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REVIEWED
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and
Roberts RC-818 Radio Cassette Receiver

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Cover:
Reviewed in this issue is the Roberts Radio RC-818. Read Mike Richard's review of this new multi-mode cassette receiver on page 29.

Taylor: Reviewed in this is the Roberts Radio RC-818. Read Mike Richard's review of this new mode cassette receiver on page 29.

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...GOOD LISTENING

TRADING POST COUPON SWM JULY 1992
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- Your partner
  Present all over the U.K. thanks to exclusive distribution.
  Complete range available as from July 1992 onwards.
This issue I have decided to give you a rest from the 'themes' of past issues. This doesn't mean that this issue is not packed with interesting features, as always it is, but that there is no link, other than radio, between them. Of particular interest is the article on Crippen and how he was captured using the then new-fangled invention of Wireless. However, next month will see the return of the 'themes' with an issue on modifications. You will notice that I have shuffled the 'front end' of the magazine around a bit to accommodate an increase in colour advertising. However, you will still find the regulars without too much difficulty.

Dear Sir

The Religious Broadcasting Special in the May 1992 issue of Short Wave Magazine was interesting. I did notice a gap in the information, which was partly covered by 'Bandscan' on p44. This concerns the Voice of Hope radio stations in various parts of the world, operated by High Adventure Ministries.

Their latest is the short wave station on the Pacific island of Palau, which began transmitting on Easter Sunday this year. Broadcast details are currently 11.980MHz from 2000 to 0800 and 9.830MHz from 0800 to 1600. I presume these times are UTC. The main transmitter is not yet in use and there will not be a full programme for a few weeks. The broadcasts are for China and I assume that they are all in a Chinese Dialect.

There is a British address, which is: High Adventure Ministries, BM 2575, London WC1N 3XX

As a non-commercial operation they would appreciate an s.a.e. if asking for a programme schedule or wanting verification of a reception report.

High Adventure also have radio stations in Lebanon, Guam and California, USA. The name Voice of Hope was because they wanted to bring hope to the Christian believers in war-torn Lebanon. There is also Christian Television. What started as Star of Hope, also run in Lebanon, has been renamed Middle East Television and is run by a different group now.

G.A. Shearer, Bristol

Dear Sir

One reads and hears (and indeed sometimes experiences) complaints about dealers (not necessarily radio) offering indifferent, impersonal and bad service. It is comforting to know that there are dealers who offer excellent service.

My Microreader decoder recently developed a fault due to a damaged 'plated-thru' hole. I sent the unit to the manufacture, Enterprise Radio Applications Ltd., on a Thursday afternoon and received it back early on the Saturday morning, the fault rectified and the unit fully tested free-of-charge - all within 48 hours. This is not a letter promoting the manufacturer's products - good though they are - but the letter of a satisfied customer.

James Trutwein
Maidenhead

Dear Sir

I normally find your magazine very interesting and informative. However, I was dismayed, to say the least, at why you should want to include a feature on religious broadcasts stations in your May issue. How anyone in their right mind would want to tune in to these broadcasts is beyond me. Have any of your readers heard the rubbish that is regularly churned out from stations like Trans World Radio?

It is high time these stations were banned. There is more than enough garbage in the world without allowing hate-filled Christian fundamentalist bigots and evangelist fanatics to push their bible-thumping propaganda on the masses. I would be interested in knowing if any other readers agree with me on this.

S. Davidson
Edinburgh
Dear Sir
In the numerous advertisements in your excellent magazine there is no common policy as to the true cost of the items offered for sale. Some include VAT in their prices, others do not. Some don't say one way or another. None seem to give the extra postage and packing amounts. This results in potential purchases having to make otherwise unnecessary telephone calls to find out the final cost of an item. Advertisers in the press and in magazines manage to give the full cost of their wares, so why can't Short Wave Magazine advertisers do the same?
R.G. Rankin Wirral

Dear Sir
I have been a keen short wave 'fanatic' for only two years, and therefore consider myself a novice in the hobby.
I thought that the SIO reception reporting code, like SINPO, was universal. On checking, I find that Radio Nederland in their Writing Useful Reception Reports guide list the SIO code from 4 to 2 (4 = good, 3 = fair, 2 = poor), the two extremes (5 and 1) being eliminated as unnecessary. The British DX Club use 4 to 1 (4 = excellent to good, 3 = fair, 2 = weak, 1 = barely audible), and the Voice of America on their reception report forms use 5 to 1!
I would be interested to know why the system has not be standardised. I personally prefer Radio Nederland coding system, but what about everyone else?
Tony Vaughan Southamton

Dear Sir
Within the normal routine of life, the day when SWM is on sale becomes something special for that is the day when interest is deepened within the realms of radio. I know instinctively that each issue will contain something to excite! Someone to build, new frequencies to try, a book to send for perhaps, a letter to write about an associated interest of even a dream of what one might buy had one the money ... there's always something of special interest. With the advent of your 'specials' however, another dimension has been added, for not only do they come as a wonderful surprise, but they must be of immense interest to many, for the selection of the subject is so topical. Special Marine Issue, Airband Special Issue, OSL Special Issue, Data Modes Issue and now the Religious Broadcast Issue serving to add an even deeper interest in the contents of SWM.
I suppose, for some, the religious broadcast has little place in the interest of DXing for I guess that 'getting' the station is thought to be of greater significance that to actually listen to the content of the programme. For those in the quest of QSLs, of curse, time must be given to log the content of a broadcast in order to provide an acceptable resume of the station's programme. For my part, whilst I confess there are times when I delight in 'winking out' the USAF on Ascension Island, or maybe a MARS transmission, for the last hour or two of the day, there is something deeply restful in tuning to a religious broadcast to hear the 'preacher' in some far-off tabernacle speaking words of comfort and enlightenment to those who would hear.
Thankyou for considering the subject of religious broadcasts worthy of a 'special' in SWM and thankyou for your contribution in writing a most comprehensive survey of religious broadcast stations. It is comforting, I believe, to appreciate that whilst 'radio' is guiding our ships and aircraft as they cross the world, and its development and sophistications has changed our whole way of life, there is still a place for the voice of the preacher, spanning the oceans and the continents to bring his message of peace. Long may this continue!
Percy Tannac Gosport

Dear Sir
The Amateur Radio Receiving Station G-13038 is an admirable collection of commercial receiving apparatus, auxiliaries and component equipment.
Whilst I have no doubt that Mr Rayer operates the equipment to his satisfaction (and can read Morse at speeds in excess of 25w.p.m.) the station in the manner in which it was presented is a grand example of the elitism that pervades our interest. I cannot see any home constructed apparatus on view at all, not even a soldering iron.
I still have my homemade baking tin chassis, all band receiver based on the 174 valve. It was constructed in 1960.
Our hobby has become tainted with Black Box operators who now have multi-band, multi-mode high-power units - all commercial. How many s.w.l.s or licensed operators have sat down and built a piece of comprehensive equipment. The elitism is a function of ones financial status, not of practical skills.
This situation must be redressed before amateur radio takes the final step towards becoming multi-band, multi-mode, high CB.
Gone are the days when one could, for a few shillings, obtain surplus receivers or transmitters which readily lent themselves to modification, reconstruction o whatever.
But the ability to construct has not diminished. It is simply not done because it is easier to buy in the equipment that will match what everyone else has. After all you can't impress your friends, neighbours, etc., with a rusty baking tin supporting two hot valves and a life-threatening h.t/t. supply.
Or can you?
Paul Beaumont BRS 33454 London

One thing about short wave listening is that it requires no examination qualification and unlike amateur radio has nothing to do with 'self education'. Whilst a practising radio amateur, it could be argued, should at least have some practical experience, why should s.w.l.s, who cannot use 'high power' equipment as they do not transmit and have no 'duty' for self education, not buy their equipment for their hobby. Photographers aren't expected to make their own cameras before they can take picture and I'm sure few musicians build their own instruments before taking up music as a hobby! Now we have opened the can of worms, let the debate continue! - Ed

Dear Sir
I'm a distant reader of SWM, 28 years old, journalist and f.m. DJ. I'm in DX since 1980 and since March of 1987 I coordinate the biggest LAs DX club, GRP, and we make every month Conexión, our bulletin. I like very much to read your (though my English is not too good!) articles, the letters and the advertisements. SWM is a great aid, here is very difficult make serious DX, for economic problems, lack of equipment.
Just no I'm dedicated to construct an efficient m.w. indoor antenna. I've make some without luck. For this reason I wish to request aid to your readers, especially some m.w. DX expert.
I have a lcom R-71A. If somebody know the design of an effective antenna for m.w. (loop or ferrite bar) with a communication receiver please help me. The set need much gain and the antenna must to can direct to the signal, sure.
Also I'd like to exchange correspondence with DX colleagues. I like all DX bands and according to the epoch I make m.w., tropical bands, f.m., TV. Also I like music (blues, garage rock, underground, dark, jazz and fusion, reggae and afromusic, world and more - except the Stars).
Well, I hope somebody can help me. I promise to send a sample copy of our bulletin Conexión and some another thing from South America DX.
Jorge (George) Aloy PO Box 465 1900 La Plata Argentina

Short Wave Magazine, July 1992
GB2RS - What is it?

A while ago, I heard from Michael Croucher, who asks about GB2RS, a station he has heard on 2m (the 145MHz amateur band). GB2RS is organised and operated by the RSGB and transmits a news service. It contains a comprehensive broadcast of national, international and local amateur radio news as well as a detailed propagation forecast.

The script is written at RSGB HQ, and sent out to the various news readers weekly. It is then transmitted each Sunday on different frequencies: 3.65, 7.0475, 144.25, 145.525 and 51.53MHz are the most popular. The latter two frequencies are on f.m., the others s.s.b. The times that the broadcasts go out depend on where you live and what frequency you want to listen on. The 2m f.m. broadcasts mainly seem to go out at 0930, 1000, 1030, 1100 and 1130 with a few at 1230 and 1330. If you’re going to listen on s.s.b., then 0900, 0930, 1000, 1030, 1100, 1130 and 1230 are the times again depending on where you live.

For example, our local news here in Bristol goes out at 1030 on 145.525MHz f.m., but in Scarborough it is 1130 on 145.525, again f.m. You can hear the news on RTTY and packet, but I won’t go into that here.

GB2RS is a good way to keep in touch with the amateur news and the propagation forecast is especially useful to those who like to plan their listening. I’m sure if you can’t find your local GB2RS Sunday broadcast, if you contact the RSGB at Lamba House, Cranbourne Road, Potters Bar, Herts EN6 3J.E. Tel: (0707) 59015, they will be able to give you the necessary details.

Good Reading

We move onto a letter from John Redmond. He asks about suitable books for the short wave listener, especially a beginner. There are a huge number of books that the listener would find interesting, but a lot depends on your finances. So perhaps it’s worth adding some of the titles to birthday and Christmas present lists.

Two excellent titles for the short wave broadcast enthusiast are World Radio TV Handbook and Passport to World Band Radio. At first, these seem expensive books at £18.95 and £14.50 - especially to those with pocket money - but they are valuable. For the junior listener, I wouldn’t suggest buying both, one is fine to get a lot out of the hobby, and you don’t have to buy one every year when you’re just starting out.

Neither book is for the beginner looking for explanations, but if you want to track down who you are hearing, where to QSL and what frequencies to try then these are the books for you.

If you want explanations, then it all depends on what aspect of radio you are interested in. Books such as Air Band Radio Handbook, Scanners, Short Wave Communications, An Introduction to HF/UHF for Radio Amateurs, An Introduction to Amateur Radio, Short Wave Radio Listeners Handbook, World Wide HF Radio Handbook and Introduction to Radio DXing are all ones that are very suitable for the beginners. Obviously you choose the ones that suit your area of interest.

There are also many specialist frequency guides and they’re not always expensive, for example Radio Listeners Guide 1992 at £2.95 and Dial Search at £3.95.

If you look at the Book Service pages of Short Wave Magazine, the two sections 'Listening Guides' and 'Beginners' can be a good place to start. It is always worth checking with your local library too, as often they can obtain copies of text books for you. That way you can decide which book is of most use to you. If you can get to any of the rallies that Short Wave Magazine attend, then that gives you a chance to browse through many of the books and ask for advice on the spot.

The RIS

Something else that Michael mentioned was the abuse of an amateur repeater. I’m afraid this seems to be a fact of life with amateur repeaters, although the majority of them treat us with the respect they deserve. But in general terms what can be done about interference and abuse of the airwaves is where the Radio Investigation Service comes in and I suggest that Michael asks the DTI for a logbook for all the details of the RIS.

Basically the RIS aims to ‘maintain the quality of radio communications’. One of the jobs is to investigate and stop persistent interference, but as they have limited resources they have priorities. The first priority is to deal with interference that could endanger the safety of life. The second priority is to deal with interference that could disrupt the running of business and services. It then deals with other radio users problems. Many users report suspected misuse of radio to the RIS and they find these reports extremely useful. The RIS can also advise householders suffering TV or radio reception problems (providing the householders equipment meets certain standards). But before calling out the RIS (you have to pay for a home visit) you should read How to improve television and radio reception. This booklet is available free either by telephoning 071-215 2072 and quoting the title, or you can write to the DTI at the address I gave last month. It’s the same address and telephone number for the leaflet RA78 too.

Log Books

"Where can I buy a log book?", I have been asked. Both amateur radio and short wave listener log books can be bought from the RSGB. But for the junior listener, these might be a bit expensive. As it is not a legal requirement for the s.w.l. to keep a fixed page log book, there are cheaper alternatives - you can make your own. If you'd like a few sample pages that you can photocopy, then drop me a line. If you do set your heart on a 'proper' log book, then again if you’re going to a rally then you should be able to pick one up much cheaper.

VoA

Vivian Philips contacted me on the subject of VoA (Voice of America) and hopefully something should be on its way to you by now. Their address is nice and simple: Voice of America. Washington, DC 20547, USA. Their broadcasts in English to Europe are far too numerous to list here, but reference to books like the WRTW will list them all. Alternatively a letter to the station will bring their schedule to your doorstep.
**Extra-life Batteries**

Kodak have recently launched a new battery range that eliminates the need to add mercury, but still offers a top power performance. Kodak’s XTRALIFE batteries are the result of sophisticated research and technology, plus the tightest possible quality control - which also helps extend shelf life for up to a year.

---

**Radio Museum**

A new 72 000 square foot facility for the Museum of Television and Radio has opened at 25 West 52nd Street in New York City. The new building has 96 consoles at which visitors can access recordings in either radio or television mediums. Two theatres, seating 200 and 90 visitors, will host some 50 seminars a year. A computerised library can provide information on some 20 000 radio and TV programmes, as well as broadcast up to 6 of them at any one sitting. A further 20 000 programmes are still to be added to the computer system, and 3000 more will be added annually, based on historical, cultural and artistic or social significance. To cope with the number of visitors expected, a limit of 2 hours per day (3 hours for members) has been imposed.

