitting station is situated at Flevo.

Radio programmes, including a media programme, will be broadcast in English, concentrated on peak listening hours, including breakfast time, lunch time and the evening hours. Meanwhile the station is now cooperating with Swiss domestic radio in the French-speaking part of the country to produce a French satellite service on Eutelsat. Since May 2, SRI has been working with Radio Romaride, La Premiere, Espace 2 and Cinquième TV to present Switzerland to a pan-European audience in another principal language of the continent.

RVI

Radio Vlaanderen International, the Belgian international broadcaster, has started to use Astra for programme delivery. It is using the audio sub-carrier of 7.380MHz on the Filmmet transponder at 10.921GHz. RVI programmes are also carried on World Radio Network, and Radio France International's English programmes are on WRN at 1200UTC.

Central Europe

Three former Soviet-satellite states are benefiting from an American media firm's initiative to produce an English-language programme called Central Europe Today. The Czech Republic, Poland and Hungary have been chosen by World Up Inc as the first areas where the programme will be heard. It is made in Budapest, and sent to the World Radio Network offices in London where it is uplinked to the Astra satellite. At present, the f.m. stations Radio Metropolis in Prague, Bridge in Budapest and Kolor in Warsaw re-broadcast the thirty-minute programme which includes international and business news, cultural information and interviews. The prime audience is seen as local business people and visitors and English-speaking expatriates in the three capital cities.

Short Wave Magazine, July 1994
A few months back I asked if anybody had any information about maritime company frequencies. A few letters have arrived, but the most comprehensive one is from Captain Ian McRae in Scotland who has first-hand experience of such frequencies - he's the captain of a North Sea oil-rig standby-ship.

After the tragic Piper-Alpha disaster, the Cullen enquiry pointed out the shortcomings of the existing standby vessels, so the fleet has been updated and modernised using converted large stern-trawlers. These spend a month at a time out in the wild North Sea patrolling the oilrigs and conducting emergency exercises. Ian says that the best place to hear these ships working each other is to listen to the International Distress and Calling frequency of 2.162MHz. The ships will make their initial contact on this frequency, and then QSY to a 'working frequency', he suggests the following frequencies:

- 2.049, 2.056, 2.226, 2.231, 2.241, 2.246, 2.301, 2.306, 2.800, 2.900, 3.373, 3.619 (all MHz).

The ships are owned and operated by a number of different companies that are based in various east-coast ports from Lowestoft to Aberdeen. As well as this normal inter-ship traffic, most of the companies keep a regular schedule between their ships and also between ship and shore station. An example of this is provided by Ian, who says that the ships in his company (all prefixed 'Grampian...'), e.g. 'Grampian Star', keep a schedule with their co-'Grampian..', e.g. 'Grampian Star', so you know what Valley will be getting in the next few years.

### Rescue

In the May issue I mentioned the call signs used by Mountain Rescue Teams ('Alpine', followed by letters or numbers). This prompted two very quick letters from Ken Dwyer in North Wales and Martin Nicholson in West Sussex, they both provide a cross-reference list between the numeric and alphabetic call signs, along with the RAF airfields where each MRT is based. Here is their list:

<table>
<thead>
<tr>
<th>Number</th>
<th>Call Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Hotel</td>
</tr>
<tr>
<td>21</td>
<td>Victor</td>
</tr>
<tr>
<td>22</td>
<td>Lima</td>
</tr>
<tr>
<td>23</td>
<td>Kilo</td>
</tr>
<tr>
<td>24</td>
<td>Tango</td>
</tr>
<tr>
<td>25</td>
<td>Sierra</td>
</tr>
</tbody>
</table>

Both Martin and Ken say that the alphanumeric calls are used when the 'Alpine' unit is communicating with either Plymouth or Edinburgh and the RESCUE helicopters, and they use the alphabetic calls when talking to each other or the civilian rescue teams.

Ken also offers a useful hint to those who live in mountain areas, or are keen hill walkers. He says to try listing to 5.691MHz between 0730 and 0830 local-time at the weekend, when Edinburgh transmits a weather report for specific mountain areas. I was a bit surprised when I first read of this, but having now heard it, it really does happen. I heard Edinburgh passing the weather forecast to Alpine 21, 20 and 95. Does anyone know where Alpine 95 is based?

Ken is a member of one of the civilian rescue teams in North Wales, so he has first-hand experience of actual rescue flights. He launched Westmorland helicopters from RAF Valley. Ken, I'm sure you're looking forward to flying in Sea King helicopters, which Valley will be getting in the next few years.

Finally, Ken asks for more military frequencies. I'm happy to oblige, so long as you keep sending me your loggings and listings. My supply is starting to dry-up, so it needs to be replenished with lots of letters!
Godfrey Manning G4GLM, c/o The Godfrey Manning Aircraft Museum, 63 The Drive Edgware, Middlesex HA8 8PS

Airband

Duxford's DC-3 in D-Day markings. Chris Mylne

How sad to start with an 'obituary'. Hatfield Aerodrome has just closed, the last flight out being a Tiger Moth. Its business jets have been displaced, mainly to Luton. Various attempts to stimulate the market for 146s have not worked: even cheap Taiwanese labour wasn't the answer, nor was renaming it just because it's now the Avro Regional Jet doesn't turn it into a different aircraft.

Visiting Hatfield some months ago, I thought I could hear the distant sound of the Comet's engines, or was it a Trident bound with the approach to Stansted, the fog? Was 'Cat's Eyes' Cunningham about to appear out of the gloom, overflying one of the few remaining i.c. inner markers (near the 24 threshold)?

No. It's all closed now; its radio frequencies and Air Traffic Zone withdrawn, its skilled workers regarded as scrap - just like an obsolete aircraft. Even the business influence of the JCB company couldn't keep it open. After decades, this important facility has come to a sudden end in the 1990s. Do you think it will ever be re-instated? Is this an achievement to be proud of? Why is it then, that if the economy is at its best ever and the recession is over, we can't afford to retain facilities that were previously regarded as essential? When will we learn that we have had enough controlled destruction, and that now is the time to turn things around and start investing - before it's too late?

PFA Rally

The Rally returns to Cranfield this year. Runway 04/22 still exists - but a Trident was last on the threshold, so was this really the only available site in Bedfordshire? You'll just be in time to go to the Rally on receipt of this issue fly-in day is Friday July 1, with the event proper being on the Saturday and Sunday (flying display Sunday only 1425-1430). Chris & I'll be there on the Saturday. They've really tried hard with the approach to the procedures this time. Hard runway control is on 122.85, Grass on 123.2, Arrivals a.t.i.s. 130.675 and Departure a.t.i.s. 121.85 MHz. If flying in, read AIC 32/1994 first.

Med evac

Photogenic enough to make television appearances, the Helicopter Emergency Medical Service (Dauphin G-HEMS) attracts attention wherever it goes. Based at The London Hospital, Whitechapel, it only operates in daylight and a typical day would see it out on perhaps three jobs.

Since he works in an office adjacent to the Hospital, Jerry Hammond (London) knows all about Mike Sierra's movements. Some time ago it came to visit my local park right here in Edgware and I saw the Captain refer to the locator squares in the Geographic Greater London Atlas when co-ordinating his pilot's position. The quarter-mile topo authorities. Frequencies used (MHz) are Special VFR 119.9, Thames Radar 132.7, DECOM 122.95, any nearby local heliport and the ambulance service channels.

Did you know that 'MS even has its own squawk (secondary radar) code' it's 0020 as listed in the UK Aeronautical Information Publication (from the CAA) and kindly brought to my attention by Peter Wade (Sevenoaks).

Follow Ups

Peter helped identify the circular vapour trails reported by one friend and still wonders why the AWACS that made them was on exercise 'near Stansted'. Of course, in three dimensions, it wasn't near Stansted, just overhead! It was far too high to be of any consequence to Stansted's own controlled airspace. It would have been in the London Terminal Maneuvering Area and hence controlled by LATCC (doubtless by London Mid in co-ordination with the appropriate civil sector).

I'm keeping with accepted convention, navigational aids are named after the nearest large town or area. No-one who wants to know about 'Mike Sierra's' movements. Most are on the aerodrome's established allocations. There are some special cases, Duxford for example, which always controls displays on 134.5MHz. The trouble is, I last published this one in the October '92 issue and I have to strike a balance between being repetitive - and the information last appearing so long ago that we've all forgotten about it. Some displays have a temporary frequency, promulgated shortly beforehand by Class I NOTAM. I can't afford a data terminal to receive these NOTAMs and, in any case, unless at least 6 weeks notice is given, I'd never get the information in print in time. If anyone out there can send these frequencies in good time then please do.

An old problem is again mentioned by Rodenick. At a display, many people are heard eavesdropping on u.h.f. and other channels. By accepting this inside the airfield, the display organisers have given a sort of default approval that their frequency can be listened to. A magazine like this one circulates to tens of thousands of people in all kinds of places and there is NO approval for the printing of messages heard whilst listening. Anyway, I'm sure that all 'Airband' readers listen through an earpiece when in public, so as not to disturb others. For example, some people's hobby is to record events on video tape with hand-held TV cameras, they want the aircraft noise, not radio chat, on their sound tracks. Now that the airband extends up to 137MHz some allocations are being made in the near section. France has had particular need for this, and the ZG radio supplements will reflect this when they are updated. Suppliers of these books are listed on Airband Factsheet, an A4 page, which is free on receipt of a stamped reply envelope at the Editorial Office (DON'T send to me, please!). Meanwhile, Stuart Terry (Canterbury) knows that Paris is on 136.075 and Brest 136.45MHz. Stuart doesn't say, but I assume, that these are area control centres and not aerodrome frequencies. More changes appear to be of any consequence to Stansted's NAT-D. Another report on the French frequencies came from Alan Page (Loughborough) who also sent a photo taken in the cockpit of an MD-81 'somewhere between Birmingham and Zurich'. I see that heading was south-easterly, FL330 and doing 310kt indicated. The conventional instruments look remarkably like those of an older DC-9, complete with pretty light-blue instrument panels.

One of the sources in the Factsheet is the RAF, whose Flight Information Handbook is most useful. Tim Christian (Norfolk) spotted the NAT-F North Atlantic circuit in section 3 of the handbook and sees that it takes over the northern part of NAT-A and the southern part of NAT-D. Gander will no longer work the NAT-D area. No one who wants to know about NAT-D should be without this handbook.

Frequency and Operational News

Plenty of new changes in the April G4SL, with thanks to the CAA. At Bristol (Lu怎么做) the a.t.i.s. changed to 126.025 (was 121.75MHz), Gloucester knows that 127.475 is now 121.85MHz (was 121.75MHz). Cranfield no longer has radar, but I'm not sure if that means 122.85MHz is now disused. Guernsey now has Ground Movements Control. 121.8kHz at busy times. Truro loses its ATZ, Duxford composes its ATZ with Fowlmere's on 120.925MHz. Wattisham has been transferred to the Army Air Corps (as previously reported) and Carl Hender

Short Wave Magazine, July 1994

60
Traffic outside regulated airspace, but still within the limits of radar cover, can not be given orders by the controller but may ask for a Radar Information (or Advisory) service in order that the controller can help by passing the locations of conflicting traffic.

Abbreviations

a.t.i.s. automatic terminal information service
AIC Aeronautical Information Circular
ATZ Aerodrome Traffic Zone
AWACS Airborne Warning And Control System
CAA Civil Aviation Authority
DC- Douglas Commercial
E East
FL Flight Level
GASIL General Aviation Safety Information Leaflet
i.f. high frequency
i.s. instrument landing system
kHz kilohertz
km kilometres
kt knots
LATCC London Air Traffic Control Centre
MD- McDonnell-Douglas
MHz megahertz
Mil Military
N north
NOTAM NOTice to AirMen (includes AirWomen)
PAR Precision Approach Radar
PFA Popular Flying Association
Selcal Selective Calling
u.f. ultra high frequency
VFR Visual Flight Rules
Z Zone time (same as UTC/GMT)

C. M. HOWES

COMUNICATIONS

CLEAN UP YOUR RECEPTION!

DUAL BANDWIDTH AF FILTER: £29.80
- Reduce noise and interference
- Sharp SSB/Speech filter with faster roll-off than IF crystal filters
- 30kHz bandwidth
- Printed and punched front panel
- All aluminium case
- Simply connects between radio and external 'speaker or 'phones
- Suits all general coverage receivers and transceivers
- Excellent receiver upgrade

ASL5 Filter Kit (£15.90) + HA5OR Hardware (£13.90) = £29.80

RECEIVER KITS

TRF3 Shortwave Broadcast TRF receiver for AM/SSB/CW, 5.7 to 12.8MHz. Complete electronics kit plus Hardware Pack. £41.40

DrRx Single Band SSB/CW for 80, 40, 20M amateur bands or 5.45MHz HF Air. Complete kit with HA809 Hardware Pack and DS52 "S Meter": £57.70

DXR10 Three band 10, 12.5, 15M SSB/CW complete kit with HA109 Hardware Pack and DS52 "S Meter": £64.30

The above kits are also available with assembled PCB modules and as basic electronics kits without the hardware.

AA2 150kHz to 30MHz ACTIVE ANTENNA

The howes AA2 is the active antenna for general coverage HF reception. Broadband performance that does not tail off at the higher frequencies. A neat compact answer for those with limited space, holiday use, mobile operation etc. Two selectable gain settings, local or coax powering (12 to 14V). Good strong signal performance, IP3 +35dBm. Easy to build, and much liked by customers!

AA2 Kit: £8.90
Assembled PCB Module: £13.90

AA4 ACTIVE ANTENNA FOR SCANNERS
Covers 25 to 1300MHz. Broad-band performance in a neat, compact package. Just over 16 inches long the answer to space/visibility problems for home or portable use. A low noise microwave IC gives good performance with a low parts count, making construction straightforward. Excellent performance in a small space!

AA4 Kit: £19.90
Assembled PCB Modules: £27.90

AB118 AIR-BAND ACTIVE ANTENNA
Optimised for long distance reception on 118 to 137MHz air-band. Omni-directional with low noise pre-amplifier and box pass filter. Switchable 10dB attenuator. Fits standard 1.5 inch plastic water pipe for easy weather-proof installation, or use it "naked" in the loft. Hear ground stations you've never heard before!

AB118 Kit: £18.80
Assembled PCB modules: £25.90

MEDIUM WAVE and "TOP BAND" RECEIVER

Complete kit with hardware to build a super portable receiver covering the medium wave broadcast band plus 160M amateurs. Easy to build with good performance. An excellent first project. Includes all parts except the battery.