- Euro DX

---

**Volunteers Needed**

Volunteers with some technical training who live in, or around, the London area are urgently needed by the Royal National Institute for the Blind to help with the maintenance of its popular Talking Book Service.

This service enables about 70 000 blind and partially sighted people to enjoy the pleasures of reading. It is a library of over nine thousand books on cassettes that can be played on special playback machines.

The special playback machines, which are loaned from the RNIB, have to be maintained and repaired and it is here that volunteers are needed. Nearly 3500 people in London use RNIB’s Talking Book Service. Many of them are frail and elderly. Indeed, 230 users are aged over a 100 years old. All are reliant on their playback machine working properly.

RNIB would welcome any volunteers who have some technical training in the fields of electrical or electronic engineering and would be prepared to spend one or two evenings a month maintaining, repairing or installing the machines. Each helper will be sent circuit diagrams and full technical details, and technical back-up will always be available by telephone.

Anyone who is interested in volunteering should contact: David Finlay-Maxwell, Honorary Recruiting Organiser of RNIB Talking Books Service Volunteers, Prospect House, Prospect Street, Huddersfield HD1 2NU. Tel: (0484) 450982.
EXDC Conference

Radioworld is the name of the temporary radio station to be operated by the Finnish DX Association during the period of the 1992 EXDC Conference. The station will be on the air 24 hours a day between 21-24 August 1992.
Radioworld is organised by a working group nominated by the Association. The licence to run the temporary station was given by the Finnish Government in October 1991. Risto Kotalampi, the technical director of the station, says that the likely frequency will be 103.8MHz f.m. stereo, but this still has to be confirmed by the Finnish radio and television authorities. Correct reception reports will be verified by a special OSL card.
If you are interested in attending the 1992 EXDC Conference in Tampere, Finland between August 21 and 24, you can get details from: EDXC92, The DX Club of Tampere, PO Box 212, SF 33101 Tampere, Finland.
The conference language is English and only a few items will be in Finnish, as a s.w.i. you can enjoy the conference programme which deals with international broadcasting in the past and in the future. You may participate in workshops studying the development trends in the international radio scene. You can meet many famous radio voices from international stations from all over the world. If you prefer medium waves you can share the recent experiences of the Finnish m.w. experts. So there should be plenty to do.

Free Information
In ‘Junior Listener’ last month Jon Jones listed some of the Radiocommunications Agency’s information sheets. Some of the numbers given were wrong and The Librarian at Waterloo Bridge House has just sent us a corrected list.
RA174 - CB Information Sheet A: Licensing
RA175 - CB Information Sheet B: Equipment
RA176 - CB Information Sheet C: Interference & Abuse
RA177 - CB Information Sheet D: Emergency Monitoring & Channel 9
RA78 - General Role of the Radio Investigation Service
RA97 - Guide to Class of Emissions
RA 180 - Radio Amateur Information Licensing
RA181 - Radio Amateur Information Morse
RA182 - Radio Amateur Information Call Signs
RA184 - Radio Amateur Information Radio Amateur’s Examination and Novice Radio Examination
RA185 - Radio Amateur Information RIS District Offices
RA186 - Radio Amateur Information CEP
Amateurs (UK Licenses)
RA187 - Radio Amateur Information CEP
Amateurs (Visiting Licenses)
RA186 - Radio Amateur Novice Licence Information Sheet
RA139 - Radiocommunications Agency - its Role
RA169 - Receive Only - Scanners, etc.
RA190 - How to become a Radio Amateur
RA67 - Radio Users Guide to the Law

Modern Amateur Electronics Manual

The Modern Amateur Electronics Manual (MAEM) has, over the past four years, established itself in the UK as a most comprehensive electronics reference work. It is advertised in a wide range of technical and hobbyist publications and has been bought by many thousands of enthusiasts, students, training organisations and companies throughout the UK.
MAEM has recently been purchased by Wimborne Publishing Ltd, the publishers of Everyday Electronics, who will continue to produce supplements and update the manual in line with previous policy. One change they will be making is to drop the word ‘Amateur’ from the title. Wimborne Publishing Ltd feel this label is inappropriate for such a manual, particularly in view of its wide acceptance in education and training throughout the electronics industry in general. It is an important work for the amateur electronics enthusiast.

The Modern Electronics Manual,
6 Church Street,
Wimborne,
Dorset BH21 1JH.
Tel: (0202) 881749.

WACRL Conference 1992

The increasingly popular annual conference of the World Association of Christian Radio Amateurs and Listeners will be held this year from October 9 to 11. A full weekend of fellowship, worship and amateur radio is programmed and the venue will be at the High Leigh Conference Centre, Hoddlesdon, Hertfordshire. The inclusive cost will be £50.
Further information can be had on the Sunday morning ‘Christian Net’ at 8pm around 3.762MHz or from G4EZU, 124 Darnley Road, Gravesend, Kent DA11 0SN. Tel: (0474) 533686.

Stop Interfering!
The Radiocommunications Agency is hoping to cut the crackle with the launch of a new fact sheet on electromagnetic compatibility (e.m.c.). EMC is the term used to describe a product’s ability to operate without polluting the electromagnetic spectrum. This will mean, for example, a vacuum cleaner will not interfere with television reception, and computers will not scramble mobile radio messages.
If you would like a copy of the EMC Information Sheet, contact: The Librarian, Radiocommunications Agency, Room 605A Waterloo Bridge House, Waterloo Road, London SE1 8UA. Tel: 071-215 2072.

BACC Master List

In order to cope with the ever increasing demand from people enquiring about computer clubs, the British Associations of Computer Clubs (BACC) has placed most of its master list of around 1000 computer groups on-line.
About 200 local or regional clubs are indexed by county and nearly 500 national or international user groups are indexed by their special interest. Particular emphasis is given to clubs affiliated to the BACC, but brief details are also given of all known clubs with a computer related interest.
The BACC has successfully negotiated with two Viewdata services operators - Tessier Ashpool Online and Silicon Village - for this information to be available free of time or subscription charges. In addition to the standard 1200/75 baud access, both these systems support multiple speeds up to 2400 and beyond.
To log on to TAO, dial 071-275 9996 then enter XMNET at the services menu to get to the Viewdata system, followed by account name GUEST and password PUBLIC when prompted, terminating the entry in each case with a hash (#), then goto page 8102 (*8102#).
Alternatively call the Silicon Village, on 081-759 6996 or 0734 819000. Upon connection enter hash to get to the Viewdata System followed by an id of 4444444444 and password 4444, then goto page 8102 (*8102#). No hash is needed after the id or password.
The BACC still operates its postal information service - send an s.a.e., and details of the type of club you are looking for, to: Terence John, 148 Furzehill Road, Borehamwood, Hertfordshire WD6 2DX.
DX-One Electronic Antenna

£249 inc VAT

The World Radio TV Handbook said of the DX-One "... the best of its type available anywhere in the world." It has a frequency range of 50kHz - 50MHz (+3dB) and 10kHz - 75MHz (+6dB); it is both horizontally and vertically polarised, so low-angle (DX) signals suffer less selective fading. The output level from the antenna is adjustable in steps from -6dB to -40dB for optimum matching. The extremely high intercept point (+66dBm 2nd order, +40dBm 3rd order) and a very low noise figure (12.8 dB) ensure optimum performance. The indoor unit contains a mains power supply, a step-wise attenuator and a very effective medium wave suppression filter. It also has two receiver outputs for feeding two receivers without mutual interference.

SP-2 Antenna Splitter

£152 inc VAT

A growing number of radio enthusiasts have two receivers, but no space for two separate antennas. The SP-2 is the answer for connecting two receivers to one antenna (be it active or passive). The SP-2 offers a very high degree of isolation between the two receivers (<30 dB). The SP-2 ensures that, within the frequency range of 50kHz - 50MHz, no unwanted mutual interference, heterodynes or signal loss will occur as a result of connecting a second receiver. With a single receiver, the SP-2 offers a precision step-attenuator (0 - 40 dB) which helps to reduce receiver inter-modulation. Included is a very effective switchable medium wave suppression filter. For those with space for a second antenna (e.g. one horizontal, one vertical), the SP-2 offers a simple way to switch between the two for comparison purposes.

Magnetic Longwire Balun

£36 inc VAT

This balun has been described in the trade press as the “most revolutionary development for shortwave listeners in the last 25 years”. Quite a claim! But this antenna device does solve one of the most severe problems associated with random long wires; the input cable. An MLB allows you to use highly screened co-axial cable between the antenna and receiver WITHOUT energy loss due to impedance mismatch. Computers, light-dimmers, televisions, and fluorescent lights no longer cause interference problems. We recommend RG58/u 50ohm co-axial cable. The MLB has been designed so that a very short length of antenna wire can be used and still be perfectly matched to the 50ohm antenna input of the receiver. Even an antenna of just 12.5 metres (41 feet) provides good results from 100kHz - 40MHz without the need for an antenna tuner. Static build-up on the antenna is allowed to leak away to earth potential - excellent for protecting receivers with FET front end circuitry. Static noise levels on long, medium, and the tropical short wave bands of 60 & 90 metres are considerably lower. The MLB is easy to mount on existing longwire or “T” antennas.

MLB Antenna: Mark I

£56 inc VAT

A complete passive wire antenna with a built-in MLB, the MLB Antenna: Mark I has excellent performance on long, medium, and short waves. It is 12.5 metres in length and can be mounted vertically or horizontally. Frequency range 100kHz - 40MHz. The MLB Antenna: Mark I offers all the advantages of the Magnetic Longwire Balun like: coaxial feeder, broadband performance without an antenna tuner and static decoupling. Heavy duty and completely water-proof, it comes complete with nylon support cord, heavy-duty insulator, high-quality plastic covered antenna wire, PL 259 connector and a water-tight rubber sleeve to cover co-axial/MLB connection.

MLB Antenna: Mark II

£67 inc VAT

Similar to the Mark I, but 20 metres long. The MLB Antenna: Mark II offers improved performance at medium and long wave frequencies, although the high frequency performance above 30MHz is reduced.

THE LISTENERS' BOOK OF THE YEAR GETS EVEN BETTER

The new 1992 issue of 'Passport to World Band Radio' is now with us and it's even better than before. The 200 pages have risen to almost 400 and every section carries the unmistakable authority of the world's best short wave companion. Broadcasts are listed as before; not only in frequency order but also by language, country of origin and the times of broadcasts. There are no less than 56 pages of receiver reviews, including the latest NRD-535 and Drake R-8, together with news, views and general information. If you own a short wave radio, you MUST have the 'Passport' by its side. The price last year was £12.95; we have kept the price the same this year at £12.95 (plus £1.55 p&p). Send off today.
Communications Receivers from KENWOOD

R-2000
- 150kHz - 30MHz
- 118MHz - 174MHz (optional)
- LSB, USB, CW, AM, FM
- Digital VFO with excellent stability
- Dual 24hr quartz clocks
- 10 memories (tunable by VFO)
- Memory/band scans
- 3 built-in IF filters
- Quality audio with 4in. speaker
- 375mm(W) x 115mm(H) x 210mm(D)
- Optional accessories
- On demonstration at all Lowe Regional Centres
R-2000 £549 inc VAT

R-5000
- 100kHz - 30MHz
- 108MHz - 174MHz (optional)
- USB, LSB, CW, AM, FM & FSK
- 10Hz step Dual Digital VFOs
- Superb Interference Reduction
- 100 memories with full data storage
- Dual 24-hour quartz clocks
- Keyboard frequency selection
- RS-232C interface for use with 'CONTROL' software
R-5000 . . . £925.00 inc VAT

The NRD-535 General Coverage Receiver

Latest in the line of NRD receivers, the NRD-535 is a triumph for JRC and represents a true step forward in features, performance and facilities for the dedicated listening enthusiast.

The smooth tuning is the first thing you notice and JRC has developed a direct digital synthesiser (DDS) system which tunes in 1Hz steps. The accuracy and stability are of laboratory standard. There is of course the front panel keypad for swift frequency setting.

All mode reception covers AM, USB, LSB, CW, FM, RTTY and even FAX with IF filter bandwidths to suit the modes.

For wrinkling out the weak stations, the NRD-535 excels. Pass band shift enables you to slide the IF filter around the signal so as to eliminate the adjacent signal and a totally new notch system gives tunable rejection with a 40dB notch depth. There is also an optional Bandwidth Control board.

For the keen broadcast DXer, there is also an optional plug-in ECSS board for locking on to an incoming AM signal and then picking off either sideband.

There are 200 memory channels, each of which stores, frequency, mode, bandwidth, attenuator and AGC settings, comprehensive frequency sweep facilities and no less than 16 different functions which can be programmed from the front panel by the user.

For the advanced user, the NRD-535 is fitted with a RS-232C interface for 28 computer controlled receiver functions. Available for demonstration at Matlock and the regional centres.

NRD-535 HF Receiver ................................................ £1,195 inc VAT
CMF-78 ECSS option ........................................... £229 inc VAT
CFL-243 BWC option .......................................... £359 inc VAT

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Short Wave Magazine, July 1992
LOWE ELECTRONICS

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  Long wave (153-281kHz AM),
  Medium wave (531-1602kHz AM),
  Short wave (5.9-15.5MHz AM)
  and even stereo FM broadcast (87.5-108MHz).
- Direct preset, manual or AUTO scan tuning.
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- 20 memories (5 on each band) for storage and recall of favourite frequencies.
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Special Launch Offer

If you bring this ad. to any Lowe branch during July and buy an SRX-50, we will give you a copy of "Short Wave Communications" by Peter Rouse, worth £8.95 absolutely free.

Retailed in the UK by LOWE ELECTRONICS LIMITED
Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone: 0629 580800 Fax:0629 580020

Short Wave Magazine, July 1992
**June 26/27: Ham Radio '82,** Friedrichshafen, Germany. The largest amateur radio show in Europe and well worth a visit. The Flea Market alone is worth a visit, let alone the SWL/PV stand in Hall 21! Friedrichshafen is situated on Bodensee within easy reach of Switzerland and Austria.

**June 27:** The Brentwood International Amateur Radio and Computer Rally will be held at the Brentwood International Centre, Doodhurst Road, Brentwood, Essex. Doors open from 10.30am to 6pm. Bar & Café serving hot meals and drinks all day, Bring & Buy area, massive car park. CLPK, 1Litchfield Close, Chelmsford, Essex. C051 3352.

**June 28:** The 35th Longleat Amateur Radio Rally will be held in the grounds of Longleat House. There will be over 140 companies this year, as well as a large craft fair. Free parking and on site camping available and there will be a beer tent and plenty of on-site catering. Shaun GVPG. Tel: (0252) 873098.

**June 28:** The Bromsgrove ARS will be holding their second Mobile Radio Ham Rally & Car Boot Sale at the Lower Wick Country Fair, the location being on the Worcester to Malvern Road, near of Bennetts' Dairy. Doors open 9am to 6pm. Tables for Boot Sale are £2. Entry to fair and rally is £1. Dave Edwards. Tel: (0527) 540075.


**July 11:** The Cornish Rally will be held at the same venue as last year, Penair School, Truro. As in previous years, SWM will have a stand, all things being equal.

**July 12:** The Sussex Amateur Radio & Computer Fair will be held at the Brighton Racecourse from 10.30am to 4pm. There will be trade stands, Bring & Buy, picnic area, refreshments, car park and a free shuttle to Brighton Sea Front. Tel: (0273) 501100.

**July 19:** The Colchester Mobile Rally will take place at the Sports and Leisure Centre, Brinkley Lane, Colchester. All the facilities provided previously will be available at this easily accessible site with free car parking and an extensive undercover area.

**July 26:** The Rugby ATS 4th Annual Amateur Radio Car Boot Sale will be held at the BP Truckstop on the A1, 3 miles east of Rugby. Open from 10am, admission is £1 per car and facilities include a good car park and toilets. Talk-in on S22 by GB8CSS. Pitches are £7 pre-booked or £9 on the day. Peter. Tel: (0455) 552489 or Kevin (for bookings). Tel: (0203) 641540.

**July 28:** The Scarborough Radio, Electronics and Computer Rally will be held in The Spa, South Foresare, Scarborough. Doors open 11am.

---


**South Notts ARC:** Fridays, 7pm. Highbank Community Centre or Fairham Community College, Fernborough Road, Clifton Estate, Nottingham. July 3 - Final Planning for VHF Field Day, 10th-12th, 3rd Foxhunt, 17th - Construction at Fairham College, 24th - On Air Night. 31st - SSB Field Day Planning. Ray G7ENK. (0602) 841940.

**Stratford upon Avon & DARS:** 7.30pm. The Home Guard Club, Main Road, Tiddington, Stratford-upon-Avon. July 13 - Annual Trip, 27th - Construction Contest. A. Beasley G0CJX. 050-882 495.

**Sudbury & DARS:** 1st Thursdays, 8pm. The Five Bells Inn, Great Cornard, Sudbury. Colin Muddimer. (0787) 771004.


**Torbay ARS:** Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. July 24 – VCRs Through the Ages. Walt G0NTX. (0803) 525672.

**West Kent ARC:** 3rd Fridays, 8pm. The School Annex, Albin Road, Tunbridge Wells, Kent. July 17 Fox Hunt. John Taylor G3DHY. (0892) 664386.

Review

AOR WX-2000 FAX Decoder

If you're looking for a new FAX decoder the AOR WX-2000 could be just the ticket. Mike Richards takes a closer look at this self-contained FAX unit.

The AOR WX-2000 is a very attractive FAX decoder that features an internal printer so making it particularly attractive to those who need a compact easy to use unit. All that's required to start receiving images is a standard communications receiver. The provision of an internal printer also gives that advantage of a paper copy which is often preferred by those that actually make use of the received information. In addition to its ability to receive standard h.f. and l.f. FAX images, the WX-2000 can decode satellite pictures that are sent mainly on the 136MHz band.

Getting Started

With so many features built-in, the external connections to the WX-2000 were very simple. On the power front, all that's required is 12 to 13.5 volts d.c at 3 amps. This aligns with standard vehicle supplies so should be easy to provide. The power connection was made using a two-pin screw connector so making a very secure connection with no risk of the plug accidentally coming adrift. For situations where a separate earth connection is required, there was an earth terminal on the rear panel.

The only other connections were the audio input jacks. These comprised a pair of standard phono jacks. These were used for the audio output of h.f./i.f. or satellite receivers. The h.f. input required a signal of approximately 0.7V in 600Ω. This can either be supplied from an external speaker socket or, preferably, a fixed audio output. The satellite input requires a similar level but this needs to be adjustable. This is because the density of the satellite image is controlled by the signal level.

To help with the next stage of the operation a useful manual was included. This was in the form of a simple eight page A5 booklet. The first seven pages of which comprised detailed operating instructions. This was followed by a very useful frequency list that covered all the major FAX stations. As well as the station name, call and frequency, the list included the appropriate r.p.m. and IOC settings.

The final section was a simple set of indexed diagrams showing the various controls and connections. I would describe the manual as adequate rather than comprehensive - it would benefit from the use of more diagrams to help those with little or no FAX experience.

HF FAX Reception

With all the connections made, FAX reception could be as simple as sitting and waiting for the WX-2000 to detect a start tone and start printing. In practice you need to carry out a few set-up tasks before you can start receiving. The first is to select the appropriate receive mode. This was achieved via a set of membrane type buttons on the top panel. For the receive mode there were two basic options provided for frequency or amplitude modulation FAX signals. You could be excused for getting a little confused at this point because h.f. FAX signals are not normally thought of as being f.m. In fact it can be considered as a form of f.m. because the values of light and shade in the FAX image are transformed to a varying frequency. In the case of an h.f. FAX signal, the transmitted frequency can vary up to ±400Hz from the nominal transmission frequency. The most common FAX signals use -400Hz to represent pure black and +400Hz for white. All intermediate shades of grey being represented by frequencies between these two limits. The reason we receive these signals with the receiver set to s.s.b. is to preserve the range of frequencies but transform them into the audio range. A look at the specification for the WX-2000 shows that its expects to see frequencies in the range 1500Hz to 2300Hz. To help adjust the receiver tuning to give this range an l.e.d. bargraph display was provided. This was mounted on the top panel and displayed the frequency range of the incoming signal. This display acted as a simple frequency meter with the left hand l.e.d. representing 1.5MHz while the right hand extreme lit with a 2.3kHz tone. To achieve optimal tuning, all you had to do was adjust the receiver so that the signal straddled the centre mark. My only criticism of this system was that the display on the review model wasn't really bright enough. This made the display difficult to read in strong daylight light. For a reliable display indication I found that the review model needed a signal input level of at least 75mV.

With the tuning set correctly, the next action depends on the type of signal you're receiving. If you're receiving say a weather chart from a major station such as...
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ing receiver covering 60-950MHz,
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memories, 5, 10, 20, 25 & 100kHz
scanning steps. Keyboard fre-
quency entry. Optional converters
are available to extend range from
613-30MHz and 900-1300MHz.

The FRG8600 HF communications
receiver. A better way to listen to the
world. Continuous coverage from
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VHF coverage from 118 to 174MHz,
SSB, CW, AM & FM modes. Direct
frequency entry keyboard.

The new NRD535 from JRC

This High technology product is based on the abundant technical experience
pinned by JRC in the professional communications receivers field. This means
that the NRD535 is probably one of the best receivers available to meet the
demanding listeners needs. Brief specifications are as follows:

Frequency coverage: 0.1-30MHz
Operating modes: CW, SSB, MS, SCR, AM, FM, PM, RTTY
Supply voltage: 240 VAC or 13.8 V D.C.
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DRAKE R8E

Now available from SMC the new DRAKE R8E communications receivers. These
receivers utilise the very latest in technology to meet the demanding
requirements of today's listeners. Conveniently located front panel controls
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full information about the current receiver status.

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Short Wave Magazine, July 1992 13
KW Communications is back in business! After a brief "rest" and under new ownership and management that understands the needs of the listener, KW will be offering the shortwave listener and scanning enthusiast a wider range of equipment and accessories, carefully hand picked to ensure quality and value for money. Whatever your interests are, be it chasing tropical DX on the shortwave broadcast bands or checking the progress of Concorde over the Atlantic, we have the receiver for you – from the fabulous new Lowe HF150 to the truly superb JRC NRD-535. We also stock an enormous range of scanning receivers for monitoring air band, marine, amateur radio and other local VHF and UHF frequencies. We've got hand held, mobile and base station scanners from Signal's R537S airband receiver to the sophisticated Icom R7100. We stock a wide range of accessories including antennas, preamps, books and frequency guides and of course our experience to help you get the best from your equipment. Call in and see the widest range of equipment in the largest shortwave centre in the south east.

**SCANNING RECEIVERS**

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<td>DJX1</td>
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<td>AOR AR2000</td>
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<td>AOR AR1500</td>
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<tr>
<td><strong>JRC</strong></td>
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<td>NRD535</td>
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| REVCONE | Low cost discone | £39.95 |
| Headphones | from £9.95 |
| TCM 84V | Voice activated recorder | £34.95 |
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Bracknell you can rely on the WX-2000’s automatic reception mode. The WX-2000 can recognise the standard start and stop tones and so set the appropriate drum speed and IOC. When first tuning into a station it’s a good idea to get a test print to check that all is ok. With the WX-2000 this is done by pressing the manual start button. This starts the print process and after a few seconds a sample print can be seen. If all is fine, a second press of the manual start puts the WX-2000 back into standby mode ready for the start of the next image. The manual start button could also be used when receiving stations that do not transmit standard start and stop tones. In this case not only do you need to use the manual start but you must set the appropriate receive parameters. For this you will need to know the drum speed in r.p.m. and the IOC. The WX-2000 features four standard drum speeds of 60, 90, 120 and 240 r.p.m. For the IOC 288 and 576 are provided. Selection of these parameters is made by operating membrane buttons on the top panel. The indication of the selection is shown by a series of I.E.D.s also on the top panel. You will also need to know if you’re receiving charts or photographs so that the grey scale or shade can be set. Through a button on the panel you can select either black and white or a sixteen level grey scale. The only other parameter that may need setting is the sense or signal polarity. While the WX-2000 is set up to print images with a receiver set to U.S.B., some stations send inverted images. This can be corrected either by changing to U.S.B. or by operating the sense button. This button acts as a toggle between normal and inverted modes. The only problem I found was that there was no indication, other than the print itself, of which mode you were in. An extra I.E.D. on the top panel would have been helpful.

**Satellite Reception**

The reception of satellite images with the WX-2000 was very simple. As with h.f. reception, the WX-2000 operates on the audio output of the receiver, so a unit covering the 136MHz band will be required. The same bargraph tuning display was used, but instead of adjusting the receiver tuning, the signal level is set to give the correct contrast. Because the low orbiting satellites don’t use start and stop tones, the manual start option has to be used. This results in a continuous picture output which takes the form of a narrow strip running down the centre of the paper. The audio levels required by the review model were 50mV for full black through to 290mV for pure white. As with f.m. reception the WX-2000 had a pre-set default mode for a.m. reception which was 120 r.p.m. and 288 IOC.

**Performance**

As you can see from some of the examples in this review, the quality of the received images was very good indeed. A thermal printer was used to produce the image and this gave excellent resolution. This was particularly noticeable when receiving detailed weather charts, where even quite fine detail was readable. The other great advantage of the thermal printing process is the noise level. When the WX-2000 is printing the only sound is the regular tick of the line feed motor. This is a significant advantage over the din produced by dot matrix based systems. As with most other thermal printers, changing the paper was extremely simple. All you had to do was lift out the old roll and drop in the new one. There was no fiddly paper feeding to be done.

The general operation of the WX-2000 proved to be very straightforward. The only problem I discovered was the dim bargraph display I mentioned earlier. I found the automatic reception software of the WX-2000 to be very reliable indeed. The only occasions where this failed was with signals that were unprintable anyway. Whilst I had the WX-2000 in the shack, I took the opportunity to check out the current consumption. This measured 350mA while idling, peaking to about 3 amps while printing pure black. This aligned with the specification.

**Summary**

The WX-2000 is a very well packaged and though out product that will have a wide appeal. It’s self contained design coupled with ease of use gives obvious appeal to the boating world, where weather FAX reception is becoming more commonplace. The keen utility listener will also find the WX-2000 a very compact way to experiment with this area of the hobby. The WX-2000 costs £925.00 inc. VAT, and can be obtained from AOR (UK) Ltd, Room 2, Adam Bede technical Centre, Derby Road, Wirksworth, Derbyshire DE4 4BG. Tel: [0629] 825926. My thanks to AOR for the loan of the review model.

**Specifications**

<table>
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<tr>
<th>Specification</th>
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<td>Audio Input</td>
<td>f.m. 1900 -- 400Hz, 0.7V in 600R</td>
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<tr>
<td></td>
<td>a.m. 2400Hz, 0-1V in 600R</td>
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<td>Auto Start</td>
<td>APSS type WMO Synchronisation Independent</td>
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<td>Printer</td>
<td>Thermal line printer, 8 dots/mm</td>
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<td>Paper Size</td>
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<tr>
<td>Drum Speeds</td>
<td>60, 90, 120 and 240 r.p.m. IOC576 or 288</td>
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<tr>
<td>Power</td>
<td>12-13.5V d.c. at 3 amps</td>
</tr>
<tr>
<td>Size</td>
<td>310mm (wide) x 70mm (high) x 200mm (deep)</td>
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Crippen Captured

Marconi’s invention of the wireless made the world smaller and removed the last hiding places for criminals, as the notorious murderer, Dr Crippen found to his cost. Tim Wander describes how he was tracked across the Atlantic by radio over eighty years ago.

There was a time, before radio, when ships sailed away from port and simply disappeared, often for many months until they hopefully made a foreign shore. Sometimes it also happened that certain individuals disappeared with them at a time when the police might wish for “help with their enquiries”. Before radio, a man on the run who stayed on land always remained within constant range of the telegraph. The wires of Europe would buzz with his description, and eyes could watch at every frontier and train platform.

But should the same fugitive decide to head for sea he was as good as free. Once aboard, even if by chance he was recognised, there was not much the ship’s authorities could do until she made her landfall. By that time the hunt would have cooled, local police would have cable for the instructions (even if they were interested) and most police forces in the world have their own troubles without importing any.

Invisible Bloodhound

This all changed in 1910 with what a newspaper termed ‘An invisible bloodhound following the scent over the high seas’, and the infamous case of one Dr Crippen.

Hawley Harvey Crippen, a graduate of the American teaching hospital system, arrived in Britain in 1900 with his wife, Cora Crippen, a small-time music-hall singer. Because he was disqualified from practising as a physician in Britain with only an American diploma, Crippen operated on the dubious fringes of British medicine for several years peddling patent cures and herbal remedies. His wife, under the stage name Cora Belle Elmore tried unsuccessfully to establish herself as a singer on the London vaudeville circuit.