MW1: £29.90 (plus £3.00 P&P)

PLEASE ADD £1.50 P&P for kits or £4.00 P&P if ordering hardware.

HOWES KITS contain good quality printed circuit boards with screened printed parts locations, full, clear instructions and all board mounted components. Sales, constructional and technical advice are available by phone during office hours. Please send an SAE for our free catalogue and specific product data sheets. Delivery is normally within seven days. 73 from Dave G4KQH, Technical Manager.
Scanning

Following in someone else’s footsteps is often a daunting - if not awesome - task - so spare me some sympathetic thoughts as Alan Gardner’s successor! Alan has, unfortunately, had to give up the column due to pressure of work and I hope that, with your help, I’ll maintain the extremely high standards Alan’s time in the chair has brought ‘Scanning’.

A new hand at the helm is not always a bad thing. I don’t, for example, intend changing direction hugely. I will, however, try to take aboard issues that have been raised to me by scanner owners here in my locality - and there are quite a few! It’s also not my intention to drift off course so regular readers of this section can sleep soundly in their beds on that one!

Obviously, there may be some alterations I’ll use this opportunity to go into my own areas and the sort of equipment I use, which will give you a good idea of what it is I enjoy. I’ll also put in some further thoughts on things I would like to see covered - and I’m sure that you will write in with ideas of your own! On that subject, if you’ve written to Alan and have not yet had a reply, then don’t worry! The mail is currently being redirected between Alan and myself and this takes time to sort out. If you’re not in, don’t fret! You’ll get through when we’re sorted.

I have now told him to try the RNLI Office should be informed by a Trading Standards Officer will prove to be closer to the making sense to look after both.

Search and Rescue

Search and Rescue interests are more than just a part of my scanning - as a crew member of the Treaddur Bay Lifeboat, you could say that I have vested an interest in the whole thing! I’m not the only one either, as nearly all the crew have scanners - monitoring them as a sort of pre-empt to the pager alarm or maroons going up! I also know other stations have scanner owners, with some stations also having a scanner fitted into the crew room! Obviously, if a situation is developing then, with some local knowledge, the crew can determine if there will be a ‘shout’. Not sanctioned by the RNLI, by the way, a versus a early warning system nonetheless.

I believe that many more of the Emergency Services personnel carry out very much the same thing here in the UK. Does this go on elsewhere, outside of this country? If you live abroad and know it does, then please drop me a line with what you know and I’ll feature it. It would be nice to know that the use of scanners can serve a more useful purpose than the very low one it is rumoured to have by a senator of some elements.

Now, a warning to potential purchasers of scanners. A colleague of mine, keen to get a scanner and unable to wait for one, purchased what was sold as a brand new top-of-the-range one through what I would consider was a very dubious outlet.

Pointed in the direction of a vendor by a ‘friend’, this person duly bought, for cash, a scanner which - after only a short while - failed to hold a charge on its NiCads or run from the supplied p.s.u. I charged the batteries for him myself and tried the set on one of nearly new and not new stuff changed hands, the dealer was unable to wait for one, purchased of mine, keen to get a scanner and had the set back and was told it would be repaired. A few days later he picked it up - to discover exactly the same thing was taking place! He then took the set back and asked for his money back, which - as you can imagine - he did not get. Why? No Bill of Sale had changed hands, the dealer was selling nearly new and not new stuff and my young friend had no proof he bought the set there. What’s more, he was accused of having bent the charge plug himself - not so, as the first person he came to see to get the set-up was myself!

If you have any queries or ideas you’d like to see start now and get writing! I’d welcome your views wherever you are in the world on any alterations/planeshites or what have you for this column. I’d be more than happy to feature them.

In the meantime, I hope that next month will prove to be closer to the principles of scanning - which saves me having to think about what I should say next!

Until next month, good listening.
RADIO WEATHER DATA SYSTEMS FOR IBM-PC COMPATIBLE COMPUTERS

Whether it's up to the minute front positions from live satellite pictures, five day forecasts from the Meteorological super computers or simply plotting up to date observation from around the globe, ICS have the solution.

**Met-2b**
A complete, easy to use, system for receiving live weather pictures direct from the Meteosat geostationary satellite. A new picture of Europe every 30 minutes. Automatic full screen animation. Colour and 3D display. Zoom. Too many features to mention here. Dish antenna, receiver, software and all leads included. Nothing more to buy.

*Met-2b: £999.95 – Carriage: £12.95*

**NOAA-2b**
An extension to the Met-2b system, allowing direct reception from low earth orbiting satellites. Includes 6 channel scanning receiver, antenna, leads and software. Automatic read out of surface temperature at cursor position, orbit prediction software. "You are here" indicator etc. Greater image definition from lower level satellites.

*NOAA-2b: £599.95 – Carriage: £12.95*

Prices include VAT at 17.5%. Literature available on request. Open Monday to Friday, 9:00 to 12:30, 13:30 to 17:30

ICS Electronics Ltd.,
Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD
Telephone: 0903 731101 Facsimile: 0903 731105

---

MOMENTUM COMMUNICATIONS

**MCL 1100 DATA DECODER**
The MCL 1100 Easyreader Data Decoder will automatically make sense of some of the strange noises that you can hear on your H.F. Radio Receiver enabling you to make FULL use of your equipment. The MCL-1100 processes data transmissions without the need of a separate computer and displays a full screen of text on your video monitor.

WHY make-do with one or two lines of information as offered by other manufacturers. And it’s designed and manufactured in the U.K.

**STANDARD FEATURES:**
- SMARTLOCK system for easy tuning.
- Full screen of readable text with on-screen tuning indication.
- Automatic decoding of RTTY, CW, FEC (NAVTEX) and ARQ.
- Auto or manual selection of transmission speeds.
- Extremely rapid lock onto signal.
- Connection for a parallel type printer.
- Made in the U.K.

**PHONE EASYREADER HOT-LINE FOR SPECIAL STARTER PACK DETAILS**

0384 896879

Authorised Dealers Martin Lynch Lowe Electronics ARC

6 & 7 Clarkson Place, Dudley Road, Lye, West Midlands DY9 8EL

---

Short Wave Magazine, July 1994
The latest information on METEOSAT encryption is published this month. I have received a large number of pictures kindly offered for inclusion in the column. Many are of high quality and I am invariably at a loss to know which to postpone! If you have submitted a picture which has not appeared, be assured that it is purely a matter of space.

Current WXSATs

If you are a beginner to the hobby of monitoring WXSAT operations, it might seem quite bewildering reading about which satellites are operating. Knowing how to identify them when they come over your horizon, transmitting signals not heard for some months, might seem all but impossible. However, experience with satellite predictions programs, together with keeping your own records of Russian (CIS - Commonwealth of Independent States) WXSATs can be invaluable.

There are two categories of operational METEOR WXSATs - series two and three. Yes, there was a series one, but those satellites were classed as experimental, and were discontinued some years ago. I still have tape recordings of several METEOR 1-30 passes that are readable using current software. Their image quality (even from the recordings) was excellent.

Those in the series two group (such as 2-19, 2-20 and 2-21) pass over a given location (such as Britain) some 18 minutes later each day. Contrastingly, those in the series three group (3-4, 3-5 and 3-6) pass over the same location some 18 minutes earlier each day. You can check this out by running a predictions program and listing pass times for a few consecutive days.

The orbits of each group will be seen to move progressively during the course of a week. This means that they are not sun-synchronous. Consequently they are always moving towards a terminator (day-night boundary). Eventually they catch up with it and, depending on the season, operate under nearly full illumination. It continues to transmit poor signal strength. One theory that might explain this, points out that it was put into orbit simultaneously with METEOR 19S (which transmits non-apparelled a.p.t. on 137.72MHz) and might have suffered from antenna misalignment during separation in orbit.

Across in the NOAA pump, NOAA-9 returned to normal operations on 137.62MHz during April. This followed its temporary clash with NOAA-11 passes. NOAA-10 also came back on (137.50MHz) after its short clash with NOAA-12, so we then had a long run with all four NOAA WXSATs transmitting. Officially NOAA-9 and 10 are backup WXSAUs, pending replacement by future NOAAs.

Some months ago I distributed the 'Learn Orbits' software (see February edition) that included self-teaching programs of high quality. One is used for test-running sample orbital elements. These programs seem to have been well received. They can be used to show exactly how the different METEOR orbits precess relative to the sun, and can therefore help in visualising changing sun angles, as experienced by the METEOR WXSATs during a period of several months.

Meteosat Encryption Update

As has been mentioned in previous months, METEOSAT Primary Data (PDUS) is due to be substantially encrypted in due course. Unfortunately no changes to WFAX users (SDUS) will be made for several years.

Discussions between EUMETSAT's 17 member states are ongoing, but a letter from Henk Verschuur, the MOP Technical Officer comments that full encryption is unlikely before late 1995, and he adds "It might be possible that several image products remain unencrypted... This appears to be a favourable change to the original plan."

PDUS Encryption

Modifications to current PDUS systems will take two forms. The first part involves the implementation of a decryption unit interface between the frame and bit synchroniser. This part will probably be required to be supplied by the PDUS manufacturer. Alternatively, it might be possible to procure this by a modification to the software.

The second change required is the purchase of a METEOSAT Key Unit (MKU) from EUMETSAT, which might be bought in the framework of a licence agreement with the UK Met Office. Further information should be available from July.

No NOAA Encryption

NOAA's position is not to encrypt data. The European community has been strongly encouraged not to encrypt its WXSAT data. There are agreements between governments to exchange such data, which means that the US has the right to distribute unencrypted European data within America.

Re-organisation of NOAA WXSAUs

For many years America has operated two types of low earth-orbiting WXSATs - the civilian programme run by NOAA, in which NOAs 9, 10, 11 and 12 transmit a.p.t. telemetry - and a military satellite. The three satellites in the converged programme will be evenly spaced, e.g., have equator crossing times at about 0330, 0930 and 1530 local. NOAA-9, NOAA-10 and NOAA-11 are backup WXSATs, pending replacement by future NOAAs.

EUMETSAT has been invited to consider participating in the new programme. My thanks to Paul Wilson of Macclesfield for providing me with this NOAA/DDO information.

GOES

Following a successful launch in April, the GOES-8 (Geostationary Operational Environmental Satellite) spacecraft is doing well. Rocket manoeuvres and deployment of the solar panels were completed successfully, and the imager was exercised. The first official GOES-8 image came after outgassing and communications switch-ons were completed.

GOES-8 is a new spacecraft with a complex ground system. It is almost a generation ahead of present GOES craft, having much better image resolution. Visible imagery will have 10-bit resolution and infra-red resolution will be twice as high as current images. There is a separate sounder for ozone monitoring. The craft has 3-axis stabilisation so image scanning limits are set by ground control. This means that they will obtain one full disc image each hour.

Its orbit was finally circularised on April 27 at which time its name changed from GOES-1 to GOES-8. The unfolding of the solar array was completed on April 28, followed by deployment of the magnetometer boom. On April 29 the spacecraft was allowed to tumble, allowing the magnetometer to obtain the characteristics of the craft's magnetic field.

Fig. 1: NOAA 11 image of UK from Dr Tony Batchelor.

The unfurling of the solar array was completed on April 27 at which time its name changed from GOES-1 to GOES-8. The unfurling of the solar array was completed on April 28, followed by deployment of the magnetometer boom. On April 29 the spacecraft was allowed to tumble, allowing the magnetometer to obtain the characteristics of the craft's magnetic field.

Lawrence Harris, 5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5QB
On April 30 solar sail deployment was completed; this means that the spacecraft is well balanced and has a proper centre of gravity against torques from the solar wind. In early May the imager's scan mirror was exercised to provide images of visible imagery. Tests will continue for some months, and GOES is expected to replace METEOSAT-3 during October at 75° longitude (over the eastern seaboard of the USA). GOES-14 is scheduled for launch in April 1995. My thanks to NOAA for providing the details of the GOES launch.

Current Geostationary Locations

As of early May, the position of WXSATs along the Clarke belt - all using 1691MHz - are as follows:

- METEOSAT-5 (MOP-2) is the operational European WXSAT, positioned at 13°W.
- METEOSAT-4 (MOP-1) is the current European backup WXSAT, located at 6°W (not normally transmitting).
- METEOSAT-6 (MOP-3) is undergoing tests on the anomaly in its infra-red transmissions, located at 10°W.
- METEOSAT-3 is positioned at 74°W, on loan to the USA. It will move to 70°W as back-up after GOES-8 becomes operational.
- GOES-8 is positioned at 90°W under test.
- GOES-6 is positioned at 105°W.
- GOES-7 is the Prime American WXSAT, positioned at 112°W (in the 'East' position).
- GOES-2 is the Western WXSAT, positioned at 134°W.

FENGYUN 2A

Just before press time for "Info" I heard that FENGYUN 2A had blown up during its testing phase. This is a very sad event which may have claimed some lives. In the western world, most satellite projects involve the building of a flight spare alongside the flight model, that latter being the one that actually goes into orbit. Flight spares were built for the ARIEL satellites with which I was involved as a controller. I don’t know whether there was such a spare for FENGYUN. The benefits of building a flight spare are numerous, if a fault develops in orbit, simulated events can be tested on the ground model, which can even be subsequently launched. The Australian Bureau of Meteorology (BOM) was working with the China Meteorological Administration (CMA) on the FENGYUN 2A (FY-2A) satellite to provide a Turn Around Ranging System (TARS) to support FY-2A operations as it currently does for the Japanese GMS satellite. FY-2A would be similar in performance to GARS, being fitted with high resolution imaging systems to provide image data, with resolutions of 5km in the infra-red, 5km in the water vapour band, and 1.25km in the visible. Low-resolution WEFAX (analogue), DCP capability, and a new digital S-band FAX service (CCITT G3) are to be included for the domestic distribution of charts and imagery.

Compared to the two FENGYUN-1 satellites launched in 1988 and 1990, the new-generation meteorological satellite FENGYUN-2 reportedly represents a breakthrough in terms of technical performance, scope of application and service life. The satellite design employs a number of advanced technologies, such as scanning radiometers, slender-body control technology and apogee engine separation, marking the first time such technologies have been used domestically and signalling a new stage in their country's space technology.

FY-2A downlink characteristics include:

- Provide image data, with resolutions of 5km in the infra-red, 5km in the water vapour band, and 1.25km in the visible.
- Low-resolution WEFAX (analogue), DCP capability, and a new digital S-band FAX service (CCITT G3) are to be included for the domestic distribution of charts and imagery.
- FY-2A satellite launched in 1988 and 1990, the new-generation meteorological satellite FENGYUN-2 reportedly represents a breakthrough in terms of technical performance, scope of application and service life.

GUIDE TO FAX RADIO STATIONS

14th edition • 400 pages • £ 22 or DM 50

The reception of weatherfax radiostations and meteorological satellites has become a major hobby. Inexpensive FAX hard- and software connects a radio receiver directly to a laser or ink jet printer. Advanced digital technology puts real-time satellite images on your PC video monitor, with fascinating colour and zoom features. This manual is the basic reference book for everybody interested in FAX via radio.

The new edition of our FAX GUIDE contains the latest equipment information, frequency lists and precise transmission schedules - to the minute - of 62 FAX radio stations and meteorological satellites, including those of Bracknell Meteo, Royal Navy London, METEOSAT, and the new Bracknell meteorological pulling services. The most comprehensive international survey of the "products" of weatherstations and FAX stations from all over the world is included: 353 sample charts and pictures were recorded in 1993 and 1994! Here are those charts for aeronautical and maritime navigation, the agriculture and the military, barographic soundings, climatological analyses, and long-term forecasts, which are available nowhere else. Additional chapters cover abbreviations, call signs, description of geostationary and polar-orbiting meteorological satellites, regulations, stations, technique, and test charts.

Further publications available are our unique Modulation CDS, Guide to Utility Radio Stations and RTTY Code Manual (12th ed.), and Air and Meteo Code Manual (14th ed.). We have published our international radio books for 25 years. They are in daily use with equipment manufacturers, monitoring services, radio amateurs, SW listeners and telecom companies worldwide. Please ask for our free catalogue, including recommendations from all over the world. For recent book reviews see SW Magazin 10/93 (p. 60), and RSGB’s RadCom 6/93. All books are published in the handy 17 x 24 cm format, and are of course written in English.

Do you want to get the total information immediately? For the special price of £ 115 / DM 270 you save £ 23 / DM 55 you will receive all our manuals and supplements (altogether more than 1800 pages!) plus our Cassette Tape Recording of Modulation Types.

Our prices include airmail postage within Europe and surface mail elsewhere. Payment can be by £ or DM cheque, cash, International Money Order, or postgiro account Stuttgart 2093 76709. We accept American Express, Eurocard, Mastercard and Visa credit cards. Dealer inquiries welcome - discount rates on request. Please fax or mail your order to:

Klingenfuss Publications
Hagenloher Str. 14
D-72070 Tuebingen
Germany

Fax 01049 7071 600849 • Phone 01049 7071 52830

PC Software

PC HF FAX Ver. 7.0 £116.33

The original and still the best HF FAX receive program. Simple to operate and install with new improved resolution.

PC GOES/WEFAX Ver. 3.3 £199.00

Receive both HF FAX images together with NOAA and Meteosat weather satellite pictures with this complete program.

PC SWL Ver. 3.1 £99.00

This simple and basic program allows the beginner to start decoding the numerous data transmissions around the HF bands.

PC SSTV Ver. 5.1 £99.00

Receive and view the numerous SlowScan TV images now sent on the Amateur frequencies.

PC Weatherspot Ver. 1.0 £93.00

A NEW program allowing any previously captured file of Meteo Code from Bracknell to be displayed on various maps with all relevant data. Optional Transmit Modulator available for HF FAX and SSTV.

Call for full details and brochures.

Prices include VAT. Please add £3.50 P&P

COMAR ELECTRONICS
Unit 3, Medina Court, Arctic Road, Cowes, Isle of Wight PO31 7XD

Tel: 0983 200308 Fax: 0983 282400

Short Wave Magazine, July 1994
Fig. 3: METEOSAT-3 re-transmission from David Simpson.

Channel Frequency Bandwidth
SV/SAR 1681.0 MHz 20kHz
LR-FAX 1691.0 MHz 26kHz
S-FAX 1699.5 MHz 26kHz

This information has been provided by both the BBC and Mike Kenny of Satellite Engineering, Bureau of Meteorology, in Australia.

Letters and pictures

Dr Tony Batchelor of Falmouth sent some large format pictures of east's position (currently occupied by Deskjet 500. His original image is imported it into PagePlus and printed on a high resolution laser printer. The picture in Fig. 3 is from NOAA 11 during June 1993 and shows a clear Britain (I don't receive it every day.) The reflection of the sun in the Atlantic ocean was recorded. All of the isles in the western Mediterranean are clearly seen, and thunderstorms off the north-western coast of Spain. Tony comments on local QRN (radio interference) on 138.3MHz that affects METEOR signals. That is probably a pager frequency. Tony has also noted an interfering signal on 137.58MHz that he says affects NOAAs 9 and 11 on 137.62MHz. The British satellite X2 (PROSPERO) transmits on 137.56MHz so could be involved. It is normally of low power.

Mike Smith of Sherborne obtained an exceptional image from NOAA 9 on February 20 this year. Fig. 2 shows the Canary Islands off the coast of west Africa in this visible-light image. Mike was surprised at the conditions that could allow reception of such a clear signal. We do not normally receive much of a signal from NOAA WXSATs over this part of west Africa. Mike used PIOUSat and obtained a BMP format image, then imported it into PagePlus and printed it 20% lighter than normal on his Deskjet 500. His original image is quite remarkable.

David Simpson sent some printouts obtained from METEOSAT. They include images from the GOES series of satellites and several supplied by METEOSAT-3, and from the Japanese GMS-4 WXST slots, currently being re-transmitted by METEOSAT-5. The picture in Fig. 3 is a visible-light image from METEOSAT-3, from the series transmitted by METEOSAT-5 at 1330UTC. At this time the area is near sunrise so illumination is low, but the cloud front off the east coast, being high above the ground, shows up quite well. The state of Florida also shows well against the dark Atlantic. State outlines are added by ground controllers as an aid to position identification. For those who prefer a more realistic image (without the outlines), software often incorporates a filter which can remove the sudden transition to white. The resultant image can be very effective, but sometimes undesirable effects can occur, depending on the amount of white present in the image - it all adds to the fascination of image processing.

Jim and Hilda Richardson of Fife (Jim was mentioned earlier) purchased the TH2SAT package that I reviewed last year. They comment that they are impressed with its particular 'quick save' feature. They have used screen photography with 202ASA colour film to produce several prints, from which I have selected Fig. 4. This is from METEOR 3.5 passing over the Kola Peninsula earlier this year. The extensive ice cover on the White Sea can be clearly seen.

Fig. 4: METEOR 3-5. Kola Peninsula. Jim and Hilda Richardson.

More Software!

I am currently examining some satellite predictions programs which I have received from readers and other sources. I hope to make one or more available from next month, after which deciding which seems the most suitable for general use. I suspect this will be a most welcome opportunity for new readers of this column.

Special Edition

Later this summer I will be producing a special feature on WXST hardware and software, when I have consolidated all of the information recently requested from various companies.

Kepler Elements

I will send a print-out of the latest WXSTats upon receiving an s.a.e. and separate, extra stamp. All WXSTats plus MIR are included, together with transmission frequencies if operating. This data originates from NASA. Alternatively, because I already send monthly Kepler print-outs to many people, you can join the list and save some postage by sending a 'subscription' of £1 (plus four self-addressed, stamped envelopes) for four editions, sent at monthly intervals. A massive 600Kb file containing recent elements for thousands of satellites is regularly issued by NASA. I now provide a version of this, split into smaller sections, from which separate satellite groupings are extracted. A print-out identifying NASA catalogue numbers (for the WXSTats, Amateur Radio satellites, and others of general interest), in both launch and object format - is included. This option is currently being improved. Please enclose cash, a cheque, or PO for £3 with your PC-formatted disk and s.a.e. Further suggestions for improvement will be welcomed. This is essentially a non-profit-making offer.

Frequencies

NOAAs 9, 11 a.p.t. on 137.54MHz; NOAA 10, 12 on 137.50MHz; NOAA beacons on 136.77 and 137.77MHz; METEOR 2-21 on 137.40MHz and METEOR 3-5 on 137.85MHz.

Abbreviations

a.p.t. automatic picture transmission
AVHRR Advanced Very High Resolution Radiometer
BBS Bulletin board service
DOS Disc Operating System
EMS Expanded (or extended) memory
ESA European Space Agency
EU/OMETSAT European Organisation for the exploitation of Meteorological Satellites
GOES Geostationary Operational Environmental Satellite
GOMS Geostationary Operational Meteorological Satellite
h.r.p.t. high resolution picture transmission
NASA National Aeronautics and Space

Short Wave Magazine, July 1994
PROsat II is used by most leading Weather Satellite enthusiasts. Lawrence Harris, Roger Ray and Brian Dudman are just a few who have come to rely on the vastly superior features of PROsat II. Features such as 1,000 frame full screen full colour animate, 3D, direct temperature readout and Windows export make Timestep products preferred by most users. All satellites are catered for including the awkward Japanese GMS and the very infrequent Soviet Okean series. All current SVGA cards are supported. NOAA images contain full resolution visible and infrared data in a stunning 2.4Mb file!

If you really are serious about Weather Satellites, phone or write us now for a colour catalogue and find out why the world’s experts including Arthur C. Clarke use and recommend our equipment.

Timestep
PO Box 2001
Newmarket
CB8 8QA
England
Tel: 0440 820040
Fax: 0440 820281

Advanced Weather Satellite users will by now have read about our new TRACK II prediction software. Full screen colour graphics and 6 simultaneous satellites are just some of the amazing features. For the ultimate in detail we offer HRPT digital systems with five 1.1km ground sensors, towns and rivers are clearly visible. For everyday use we also have the PDUS digital Meteosat system that takes 2.5km data every 30 minutes. Timestep PDUS colour animate is used several times a day by Anglia Television because of its very high resolution combined with spectacular colour. Forecasters will appreciate temperature calibrated 30 minute interval images.

A full range of separate Antennas, Preamplifiers, Cables, Receivers and accessories are held in stock.

NEW! TU3 Antenna Tuner

- Ideal for receivers with a long wire Antenna on the H.F. bands, 1-30MHz.
- Versatile! The touch of a switch gives any one of 3 different arrangements.
- Quality case - black with printed aluminium front & back facias. Measuring only 170-140-50mm.
- Kit complete with ALL components and hardware including pre-punched case and panels.

Price £44
Ready made £54

LAKE ELECTRONICS
7 MIDDLETON CLOSE, NUTHALL,
NOTTINGHAM NG16 1BX
(Callers by appointment only)
Clevedon appears to have found the answer and reports that it’s a Russian variant of the British Piccolo or French Coquelet multi-tone system. Bill Jeffs of Wimborne also wrote in pointing out that it looked very similar to the Piccolo system. Incidentally, for those that haven’t come across Piccolo it was an ingenious system that used tone combinations to represent letters of the alphabet. The nearest modern equivalent is the two tone system used to represent digits in modern telephone systems. The Piccolo was originally developed for the diplomatic service to provide error free reception in noisy city centre locations. However, the most famous use of the system was when it was used to transmit daily news reports to the QEI!

Complex Modes

Geoff Crowley of Aberdeen is a regular contributor and poses a frequently asked question - Is it worth upgrading to what’s become known as the complex modes? Most of the popular decoding systems on the market have been developed to handle the more common modes such as FEC, ARQ, RTTY, c.w. and FAX, but there are a wide range of less common systems in use. It is these latter systems that tend to be referred to as the complex modes.

Typical examples being ARQ-E, ARQ-E3, FEC-A, TDM342, TDM242, TQRG, RTTY, FAX and many more. In order to receive these modes you will most likely have to make a significant upgrade to your decoding equipment and move to top-of-the-range systems like those from Universal, Wavecom and Yokai. The abundance of ARQ-E3 is primarily due to his monitoring the French Forces h.f. comms network. Although only really relevant to South Africa, Robert reports that the highest density of utility transmissions occurs at between 1800 and 2200UTC.

Amiga Software

Andrew Westmorland of Wakefield has written in response to my request for help with software for the Amiga range of computers. Andrew has been using 17 Bit Software of Wakefield and reports some good public domain software. For more details please contact 17 Bit direct on (0924) 365982 or write to 17 Bit Software, 1st Floor Offices, 2/8 Market Street, Wakefield, West Yorkshire WF1 1DH. My thanks to Andrew for taking the trouble to write.

Shot this shows him reading SWM whilst listening to his home-brew fourteen valve, double superhet receiver. In fact, Dennis has been a keen listener since 1934 and an avid reader of SWM since 1939. In the second picture not only does Dennis grown more handsome (1) but his shack has expanded considerably. Current receivers are a NRD-525 and Drake R7A, which in turn drive a selection of decoding systems. These include the Universal M-7000, FAX-1 and Telereader 670E. In addition he runs a 386SX computer. The antennas comprise a TH4X3 at 40ft plus a 22m long wire which with his house being 300m a.s.l makes for a very effective set-up. Just to prove the point Dennis has sent me a selection of top quality FAX charts that he’s received over recent months. If you can beat this for continuous listening why not drop me a line with a few details or a photo or two.

Momentum Update

I have one or two corrections to add following my review of the MCL-1100 Starter Pack in the May issue. The optional TV modulator is no longer available following the introduction of the starter pack with its own monitor. This is probably a good move as TV’s generally make poor monitors. Bob Taylor of Momentum has also promised to improve the documentation with the next release.

USCG Boston (NMF/NIK)

Following a recent QSL with this station, Chris Durkin of Ormskirk has sent me a copy of a fact sheet about this important US Coast Guard station. The station fulfills a number of key roles including long range ship-to-shore and air communications for command, control and co-ordination of coast guard operations within the Arctic.

Readers’ Letters

Ray Howgego from Caterham uses both JVFAX and PC GOES/WFAX and writes: It’s been a real help with the double bands and as the overheads pass over the DX they can be tuned in. This rotated up to 3400. A program such as JVFAX. Please drop me a line if you can help.

Mark Atherton of Solihull, has recently started reading the column but being an ex-maritime radio officer he has lots of radio experience. He recalls using an old Japanese FAX receiver but was unable to access the PC GOES a.m. port for use by other programs such as JVFAX. Please drop me a line if you can help.