On the evening of 31 January 1910, Cora was seen with her husband at their home in Hilldrop Crescent, North London, but was never seen alive again. After a while Crippen told everybody that she had gone to live with relatives in California, and after a time, he announced that his wife, on a date unspecified, in a town unnamed, had actually died. However, after a short while Crippen’s secretary Ethel Le Neve went to live with the good Doctor which in post-Victorian England caused a considerable stir. A senior Scotland Yard detective, Chief Inspector Walter Dew was compelled to call on Crippen at his office. With a great display of open honesty the Doctor at once admitted that the stories that he had told about his wife’s death were untrue and that as far as he knew she was still alive.

The ‘real’ truth was that she had run off to America with another man and to cover up her absence without any scandal he had simply told people that Mrs Crippen was dead.

Some days later, by chance a few details remained with some paperwork and to settle them Dew returned to Crippen’s office. To his surprise, he learnt that the little doctor had hurriedly left the country without the ‘formality’ of leaving a forwarding address.

Horrific Discovery

His interest aroused the Inspector went to Crippen’s Camden town house and began a thorough search. He soon noticed that the ground in the cellar had recently been disturbed. Calling in assistance, as the police began to dig they came upon a horrific discovery. Buried in the Doctor’s cellar was a mass of human flesh.

On July 16 1910, warrants were issued for the arrest of Dr Crippen and Ethel Le Neve for murder, and their descriptions were widely published.

Among those who read them in the English papers was Captain H G Kendall, master of the Canadian Pacific liner Montrose, then waiting in the port of Antwerp to begin her voyage to Canada. She sailed on July 20, and among her passengers was a gentleman calling himself ‘Dr John File Robinson’, who was accompanied by his rather delicate son, aged about sixteen, a ‘Master John George Robinson’.

Kendall later recalled that he discovered the pair just two hours after leaving Antwerp. He noticed that ‘Master Robinson’ squeezed ‘his’ father’s hand a great deal, and ‘he’ looked really more like a girl than a boy. Soon the Captain was convinced that the Robinsons were in fact Dr Crippen and Ethel Le Neve.

By coincidence Captain Kendall had been Second Officer on the SS Lake Champlain when she was the first British ship to be equipped with a Marconi wireless receiving and transmitting set. The newly fitted vessel sailed from Liverpool on 21 May 1901 successfully establishing contact with the Holyhead and Rosslare shore stations on the outward journey and the newly opened station at Crookhaven on the voyage home.

The first message received, wishing Captain W Stewart, the master of the Lake Champlain every success with her new equipment had come from Marconi himself. Consequently, Kendall was more aware of the possibilities of wireless than the average deck officer of the day.
SWORN TO SECRECY

Early in the afternoon of Friday 22 July 1910, having sworn his Marconi operator to secrecy, Kendall sent a confidential wireless message via the Canadian Pacific Railway offices in Liverpool;

‘Have strong suspicion that Crippen London cellar murderer and accomplice are amongst Saloon passengers.’

Kendall extended his confidence only to his Chief Officer, and continued to keep an eye on the two.

‘Whilst the unlikely pair were on deck I searched their cabin and found that the boy’s hat was parched to make it fit and he was using a piece of a woman’s bodice for a face flannel’.

Kendall decided to befriend Dr Robinson, but once the wind blew up Crippen’s coat tails to show that in his hip pocket he carried a revolver. From that moment on “I always carried mine” noted Kendall.

Kendall sent many wireless dispatches, describing with humorous details the ‘Robinson’ and their life aboard ship, to be later published by the Daily Mail:

‘Her (Ethel) trousers are very tight about the hips having split down the back and secured with large safety pins’. ‘His beard is growing nicely. I often see him stroking it, staring up at the wireless aerial, and listening to the crackling electric messages being sent by the Marconi operator. He (Dr Crippen) has been heard to say “What a wonderful invention it is!”.

Little did he know that, that very invention was at that moment sealing his fate. On Saturday July 23, Chief Inspector Walter Dew sailed from Liverpool aboard the SS Laurentic, which being faster than the Montrose was scheduled to reach Canada first.

SPRING THE TRAP

By means of wireless, the fascinated world now watched the spectacle of the detective’s ship speeding across the Atlantic to spring the trap on Dr Crippen at the very moment when he counted on starting a new life in the new world.

On July 31 1910 at Fatherv Point, Quebec three police officers including Inspector Dew all disguised as St Lawrence river boat pilots with blue suits and white caps boarded the Montrose from a small boat. Dr Crippen was promenading the deck with Dr Stuart, the surgeon of the Montrose. The ‘pilots’ went on board and walked along until they passed the spot where Crippen was standing. Then, as Inspector Dew was able to get a good look at Crippen, he gave a pre-arrested signal and the arrest was made.

The detective at once grasped him by the hand and quietly said “Good Morning, Dr Crippen, I am Inspector Dew of Scotland Yard. I have a warrant for your arrest.”

“Good morning, Mr Dew,” was all that Dr Crippen could manage as a reply.

Back in England Dr Augustus Joseph Pepper, a Home Office Pathologist and perhaps the leading exponent of forensic medicine in the world, had been given charge of the hideous remains found in the cellar.

It became obvious that Crippen’s main defence would be that the sections of the torso found in his cellar were not those of a woman at all, and that they had been buried without Crippen’s knowledge; probably before he rented the house the previous autumn.

However Dr Bernard Spilsbury, the senior pathologist at St Mary’s hospital positively identified a scar that had been formed as the result of a hysterectomy operation; and Cora Crippen had undergone such an operation some time before coming to England.

The forensic scientists testimonies was the final damning evidence in the Crippen case. The prosecution had already shown that the woman’s body had contained a lethal dose (217 milligrams) of the unusual vegetable drug ‘Hyoscine Hydrobromide’. They also proved that Dr Crippen had recently bought 300 milligrams of that same drug.

TRIUMPH

Crippen’s conviction was the first triumph for forensic histology (the study of organic tissues) and a major success for the invisible wireless ‘bloodhound’ that chased the murderer across the high seas. Dr Crippen was found guilty of the murder of his wife and sentenced to death, taking the long walk to the gallows on 23 November 1910. However, Ethel was found not guilty of having been involved in the murder and was allowed to go free.

INTENSELY THRILLING

It’s hard now to imagine the stir that the Crippen case caused back in 1910. The story captured the imaginations of the general public who watched with bated breath as the wireless dispatches from Captain Kendall were ‘faithfully published every morning in the newspapers. By the time the first wireless message was received all hope of escape was defeated.

There was something intensely thrilling, in the thought of two passengers travelling across the Atlantic, in the belief that their identity and whereabouts were unknown, while news of both was being flashed to all quarters of the civilised world.

The British Government recognised that the capture of Crippen was due in great part to Captain Kendall’s initiative and resource, and they presented him with a cheque for £250 for the service he had rendered in bringing Dr Crippen to justice.

The chase and successful arrest of Dr Crippen under such dramatic circumstances was another tremendous advertisement for wireless and its inventor, spurring the fortunes of the Marconi Company even further.

Mitchell had proved once again that the world was shrinking and that the places a guilty man could hide from the law were getting even rarer for where ever he went the “invisible wireless bloodhound” could follow.

YEARS LATER

Captain Kendall was, some four years later, to receive further personal evidence of the value of wireless when his ship The Empress of Ireland was rammed in the St Lawrence river by a Norwegian collier and sank with great loss of life. Captain Kendall was picked up from floating wreckage some half-hour afterwards by rescue ships which has been called to the scene by wireless.
YUPITERU

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This month we are pleased to introduce THE WORLD'S FIRST DEDICATED CIVIL/MILITARY AIRBAND RECEIVER, THE VT225.

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- Covers 500kHz to 1300MHz
- 100 Memories
- AM/FM/WFM
- 3 Scanning speeds

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Alinco ESC15 Battery Case: .... £10.95
Alinco Soft Case: .... £9.95

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- 150-300MHz
- 76-108MHz
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- World map display
- Four tuning system - 125 memory presets, Manual tuning, Auto scan, 10 key direct tuning

Now in stock for immediate shipment at just £249

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AOR's top of the range model now improved.

- Receives 100kHz - 2000MHz
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- Computer control is also available via the RS232 socket. Software for IBM PCs & clones is also available.

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SONY

As a Sony Shortwave Centre we stock the complete range of Sony Shortwave products - here is a selection of the popular models

ICF2001D

A full coverage shortwave, VHF, and airband radio (1150kHz to 1300MHz). Receives AM, FM, and SSB .... £299

SW77

One of the new additions to the Sony range, the SW77 covers 15kHz to 30MHz plus 76-108MHz. With a rotary tuning dial, 125 scan memories, reception of AM, FM, USB, LSB, CW, tape record facility. This set is a superb allrounder .... £349

SW800

A pocket size VHF and Shortwave radio covers 76-108MHz, 3.7 - 17 MHz Shortwave. With 60 memories and credit card style facility for programming .... £99.99

SW1E

Pocket shortwave plus VHF radio supplied with headphones, case and shortwave guide. This model won't hurt your pocket! .... £149

SW7600

One of Sony's most popular VHF and Shortwave radios. 76-108MHz, FM, 150kHz-300MHz. Shortwave receives AM, FM, SSB .... £199

AIR 7

Very popular, sensitive Airband handheld radio - lovely audio quality & large easy to use key board .... £229

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AN1

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The AR1500 is the World’s first true compact hand-held wide range receiver offering SSB as standard. Coverage is from 500 kHz all the way to 1300 MHz without any gaps in the range. Channel steps are programmable in multiples of 5 kHz and 12.5 kHz up to 995 kHz, the BFO will allow tuning between these steps for SSB operation. All popular modes are provided NFM, WFM, AM and SSB (USB, LSB and CW) with the BFO switched on.

The receiver is supplied with a comprehensive selection of accessories: DA900 wide band flexible aerial, NiCad pack, Dry battery case (for use with 4 x AAA alkaline cells), Charger, DC lead fitted with cigar lighter plug, Earphone, Soft case, 5 metres (approx) of aerial wire terminated in a BNC connector for shortwave reception and Operating manual.

Versatility is excellent. The AR1500 may be powered from it’s internal NiCad pack, spare dry batteries may be carried for extended operation and used with the dry battery case, the set may also be plugged directly into the cigar lighter socket of a motor vehicle (external input range 11 - 18V DC).

Although offering a long list of facilities and operating modes, the receiver remains easy to operate. Many facilities have been carried across for the well proven AR2000 receiver. The AR1500 has a new ‘automatic memory’ feature which automatically stores busy channels from search bank 9 into the 100 memory channels of scan bank 9.

There are 1000 memories in total arranged in 100 memories x 10 banks, there are also 10 additional programmable search banks. Each memory will store frequency and mode (NFM, WFM or AM - not SSB) the search banks will also store the step increment. There is a massive EEPROM memory store for all memories and search banks so that no back-up battery is required. The memories may be over-written time and time again.

The AR1500 can meet a number of requirements to satisfy Airband or Marine enthusiasts, Professional off air monitoring and of course casual listening too. The World’s shortwave and Amateur bands can be monitored, even the longer range Oceanic Airband and ship to shore. Of course the performance of this compact hand-held receiver can not be directly compared to that of the AR3000A or dedicated General Coverage Receiver. Amazing value, all for an extremely attractive.

**Recommended Retail Price of £279.00 including VAT.**

The popular AR2000 receiver continues. It has not been replaced by the new AR1500 receiver, the AR2000 remains a firm favourite with listeners and enthusiasts. Features include coverage from 500 kHz - 1300 MHz and reception of AM, NFM & WFM.

**Recommended Retail Price £269.00 including VAT.**

**Radio Facsimile Terminal WX-2000 (as reviewed in this issue)**

The WX-2000 is a stand alone radio facsimile terminal designed to produce hard copy images from various facsimile services including Weather charts, Maps, News media and even Satellite pictures from NOAA, GOES and METEOR etc. The WX-2000 simply requires an audio signal from a shortwave or satellite receiver which is capable of receiving facsimile signals. The built-in high resolution (8 dots per mm) thermal line printer produces crisp images with high resolution. The WX-2000 is also capable of simulating grey scale which is ideal for Automatic Picture Transmission by weather satellites.

In addition to the basic functions, the WX-2000 provides full operational controls such as Auto Start, Sync., Adjustment, Position Alignment, Tuning LED etc. to produce the highest quality images. The power requirement is 12 - 13.5V DC @ 3A. This makes the WX-2000 ideal for on land and off shore applications.

<table>
<thead>
<tr>
<th>Printing method:</th>
<th>Thermal line printer 8 dots per mm</th>
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</thead>
<tbody>
<tr>
<td>Paper width:</td>
<td>A4 (210mm) x 30m - Toshiba 01456410</td>
</tr>
<tr>
<td>Auto start:</td>
<td>APSS type</td>
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<tr>
<td>Reception speed:</td>
<td>60, 90, 120 &amp; 240 rpm, selectable</td>
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<tr>
<td>Power input:</td>
<td>12 - 13.5V DC @ 3A</td>
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<tr>
<th>Printing scale:</th>
<th>2 (B/W) or 16, selectable</th>
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<tbody>
<tr>
<td>Audio Input:</td>
<td>FM 1900-400 Hz O/T 0.7V/600 OHM AM 2400 Hz 0-1V/600 OHM</td>
</tr>
<tr>
<td>Synchronisation:</td>
<td>Independent type</td>
</tr>
<tr>
<td>Collaboration factor:</td>
<td>576 or 288</td>
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<tr>
<td>Size:</td>
<td>310mm (W) x 70mm (H) x 200mm (D)</td>
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**Recommended Retail Price ... £925.00 including VAT.**

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All at Sea

Listening on the Waves!

John L. Griffiths has been a merchant seaman for almost fourteen years working on a north sea oil rig supply vessel. He describes how he manages to pursue his hobby on board.

Short wave listeners must be pretty ingenious addicts to their hobby. Apart from the base receivers many of us own, a growing number of us tend to operate 'mobile' either in our cars or on foot using the many variations of hand holds available on the market. In my case, the set used is a Sony ICF Pro 80 Hi-Scan handheld which accompanies me not just when I'm out and about at home but also comes to work with me! After many years of operating a Yaesu FRG 7700 and being tied to the house, the freedom afforded to me with the PRO 80 is brilliant.

I'm very fortunate in having the job I've got. Apart from some four years ashore - starting a family - I've been a Merchant Seaman for close on 14 years now. Working one month on, one month off aboard a North Sea Oil Rig Supply Vessel I get plenty of time to devote to my hobby of short wave listening and broadcast band listening. With an equal split throughout the year of work-off time, I tend to spend a great deal of leisure time at the radio. When you're addicted, that's a good thing!