Mike Richards G4WNC, PO Box 1863, Ringwood, Hants BH24 3XD

Mystery Signal Identified

In the April Decode I printed a request for help from Dr Martin van Dunen of Holland. He had spotted a mystery multi-tone station on 12101 and 14.397 MHz and asked if it could be identified. Day Watson of Northwood received a selection of TDM modes and a photo of the front panel. The FAX image was produced by three needles that attached to a turntable. This rotated and as the needles passed over the image was gradually built-up. Does anyone out there have any more information about this system? The nearest modern equivalent is the two tone system used to represent digits in modern telephone systems.

Dennis Heaton - a lifetime of listening. On the left in his 1947 shack, while below in his present one.

"Dennis Heaton - a lifetime of listening". On the left in his 1947 shack, while below in his present one.

"Dennis Heaton - a lifetime of listening". On the left in his 1947 shack, while below in his present one.
North Atlantic and Caribbean area. These communications are by satellite RTTY systems. This prime role is supplemented by a number of other services such as weather information, NAVTEX and Ice patrols. This latter service having been set up to avoid the tragic sinking of the RMS Titanic in 1912. The main station is located on a 57 acre site about 55km south of Boston in Marshfield, Massachusetts. The transmitter site covers about 542 acres within the Massachusetts Military Reservation on Cape Cod. This is supplemented by an unmanned microwave site at Manomet with the whole network interconnected using landlines and microwave links.

The Boston main site uses 30 Harris R-368/F, U.R.F. I.f.m/f.h. receivers that are connected to an omni-directional Hermes aperiodic loop array. At the transmitter site there are 12 state-of-the-art Collins HF-80 10kW transmitters plus two National NX2300 7T.t.m.f. transmitters. This impressive set-up can be patched to an amazing range of 18 antennas that comprise 4 directional log, periodic, 4 omni-directional, horizontal log, periodic, 1 omni-directional horizontal flat-top (i.m.) and 1 omni-directional vertical dipole!! As you can imagine, both sites are manned 24 hours a day and employ a total of 68 people. If you'd like to contact this station the G3L address is USCG. Communication Station Boston, Marshfield, Massachusetts 02050, USA. Just to complete the picture, you should find the latest Boston Schedule in the column. Thanks to Chris for supplying this information.

JVFAX Bits & Pieces

With so many readers having taken up JVFAX (around 900 so far) I've received an assortment of queries/suggestions that warrant an airing. The first concerns the use of JVFAX with PC emulation programs - it won't work! Over the years there have been a number of attempts to write emulation programs that make other computers like the Sinclair QL behave like an IBM PC. Whilst some of these do enable common business application to run and successfully they don't work with most comms programs like JVFAX and HAMCOM. This is because comms programs usually employ non-standard routines to work directly with the system hardware, but emulators work with standard basic input and output routines (BISOs). My second point will be of interest to anyone building the complex interface that's detailed in the next fact sheet. Many people have had some difficulty finding a supplier of the analogue to digital interface chip (LTC1099). John Collins of Bristol reports that he managed to get one on-off quantifiers from ANZAC, Z22. Yeovi Road, Slough Trading Estate, Slough SL1 4JA. Tel: (0628) 604411. If you live in the Bristol area and have managed to get a complex interface to work perhaps you could help John as he's having a few problems. Finally, I'm looking for some information from you. Whilst JVFAX works best on a 386 based machine or better, I know some of you are using it with some of the older processors. If you've managed to run this successfully could you drop me a line with details of the system settings that you used to overcome the speed problems. Coming soon will be a few hints on using the SSTV options plus some guidance on the date driven FAX reception. If you need any help with JVFAX, HAMCOM or PKTMON please write to the address at the head of the column. Whilst I can't always answer personally I can respond via the column.

PKTMON12

Those of you who have already sent in your copy of HAMCOM will have noted the inclusion of an extra chapter on PKTMON12. This was included on the original disk supplied by HAMCOM author Wilhelm Schroeder so has been incorporated into the program. You can therefore review these logs to see complete contacts between two stations. This is especially useful when trying to make use of information retrieved from bulletin boards.

Letter Replies

I'm sorry to have to say that I'm no longer able to provide a personal response to the many technical queries. This is due to a combination of pressures on my time, not the least of which is dealing with requests for JVFAX/HAMCOM and frequency lists. What I will continue to do is answer all the complicated technical queries through this column. I am also working on a series of Fact Sheets covering the most common areas like where to start and computer interference, etc. This will enable me to help a larger number of people with their listening problems. So please keep the questions coming. First fact information on interference is ready this month, details below.

Special Offers

The following special offers are available to Decode readers. Although some of the deals are aimed around a day or two you should allow up to two weeks for delivery (we might have tried to go on holiday or something?!) JVFAX Provides FAX and SSTV reception, transmission and image manipulation facilities. HAMCOM Provides RTTY and c.w. transceive facilities for PC users. This program is supplied with PKTMON12 enabling reception of h.f. and v.h.f. packet signals.

Day Watson Beginners List

This comprises a chronological listing of reliable utility signals designed to entice the new listener can easily find some signals to decode. These are also some good listening tips and explanations. Version 200 is now available.

Decode List: This is a straightforward frequency list of around 3 to 4 pages of reports sent in over the last few months.

Fact Pack 1: This fact sheet is on solving interference problems. With some three or four pages of hints and tips, it should help pick out some of the interference problems.

Ordering Details: For each program send a blank formatted 3.5in disk (720kb or 1.44Mb) plus 50p and a self-addressed sticky label.

Beginners or Decode List: 50p and a self-addressed sticky label. Both lists plus JVFAX or HAMCOM blank formatted 3.5in disk (720kb or 1.44Mb) plus £1.50 and a self-addressed sticky label.

Fact Pack 1 (interference) sticky self-addressed label and 50p.

Frequency List

Another fix of logbook from Decoders J. Fairfax, S. Workman, Steve Walker, Geoff Crowley, Chris Durham and Day Watson.

USCG Boston (NMFK-NIF) Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0600</td>
<td>6.3323</td>
</tr>
<tr>
<td>0600</td>
<td>8.4148</td>
</tr>
<tr>
<td>1200</td>
<td>11.5773</td>
</tr>
<tr>
<td>1800</td>
<td>17.5773</td>
</tr>
<tr>
<td>2400</td>
<td>23.5773</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0600</td>
<td>6.3323</td>
</tr>
<tr>
<td>0600</td>
<td>8.4148</td>
</tr>
<tr>
<td>1200</td>
<td>11.5773</td>
</tr>
<tr>
<td>1800</td>
<td>17.5773</td>
</tr>
<tr>
<td>2400</td>
<td>23.5773</td>
</tr>
</tbody>
</table>

Ordering Details:

Decode List: This is a chronological listing of reliable utility signals designed to entice the new listener can easily find some signals to decode. These are also some good listening tips and explanations. Version 200 is now available.

Fact Pack 1: This fact sheet is on solving interference problems. With some three or four pages of hints and tips, it should help pick out some of the interference problems.

Ordering Details: For each program send a blank formatted 3.5in disk (720kb or 1.44Mb) plus 50p and a self-addressed sticky label.

Beginners or Decode List: 50p and a self-addressed sticky label. Both lists plus JVFAX or HAMCOM blank formatted 3.5in disk (720kb or 1.44Mb) plus £1.50 and a self-addressed sticky label.

Fact Pack 1 (interference) sticky self-addressed label and 50p.

Frequency List

Another fix of logbook from Decoders J. Fairfax, S. Workman, Steve Walker, Geoff Crowley, Chris Durham and Day Watson.
Short Wave Magazine, July 1994

With the approach of the peak holiday season perhaps this is a good time to remind you to take a small portable radio receiver with you! Exploring the bands while in a new or favourite location can be quite rewarding and your findings are bound to be of interest to the readers of LMS.

If you do not own a suitable set, then may I suggest that you study the adverts in this issue. A wide range of portables are on offer, some of which are capable of quite remarkable performance.

Long Wave Reports

Note: L = Listening; W = World Service

 conditions on the 21MHz (13m) band.

Although intended for listeners in Asia, R. Australia's Darwin broadcast on 21.752 (Eng 0630-1100) often reached the UK. This was very weak or inaudible. Under favourable conditions it rated 34333 at 0935 in Woking; SI0322 at 1330 in E.London; Africa 1330-1400) 55555 at 1030 by Kenneth Buck in Edinburgh.

Also heard here in the morning were UAEP Abu Dhabi; 21.732 (at 0500-0600) may be heard - it peaked SI0333 at 1200 in Edinburgh. After dark.

\[
\text{Table 1: \text{short wave frequencies}}
\]

<table>
<thead>
<tr>
<th>Station</th>
<th>Power (kW)</th>
<th>Listener</th>
</tr>
</thead>
<tbody>
<tr>
<td>153</td>
<td>1000</td>
<td>A.P.C.</td>
</tr>
<tr>
<td>152</td>
<td>1200</td>
<td>F.R.</td>
</tr>
<tr>
<td>151</td>
<td>1000</td>
<td>K.L.</td>
</tr>
<tr>
<td>150</td>
<td>1200</td>
<td>I.J.K.L.</td>
</tr>
<tr>
<td>149</td>
<td>1000</td>
<td>G.H.M.</td>
</tr>
<tr>
<td>148</td>
<td>1200</td>
<td>C.D.E.</td>
</tr>
</tbody>
</table>

*Notes: Entries marked "* were logged during darkness. All other entries were logged during daylight or at dusk.

Long Wave Report: Conditions on the h.f. bands were generally poor during April. The 13 & 16m bands often closed early in the evening.

The 25MHz (11m) band appears to have been vacated by all international broadcasters. The daily broadcast rates from R.H. via Alious, France on 25.620 were not heard here after dark. Daily variations in propagation were observed in the 21MHz (13m) band.
<table>
<thead>
<tr>
<th>Frequency (kHz)</th>
<th>Station</th>
<th>Country</th>
<th>Power (kW)</th>
<th>Listener</th>
<th>Frequency (kHz)</th>
<th>Station</th>
<th>Country</th>
<th>Power (kW)</th>
<th>Listener</th>
</tr>
</thead>
<tbody>
<tr>
<td>520</td>
<td>Hol-Sava (SR)</td>
<td>Germany</td>
<td>0.2</td>
<td>B.K.</td>
<td>510</td>
<td>Berlin (W)</td>
<td>Germany</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>522</td>
<td>Hol-Sava (SR)</td>
<td>Germany</td>
<td>0.2</td>
<td>B.K.</td>
<td>515</td>
<td>Berlin (W)</td>
<td>Germany</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>524</td>
<td>At Balta</td>
<td>Algeria</td>
<td>600</td>
<td>B.K.</td>
<td>525</td>
<td>Bravo (BBC)</td>
<td>Belgium</td>
<td>200</td>
<td>B.K.</td>
</tr>
<tr>
<td>527</td>
<td>1240</td>
<td>Germany</td>
<td>100</td>
<td>B.K.</td>
<td>530</td>
<td>Radio Algeria</td>
<td>Morocco</td>
<td>200</td>
<td>B.K.</td>
</tr>
<tr>
<td>530</td>
<td>Leipzig</td>
<td>Germany</td>
<td>100</td>
<td>B.K.</td>
<td>535</td>
<td>Radioshow</td>
<td>Morocco</td>
<td>200</td>
<td>B.K.</td>
</tr>
<tr>
<td>531</td>
<td>RRI via 7</td>
<td>Spain</td>
<td>7 K.W</td>
<td>B.K.</td>
<td>540</td>
<td>783</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>540</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>550</td>
<td>785</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>545</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>560</td>
<td>786</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>550</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>570</td>
<td>787</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>560</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>575</td>
<td>788</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>575</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>580</td>
<td>789</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>580</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>590</td>
<td>790</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>590</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>600</td>
<td>791</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>600</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>610</td>
<td>792</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>610</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>620</td>
<td>793</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>620</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>630</td>
<td>794</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>630</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>640</td>
<td>795</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>640</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>650</td>
<td>796</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>650</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>660</td>
<td>797</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>660</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>670</td>
<td>798</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>670</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>680</td>
<td>799</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
<tr>
<td>680</td>
<td>Woranzer (SR)</td>
<td>Germany</td>
<td>500</td>
<td>B.K.</td>
<td>690</td>
<td>800</td>
<td>Spain</td>
<td>5</td>
<td>B.K.</td>
</tr>
</tbody>
</table>

Note: Entries marked * were logged during darkness. All other entries were noted during daylight or at dawn.
**Local Radio Chart**

<table>
<thead>
<tr>
<th>Station</th>
<th>Frequency (kHz)</th>
<th>PEP Power (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC 2100</td>
<td>1260</td>
<td>1.00</td>
</tr>
<tr>
<td>LBC</td>
<td>1251</td>
<td>0.16</td>
</tr>
<tr>
<td>1210</td>
<td>1170</td>
<td>3.08</td>
</tr>
<tr>
<td>1161</td>
<td>1161</td>
<td>0.83</td>
</tr>
<tr>
<td>1026</td>
<td>1026</td>
<td>1.50</td>
</tr>
<tr>
<td>1242</td>
<td>1152</td>
<td>1.20</td>
</tr>
<tr>
<td>1152</td>
<td>1152</td>
<td>0.16</td>
</tr>
<tr>
<td>990</td>
<td>990</td>
<td>0.18</td>
</tr>
<tr>
<td>990</td>
<td>990</td>
<td>0.30</td>
</tr>
<tr>
<td>990</td>
<td>990</td>
<td>1.50</td>
</tr>
<tr>
<td>945</td>
<td>945</td>
<td>0.45</td>
</tr>
<tr>
<td>873</td>
<td>873</td>
<td>0.12</td>
</tr>
<tr>
<td>855</td>
<td>855</td>
<td>0.20</td>
</tr>
<tr>
<td>837</td>
<td>828</td>
<td>2.00</td>
</tr>
<tr>
<td>828</td>
<td>828</td>
<td>1.00</td>
</tr>
<tr>
<td>828</td>
<td>828</td>
<td>0.27</td>
</tr>
<tr>
<td>792</td>
<td>792</td>
<td>0.14</td>
</tr>
<tr>
<td>774</td>
<td>774</td>
<td>0.037</td>
</tr>
<tr>
<td>756</td>
<td>666</td>
<td>0.20</td>
</tr>
<tr>
<td>630</td>
<td>585</td>
<td>0.03</td>
</tr>
<tr>
<td>585</td>
<td>585</td>
<td>0.30</td>
</tr>
<tr>
<td>585</td>
<td>585</td>
<td>0.14</td>
</tr>
<tr>
<td>556</td>
<td>556</td>
<td>0.04</td>
</tr>
<tr>
<td>534</td>
<td>534</td>
<td>0.12</td>
</tr>
<tr>
<td>513</td>
<td>513</td>
<td>0.06</td>
</tr>
<tr>
<td>483</td>
<td>483</td>
<td>0.03</td>
</tr>
<tr>
<td>462</td>
<td>462</td>
<td>0.02</td>
</tr>
<tr>
<td>441</td>
<td>441</td>
<td>0.01</td>
</tr>
<tr>
<td>420</td>
<td>420</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Notes:**
- Entries marked * were logged during darkness.
- All other entries were logged during daylight or at dawn.

**Listeners**:
- E. Lee, Sunderland.
- T. Inkster, Congleton.
- Martin Dale, Stockport.
- W. Williams, Islington.
- P. F. Ryan, Burton-upon-Trent.
- V. Underhill.
- F. John, Edinburgh.
- G. Murphy, E. London.
- M. McPhillis, Co. Monaghan.
- P. Richard, Barton-under-Howard.
- S. Hockenhull, E. Bristol.
- M. Hughes, Newry.
- M. McCr😨, Co. Monaghan.

**More favoured conditions often existed in the 13MHz (22m) band and reception from some areas was reported as good.** SRI via Sottens? 13.685 (Fr, En, Fr, Port to Aust, SRI Pacific 0830-1100) was 55555 at 0900 in Appleby; R. Austria via Darwin on 13.625 (En, Chin to Asia) 13.455 (Fr) was 44444 at 1700 in Stirling. Later, SRI via Sottens? 13.635 (Eng, Ger, Fr, Fr to M. East, Austria 1700-1900) was 33333 at 1815 in Macclesfield. D'W via Julich? 13.730 (Eng to W. Africa 1900-2100) was 33333 at 2000 in Worthing, BBC via Ramsgate 13.660 (Fr to M. East, Austria 1900-2100) was 33333 at 2100 in Vatikan R.

**Better noted from the UK, 10kW transmission on 9.700 (Eng to 12:00) was 33333 at 0930 in Sunderland and SIS033 at 1120 in Rotterdam.**

**Many bands have been noted in the 9MHz (31m) band.** R. New Zealand's broadcast to Pacific areas reach to the UK, 10kW transmission on 9.700 (Eng to 12:00) was 33333 at 0930 in Sunderland and SIS033 at 1120 in Rotterdam.

**More**

**Conditions**

- Better noted from the UK, 10kW transmission on 9.700 (Eng to 12:00) was 33333 at 0930 in Sunderland and SIS033 at 1120 in Rotterdam.

**More**

- Better noted from the UK, 10kW transmission on 9.700 (Eng to 12:00) was 33333 at 0930 in Sunderland and SIS033 at 1120 in Rotterdam.

**More**

- Better noted from the UK, 10kW transmission on 9.700 (Eng to 12:00) was 33333 at 0930 in Sunderland and SIS033 at 1120 in Rotterdam.
Reception conditions on the frequencies that many regard as the European pirate band, 6.2 - 6.4MHz, have been rather poor over the last few months, particularly during the mornings. The frequencies favored by American pirates 7.4 - 7.5MHz have only fared a little better. Nighttime conditions in the 3.9 - 4MHz area have rendered quite good results for the few stations that turn up there on a regular basis.

Generally speaking, most of the short wave pirates target their programmes for an audience at the weekends, with advertisements for pirate radio memorabilia in the shape of books, recordings and clubs. DX programmes including news of pirate radio activity are carried by several stations (I am not allowed to say which) but needless to say Andy Walker's Free Radio Show is possibly the one most well known. Some stations also play recordings of bygone pirate stations from the 60's or 70's, which can sometimes make fascinating listening.

Last quarter I became heavily inundated with mail following my offer to provide print-outs of pirate radio activity. Much as I enjoy hearing from readers, I almost reached the point of becoming a pirate radio bureau! The difficulty is that everyone wants information that the Radio communications Agency objects to me publishing here. Magazines printed abroad and private club newsletters would probably object to me publishing here.

Generally speaking, most of the DX programmes, releases to mobile radio networks in the area. Several electricity and gas companies still use private mobile radio equipment that operates around 107MHz, with amplitude modulation, for mobiles and around 139MHz for their base stations. When 'talkthrough' is switched on, for car to car use, anything transmitted on 107MHz is also radiated by the repeater on 139MHz, thus interfering with a system capable of covering a radius of about 65km. This system is indeed outdated and fairly quickly from interference from countries that legitimately use these frequencies for broadcasting. Because of this sensitive or emergency messages are usually sent to engineers by mobile telephone. New frequencies have in fact been allocated to these services for the few stations that turn up there on a regular basis.

The s.w. pirate Lazer Hot Hits are a new arrival in Ontario, Canada, and details of how to QSL are conveniently given on air. The operators of this station have had a campaign running to persuade the authorities to give them a national f.m. circuit. This could be achieved by using the newly available frequencies, or at the expense of either BBC Radio 3 or 4. It is argued that Radio 3 is more than compensated for by Classic FM, and Radio 4 simply does not require stereo quality for a talk station. Personally I can't see the Beeb relinquishing any of their transmission facilities. Still with the continued privatisation of the broadcasting industry and the possible abandonment of TV licensing, who knows?

European Free Radio stations are being relayed on 7.125MHz by the Italian Radio Relay Service, so this could be a frequency to keep an ear on. This seems to follow the current trend of shared transmission facilities, rather similar to legitimate s.w. stations.

I received many letters following last quarters report on restricted service licensed stations. It does offer a legal option to piracy, but only on a very short term basis.

Coming Soon

In a forthcoming 'Off The Record' I hope to look at Citizens Band radio in the UK following several years of illicit use. CB radio was legalised on a set of 40 channels at 27.6MHz and 20 channels on 934MHz in 1981, since then the EU have authorised the use of another 40 channels on 27MHz giving British users the theoretical use of 100 legal i.m. channels. What do you think of CB radio, its use or misuse and do you have any opinion on this matter?

A Reminder

This page makes constant references to pirate broadcasts, these are reported as a guide to our hobby of s.w. listening. Clearly, it would be misleading to pretend these stations don't exist and to ignore them completely. There is no intention to encourage or assist persons engaged in unlicensed transmissions, which in the event of a conviction, can carry heavy fines, imprisonment and the confiscation of equipment.

See you on this page next quarter...bye.

Land-based Pirates

The s.w. pirate Lazer Hot Hits are a new arrival in Ontario, Canada, and details of how to QSL are conveniently given on air. The operators of this station are

Virgin 105-108MHz?

Consultations are going on within the broadcasting industry over the future development of the 105-108MHz area of this band. Basically, the choices are either for community radio, a combination of regional and local stations or another national network. The m.w. rock station Virgin 1215

Off The Record

74

Short Wave Pirates Chart

<table>
<thead>
<tr>
<th>Station</th>
<th>Monitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subterranean Sounds</td>
<td>B</td>
</tr>
<tr>
<td>Reflections Europe</td>
<td>A,E</td>
</tr>
<tr>
<td>Delta</td>
<td>A,G</td>
</tr>
<tr>
<td>Gloria</td>
<td>A</td>
</tr>
<tr>
<td>Orang Utan, (Raided)</td>
<td>B,E</td>
</tr>
<tr>
<td>Reflections Europe</td>
<td>A,B,E</td>
</tr>
<tr>
<td>Lowlands</td>
<td>D</td>
</tr>
<tr>
<td>WGAS</td>
<td>A,C,D,E,F,G</td>
</tr>
<tr>
<td>Emerald International</td>
<td>B,E,F</td>
</tr>
<tr>
<td>Jolly Roger</td>
<td>A,E,F,G</td>
</tr>
<tr>
<td>Merlin (Raided)</td>
<td>A,F</td>
</tr>
<tr>
<td>British Radio</td>
<td>B,F</td>
</tr>
<tr>
<td>Ozone</td>
<td>A,C,E,G</td>
</tr>
<tr>
<td>Level 48</td>
<td>B,G</td>
</tr>
<tr>
<td>East Coast Commercial</td>
<td>A,C,E,F,G</td>
</tr>
<tr>
<td>Pirana</td>
<td>A,B,G</td>
</tr>
<tr>
<td>Xenon Transmitting Co</td>
<td>B,E,F,G</td>
</tr>
<tr>
<td>Free Radio Holland</td>
<td>B,D,F</td>
</tr>
<tr>
<td>Free Radio London</td>
<td>B,F</td>
</tr>
<tr>
<td>Live Wire</td>
<td>B,E</td>
</tr>
<tr>
<td>Caroline SW</td>
<td>A,B,C,D,E,F,G</td>
</tr>
<tr>
<td>Lazer Hot Hits</td>
<td>B,C</td>
</tr>
<tr>
<td>Starclub</td>
<td>G</td>
</tr>
<tr>
<td>Angel (Raided)</td>
<td>B,G</td>
</tr>
<tr>
<td>Optimod</td>
<td>A,D,E</td>
</tr>
<tr>
<td>Dublin</td>
<td>A,E</td>
</tr>
<tr>
<td>Waves. (Closure announced)</td>
<td>A,E</td>
</tr>
<tr>
<td>Germonio</td>
<td>B,C</td>
</tr>
<tr>
<td>Brightspire</td>
<td>A,B,C,E</td>
</tr>
<tr>
<td>Europe</td>
<td>A,B</td>
</tr>
<tr>
<td>World Communication</td>
<td>A</td>
</tr>
</tbody>
</table>

B. Ian Turner, Deal, Kent.
C. Bob Marah, Bexleyheath, Kent.
D. Connor Walsh, Wexford, Ireland.
E. Rab O'Fokel, Sunderland, Tyne & Wear.
F. David Williams, Bursledon, Southampton.
G. Dave Murphy, Sale Cheshire.
SOLE U.K. IMPORTER FOR VARGARDA
HIGH PERFORMANCE – HIGH QUALITY
VHF/ UHF ANTENNAE

AVAILABLE NOW AT THESE RADIO OUTLETs:
MARTIN LYNCH
LOWE ELECTRONICS
BREDHURST ELECTRONICS
SKYWAVE
ALAN FOUIL
JAYCEE ELECTRONICS
PHOTO ACOUSTICS
ICOM RADIO HAMSTORES

If your local dealer doesn’t have stock – ask why.

Toroidal Transformers for
13.8V DC Power Supplies
9T845 16.1 VOLT AT 42 AMPS (PW MARCHWOOD PSU)
8C267 18 VOLT At 27.8 AMPS (500VA)
Complete standard range of 107 types of ILP Toroidal
Transformers and the full range of ILP Audio Amplifier Products

UK DISTRIBUTORS FOR
Jaytee Electronic Services
Unit 171/172, John Wilson Business Park,
Whitstable, Kent CT5 3RB. U.K.
Telephone: (0227) 265333 Fax: (0227) 265331

THE AVIATION HOBBY CENTRE
1st FLOOR, MAIN TERMINAL BUILDING,
BIRMINGHAM INTERNATIONAL AIRPORT
BIRMINGHAM B26 3QJ
Telephone: 021 782 2112 or 021 782 6560
OPEN 7 DAYS A WEEK
(including bank holidays)

Why not pay us a visit and watch the aeroplanes at the same time. We have two shops, one on the first floor by Mag-Lev (have a free ride to BR station and back) and one in the Airport Visitors Centre (Viewing Gallery open everyday – Admission 50p).

Airband Radios from £9.95 and Scanners from £190.00 plus a variable selection of good secondhand and part exchange models usually available.

We stock radios by Fairmate, Jupiter, Icom, Uniden, Steepletone, Texet etc., Models and Prices to suit you.

Come and see the finest range of books on Aircraft and associated subjects there is, by publishers such as Ian Allan, Airlife, Putnam, PSL, Haynes, MCP and many more. Air Maps, Frequency Charts, Books on ATC, even books on how to fly a Cessna or a Jumbo Jet, we stock ‘em all. Books for the Student Pilot and PPL, Checklists, Flight Cases, current Topo Charts always in stock, Nav-Flight Computers and much more. We also stock aviation postcards, posters and badges (callers only). Can’t visit? Then send £1 for our mail order catalogue or telephone us on:

021 782 2112 or Fax: 021 782 6423

We accept all major Credit Cards and Cheques with Bankers Card Number (up to £500 for Personal Callers with I.D.)

QUANTEK FC2000

ULTRA HIGH SENSITIVITY
FREQUENCY COUNTER/FINDER

★ 1MHz – 2.4GHz
★ Sensitivity less than 1mV from 10MHz to 800MHz
★ 2 Gate/measurement periods
★ Display hold switch
★ Bright 8 digit LED display
★ Charge & Gate LEDs
★ Aluminium case — 100 x 87 x 28mm
★ 700Mah Ni-cad batteries
★ Maximised sensitivity for measuring transmitted radio signals at a distance
★ Supplied with mains adaptor/charger & telescopic antenna

ONLY £119 + £5 P&P
MADE IN UK
12 Months Guarantee

TO ORDER CALL
021 457 7994
FAX ORDERS 021 457 9745
QUANTEK ELECTRONICS,
1678 BRISTOL ROAD SOUTH, BIRMINGHAM B45 9TZ

RADIO AMATEURS EXAM?
PASS FIRST TIME!
Before you enrol check the benefits of RRC’S unique Home Tuition Service

RRC has helped thousands of students to success in their examinations with this unique system of postal tuition, one which guides you, step-by-step, to qualify in the shortest possible time. Only The Rapid Results College offers you all these advantages:

☑ A qualified personal tutor
☑ Study material prepared by specialists
☑ Completely self-contained courses
☑ Handy pocket-size booklets
☑ Personal study programme
☑ Regular marked tests
☑ Courses regularly updated
☐ 48 hour despatch
☐ Free advice before you enrol
☐ Telephone Helpline
☐ ‘How to Study’ Guide
☐ Inscription Plan
☐ Free Postage on course material
☐ Worldwide Airmail Service
☐ Extra tuition free if you don’t pass first time

POST COUPON TODAY FOR FREE
RADIO AMATEURS PROSPECTUS
Please send me my prospectus as quickly as possible.
Mr/Mrs/Miss/Ms
Address
Postcode

The Rapid Results College
Dept. 1V149, Tuition House, London SW19 4DS. FREE ADVICE: 081 946 1102 (24 hour Recordacall Service quoting Dept No. above).