Oil Rigs

The ship I work on, the MV Star Vega, is typical of the plethora of craft designed about the trade of supplying oil and gas rigs with a vast variety of supplies needed offshore. Built in 1983, and weighing some 1600 tonnes gross, she is designated as a Fixed Platform Supply Vessel or, in the words of her crew, a Straight Supply Ship. The ship is owned by Star Offshore Marine Services of Aberdeen and runs with a complement of 11 men. Currently, Star Vega is on charter to Total Oil Marine and running to the North Alwyn oil field some 370km NE of Aberdeen. This summer she will rotate to Great Yarmouth on a construction job for the same charterers for approximately six months, after which she will return north. For those interested in her call sign, she is GCXN.

Watchkeeping

Anyone at least interested in ships, and in radio equipment, will be aware of the basic communications equipment carried by merchant ships. Apart from the ships main RX/TX set, there is a dedicated 2.182MHz watchkeeping receiver as well as a separate receiver for use of the Officer of the watch in receiving weather reports and so on. This set also tunes into such stations as Radio 1, etc., for background noise which alleviates the grinding monotony of passage making! Quite a little gem, believe me!

She also carries two v.h.f. sets, duplicated one for 'ad and one aft, for communicating with other vessels and installations during cargo transfer operations, has an aircraft band DF set as well as an aircraft band TX/RX on v.h.f. - though this is not used and was put aboard when she filled in as a limited capability stand-by safety ship. Mobiles are hand-held v.h.f. with full marine v.h.f. coverage. One is designated for the Fast Rescue craft carried and one can be used on the deck during cargo ops if need be. For further entertainment, an Audix system is installed, which is basically an Eddystone general coverage receiver with speakers sited throughout the ship. Again, it is not in use as nowadays video and TV tend to dominate crew recreation time.

Each watchkeeping officer has responsibility for the transmission and reception of all traffic, and each is qualified to DTI Restricted Radio standards. Legislation in force now also requires that one officer is also GMDSS certificated. This system effectively does away with the radio officer, though Star Vega is under the tonnage for a Sparky. There is also a Cellphone fitted to the ship, used between the main office in Aberdeen and the ship when within range. This feature is fitted to the majority of ships nowadays.

The Sony ICF-Pro 80 is used in my cabin, with an external long wire that runs from my porthole, up the housing side to the monkey island - the top of the bridge for those landlubbers amongst us! - and is then run to the foremost. Length is around 14 to 15m and the antenna is really an inverted L type. It took some experimentation to get this to work when at sea but I can now listen in to BCS as well as s.w.l., hams and so on. It is earthed via a short strap from the telescopic whip to the radio plug socket in my cabin. It works very well indeed, though sometimes disconnecting it when tuning to the marine or amateur h.f. bands gives better results.

Poor Reception At Sea

In port, either fitted to the external antenna or on the whip in the cabin, reception is good. In fact, last trip, I listened in to four US stations on 27.625MHz CB band talking between Washington and Albuquerque via California! All sides of the conversation on s.s.b. were audible though I
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lost the signal when the propagation came to a rather quick end! This was heard on the external antenna.

Fitted with the v.h.f. converter, the PRO-80 gives, I think, rather disappointing results. 144MHz in Aberdeen was audiable, as was marine v.h.f. activity in the port itself, but once out to sea the reception was very poor indeed. I'd have thought that any transmissions from the ship to the rig would have been clear but this was not the case. I guess that it has something to do with all that metal around me! A further scan through the converter range of 115.150 - 220MHz was also disappointing. Likewise, the situation is the same at home. I get 2m okay, Marine v.h.f. and some aircraft activity but that's about it. Maybe it's time I got a dedicated v.h.f./u.h.f. discone?

**Pace The Deck**

Perhaps other owners of the PRO-80 experience the same conditions as I do when operating the converter? I'd be interested to hear from any owner who can assist in making sure I get the best from this black box, and any hints and tips on the PRO-80 in general will be received with thanks.

In conclusion, I find that the PRO-80 is a good set all in all. I have monitored Radio Australia with it while at sea, most European BC stations, ham operators from most places. Inter-Qs on 40 and up although 80 metres is duff for definite! Ship stations come in like no-one's business but hams? Very, very poor indeed! The audio quality is excellent from such a small speaker and the set, without the FRO-80 fitted is extremely sensitive and good value for money. It is a compact set, carries easily in my hand baggage while flying to and from work, and with its shoulder strap and carrying case allows me to pace the deck in port searching for signals - something that my shipmates cannot understand!

**Lost Without It**

Entertainment at sea nowadays, with ships in the offshore supply and service game being out for days rather than weeks, is confined to a v.c.r. in the messroom and a stereo. Having made my initial trip on this ship without the set I realised that I was quite lost without it and consequently it now comes with me everywhere. There are rare opportunities to 'have a go' on the ship's main receiver - under the eagle eye of the Duty Officer - and also the operation of v.h.f. handhelds when I take the Fast Rescue Craft out as Duty Cox. None, I feel, can compare with the luxury of sitting in my own cabin with a pot of tea on the desk and a whole watch off to chase the bands! Had I have done better at school, had I not have come to sea at such an early age and opted to be a seaman, then there is no doubt in my mind whatsoever that I would have been a Sparky. At 34, with a family, that chance is now beyond me - but sometimes, when the c.w. is rattling in and the weather is really rough outside, when the ship is giving it big licks through enormous seas and the cabin lights are dim....when Oceangates- New Jersey, Portishead, Scheveningen, Rogaland Radio....when there's someone calling out on 2.182 and the crepitating ether is full of voices from the sea....well! That's when I can shrug off the duties I'm signed on to and perform and become, just in my mind, what I know I should have been!

In the meantime I'll continue to monitor the bands on the PRO-80, to keep in touch with the world and get deeper into the hobby. After all, when you're addicted....!

---

**First Aid**

Recently I have acquired the working 'head' of a Collins SWR/ PWR meter. Research shows its part number is 382C-1 and it was fitted into the Collins speaker console, part number 3128-4. Can anyone help with a circuit diagram of this 'head' wiring to its meter and the switching circuitry involved. All costs paid.

Bob Leask. The Birches, 80 Mill Road, Shambrook, Beds MK44 1NP.

I would like to know if anyone could give me some information about aircraft flying the North Atlantic Tracks. Does anyone know if American aircraft have company high frequencies to inform their companies of their arrivals times back to the USA or Canada. I know that American and Delta flights use Rainbow Radio on 13.985MHz, but what frequencies on h.f. would Air Canada or Canadian aircraft use. What company frequency does Aer Lingus use or does it use Portishead. Darren Heaney, 14 Ashgrove Avenue, Lurgan, Co. Armagh, N. Ireland BT67 9EA.

I have been interested in radio since I was a boy and the short waves hold my interest the most. Although I have no formal training, I like to build my own simple receivers since, for me, the great fascination in s.w. listening is the thrill of producing results on the most basic of equipment.

In the late 70s and early 80s, I was a regular listener, mostly to the 41 and 49m broadcast bands. I used an old HAC single valve (AR8) receiver. I still have most of the major parts of this incredible little radio, but in moving from Essex to the Midlands in the early 80s. I lost the circuit diagram.

Are there any old-timers out there who could let me have a photocopy of the instructions for the old HAC single valve receiver?

Alternatively, can anyone devise a circuit using an AR6 valve and Denco Green dual-purpose coils? I would really like to refurbish this little gem of a radio and any help that your knowledgeable readership could give would be greatly appreciated.

Guy Howard. 20 Maple Drive, Wellesborough, Northamptonshire NN8 3GD.

I have noticed on tuning to the Marine Band on 2.182MHz, the shore stations such as Wick, Niton, Humber, etc., always (after making initial contact with the ship) refer to an alphabetical channel in order to continue the conversation and it is therefore not possible to maintain contact on my receiver. Is there an appropriate reference work that will give me the channel information I need.

A.F. Almond. 8 Queensway, Princes Park, Shevington, Wigan WN6 8XK.

HELP! Can anyone please help me on connecting my AOR3000A to an Elonex 388XM/16 PC. I am stuck! Any hints and tips or advice will all be gratefully acknowledged. Also, is anybody interested in frequency swaps in the area?

Pete Dowling. 3 Hempstead Drive, York YO3 0AY.
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SOME OTHER ACCESSORY KITS

<table>
<thead>
<tr>
<th>Kit</th>
<th>Assembled PCB modules: £39-90</th>
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<tbody>
<tr>
<td>AA2</td>
<td>HF Active Antenna 150kHz to 30MHz</td>
</tr>
<tr>
<td>AA4</td>
<td>25-1300MHz Active Antenna for scanners</td>
</tr>
<tr>
<td>CBA2</td>
<td>Buffer to connect DFDS to our receivers</td>
</tr>
<tr>
<td>CSL4</td>
<td>Additional SSB/CW filtering for our receivers</td>
</tr>
<tr>
<td>CTU30</td>
<td>HF Bands ATU for RX or 30W on TX</td>
</tr>
<tr>
<td>CV100</td>
<td>HF Converter for VHF Scanners</td>
</tr>
<tr>
<td>DCS2</td>
<td>&quot;S Meter&quot; for our receiver kits</td>
</tr>
<tr>
<td>DFS5</td>
<td>Digital Readout for use with our receivers</td>
</tr>
<tr>
<td>SPA4</td>
<td>Wide-band Receiver Pre-amp 4-1300MHz</td>
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<tr>
<td>ST2</td>
<td>Morse Practice/Side-tone Oscillator</td>
</tr>
<tr>
<td>SWB30</td>
<td>SWR/Pwr Indicator &amp; load</td>
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</tbody>
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PLEASE ADD £1-29 P&P for kits or £3-00 for hardware.

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CASA30M Handy Pack plus
CTU30, SWB30 & ST2 Kits.
CASA30M, £28-90

HOWES KITS are produced by a professional RF design and manufacturing company. They contain good quality printed circuit boards with screen printed parts locations, full clear instructions and all board mounted components. Sales and technical advice are available by phone during office hours. Please send an SAE for our free catalogue or specific product data sheets. Normally all items are in stock and delivery is within seven days.

72 & 73 from Dave G4KOH, Technical Manager.
Reference Books for the Listener

A ‘reference’ book is just that. You don’t read it and file it, but dip into it for information as and when the need arises. Even for the casual listener some of the items discussed here by Paul Essery GW3KFE may be well worth while.

First on the list of reference books, if you listen on the amateur bands, must be a set of Geoff Watts’ lists. Perhaps the most important of these is the Prefix-Country-Zone List, which is bang up-to-date when Geoff posts it to you. Secondly, a Russian Oblast List, which tells you of a call sign logged, his location by Oblast. An Oblast, as if you didn’t know, is the Russian equivalent of our County. A third list is designed with the needs of the older s.w.l. returning after years of absence. Lists cost £1.00 each if printed on both sides, or £1.25 printed on one side only. The latter style is ideal for instant reference, kept under a piece of glass on the operating table. Geoff Watts is at 62 Belmore Road, Norwich NR7 0PU.

Secondly, whether you listen to the BC or the amateur bands you need a World Map. Now, any map of a large area suffers from a serious problem, namely that you can’t get a flat sheet of paper to shape square over a sphere! Thus there are more map projections to choose from than you’ve had hot dinners and all are less than perfect. For., perhaps the ideal is to own a couple of them. One should be a Great Circle Map, which preserves directions and distances but lets the shapes go all a-hoo; one centred on London is satisfactory for all practical purposes for a listener anywhere in the UK. The other one could be a Mercator projection, ‘cos that’s the one we are most familiar with. SWM/did a desk size Great Circle Map based on London and copies are still available from the Offices for £1 post free. Otherwise the RSGB sell one in desk or wall size. For a Mercator world map, you can either go to the American one available from the SWM Book Service, or use the RSGB one; yours truly prefers the latter as it also includes the World Locator grid system. For v.h.f. radio purposes the IARU Locator Map is useful, from the SWM Book Service, covering as it does the area upon which you need more detail.

What about a log? Well now, this is a bit of a conundrum. There are plenty of pre-printed logs available or you can get a suitable book and rule-up your own. You need columns for date, time (UTC), Mode, Frequency, his callsign, his signal strength in RST; callsign of the station he is working, RST of the station he is working if audible, Report Sent, QSL Received, and a nice large section labelled ‘Remarks.’ Such a rule will serve the general-purpose listener who goes from BC to amateur to airband and from s.s.b. to f.m. to ATV or whatever, but if you specialise you can alter the rulings to suit yourself. I’ve never yet had a book fill up without becoming dog-eared or even coming apart - even if she-who-must-be-observed insists it is kept in a drawer when not in use. Nowadays I get ‘book-bound’, blank, A4 books from the local market, and rule them right across a double page, which obviously leaves more room for Remarks and ensures that the book is full before it disintegrates! But they are all adorned with cup-marks on the cover, or soldering-iron burns, or whatever by the time they are even half-full. When a book is full it goes in the archives up in the loft.

If your receiver has a digital readout, you have at least a vague idea where you are. If hasn’t it is well to try and get a clearer idea where you are, on the dial of course, so that the indicated frequency can go in the log. For the older receiver there are some counters about which can be used with a receiver (they measure the received frequency by assuming a 465kHz i.f. and mixing a signal of that frequency with the output of the receiver oscillator), or you can use a crystal calibrator if one is fitted. Alternatively a home-brewed crystal ‘piper’ would serve. Whatever, the object of the exercise is to be able to return to a frequency, and than to log that frequency to the same accuracy. Imagine that you are listening to, say, a DX programme from HCJB. If you note what the receiver dial settings are and reset to those carefully in a week’s time and then switch on, you should find HCJB at least within the receiver pass-band, even if not quite perfectly tuned. This doesn’t tell your precise frequency, but with the help of a crystal piper giving 1MHz, and 100kHz points, you should be able to determine your frequency to within 1kHz or better. If you can log frequencies accurately like this it’s a plus point on a s.w.l. report, whether to amateur or BC stations. If Joe Bloggs rings you and says “S5 and So is on 14.155MHz”, then it’s nice to know you can crank the dial round to the indicated spot and not have to paddle round looking for the guy.

A decent Atlas with a gazetteer is well worth the cost. We have here in the shack the latest issue of the Oxford Atlas, and an older Edinburgh. It is worth while to visit your local WH Smith to see what is on offer. Check the gazetteer to get at least a ‘feel’ for how small a town has to be before it isn’t listed, since that is the most frequent usage. I have a copy of the Penguin Dictionary of Places on my shelf too.

BC listeners could do worse than invest in a copy of the World Radio TV Handbook. Of course, it should be renewed every couple of years, as radio stations tend to CSY so as to give them the best coverage of the target area as the sunspots and seasons change.