QUANTEK ELECTRONICS
1678 BRISTOL ROAD SOUTH, BIRMINGHAM B45 9TZ

TO ORDER CALL
021 457 7994
FAX ORDERS 021 457 9745
QUANTEK ELECTRONICS,
1678 BRISTOL ROAD SOUTH, BIRMINGHAM B45 9TZ

Short Wave Magazine, July 1994
Let Your Computer Control Your Radio! ...with SCANCAT

Once you use the SCANCAT computer program with your radio, you will never operate your radio again without it! SCANCAT Version 5.0 controls the following radios:

* AOR 2500, 3000
* KENWOOD R-5000, TS-990, TS-450, TS-711, TS-950
* DRAKE R-8
* YAESS FT-757GX, FRG-9600 - FRG-100
* ICOM R-71, R-7000, R-9000, R-7100
* JRC, NRD-525, NRD-535

(For other ICOM and Kenwood radios please write)

SCANCAT 5.0 UNIVERSAL FEATURES

* Create Frequency Databases
* Scan between ANY Frequencies
* Up to 400 Frequencies/File
* Scan by ANY increment and delay
* Built in TNC comm program
* Share ANY radio's file
* Import text files

EXTRA SCANCAT-PRO FEATURES

* DBase support
* Unlimited file sizes
* Multiple Scanning banks (up to 15)
* Dual simultaneous scanning of TWO Icom radios

AOR-3000, ICOM, NRD-535 FRG-9600 & FRG-100 FEATURES

* Auto logging to disk files
* Spectrum analysis with spectacular graphic,
* Auto signal detection/scan stop
* Save/Load radio's memories to disk

Optional squelch detect cable - Specify loam or Yaess $24.95

Scancat 5.0 $49.95
Upgrade $14.95
ScancatPro $79.95
Upgrade $24.95

Charge Cards welcome
Phone. 318.636 1234 (8-5 CST) or FAX 318-686 0449 (24 hours)

J & J Enterprises
P.O. Box 18292, Shreveport, LA 71138

SUREDATA
AMSTRAD REPAIRS AND SECOND USER SALES
Tel/Fax: 081-902 5218
OFFICE & AFTER HOURS
Tel/Fax 081 905 7488

AMSTRAD
for repairs, spares and second user, phone for details
83 John 5311U
UNIT 5, STANLEY HOUSE, STANLEY AVENUE, WEMBLEY, MIDDX HA9 4JH

The Flying Shop
BIGGIN HILL AIRPORT

THE NEW!!!
YUPITERU MVT-7100

* 1000 Channels
* All Mode AM/FM/MW/LSB/USB
* 500kHz~1650MHz
* SSB tuning in 10Hz steps

£179 inc. VAT
Complete with 3 AA size ni-cad batteries, 240V mains adaptor, 12V d.c. cigar plug and carry strap

YUPITERU VT-125 MkII

£235 inc. VAT

The Flying Shop, Biggin Hill Airport, Westerham, Kent TN16 3BN
24 hr delivery £7.50 48 hr delivery £5.00
Prices are subject to change with out prior notification

Tel: (0959) 576370 0900 - 18.00 (Mon-Sun)
(0959) 573325 0700-0900 & 1800-2000
Fax: (0959) 576711 24 Hour.

NOW, the people who brought you the
LONDON
AMATEUR RADIO &
COMPUTER SHOW
present a huge
NEW Show.

HAMfest-UK

For all that's best in...

AMATEUR RADIO
COMPUTERS
ELECTRONICS

Saturday July 2nd
& Sunday July 3rd
10am - 5pm both days

Venue:
The County Showground,
Weslton Road, Stafford.

RadioSport Ltd. 126 Mount Pleasant Lane, Bricket Wood, Herts, AL2 3XD. Tel 0923-893929. Fax 0923-678770.

56 Short Wave Magazine, July 1994
For Sale

2 TF144H sig. generators, £35. CT 160 valve tester, £60. Weston valve analyser, £30. Three MA350B synthesisers, £180. RA17L v.g.c., £160. CT 375 LCR bridge, £30. Rob, Lin’s. Tel: (0526) 378685.

2m Talkbox transceiver with pre-amp and full compliment of crystals. Four element quad antenna and rotator, excellent beginners ORP station, £75 or swap/PP. Buyer must collect. Dave, Essex. Tel: (0375) 372813.

3-element tri-band antenna, pass TH3, in good condition, sale at £150. Wanted TNC cheap. Tel: Derby (0339) 345866.

AOR AR2000, as new, all accessories including NiCads charger and Sky Scan Magmount MkIId aerial, £225. Tel: Suffolk (0394) 387785.

AOR AR2800 scanner, 500kHz-600MHz, 800-1300MHz u.s.b., l.s.b., c.w., a.m., f.m. (narrow), f.m. (wide), 1000 memories, all accessories, boxed, £260. Mr P. Wright, Cleveland. Tel: (0642) 222521 anytime.

AOR2000, boxed with all accessories, plus frequency guides, mint, £180. Sangean 803A plus 1993 passport and compact antenna, excellent condition, £75 no offers. Buyer collects, upgrading h.f. gear. Tel: Coventry (0203) 667108.

AOR3000, complete with p.s.u., and operating manual, £380. Tel: Oxford (0993) 841037.

AOR300A boxed, hardly used, 18 months old, £500 cash. Mark, Clwyd. Tel: (0244) 535204 after 6pm or leave message.


Grundig Satellit 700, little used, £175. Tel: West Sussex (0903) 248978.

Hoka Code 3, excellent, ASCII save option, new, £364, yours for, £200. Comax CD-670 data decoder, boxed, g.w.o., specs as Microreader, £95. Yaesu FIF-232, boxed, unused, £80, all manuals, might deliver. Tel: West Glamorgan (0792) 205214 any reasonable time.

Lowe HF225 f.m. filter. £250. Multi-mode decoder, Morse, packet, RTTY, FEC, ARQ, many more, £175. Receiver 6 s.w. 6 v.h.f. an h.f., J-Beam aerial, £300, will swap for a good scanner. David, Lancs. Tel: (0262) 37768.

Howes DXR10 receiver, 15, 12 and 10m, assembled and tested by Howes, three months old, 12V p.s.u., £65. James Trutwein, Berks. Tel: (0628) 27505.

Icom IRC71E receiver with remote control, f.m. filters, pbt and notch, excellent condition, £600 o.n.o. Tel: Essex 081-507 7397 after 6pm.

Icom ICML1 144MHz, 10W P.A., same size as IC2E with mobile bracket, £20. Oscilloscope dual-trace, £45. Tel: Warks (0203) 311402 evenings, (0203) 834450 weekends/daytime, ask for Lindsay.

Icom ICR9000 communications receiver, very little used, mint condition, excellent performance, SP20 external monitor, workshop manual, inspect and collect, £2500, cash and RX part exchange. Tel: Middlesex 081-813 9193.

Kenwood R2000 receiver, excellent working order, complete with manual, £280. Stuart Homer, Worcs. Tel: (0684) 561130.


Lowe HF225 receiver, keypad, boxed with manuals, excellent condition, £285. Tel: Somerset (0643) 704884.

Magazine clearout, about 150 copies of PW, SWM, dating from 1962 to present date, some complete volumes, reasonable condition, 10p copy. Buyer collects or shares cost of transport (covers valves to semi-conductors). Tel: Cardiff (0222) 628708.

R2000, v.g.c., £150 o.n.o. John, Norfolk. Tel: (0379) 652043 evenings/weekends.

RA17 in 19in CAB with RA121 s.s.b. and RA137 I.f. adapters, copy manuals, £150. Buyer collects. Tel: Manchester 061-336 9221.

Racal RA17, £150. RA117, £180. AVO 1930s valve tester, £45. AR88, £90. HRO with all coils, £120. Marcacci sig. gen TF801, £55, TF144H, £65, BC221, £26. Tektronix scopes, many others. Alan, Berks. Tel: (0344) 27869.

Realistic PRO-SCAN 2006. 400 channel programmable memory, hardly used, mint condition, still boxed, complete with extras, £225, no offers. Tel: Exeter (0392) 215913 evenings.

Redifon receiver RS51N digital, complete with original synthesiser a.t.u., three units in case, ex Navy, excellent condition, needs attention, £150. Tel: London 081-985 2500.

Saisho SW5000 (Sangean AT560A clone), very little used, condition as new, boxed, £80 inc P&P. Tel: Cheshire (0244) 310271 evenings.

Sony 2001D, perfect condition, all accessories, books, original packing, fitted.
### Dumpmaster screen dump

SSTV, RTTY, c.w., AMTOR,
Technical Software RX-8
Trent. Tel: (0782) 311386.
Cost £75 new, bargain at, £30 complete with instructions.

**Technical Software RX-8**

Trio R2000, boxed, v.g.c., £125. Signal R532 v.h.f. airband receiver, NiCad pack, charger, case and two antennas, v.g.c., £125. Yupiteru MVT7000, boxed, complete, as new, £225. Icom SP3 speaker, £35. Mike G1HGD, Warwickshire. Tel: (0932) 413127 evenings.

**Yupiteru MVT7000**

Yaeusu FRG-7000 h.f. receiver, mint condition, 0-30MHz, £180. Buyer collects. Tel: Stafford (0931) 095473 mobile.

**Yaeusu FRG-7000**

Yupiteru 7100 a.m./f.m./c.w./w.f.m., s.s.b., 1000 memories, 500KHz to 1650MHz, 6 weeks old, hardly used, boxed with all accessories plus leather case, unused, including charger for NiCads, £359. Tel: Hants (0425) 620413.

**Yupiteru 7100**

Drake prof. receivers, MSR1, MSR2, DSR1, DSR2, R3, to complete collection. Also seeking table cabinet for Racal MSR2, DSR1. Tel: (0742) 373330.

**Drake prof. receivers**

**Ferrite rod aerials**

Must be seven inches long 1/2 inch in diameter, no more or less. Must be eight inches long 3/8 inch in diameter, no more or less. favoured. K. Borkhataria, 24 York Road, London W5 4SG.

**Ferrite rod aerials**

### SWL antenna, magnetic

Tel: Rochdale (0706) 374726.

**SWL antenna, magnetic**

Sony SW1, no box or instructions, plus AN1 active antenna, both v.g.c., £95 o.n.o. Tel: Rochdale (0706) 374726.

**Sony SW1**

**XZ spectrum**

Hambly, Middlesex. Tel: (0932) 454381 anytime.

**XZ spectrum**

**Technical Software RX-8**

Wolverhampton. Tel: (0902) 742801. Morse key for B2, please call anytime.

**Morse key for B2**

### Wanted

Steve, Tel: (0772) 713370.

**Steve**

### Exchange

Peter Lepino, Surrey. Tel: (0374) 128170 or FAX: (0372) 454381 anytime.

**Peter Lepino**

### Closing Date for August Issue - 1st July

A photocopy of this form is acceptable, but you must still send in the corner flush below as proof of purchase.

**Closing Date for August Issue**

**TRADE POST ORDER FORM**

**PLEASE WRITE IN BLOCK CAPITALS**

I enclose Cheque/P.O. for £__________ (£3.00) Made payable to Short Wave Magazine.

For sale/wanted/exchange maximum 30 words

Name

Address

Post Code

Credit Card Details

Card Number

Signature

Expiry date of card...
LISTENING GUIDES

AIR BAND RADIO HANDBOOK
4th Edition
Mark Plowman
Extensively revised & updated (October 1992). Air band radio listening enables you to listen-in on the conversations between aircraft and those on the ground who control them, and is an increasingly popular and fascinating hobby. A new chapter on military air band has been added. The author, an air traffic controller, expands on this more about this listening hobby. 190 pages. £7.99

THE COMPLETE SHORT WAVE LISTENER'S HANDBOOK AND EDITION
Hank Bennett, Harry Holms & David HandY
This book is a comprehensive guide to the basics of short wave listening. Everything you need to get started as an s.w.l. is explained in a clear and easily understood manner. Receivers, antennas, frequencies, propagation, G-codes, etc. are all covered. 204 pages. £17.95

DIAL SEARCH 1992/94
George Wilcox
The listener's check list and guide to European radio broadcasting. Covers m.w., i.e., v.h.f. & s.w., including two special fold-out maps. Also includes a full list of British stations, a select list of European stations, broadcasts in English and 'Making the Most of Your Portable'. 46 pages. £2.50

FLIGHT ROUTINGS 1993
Compiled by T.T. & S.J. Williams
This guide was produced with the sole aim of assisting airband listeners to quickly find details of a flight, once they have identified an aircraft's callsign. Identifies the flights of airlines, schedule, charter, cargo and mail, to and from the UK and Europe and overflights between America and Europe. 127 pages. £9.00

FERRELL'S CONFIDENTIAL FREQUENCY LIST 5th Edition
Compiled by Geoff Halliday
Specially bound, this easy-to-use reference book covers 1.8-20MHz in great detail, all modes and utility services, with new reverse frequency listing including every known frequency against each callsign, who's using what frequency and mode, what that callsign? These are some of the answers this book will help you find. 504 pages. £17.95

GUIDE TO FACSIMILE STATIONS
13th Edition
Joerg Klingerfuess
The new edition of this super reference book covers the world's facsimile stations, their frequencies and methods of working. There is a section covering the equipment needed to receive FAX over the radio. To give you an idea of what is available there are many pages of off-air received FAX pictures. 392 pages. £18.00

GUIDE TO UTILITY STATIONS
12th Edition
Joerg Klingerfuess
This book covers the complete short wave range from 3 to 250MHz with the additional frequencies from 3 to 1500kHz and from 16 to 3MHz. It includes details on all types of utility stations including FAX and RTTY. There are 19540 entries in the frequency list and 3500 in the alphabetical callsign list plus press services and meteorological stations. Included are RTTY & FAX fax and meter data. There are 11000 changes since the 10th edition. 534 pages. £24.00

HF OCEANIC AIRBAND COMMUNICATIONS
4th Edition
Bill Laver
HF aircraft channels by frequency and band, main ground radio stations, European I/F networks and North Atlantic control frequencies. 32 pages. £3.95

INTERNATIONAL RADIO STATIONS GUIDE RP255
Peter Shore
As in 'Broadcast Round-up', this column in PM, Peter Shore has laid this book out in world areas, providing the listener with a listeners guide. Simple-to-use maps and channel lists, callsigns, times and modes, broadcast listing and times. 192 pages. £9.95

INTERNATIONAL VHF FM GUIDE
7th Edition
Julian Boulting, G3UHK & Kris Partridge, G6AUU
This book gives concise details of Repeaters & beamers worldwide plus coverage maps & further information on UK repeaters. 260 pages. £15.00

INTERNATIONAL VHFR FM GUIDE
11th Edition
Julian Boulting, G3UHK & Kris Partridge, G6AUU
This book gives concise details of Repeaters & beamers worldwide plus coverage maps & further information on UK repeaters. 260 pages. £15.00

INTERNATIONAL HF FM GUIDE
7th Edition
Clive Woodyer
This is the third edition of this radio listener's guide. Simple-to-use maps and charts show the frequencies for radio stations in the UK. Organised so that various station types are listed separately, the maps are useful for the travelling listener. Articles included in the guide discuss v.h.f. aerials, RDS, the Radio Authority and developments from Bluepot. 68 pages. £3.45

SHORT WAVE INTERNATIONAL FREQUENCY HANDBOOK
4th Edition
Bill Laver
Fernley's Confidential Frequency List and re-published in April 1993, this book covers 500kHz-30MHz. It contains duplex and channel lists, callsigns, times and modes, broadcast listing and times. 350 pages. £15.50

UK SCANNING DIRECTORY
3rd Edition
This spiral bound book lists over 12000 UK spot frequencies from 25MHz to 12150GHz. Articles on scanning in the UK. 250 pages. £16.95

VHF/UHF SCANNING FREQUENCY GUIDE
This book gives details of frequencies from 26MHz to 1220MHz with no gaps and who uses what. Completely revised and enlarged (February 1993), there are chapters on equipment requirements as well as antennas, the aeronautical bands, as well as the legal aspect of using a scanner. 150 pages. £8.95

ROYAL SCANNING DIRECTORY
3rd Edition
Bill Laver
A practical guide to satellite television. Detailed guides-listing on installing and aligning dishes based on practical experience. 96 pages. £13.95

WEATHER SATELLITE HANDBOOK
2nd edition
Dr Ralph E. Taggart WBD0T
This book explains all you need to know to set up your own satellite TV terminal at home, dish and accessories, cable and tuner. 73 pages. £1.50

SATELLITE TELEVISION: A layman's guide
Peter Pearson
Pictures from space, that's what satellite television is all about. Orbiting satellites, 35000km high, receive TV signals from stations on the earth and re-transmit them back again. This book explains all you need to know about weather satellite TV. 192 pages. £14.50

GUIDE TO FACSIMILE STATIONS NEWNES GUIDE TO SATELLITE TV
4th Edition
Martin Davidsiff K2UE
The book is divided into four main sections - History, Getting Started, Technical Topics and Appendices. It provides practical advice on orbit, spacecraft built by, and for, radio amateurs. In addition, it discusses weather, TV broadcast and other satellites of interest to amateurs. 313 pages. £14.50

NEWNES GUIDE TO SATELLITE TV DEREK STEPHENSON
This book, the 3rd edition, is a hard bound volume, printed on high quality paper. The author, a satellite repair and installation engineer and the book covers all information needed by the installation engineer, the hobbyist and the service engineer to understand the theoretical and practical aspects of satellite reception with dish installation and to how to trouble-shoot when picture quality is not up to anticipated reception. Mathematics has been kept to a minimum. 371 pages £18.95

SATELLITE BOOK - A Complete Guide to Satellite TV Theory and Practice
John Brooks
This book deals almost exclusively with television broadcast satellites and is a comprehensive collection of chapters on topics, each written by an expert in that field. It appears to be aimed at the professional satellite system installer, for whom it is invaluable, but it will be appreciated by a much wider audience - anyone interested in satellite technology. 700 pages. £30.00

SATELLITE EXPERIMENTER'S HANDBOOK
2nd Edition
Martin Davidsiff K2UE
The book is divided into four main sections - History, Getting Started, Technical Topics and Appendices. It provides practical advice on orbit, spacecraft built by, and for, radio amateurs. In addition, it discusses weather, TV broadcast and other satellites of interest to amateurs. 313 pages. £14.50

NEW SERVICE
Next day delivery service for orders received am, providing the required books are in stock. To take advantage of this be sure to enclose £3.75 P&P per order (no limit to number of books ordered).

Service applies to UK mainland customers only.
COMMUTING

INTRODUCTION TO COMPUTER COMMUNICATIONS BP177
R. A. Penfold
Designed for various types of modem and their applications, plus how to interconnect computers, modems and the telephone system.
22 pages.
£2.95

NEWNES AMATEUR RADIO COMMUTER HAND BOOK
Joe Prichard G1UQW
Shows how radio amateurs and listeners can improve their signals by reading texts on a computer screen. This book also covers the application of computers to radio Housekeeping, the art of keeping QSL cards, satellite predictions and Internet design as well as showing how to control a radio with a computer.
300 pages. £15.95

PC MADE EAST: Second Edition
Jim Riely
A friendly, comprehensive introduction to everything an individual computer - including Macs! This book is packed with valuable tips on every aspect of computer technology available today and will help you to get comfortable with your computer.
430 pages. £14.95

UPGRADE YOUR IBM COMPATIBLE AND SAVE A BUNDLE
Stefan Niewindomski
Written for the owners of the IBM compatible computers, this book provides a very straightforward and easy to understand approach. The author has adopted a friendly and informative style and the result is a very many illustrations. Typically American in approach and style, the book provides much information and an excellent read.
245 pages. £17.95

BEGINNERS

ELECTRONICS SIMPLIFIED - CRYSTAL SET CONSTRUCTION BP92
E. A. Wilson
Especially written for those who wish to take part in basic radio building. All the sets in the book are for one-prison room work and the reader is shown how the equipment is assembled, how to make a sound, and the procedure for calling another boat calling the horizon and into the blue? What you need is a v.h.f. radiotelephone is essential equipment for any sea-going boat but what can you do with it? How do you stay in touch when you sail off over the horizon and into the blue? With the aid of this book you can learn the world of the radio amateur with one simple receiver, the v.h.f. radio. The author guides the reader through the mysteries of the radio amateur's world and explains how the system works, how to choose your set and how to get the best out of it. A detailed chapter on amateur radio gives the emphasis on the increasingly important mariner mobiles. 36 pages. £10.95

MARINE VHF OPERATION
J. Michael Gale
A v.h.f. radio set is essential equipment for any sea-going boat, but what can you do with it? Who can you call, and how do you make contacts? Which channel do you use, and why? What is the correct procedure? A sea-going boater should know the list of marine phone numbers by heart. 47 pages. £7.95

PASSPORT TO WORLD BAND RADIO 1994
This book gives you the information to explore and enjoy the world of broadcast band listening. It includes features on different international radio stations and receiving advice as well as the hours and language of broadcast stations by frequency. The "Blue pages" provide a channel-by-channel guide to world band schedules.
£14.95

RETRANSMITTER CODE MANUAL: 11th Edition
Jerry Klinger
This book contains detailed descriptions of the telecommunications of terrestrial transmission on short waves. It covers broadcast and commercial media including voice frequency telegraphy and communication information on all systems and s.o.m. alphabets. 58 pages. £16.00

INTERFERENCE

INTERFERENCE HANDBOOK (USA)
William R. Nelson WA6FQG
How to locate & cure f.i. for radio amateurs, CBers, TV & stereo owners. Types of interference covered are spark discharge, electrostatic, power line many 'cures' are suggested. 700 pages. £15.95

SECRET OF THE DEEP MORSE CODE
Mark Francis
Unveils the facts and figures behind the code. Designed to make you proficient in the Morse code in the shortest possible time, this book points out many of the myths that beset the student.
84 pages. £4.95

CONSTRUCTION

CIRCUIT SYSTEM BOOK 2 BPS2
R. A. Penfold
This book, as its name implies, is a source book of circuits. The circuits provided are mostly the interests of the majority yet amongst are also all based on integrated circuits. This book is packed with an extensive list of circuits. The book is divided into three main sections, Analog Circuits, Digital and Power supply circuits. 214 pages. £14.95

COIL DESIGN AND CONSTRUCTION MANUAL BP57
B. B. Babani
Covering audio to r.f. frequencies, this book has designs for almost everything. Sections cover such topics as cores and.pdf output transformers, chokes and r.f. coils. What is the recommended index? This book will show you how to find out: Test and tables. 110 pages. £2.50

G GRP CIRCUIT CIRCUIT BOOK
Edited by Rev. G. Davis GP4GV
This paperbound book has been compiled from circuits published in the Radio Club periodicals from the years 1934 to 1982. Essentially, it is a collection of circuits and projects covering everything from radios, transmitters, antennas and accessories together with the best from overseas. This book is aimed at the keen constructor and provides all the information required to build the host of projects described. 80 pages. £9.00

HOW TO DESIGN AND MAKE YOUR OWN PCBP27
R. A. Penfold
The purpose of this book is to familiarise the reader with both simple and more sophisticated methods of producing p.c.b.s. The emphasis is on the practical aspects of p.c.b. design and construction of components. 185 pages.

MORE ADVANCED POWER SUPPLY PROJECTS BPS71
R. A. Penfold
The practical and theoretical aspects of the circuits are covered in great detail. Topics include switching mode power supplies, precision regulators, dual tracking regulators and computer controlled power supplies, etc. 142 pages. £2.95

COMPUTING

INTRODUCTION TO COMPUTER COMMUNICATIONS BP177
R. A. Penfold
Designed for various types of modem and their applications, plus how to interconnect computers, modems and the telephone system.
22 pages.
£2.95

NEWNES AMATEUR RADIO COMMUTING HAND BOOK
Joe Prichard G1UQW
Shows how radio amateurs and listeners can improve their signals by reading texts on a computer screen. This book also covers the application of computers to radio Housekeeping, the art of keeping QSL cards, satellite predictions and Internet design as well as showing how to control a radio with a computer.
300 pages. £15.95

PC MADE EAST: Second Edition
Jim Riely
A friendly, comprehensive introduction to everything an individual computer - including Macs! This book is packed with valuable tips on every aspect of computer technology available today and will help you to get comfortable with your computer.
430 pages. £14.95
ANTENNAS (AERIALS)

AERIAL PROJECTS BP105
Practical designs including active, loop and fanite antennas plus accessory units.
96 pages. £2.50

ALL ABOUT VERTICAL ANTENNAS
W. I. Orr W3SAS & S. D. Cowan W1LXK
Contains the theoretical and practical operation of vertical antennas. How to use them as vertical antennas and compact vertical designs for restricted locations. All about loading coils and a.s.d.
192 pages. £1.95

ANTENNA EXPERIMENTER'S GUIDE
Peter Dodd G3LDD
Although written for radio amateurs, this book will be of interest to anyone who enjoys experimenting with antennas. You only need a very basic knowledge of radio & electronics to get the most from this book. Chapters include details on measuring reactance, impedance, field strength and performance, mats and materials for experimental antennas. 200 pages. £8.90

ANTENNA IMPEDANCE MATCHING
Wilfred N. Caron
Proper impedance matching of an antenna to a transmission line is of concern to antenna engineers and every radio amateur. A properly matched antenna as the termination for a line minimizes line losses. Power can be fed to such a line without the need for a matching network at the output of the line. There is no mystique only need a very basic knowledge of radio & electronics to get the most from this book. There are chapters on impedance matching, power calculations, and practical antenna design. 223 pages. £9.50

INTRODUCTION TO ANTENNA THEORY
W. R. deW. Chapman
This book deals with the basic concepts relevant to radio transmitting and receiving antennas, with an emphasis on the mathematics and minimal use of mathematics. Lots of diagrams help with the understanding of the subjects dealt with. Chapters include information on efficiency, impedance, parasitic elements and a variety of different antennas.
96 pages. £2.95

PRACTICAL ANTENNA HANDBOOK
Joseph C. Carr
As the name suggests, this book offers a practical guide to everything to do with antennas, from h.f. to microwaves. It also has sections on propagation, transmission lines, antenna fundamentals and a helpful introduction to radio broadcasting and communication. The book not only presents a practical approach with the minimum of mathematics, good diagrams and a lively text.
96 pages. £2.15

RADIO AMATEUR ANTENNA HANDBOOK
W. I. Orr W3SAS & B. C. Cowan W1LXK
Yagi, Guí, Guap and LPI beam antennas as well as vertical, horizontal and dipper antennas are covered in this useful handbook. How to judge the best location, DX antenna height, ground loss and radiats.
74 pages. £7.50

SIMPLE, LOW-COST WIRE ANTENNAS FOR RADIO AMATEURS
W. I. Orr W3SAS & B. C. Cowan W1LXK
Efficient antennas for Top Band to 2m, including 'invisible' antennas for difficult station locations. Clear explanations of reactance, radiation resistance, impedance, s.w.r., balanced and unbalanced antennas are also included. 115 pages. £7.50

WIRE'S ANTENNA HANDBOOK
Doug DeMaw W1FB
This book provides lots of designs, in simple and easy to read language, on simple wire and tubing antennas. All drawings are large and clear making construction much easier. No high-level mathematics in this book, just simple equations only when necessary to calculate the length of an antenna element or its matching section. 123 pages. £6.95

WIRING & WAVES
Collected Antenna Articles from PW 1980-1984
Antenna and propagation theory, including NBS Yagi design data. Practical designs for antennas from medium waves to microwaves, plus accessories such as a.t.u.s., s.w.r. and power meters and a noise bridge. Dealing with TVI is also covered. 160 pages. £3.90

SIMPLE AMATEUR BAND AERIALS
BP129
E. M. Noll
How to build simple and inexpensive amateur band aerials, from a simple dipole through beam and triangle designs to mini-Hornics. Dimensions for specific spot frequencies including the WARC bands are also given.
63 pages. £1.95

SIMPLE INDOOR AND WINDOW AERIALS
BP136
E. M. Noll
Designs for antennas for people who live in flats or have no land to build. Gives surprisingly good results considering their limited dimensions. Information is also given on short wave bands, aerial directivity, time zones and dimensions.
50 pages. £1.75

SIMPLE SHORT WAVE BAND AERIAL
BP131
E. M. Noll
Designs for 25 different short wave broadcast band aerials, from a simple dipole through helix designs to a multi-band umbrella. Information is also given on short wave bands, aerial directivity, time zones and dimensions that will help spot an aerial on a particular frequency.
63 pages. £1.95

SIMPLE TROPICAL AND MW BAND AERIALS
BP146
E. M. Noll
Simple and inexpensive aerials for the broadcast bands from medium wave to v.f.m. Information is also given on band details, directivity, time zones and dimensions. 54 pages. £1.75