Again, amateur bands s.w.l.s who send reports could do worse than buy a set of the World Call Books, although to be fair, unless you are really active in reporting stations logged, the cost is prohibitive.

So much for the operating side. As for technical books, you must make your own choice. I suggest that you ask the local library to get a title you fancy so you can read it before you buy. Don’t forget, these books are for reference books to be used and to get dog-eared. That being so, perhaps one should suggest building a shelf or two so they can live in the place where they’ll be used - in the shack. After all, if you completely line the walls with books, you’ll have some extra insulation, won’t you?
During the month of July, I have some special offers on receivers and scanners, together with all the accessories. The new AOR 1500 is finally available from stock, (at last!!). Although in short supply, they make the ideal hand held for the summer months listening to VHF/UHF frequencies and long range communications using its SSB/CW capability. At only £279.00, it must be the bargain of the year!

The Lowe HF150 is the ideal starter shortwave receiver at only £325. No bells or whistles, just good performance at a sensible price. With 30kHz to 30MHz and 60 memories, it makes the ideal receiver for decoding Fax and data transmissions. Remember, the equipment advertised below is on JRC NRD 535

<table>
<thead>
<tr>
<th>JRC NRD 535</th>
<th>£1149</th>
<th>Latest high performance receiver</th>
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<tr>
<th>Icom IC-R72E</th>
<th>£669</th>
<th>Budget priced SW Receiver. Used examples from £499</th>
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<tr>
<th>Drake R8E</th>
<th>£949</th>
<th>Receiver with most options fitted as standard</th>
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<tr>
<th>Yaesu FRG8800</th>
<th>£639</th>
<th>Excellent HF receiver. Used examples from £499</th>
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<tr>
<th>Icom IC-R9000</th>
<th>£3895</th>
<th>The flagship of communications receivers</th>
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<tr>
<th>Icom IC-R71E</th>
<th>£849</th>
<th>The big brother of the IC-R72. Used examples from £599</th>
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<table>
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<tr>
<th>Kenwood R2000</th>
<th>£529</th>
<th>Kenwood's fine HF receiver. Used examples from £399</th>
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<tr>
<th>AOR 2800</th>
<th>£359</th>
<th>Wideband all-mode base/mobile scanner</th>
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<table>
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<tr>
<th>Kenwood R5000</th>
<th>£885</th>
<th>Top of the range shortwave receiver. Used examples from £649.</th>
</tr>
</thead>
</table>

In addition to the above, I have at least 500 used items all to the strict demanding standards set out above. Phone for your free list and free valuation on your unwanted equipment.

Remember I also have the complete range of new Yaesu, Icom, Kenwood, Alinco, AOR, Drake etc in stock – and none of it grey imported. All that I sell is backed up by the official UK distributor.

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AN P1200 Portable outboard receiver and frequency converter • Designed to augment the CR-721i along with the CR-P1200 + capable of receiving fax broadsheets from meteorological services. Size: 1.25m x 20cm x 3.5cm (Open) £75

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The Roberts RC818 is a very compact radio cassette player featuring full coverage of the short wave bands in addition to the normal medium, long and v.h.f broadcast bands. This is supplemented by a beat frequency oscillator giving the listener the ability to receive single sideband and utility stations. All this in a stylish compact form sounds too good to be true, so let's take an in-depth look.

**Getting Started**

As you would expect from this type of receiver it's largely self contained. In fact, when using the internal batteries there were no external connections at all. The batteries required were four D cells which were housed in a standard battery compartment on the back. In order to retain the time and memory information, an additional three AA cells were fitted behind the main batteries. I did wonder if the memory content would be retained if you removed both sets of batteries so I tried it! I'm pleased to report that all was well and both the time and memory information was fine. A closer read of the excellent instruction book revealed that providing the LOCK switch is operated (more of that later) the memories would be retained for 2 minutes.

If you prefer to use mains power, the RC818 could be operated from the supplied mains adaptor. This unit could only run from 240 volt 13 amp outlets, so the foreign traveller may need to seek out an alternative supply. Through the co-axial external power socket, you could also connect a cigar lighter adaptor for mobile use. However, you should beware of using unapproved adaptors, as the RC818 only requires a 6 volt supply.

The RC818 featured the usual 3.5mm headphone socket, in this case mounted on the side panel. This was designed to accept modern stereo headphones and the review model had plenty of power to drive my, relatively insensitive, units.

The final socket was provided for connecting an external antenna. This replaced the RC818's telescopic antenna and is essential for the serious DXer. The main advantage being greater signal strength and reduced interference.

With all the connections sorted out I ought to mention the excellent instruction book. I have to admit that the supplied book was one of the best I've seen for a long time. The secret is in the copious use of simple diagrams to explain the various actions. The book comprised thirty-seven pages of A5 but contained 96 diagrams - I know, I counted them! All the operations were described in simple language using step-by-step charts for the more complex functions. Although this may sound like overkill, it made understanding the various features very quick and easy. There are many other manufacturers who could do with taking a leaf out of the Robert's book (sorry about the pun!).

**Tuning Options**

The RC818 boasts a very comprehensive range of tuning methods designed to cope with a variety of operating conditions. The first and perhaps most used is the straight forward manual system. This used a large knob on the right hand side. As is common with processor based tuning systems, the tuning knob operated in a series of click stops instead of a continuous system. The frequency changes associated with these click stops depended on both the selected band and speed. With the speed switch in the slow position the steps were 1kHz for long, medium and short wave with 50kHz on v.h.f. The fast setting changed this to 5kHz on short wave, 9/10kHz on long and medium wave plus 100kHz on v.h.f. The speed switch was supplemented by a third position that gave the facility to lock the tuning knob. When this was activated the selected frequency was held regardless of a movement of the tuning knob. This was very useful as it can be very frustrating having found an exotic DX station only to lose it with an accidental knock of the tuning knob! The only slight grumble with the review model was a tendency for the mechanical and electrical steps to run out of synchronisation.

An alternative tuning method is to use the up and down arrow keys on the main panel. As you would expect these increment or decrement the frequency using the same tuning steps as the manual tuning knob. As an added feature the receiver enters its search mode if either of these buttons is depressed for more than about a second. In this

---

New multi-mode receivers always attract plenty of attention from short wave listeners. The Roberts RC-818, reviewed here by Mike Richards, is certainly no exception.
mode the receiver automatically steps up or down in frequency until it finds a signal that exceeds its preset threshold. This is extremely handy for looking out activity on quiet bands.

If you want to go straight to a particular frequency the direct access facility is by far the fastest. You simply press the button marked FREQ and type the frequency on the numeric keypad. Once you’ve selected the frequency, you can then use any of the other tuning methods to move on from there.

Those interested in broadcast band reception will be pleased to hear that thirteen short wave bands are stored in pre-set METRE memories. To move straight to any particular band you just press METRE followed by the appropriate band key.

As if all this wasn’t enough the RC818 included a set of user programmable memories. As the name implies, this gives you the option to store a number of your favourite frequencies. The memories were organised in groups of nine with one group for each of the long, medium and v.h.f. bands and two groups for the short wave band. This gives a total of forty five memories which should prove adequate for most listeners.

**SSB Reception**

One of the most important features of the RC818 is its ability to receive s.s.b. signals. This opens up a whole new world of short wave listening that includes all manner of utility stations. Unless you take the trouble to learn Morse code you will need some additional equipment to receive modes other than phone signals.

The RC818 used the Beat Frequency Oscillator (b.f.o.) method of resolving s.s.b. signals. This involves injecting a variable frequency oscillator into the final stages of the intermediate frequency (i.f.) amplifier. The implementation used in the RC818 proved very easy to use. It was activated by a switch on the front panel coupled with a rotary frequency adjustment control. The fine tuning provided by the b.f.o. control is used to tune in between the 1kHz main tuning steps. This ensures that all signals can be accurately tuned.

To check the RC818’s suitability for the more sophisticated modes I connected it up to a variety of decoding systems. The first one I tried was FAX as this represents a good test of the receiver’s frequency stability. This is because a FAX image often takes ten or fifteen minutes to receive. During this period the tuning must remain spot-on, otherwise the received image will deteriorate. With the review model, I found that I was able to receive at least two complete images before having to make any slight trimming. This was very good and well up to the standard required by most listeners.

I continued my experiments with a few narrow band modes like ARQ and RTTY. As with the FAX signals the RC818 performed very well indeed. The only real problem I hit was when using an external antenna. In my case this was a full size G5RV in my back garden. This provided signal strengths that were far too high for the RC818’s front end. The subsequent overloading caused a significant rise in the noise level on the band. Although this may sound serious it is in fact very common with receivers of this type. Fortunately the solution is simply to insert some attenuation in the antenna feed. Some receivers in clude this as a switchable option but it’s quite easy to add the attenuation externally. With the combination of the review model and my antenna system 30dB of attenuation was the most I needed with 20dB being the most common. The only other problem area was with the response time of the a.g.c. This gave a noticable pumping when receiving ARQ signals with widely differing strengths. As with the front end overload, this was not a serious problem for this type of receiver.

One good plus point was the provision of switchable selectivity. Whilst the WIDE setting was great for broadcast services, the NARROW was really useful on the short wave bands. It was particularly effective when receiving s.s.b. and utility signals.

**Clock-Timer**

The RC818 supplemented it's main features with a very well thought-out clock and timer system. This gave the facility for pre-setting two time zones. Associated with the clock was a timer function that could be set to turn the receiver on at a predetermined time. The great advantage of this was that it could also be set to start the internal cassette deck. By combining these features you could leave the RC818 unattended to record your favourite programme whilst you get on with something else. The only point I ought to make clear is that the timer can only switch the radio and tape on - there’s no facility to turn it off automatically.

At this point it’s probably appropriate to say a little more about the cassette unit. This had been very tastefully incorporated with all the controls flush mounted on the top panel. The deck was fairly standard in terms of features, but nevertheless of good quality. A switch for tape selection was mounted on the side panel enabling either normal or chrome types. There was also a two position beat switch to overcome the heterodyne problems that can occur with stereo signals. The RC818 also featured automatic shut down when the end of the tape is reached.

**Summary**

The RC818 has certainly shown itself to be a very capable portable receiver that should have particular appeal to the newcomer to short wave listening. The inclusion of s.s.b. reception gives it a special appeal to those with an interest in utilities. The styling and general operation were all very good and the RC818 has a very solid ‘feel’. The technical performance was also well up to that expected from a receiver in this class.

If you’re interested in buying one, the recommended price is £199 and it should be obtainable from any Roberts stockist. My thanks to Roberts Radio Company of West Molesey for the loan of the review model.
TOP VALUE AT SUPER HAMSTORES THIS MONTH
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- Built-in clock and alarm. Radio locks on automatically at preset time and frequency.
- Large digital frequency display.
- Fourteen memories - nine memory channels for your favourite station frequencies. Last setting of mode and waveband stored in five memories.
- Direct press-button access to all 12 shortwave broadcast bands.
- Two power sources - battery of AC mains adapter.
- General coverage of all AM bands in LW/MW/SW (dedicated broadcast band coverage on all versions), plus of course the FM band for quality sound broadcasts in headphone stereo.
- SLEEP function turns the radio on or off after an adjustable time of 10-90 minutes.
- Separate BASS and TREBLE controls for maximum listening pleasure.  
- External antenna jack for better reception.
- Adjustable GAIN control to prevent overloading when listening close to other strong stations or if there is interference.
- Improved side/narrow filter (6/2.7kHz).
- Built-in filter switch.
- BFO control (Beat Frequency Oscillator) enables reception of SSB/USB/LSWB (single side band) and CW (Morse Code) transmissions.
- Illuminated display to facilitate right-time use.
- Designed for both portable and desk top use. Five dot LED signal strength indicator.

Dimensions: 25.0cmX16.0cm (11.5inx6.3inx2.36in).

Output: 1200mW (10%THD)

Weight: 1.7kg (3.75lbs) without batteries. Wide/narrow filter switch.

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SKY SCAN
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Built and designed for use with scanners. Coverage: 25 to 130MHz. Total height - 39cm - 96cm at widest point. Comes complete with 4 metres of RG58 coax cable and BNC connector. Ideal for indoor - high performance antenna and can also be used as a car antenna when your car is static! REMEMBER YOUR SCANNER IS ONLY AS GOOD AS YOUR ANTENNA SYSTEM!

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

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Algarve Holiday

Holiday time is here again. E. Dunlop and his wife decided to go to the Algarve, Portugal, to pay a visit to the sun. He recounts his experiences for the benefit of others following in his footsteps this year.

Having scoured the travel brochures, made a selection, paid our money we were ready to go. Seeing the same holiday in another brochure a bit cheaper cheers you up no end. Pack up the little tranny (SAB9, batteries removed as per instructions), with bucket and spade and off we go. Don’t forget to bring the wife along.

This time to make things easier for Security at Glasgow Airport I took along a little screwdriver to take the back off the SAB9 to show that there was nothing untoward hidden in the back, and the batteries are removed. There are only a few screws holding the back on the SAB9, I had removed all the outer ones leaving the middle one, after all that’s all it really needed. Having searched the bag, the Security Guard insisted that the radio was switched on even after I had taken the back off, so I had to empty the hold-all to find the batteries. The batteries, naturally, had gone into hiding at the bottom of the bag.

It was raining then we went to board the aircraft, mind you it had been all week. The flight was an Air Atlantic 737. The flight comedian came up with his quip of the week about Atlantis being a lost continent, and who knows where we are flying to. Every flight has a comedian, seen, been and done it all and spends the rest of the flight in a white knuckled posture, usually near the emergency exit! The flight was superb. Once we left the shores of Britain the sky cleared.

We landed at Faro on time, and being Easter the airport was busy. It looked like they were having a fly-in day as the bays were full of light aircraft mainly from Germany, Holland and Switzerland. We made our way to Albuferia. While my wife unpacked my shorts and flip-flops I dug out the tranny. Anyway, here is the Algarve radio report for anyone going on holiday to Portugal. The list of stations given here is taken from various Portuguese newspapers. I always buy local newspapers wherever I go to keep my records of radio stations up-to-date, mainly from the English printed Algarve Resident as shown in the Table.

Radio Foia (commercial) on 105.7 in Monchique broadcasts in English every Sunday between 0900-1000. This is located up in the mountains.

Radio Alvor on 90.1 is also called the Sound of the Algarve, near Portimao, but doesn’t announce any English broadcasts.

Radio Restauracao 102.3, near Faro, broadcast in English from 1200-1400 with Peter Haigh (ex BBC), also does requests.