PRACTICAL WIRE ANTENNAS RSG
John Heys G3BDI
Many radio enthusiasts have to be content with wire antennas. This book describes how to use wire antennas provides plenty of ideas and projects to help get the best out of a simple system. A helpful book, and good reference source. 100 pages. £8.50

FAULT FINDING
GETTING THE MOST FROM YOUR MULTIMETER BP239
R. A. Penfold
This book is primarily aimed at beginners. It covers basic concepts of digital multi-meters and their respective limitations. All kinds of testing is explained too. No previous knowledge is required or assumed. 102 pages. £2.95

HOW TO USE OSCILLOSCOPES & OTHER TEST EQUIPMENT BP240
R. A. Penfold
Hints and ideas on how to use the test equipment-how to check out, or fault find on electronic circuits. Many diagrams of typical waveforms and circuits, including descriptions of what waveform to expect with various faults, or distortion in audio amplifiers. 104 pages. £3.50

MORE ADVANCED TEST EQUIPMENT CONSTRUCTION BP249
R. A. Penfold
A follow on from Test Equipment Construction (BP248) this book looks at digital methods of measuring resistance, voltage, current, capacitance and frequency. Also covered is testing semiconductors, along with test gear for general radio related topics. 102 pages. £3.50

TRoubleshooting with your Triggered-Sweep Oscilloscope
Robert L. Garber
This book steers you through the various features - old and new - that scope technology provides and is an invaluable guide to getting the best out of your scope. An overview of available scopes will help you choose the one that best suits your needs. Areas covered include spectrum analysis, test applications, multi-trace displays, waveform analysis, triggering, magnified sweep displays, analogue and digital scopes, etc. 220 pages. £11.50

MORE ADVANCED USES OF THE MULTIMETER BP250
R. A. Penfold
This book is primarily intended as a follow-up to BP239, Getting the most from your Multimeter. By using the techniques described in this book you will learn and analyse the performance of a range of components with just a minimal effort (alex is a very few expensive components in some cases). The simple ONE-ONE extended the capabilities of a scope to make it even more useful. 96 pages. £2.95

OSCILLOSCOPES, HOW TO USE THEM, HOW THEY WORK
3rd Edition
Ian Hickman
This book describes oscilloscopes ranging from basic analogue models and their accessories to go with them. Oscilloscopes are essentially waveform checking circuits, operation and diagnosing faults, and an enormous range of models is available. 248 pages. £15.95

MAPS
RADIO AMATEURS' MAP OF NORTH AMERICA (USA)
Shows radio amateur prefix boundaries, continental boundaries and zone boundaries. 760 x 630mm. £3.90

QTH LOCATOR MAP OF EUROPE
Travel OKKP2
Radio Map Service
This comprehensive map of the European callsign area has now been updated and enhanced. The map, thought out, coloured map covers from N. Africa to Iceland and from Portugal in the west to Iran in the east. Folds to fit into the 145 x 260mm clear envelope (108 x 105mm to the map). 0.75

NORTH ATLANTIC ROUTE CHART
This is a provision chart designed for the use of ATC in monitoring transatlantic flights. Supplied folded. 240x300mm. 7.50

NEW SERVICE
Next day delivery service for orders received am, providing the required books are in stock. To take advantage of this be sure to enclose £3.75 P&P per order (no limit to number of books ordered). Service applies to UK mainland customers only.
Be sure of your copy of *Practical Wireless* every month and qualify for the Subscribers' Club as well. Special offers and discounts are normally available to members, including those abroad.

This month we are pleased to offer a book package to our subscribers. You get *The Complete Shortwave Listener's Handbook* - 4th Edition and *Dial-Search* by George Wilcox at a saving of £3.00.

**The Complete Shortwave Listener's Handbook**
Hank Bennett, David T. Hardy and Andrew Yoder.

Now updated and expanded to include the latest information on short wave radio equipment, stations, procedures and operating practices, this fourth edition, tells you everything you need to know to listen in on broadcasts from around the world!

**Dial-Search**
by George Wilcox
Including:
* a full listing of British stations
* a select list of European stations
* broadcasts in English
* classical music and jazz programmes
* "making the most of your portable"
* two special maps

Normal combined price £22.20
plus £2.00 carriage UK
£3.75 Overseas surface.

Offer price £19.20
plus £2.00 carriage UK
£3.75 Overseas surface.

This offer closes 23 July 94.

**ORDER FORM FOR ALL MAIL ORDER PURCHASES IN SHORT WAVE MAGAZINE**

**CREDIT CARD ORDERS TAKEN ON (0202) 659930
FAX ORDERS TAKEN ON (0202) 659950**

Or please fill in the details ticking the relevant boxes, a photo copy will be acceptable to save you cutting your beloved copy!

To: PW Publishing Ltd., FREEPOST, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

**SUBSCRIPTIONS**

**SHORT WAVE MAGAZINE 1 YEAR**
- £22.00 (UK)
- $45.00 (USA)
- £25.00 (Europe)
- £27.00 (Rest of World)

Please start my subscription with the...issue.

**SPECIAL JOINT SUBSCRIPTION WITH PRACTICAL WIRELESS 1 YEAR**
- £39.00 (UK)  
- £42.00 (Europe)  
- £45.00 (Rest of World)  
- $75.00 (USA)

* $ cheques only please.

**SUBS CLUB OFFER**

Subscribers’ Club No. ___________________________

- Please send me .... *The Complete Shortwave Listener's Handbook* and *Dial-Search* @ £19.20 + £2.00 carriage UK (£3.75 overseas surface mail)

**BINDERS**

- Please send me......SWM Binder(s) @ £5.50 each. £

Postal charges.
- £1 for one, £2 for two or more
- (UK & overseas surface).

**BOOKS**

- Please send me the following book/s, postal charges.

  - UK: £1 for one, £2 for two or more.
  - Overseas: £1.75 for one, £3.50 for two or more.

**NEW FASTER NEXT DAY SERVICE (UK)**

For orders received am £3.75

**GRAND TOTAL** £

**PAYMENT DETAILS**

Name

Address

Telephone No.

Postal charges.

I enclose cheque/PO (Payable to PW Publishing Ltd) £

Or

Charge to my Access/Visa Card the amount of £

Card No. ___________________________

Valid from_________________________to_____________________

Signature ___________________________Tel: _______________________

Books are normally despatched by return of post but please allow 28 days for delivery. Prices correct at time of going to press. Please note: all payments must be made in Sterling.

**CREDIT CARD ORDERS TAKEN ON (0202) 659930
FAX ORDERS TAKEN ON (0202) 659950**
Please mention Short Wave Magazine when replying to advertisements

G2VF LOOP ANTENNAS WITH ATU FOR HF HAM BAND TRANSMISSION
Build £25.00

Find out what really is available in PD & Shareware - ham radio, graphics, business, scientific, electronics, maths, education, etc. You'll find them all here, everything you need in one book. Thousands of the best. PD-Shareware programs for DOS & Windows, described in detail with the hardware requirements for each. This is probably the most complete up-to-date shareware reference book available today.

For your copy send £5.50 by cheque, P.O. cash or pay by Access/Visa to:

PDSL, Wincecombe Hse, Beacon Rd, Crabworth, Sussex TN6 1UL.
Tel 0892 663398 Fax 0892 667 873

THE INTERNATIONAL GROUP FOR APT, HRPT, ETC.
INNOVATIONS, CONSTRUCTION, HARDWARE, SOFTWARE.

For all WEATHER SATELLITE Enthusiasts

ENCYCLOPAEDIA of SHAREWARE

TURN YOUR SHACK INTO A MONITORING STATION!

Connect to any receiver with a squelch control and the AUTO-VOX will automatically switch your tape recorder on and off as signals are detected. A must for all scanner owners. 'Return to a neatly compressed tape of all the action'. Supplied as a kit with full instructions or ready built and tested.

Radio Research, SWM 7, 3 Pasture Close, Whitmore, Staffs, STS 50 00

For a Free Information Pack and Membership details send a

P.O. Box 142, Rickmansworth, Hertfordshire, WD3 4RQ, England.

NEW ENLARGED EDITION

PUBLISHED on the fourth Thursday of each month by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Printed in England by Southportprint (Web Offset). Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (0203) 522222. Distributed by Seymour, Windmill House, 1270 London Road, Norbury, London SW16 4DH. Tel: 0181-679 1899, Fax: 0181-679 8807, Texas: 851826. Sole Agents for Australia and New Zealand - Gordon and Dark (Ship) Ltd, South Africa - Central News Agency Ltd. Subscriptions: INLAND 8221, EUROPE 9212, OVERSEAS (by ASP) 872, payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. SHORT WAVE MAGAZINE is said subject to the following conditions, namely that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

ADVERTISERS INDEX

Aerial Techniques...53
AOR UK..............6
ASK Electronics......25
Aviation Hobby Centre...75
Chevet Books......50
Cirkit.............56
Colomer Electronics...84
Comar...............65
Datong Electronics...48
DG Antill............50
DRS Trading........56
ERA.................44
FG Rylands...........84
Flightdeck...........50
Flying Shop..........76
G3RCQ Electronics...84
Garex Electronics....56
GoTechnic...........50
Haydon Communications...26
Hoka Electronics......46
Howes, CM...........61
Icom................53
IGS Electronics.......63
J & J Enterprises.....76
J & P Electronics....56
Javiation............46
Jaycee Electronics...84
Jaytee..............75
Klingenfuss........48, 65
Lake Electronics......67
Link Electronics.......44
Lowe Electronics......8, 9, 29, 50, Cover iv
Martin Lynch........42, 43
Momentum Electronics...63
Nevada Comms......18, 19
PDSL................84
Pervisell............50
Photavia Press.......53
Photo Acoustics.....37
Quantek Electronics..75
R & D Electronics.....44
Radio Research.......84
Radiosport............76
Rapid Results College..75
Remote Imaging Group..84
Roberts Radio.......38
SMC Ltd.............17
Solid State Electronics..48
SRP Trading.........15
Suredata.............76
Timestep............67
Trac Satelite Systems..50
Waters & Stanton......34 & 35

PUBLISHED on the fourth Thursday of each month by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.Printed in England by Southportprint (Web Offset), Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (0203) 522222. Distributed by Seymour, Windmill House, 1270 London Road, Norbury, London SW16 4DH. Tel: 0181-679 1899, Fax: 0181-679 8807, Texas: 851826. Sole Agents for Australia and New Zealand - Gordon and Dark (Ship) Ltd, South Africa - Central News Agency Ltd. Subscriptions: INLAND 8221, EUROPE 9212, OVERSEAS (by ASP) 872, payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. SHORT WAVE MAGAZINE is said subject to the following conditions, namely that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

84 Short Wave Magazine, July 1994
VT-225 CIVIL/MILITARY AIRBAND

By covering just Civil and Military Airband, receiver performance is optimised allowing reception of long distance signals. The set is easy to use and has excellent audio quality.

- Civil, Military & Marine Band
- 108-142, 149.5-160, 222-391MHz
- AM & FM Modes
- Fast search
- 100 Memory Channels
- Signal Strength meter
- Supplied with NiCads, Charger, Earphone, Belt Clip
- Optional Leatherette Case available
- Price: £249

VT-125 CIVIL AIRBAND

Being dedicated to one specialist band has enabled Yupiteru to optimise the performance of this radio - sensitivity is outstanding, enabling reception of long distance aircraft, inaudible on other scanners.

- 108-142MHz
- 30 memory channels
- AM mode reception
- Signal meter
- Supplied with NiCads, Charger, Earphone, Belt Clip
- Optional Leatherette Case available
- Price: £189

MVT-7100 WIDEBAND WITH SSB

The ultimate in Scanning Receivers - with true SSB reception using carrier insertion for effortless reception of both USB, LSB or CW. A rotary tune knob allows normal receiver tuning across the entire wideband frequency range. It’s exceptional sensitivity and ease of use has made this the UK’s number one scanning receiver.

- 100kHz-1650MHz
- All mode reception
- AM/FM/WFM/USB/LSB/CW
- Supplied with NiCads, Charger, Earphone, Belt Clip
- Optional Leatherette Case available
- Price: £369

MVT-7000 WIDEBAND

The exceptional receiver performance of this handheld has to be heard to be believed. It’s ease of use and instant results with only minimum programming make it one of the best in it’s class.

- Continuous coverage (100kHz - 1300MHz)
- 200 memory channels
- AM/FM/WFM modes
- Rotary or keypad frequency control
- Supplied with all accessories
- Price: £325

MVT-8000 BASE/MOBILE

This base version of the MVT-7000 incorporates all the facilities of the handheld in a stylish metal case. Again, it can be controlled by either direct keypad or rotary tuning knob. Easy read full function LCD display makes this model a dream to use, and produces stunning results on the air.

- 100kHz-1300MHz
- Direct keypad and rotary control
- 200 memory channels
- Supplied with UK Mains Power Supply and Mobile Mount Bracket
- AM/FM/WFM modes
- The best base available! Price: £369

Available from your Local Dealer or Direct:

Order hotline (0705) 662145
or Fax (0705) 690626

YUPITERU FACTORY APPOINTED DISTRIBUTORS:

Nevada Communications

189 London Road North End Portsmouth PO2 9AE

WARNING— ALL OF THE ABOVE MODELS ARE PRODUCED BY YUPITERU FOR THE UK AND COME COMPLETE WITH ORIGINAL YUPITERU GLOSSY HANDBOOK IN ENGLISH. PLUS AN APPROVED 12V SCANMASTER UK CHARGER. MODELS PRODUCED FOR THE JAPANESE DOMESTIC MARKET DO NOT INCLUDE THESE AND HAVE CERTAIN FREQUENCY COVERAGE REMOVED.
HF-Europa "Best DX receiver 1992"
HF-150 "Most Innovative Receiver Design"
HF-225 "Receiver of the Year"

All across the world, people are buying and using Lowe short wave receivers. You can try one out today in any of our branches listed below or at one of our many dealers around the country.

LOWE ELECTRONICS LTD. Chesterfield Road, Matlock, Derbyshire DE4 5LE
Telephone 0629 580800 Fax 0629 580020
Newbury 0635 522122 * Newcastle 0661 860418 * Cumbernauld 0236 721004 * Bristol 0272 315263
Cambridge 0223 311230 * Bournemouth 0202 577760 * Plymouth 0752 257224 * Leeds 0532 452657