Solar Radio (commercial) on 94.0/99.7. This is the one I took to as it was my sort of local radio station, and was across the road from where I was staying. So I stayed mostly on 94.0, in between visits to the pool, the bar and being dragged out in the midday sun to sight-see. Even though the station announcement only claimed to transmit on 94.0, it also transmitted on 99.7, but never announced the second frequency. The English broadcasts are timed at 1030, 1330, 2030, but there was also an 0830 one. Time signals are given every half hour. The equipment for giving the time signals over-rides whatever is being transmitted, starting at the 57th second, 4 pips with no extended tone on the 60th second.

The programme is being handled in this case by Mike Johnstone. The English transmissions include local news, world news items of British news and the latest exchange and financial matters. Some of the commercials are in English and cover everything from eating to pleasure parks. They’re good at giving out car stickers too. My only criticism is that when they play Portuguese pop records they should also announce then in English as well as Portuguese, some of them were quite catchy.

The SAB9 was a bit erratic on f.m. and, would you believe, the same data pagers still cause interference! Also causing interference was the Band III TV. I would have liked to have taken a better receiver to monitor the f.m. band.

So ended our Easter holiday. The weather was great and I think the wife enjoyed it. Oh yes - it was raining when we arrived back at Glasgow!
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Includes free AC supply aerial and case!
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The SW-77 is the latest short wave portable from Sony. It integrates computer technology to provide a programmable data base of station names in its memory bank. Also included are 5 different timers and 162 preset stations. Fabulous!

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NEW!
VHF/UHF airband monitor AM/FM
108-142/222-291MHz.
Superb sensitivity, 100 memories – (see above)
AR-1500 £279
2MHz-1300MHz
FM/AM/SSB/CW
Yes it’s true, a hand held scanner that gives you SSB and CW reception. We are hoping to have supplies available by March of this self contained all mode receiver. New from AOR, this promises to be the most comprehensive scanner yet. If you want full details, phone or write for the full specification. And remember as the UK’s largest stockest of receivers, we can offer you the kind of back-up service that such an advanced product needs.

“WOW!”
Optoelectronics 2300
1MHz – 2.4GHz
Can read a 2W signal
frequency at over 100ft!
With 25 Watts...
WOW!
Simply switch on and connect an aerial to read
£149.95
frequencies from local transmitters. This is like no other unit you have ever seen. It’s absolute magic!
• HIGHLY ACCURATE COUNTER
• BNC AERIAL SOCKET • INTERNAL NI-CADS • AC CHARGER • VARIABLE GATE TIME • HOLD FUNCTION • AMAZINGLY SENSITIVE!

YUPITERU VT-225
Military & Civil Airband Monitor
The VT-225 is the new exciting monitor from Yupiteru. It covers the full VHF and UHF airbands with a sensitivity that leaves its competitors standing! This dedicated receiver is surely going to become the reference from which all others will be judged. Our stocks are direct from the factory with English handbooks and of course an officially backed factory warranty. Phone or write today for the full information on the new “industry standard” receiver.

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With 25 Watts...
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£149.95
frequencies from local transmitters. This is like no other unit you have ever seen. It’s absolute magic!
• HIGHLY ACCURATE COUNTER
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The VT-225 is the new exciting monitor from Yupiteru. It covers the full VHF and UHF airbands with a sensitivity that leaves its competitors standing! This dedicated receiver is surely going to become the reference from which all others will be judged. Our stocks are direct from the factory with English handbooks and of course an officially backed factory warranty. Phone or write today for the full information on the new “industry standard” receiver.
"Professional Grade" Scanner
DJ-X1, 500kHz-1.3GHz

"A Scanner of Unrivalled Performance"

Specification:
- Modes: AM/Narrow FM/Wide FM
- Steps: 5, 9, 10, 12.5, 20, 25, 30, 50, 100kHz
- Antenna: 50Q BNC
- Supply: 6-15V DC (Internal 9V AA) 24mA (Battery save.)
- Dimensions: 110 x 53 x 37mm
- Weight: 370g
- Configuration: AM/FM Triple conversion
- Sensitivity: NBFM-8DB (12dB SINAD) AM -2dB (10dB S/N)
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Up until now most handheld scanners have been large and cumbersome with low grade plastic cases using technology that has been around for several years. The arrival of the ALINCO DJ-X1 has changed all that. This new receiver is ruggedly built, compact, and above all, ultra sensitive. ALINCO are the first major manufacturer of communications equipment to produce a new generation of scanning receiver. All of a sudden its competitors seem drab, old fashioned and lacking in sparkle and performance.

- 3 scanning speeds
- 3 scanning modes
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New! AR1500 with SSB New! Only £279.00 p&p £5.00

Specification

Model: AR1500
Receiver coverage: 500kHz-1300MHz
Receiving modes: AM, FM(narrow) FM(wide) and SSB with the BFO switched on (SSB, LSB and CW)
Number of memory channels: 900 plus 100 retained for 'auto-memory' in bank 9
Number of scan banks: 9 total; Bank 9 reserved for 'auto-memory'
Scan rate: 20 channels per second (approx)
Scan delay time: 2 seconds (approx)
Search banks: 9 standard search banks plus one search bank for the automatic search-pair of bank 9.
Search rate: 20 steps per second (approx)
Search step size: Programmable in 5 and 12 kHz steps to a maximum of 955kHz (i.e. 5, 10, 12.5, 15, 20, 25, 50kHz etc)
Priority channel (AIU...): Any one of the 100 memories may be used as priority. Sampling is every 2 seconds (approx)

Receiver sensitivity: FM(narrow)-5.5µV or better for 12dB SINAD across most of the range AM-3.5µV or better for 15dB S/N across most of the range SSB 1.5µV or better across most of the range

BFO range: Continuous -4kHz-+6kHz (approx)
Aerial connection: One 50 OHM BNC socket on top case and 100kHz @ 10% distortion
Audio output: BV DC from built-in NiCad battery pack or 11-16V (25cm long) jack or 4 x AAA dry cells (dry cell provided)
Power requirement: 100mA approx
Power consumption: 150mW
Size: 155 x 125 x 27mm
Weight: 370g

ALINCO's £249.95
"Professional Grade" Scanner
DJ-X1. 500kHz-1.3GHz
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Modes: AM/Narrow FM/Wide FM
Sensitivity: 60dB (NBFM) 65dB (AM narrow) 70dB (AM wide)
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AR3000A still covers
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Priority
SCAN and SEARCH speed has been

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AR3000A is an evolutionary step forward from the highly acclaimed AR300 and many major improvements have been implemented or the resultant of improvements that AR3000A offers an unprecedented
coverage of 100kHz-30MHz without gaps and offers ALL MODES: AM, NFM, WFM, USB, LSB & CW. The LED is larger and the viewing angle has been changed to further improve visibility. SCAN and SLOWSCAN speeds have been greatly increased and new programmable DELAY, PAUSE and PRIORITY facilities have been added. The rotary tuning control is a true steering to increase user friendliness for SSB/CW listening. Memory clear and microprocessor reset are now available on the front panel.

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SONY
ICF SW77
£349
150kHz-30MHz + stereo FM AM/SSB/CW
The SW-77 is the latest short wave portable from Sony. It integrates computer technology to provide a programmable data base of station names in its memory bank. Also included are 5 different timers and 126 preset stations. Fabulous!

Designed as a logical alternative to the Japanese 'push button portables', the HF-150 places a 'real radio' within your price reach. With simplicity of operation, the HF-150 nevertheless has all the features and facilities you need. This truly is 'Real Radio'.

For the sign on the box!
Two versions of the set have been constructed, the first being the experimental development model. For convenience, this was built on Veroboard, but this is definitely not recommended unless you are very experienced. Once the circuit development was complete and the design finalised, a printed circuit layout was produced and this p.c.b. layout is used in the set illustrated. In fact, the two versions performed identically, showing that the design is 'tame' and reproducible. If the p.c.b. layout is followed, there should be no insuperable problems, provided care is taken in winding the coil exactly as shown in Fig. 3.1. Note that some components and wire links are fitted on the copper track side of the p.c.b. If you are unsure about soldering integrated circuits directly to the p.c.b. then you can fit sockets into which the i.c.s can be plugged. The tuning and bandspread capacitors are the small, inexpensive, two-gang, solid dielectric types used in pocket 'trannies'. They are designed for edge operated use, so make sure that you also get a couple of shaft adapters to enable a 0.25in diameter shaft extender to be fitted. A vernier slow-motion drive should be fitted to the main tuning capacitor. R1 will come in for a lot of careful adjustment in use, so it best, if possible, to use a good quality component, preferably one with a ceramic or conductive plastics track rather than a sprayed carbon. The completed p.c.b. is mounted behind the front panel using four 30mm long, plastics stand-off pillars - ensuring that the control shafts pass through their appropriate holes. It is most important in use that the whole set is rock steady, otherwise the tuning will vary as you take your hand off the controls - most infuriating. For this reason, I recommend fitting additional self-tapping screws to the case near the top, back and front at each side.

**Using the Set**

Using the set is very straightforward, once you have got the hang of using the reaction control. In the 80m amateur band, signals are most likely to be s.s.b. voice or c.w. Morse, and to receive these, the r.f. stage should be just oscillating. This will also provide both maximum sensitivity and maximum selectivity, both of which you are likely to need, if using a small antenna, such as a telescopic antenna plugged into the antenna socket, as in the illustration. If using a longer antenna, then it will probably be best to set S1 to position A, to avoid the larger antenna damping the tuned circuit excessively. In fact, position A should always be selected for preference, particularly when receiving strong signals such as the a.m. signals in the 75m broadcast band, which this receiver also covers. It won't lose you anything, bearing in mind that the receiver's noise figure is as low as 10dB. After all, even in quiet rural surroundings at a quiet time of the day, year and sunspot cycle, atmospheric noise is likely to be at least 35dB above thermal at 4MHz, and may well be up to 65dB above thermal.

It may be asked, therefore, is there any point in having a receiver noise figure as low as 10dB? The answer is no, if you are using a large antenna. However, a low receiver noise figure enables one still to be limited by externally atmospheric noise rather than receiver noise when using an inefficient (i.e. small) antenna such as the telescopic type shown, which is very short compared to the wavelength.

**No Image Rejection,**

The design of this receiver provides no image rejection, so it will receive signals up to 3kHz either side of the tuned frequency. This is obviously no disadvantage in the broadcast band part of its coverage, where the a.m. signals are double sideband anyway. Incidentally, these are usually so large compared to signals in the adjacent amateur band that you will need to reduce the gain of the receiver, to avoid deafening yourself. It is best to reduce the overall gain by means of the volume control R23, rather than reducing the reaction, since it is the latter which provides the required degree of selectivity to separate the stations. The lack of image rejection is however a limitation one has to live with in the 80m band part of the coverage, though in practice it is not nearly as troublesome as one might think. In particular, when receiving c.w., the narrow bandpass filter can be selected. In the event that there is another c.w. signal the other side of the carrier at the same separation, and therefore giving the same pitch note, proceed as follows. Turn the bandspread control slightly and one signal (the wanted one, say) will increase in pitch whilst the other decreases.

Follow the wanted signal with the c.w. filter tuning control R27, and when the tone separation reaches or exceeds an octave, you will have well over 20dB relative attenuation of the unwanted c.w. signal. If however you tweak the bandspread control, the pitch...
Full size details of the p.c.b. track pattern and component positions for both sides of the 'Novel' project.
of both c.w. signals moves in the same direction, this means they are on the same side of the carrier and no further discrimination is possible.

**Satisfaction**

Once you have mastered the operation, you will find that receiving DX on this receiver provides much more satisfaction than using a £500 plus box with all the bells and whistles, due to the operating skill you have acquired.

On a practical note, the frequency stability of the receiver is excellent, showing no drift when listening to an s.s.b. QSO, provided that the voltage of the supply rails is constant. For this reason, the alkaline type of PP3 is recommended rather than the more usual zinc/carbon variety. Happy listening!

**Errata**

Unfortunately a couple of errors crept into the circuit diagram, Fig. 2.1, in the second part of this project (page 40 June 92 issue). The collector of Tr1 should be connected the +9V rail, not to the wiper of R1. The collector of Tr3 should be connected to the -9V rail, not to ground.

**Fig. 3.4.**
through frequent observations of the sun's image, with projection apparatus, Ron Livesey (Edinburgh) identified 4 active areas on March 8, 11, 14, 21 & 25. Despite periods of cloud, Cmrd. Henry Hatfield (Sevenoaks), using his spectrohelioscope, located 1 sunspot group, 14 filaments, 9 quiescent prominences and an active plage, close to the east limb, on the 8th; 1grp, 15f & 6 very small spots on the 18th; 2grps, both slightly active, 16f & 5 ops on the 19th and 4grps, one very active, 17f & 2 minute prominences on the 31st. In my view those sunspot groups nearing the west limb and visible from about March 24 to April 1 were responsible for the individual bursts of solar noise, on 136MHz, that Henry recorded on the 28th and April 1 as well as the continuous noise all day on March 31st.

Henry also saw a medium sized 'cauliflower' prominence on the SW-limb on April 4; 1grp, 9f & 5 small spots on the 5th; 16f & 8 & 4 small spots on the 9th; 1grp, 12f, 5 small spots and a 'very long straight thin filament, in the SE-quadrant', on the 10th and 5grps (two active), 19f & 7 ops on the 28th.

From his observatory in Bristol, Ted Waring counted 11 sunspots on April 8, 8 on the 12th and 31 on the 19th. At 0750 on the 20th, Patrick Moore, continued his watch on the progress of a string of sunspot groups, Fig. 1, which had been about for some days.

**Auroral**

Ron Livesey's team of auroral observers in the British Isles reported seeing 'glows' overnight on March 7, 9, 19, 21, 25, 29, 30 & 31; 'rays' on the 8th and 'active aurora' on the 21st. Ron, the auroral co-ordinator for the British Astronomical Association, tells us that astronomers in New Zealand, watching for aurora australis, reported 'glows' on March 2, 7, 25, 29 & 31 and 'rayed arc' on the 1st. Auroral reflected (tone-A) radio signals were detected on the 50 and 144MHz bands by Doug Smailie (Wishaw) on March 17, 21 and 26 and Gordon Foote (Didcot) copied weak auroral warning signals from the German beacon DK0WICY (10.144MHz) on April 3.

**Upper Ionospheric**

Routine studies of solar and ionospheric behaviour and h.f. propagation, in April, by Tony Hopwood (Upton-on-Severn) revealed "a clear lift from 10th-16th and a general trend of following the passage of the active area across the disc [see Fig. 1] during the second half of the month". He also noted late h.f. propagation peaks at 0100 on the 9th and 24th and the bands staying open to 0200 on the 27th.

Ionospheric activity is also a special interest to Richard Gosnell (Swindon) who reports that the maximum useable frequency (m.u.f.) from the East was around 42.7MHz at 0935 on April 4. Although, during that afternoon, he logged 29MHz repeater signals (29.62-29.66MHz) and a commercial station on 33.9MHz from the USA it was the last day that Richard heard their m.f.m. stations between 29 and 34MHz. "Latter in April the propagation favoured 26 to 28MHz as the highest for studying", said Richard and added, "Citizens Band traffic was not heard at all from the USA but lots of it in Spanish or Italian on a.m. and s.s.b. It suggests that "this could be propagation becoming more equatorial".

**Lower Ionospheric**

"Some of the stations were average quality and a few were as good as local quality," wrote Michael Larsson (Cheddle Hulme) about the broadcasts he heard from Finland, Italy, Norway and Spain below 88MHz and from Sweden and Italy above 101MHz on May 5. Well done Michael, your report is typical of an early season Sporadic-E especially as you received 'so many low-powers from Spain and Italy', at the time.

**Propagation Beacons**

Firstly thanks to Gordon Foote, Henry Hatfield, Ted Owen (Maldon), Fred Pallant (Storrington), Ted Waring and Ford White (Portland), for their 28MHz beacon logs from which enabled me to show a collective record of their work for the period March 28 to April 25 in Fig. 2. Ern Warwick received a 'Certificate of Confirmation' from Philip Kinder and Kerry Martin, located approximately 48km from the Kennedy Space Center in Florida, for his report on their experimental beacon WA4BKS (28.257MHz) which he copied at 1312 on March 24. Briefly, Kerry (KB4MK) and Philip (WA4BKS) established this experiment after noticing that a dead 28MHz band became wide open on certain paths after the launch of rockets that used solid fuel. Launches of things anowing graph of The beacon will not be used if a launch takes place when the band is open. Reception reports will be welcome by either Kenny or Philip (QTHR) or direct to KB4MKs on 29.3965MHz u.s.b. for about one hour after take-off. This proves once again the value of strategically sited low power radio beacons and international monitoring for scientific studies.

**Tropospheric**

Around 1600 on April 20, George Garden (Edinburgh), noticed the pressure was falling and decided to try his car radio from various spots on his journey. At one time he heard the Middlesbrough/Sunderland football match which he realised was coming from the Sandale transmitter of Radio Cumbria. He also logged IRL Tay from Perth without altering his tuner. Apart from the enhanced propagation conditions, George points out that this happened because of the closeness of Cumbria on 96.1 to Tay on 96.4MHz. Simon Hamer recently added Radio Waves, Blackpool on 96.5 and Lincs FM, Lincolnshire on 102.2MHz to his local radio score on Band II.

**Associated Reports**

In order to save space and provide a wide range of propagation reports, you will find more details about v.h.f. and u.h.f. (Sporadic-E & tropospheric) openings and a graph of atmospheric pressure (March 26 to April 29) in my 'DX television' column elsewhere in this issue.
One of the most popular things to listen to in the s.s.b. utility bands are the h.f. air traffic control frequencies. These are set up in areas where normal v.h.f./u.h.f. communications cannot be used to cover the vast distances between aircraft and controller (for example, across the North Atlantic or Indian Ocean).

Aircraft use h.f. to pass weather and position reports, and to get clearance for course changes or altitude changes. Many aircraft are equipped with a special receiver to alert them when they have been called on their h.f. radio. Each aircraft is allocated a special code, called a selcall (SELECTive CALLing), which triggers the receiver in the cockpit whenever the relevant selcall chimes are transmitted by the ground station. The aircraft’s selcall code is usually passed to ATC upon first contact with the controller, and ATC will usually check that the system is working by calling the aircraft back using its selcall code. Although selcalls are not always unique, they are allocated so that aircraft with similar selcalls are unlikely to be operating in the same areas at the same time.

Many people spend countless hours listening to aircraft on h.f. ATC frequencies, monitoring them as they fly around the world and carefully noting their details as the flights progress. Hearing the selcall code being passed helps to further identify the aircraft type and registration. As you have a list of selcalls to check against the standard ‘bible’ for this aspect of our hobby has always been High in the Sky, which lists all known selcalls with their aircraft type, operator and registration. The latest edition of High in the Sky has just been published. It has been updated to include all the recent selcall allocations and changes, and now covers over 6000 selcalls in over 150 pages. There is information on suitable radios for h.f. reception and which antennas to use, and an explanation of how the selcall system works. There are also summaries of oceanic tracks and world-wide routings (with frequency lists), each illustrated with maps and diagrams. It also contains a complete listing of airline ‘three-letter codes’ along with summary of airline callsigns. This latest edition costs £5.95 and it’s post free; it is available from: The Aviation Hobby Shop, 4 Horton Parade, Horton Road, West Drayton, Middlesex UB7 8EA.

Tell them that I sent you.

Coastal Control.

Back in the January issue, Peter mentioned a letter from John Garnett asking about ‘Coastal Control’. Some further information has arrived giving a few more details, and adding to the ‘mystery’.

The frequencies mentioned by John are initial calling frequencies, with the ship using 4.420MHz and the coast station on 4.420MHz. There are at least three (or more) other paired calling frequencies, the above pair are thought to be ‘Channel Delta’, so there are (presumably) channels ‘Alpha’ and ‘Bravo’ at least. The ship and Coastal Control shore station first established contact on a calling frequency, and they will both QSY to another set of frequencies. These are numbered, and the highest ones heard so far is in the mid-sixties. The coast station appears to control the frequency changes, as they decide which working channels are used. The coast station says something like ‘Coastal 32, Ship 41’ or just ‘32 and 41’, and they both QSY to the relevant frequencies. The ship and coast station do not always QSY to the same pairs of frequencies.

The ships frequently use callsigns in the range ‘GA’ to ‘GZ’, but they have also been heard using their full ships name. The coast stations do not appear to have (or use) any set callsign. The system does not always cover coastal areas, as one ship has been heard to give its position as 52°N 42°W.

‘Channel Delta’ appears to be the main calling channel, as it seems to be the busiest frequency. When 4.420MHz is not in use there is a two-tone chime signal which sounds every 5 seconds until a ship calls; then the tones disappear while a contact takes place. Once both stations have QSYed, the chimes return. Try listening to 4.420MHz to familiarise yourself with the chimes, and then search for similar chimes elsewhere in the h.f. spectrum. Paul H of Newbury mentions hearing a shore station calling ship “GO” on 4.458MHz during early December. Can anyone offer any more?, especially any of the paired frequencies.

Intercept

Those of you interested in v.h.f. and u.h.f. aircraft communications as well as h.f. will be interested to hear of a new newsletter that has just become available. Intercept aims to cover aircraft communications on h.f., v.h.f. and u.h.f., and relies on information sent-in by readers. It is available free of charge to anybody sending a large stamped s.a.e. along with some information for inclusion within future issues of the newsletter to Intercept, 9 Road, Denton Burn, Newcastle Upon Tyne, NE15 7UP. Intercept has several sections, covering, h.f., v.h.f./u.h.f. and utilities, frequency news and call sign information. Don’t forget the stamped s/a.e., and remember to send in some of your own information (with all the UK u.h.f. airmail frequencies having changed in early May, there is plenty of ‘new’ information out there).
DATELINE EUROPE, summer 1992: Civil war continues in parts of the former Yugoslavia; Radio Japan broadcast from transmitters in the United Kingdom; German radio stations merge; an English TV channel goes bankrupt...

Who would have thought this would be the way of the world in 1992? Dramatic changes in little for Europeans which may affect regions far beyond the borders of the European Community. On my wall is a map showing the new political boundaries in Europe, detailing, use of the BBC facilities to improve reception in Europe which has been of a lower standard than the station wanted, despite the use of the Gabon-based Africa No 1.

European radio scene has undergone a remarkable transformation in the last months. More European international broadcasters are heard from their short wave terrestrial broadcasting to satellite delivery. At the end of March, Radio Sweden and Swiss Radio International started to lease time on the Astra satellite which offers easy reception to most of continental Europe. Radio Exterior de España, Deutsche Welle and Deutschlandsfunk, BBC World Service, Radio Free Europe, Radio Liberty and the VoA have been using satellites for some time and more and more cable networks are now carrying international radio programmes. And in May, several other international broadcasters were heard on satellite when the World Radio Network ran tests for seven days. With little notice, WRN started operations on April 21, claiming to “showcase English language programming from the world’s radio stations, most... live and in superb audio quality”. Run by BBC staff in their spare time, WRN operated from 0000 UTC to 2230, carrying programmes of Radio Canada International, Radio Australia, Radio Moscow, Israel Radio, Radio Finland, Austrian Radio and others. WRN claimed that a terrestrial transmitter in Moscow on 911kHz would relay all WRN’s output and that Spectrum Radio in London and Capital FM in Helsinki would also carry some of the broadcasts.

In the end, Spectrum’s relay did not happen as the station had difficulty with its receiving equipment, but the other relays did go ahead. I spoke with Karl Mosig, one of the three people behind WRN. He told me that it is planned to make the service permanent in September, and all going well. Independents on finding sponsorship to meet the costs of the satellite relaying (which is around €30,000 a year) and the operations centre in London. Karl is cautiously optimistic that the Network will be a success. More than 1,200 telephone calls were received during the week WRN was operating, with an almost even split between DXers and ordinary Astra equipment users who liked to push the audio buttons and learn about the new services offering “bandscan” for more information.

The civil war in Bosnia-Herzegovina dominated the news during May, following on from the destruction seen in other parts of the former Yugoslavia. Dramatic pictures were shown on television news of cameramen being shot and shells flying into the hotel rooms used by BBC Television. Radio continued to provide a link with the outside world and English is heard from time to time on the radio stations of the former Yugoslav republics. Croatian Radio’s First Programme has English at 0603 and 0803 Monday to Saturday and on Sundays an hour later, and at 1203 and 2103. All are transmitted on short wave on 21.48, 9.83 and 724 MHz, and on medium wave on 1.143 and 1.125 MHz 24 hours a day and on 1.134 during night and 7.85 MHz during the day.

Radio Netherlands’ European listeners would have found the vocal lot for the station had intended to drop its European English service with the introduction of a new schedule at the beginning of April. In the end, it relented, offering European listeners one daytime frequency from 1200 to 1320 on 9.855 MHz. The station also suggested to listeners in Europe that they try the 1380 African transmission on 21.59 and 21.515 MHz. Meanwhile the station is still considering a satellite channel, but no final decision has been taken yet. Unused audio sub-carriers on Astra are becoming increasingly difficult to find and this may prove to be the station’s downfall.

Radio Sweden started using an audio sub-carrier on Astra at the beginning of April to relay its programmes, but it is one that many Astra receivers cannot tune to. It’s on the Comedy Channel transponder at 11.597 GHz, with audio at 7.44 MHz (yes, it’s the Adult Channel during the night). English is heard at 1300-1400 and 2130-2230 in parallel with short wave frequencies and 1.197 MHz medium wave in the evening. The station’s communications expert, George Wood, has just compiled the latest edition of Communications in Space which provides a comprehensive round-up of the satellite broadcasting world, together with details of amateur satellite, space communications and more. It is available free of charge by writing Mediascan, Radio Sweden, S-105 10 Stockholm, Sweden.

Swiss Radio International went satellite at the same time as Radio Sweden. The European programmes can be heard by tuning to Astra’s transponder at 11.332 GHz, audio subcarrier 7.20MHz. English is at 0800, 0803, 1100, 1300, 1500, 1700, 2000, 2200, 2400, 0000 and 0400 UTC.

Turkey, which just about counts as being in my European remit, is moving steadily eastward into the former Ottoman empire. It is expanding its operations in the Central Asian region which, depending on one’s school of thought, from the Caspian Sea over to the Chinese border. Many of the former Soviet republics speak Turkic languages and the TRT sees the opportunity to spread Turkey’s views into these newly emerging states. A television channel has been launched and the Voice of Turkey will be adding new languages to its radio output. Watch out for other developments in this increasingly important area.

Listeners to Radio Moscow will have noticed a change of name. It is now announcing as Radio Moscow International. Some major changes are expected during the summer months and SW/Radio Moscow will keep you up-to-date.

The World Service of Radio Ukraine, known as Radio Kiev until earlier this year, has made some changes to its transmissions. English is heard at 2100 for an hour on 9.785, 9.64, 7.34, 7.25, 7.24 and 6.01 MHz and at 0000 on 17.89, 11.77, 10.344 (upper side band), 8.97, 9.785, 9.685, 9.64, 7.24, 7.195 and 6.145 MHz.

Radio Voice of Lithuania also has two English language transmissions. They are at 2310 on 9.71 and 9.675 MHz and at 2300 on 15.153, 13.845, 11.78, 9.71 and 10.344 (upper side band).

If you have not already made up your mind about a summer holiday, how about combining a relaxing break with some DXing? This year’s European DX Council Conference will take place in Tampere, Finland between Monday and Monday 24 August. There will be the opportunity to meet DXers from Europe, North America and Asia, together with some of the personalities behind the microphone. The local organisations are the Finnish DX Association and the DX Club of Tampere who organised the EDXC Conference during its last visit to Finland in 1987. There will be a large listening shack equipped with various DX receivers connected to a farm of outdoor antennas, a computer room with PCs and public domain software, a video room, DX library and much more.

The Conference is residential, with special packages offered to delegates, although you can make your own accommodation arrangements if you wish. Details are available from EDXC 92, PO Box 212, SF-33310 Tampere, Finland. In the UK, contact Brian Lane, tel. 058-01 3133 or FAX 058 31 181 857.
Roger Bunney, 33 Cherville Street, Romsey, Hants S051 8FB

I have been investigating a Taiwan sourced badged receiver that is available here in Europe under various labels such as SGS and Echosphere (the latter as SR-50). Although it has many front user knob controls there is an inherent problem in the front end, it will overload on high signal inputs (causing non linearity, spurious images, mixed pictures, etc.) and means to correct this problem have been taken up with the manufacturer. I am hoping to sort out the problem as soon as possible, when hopefully I can report that the ideal satellite DXers receiver has been found!

An indication of the devious route these satellites take to reach the TV production studio was vividly illustrated in a letter from Iain Waller (Lincoln Satellite), ITN have apparently despatched their UK175NG unit (Satellite News Gathering) to Afghanistan to report on the internal strike and conflict. Signals from the ground are then uplinked to Ku band into Intelsat V F5 60°E and cross-strapped to downlink into Europe at C Band 3.98GHz left hand circular. The signals are received by France Telecom and then uplinked again over Eutelsat II F1 13°E at 12.6GHz horizontal and then raced to the Maxar satellite earth station atop the ITN building in Grays Inn Road and thence fed downstream to ITN proper.

During late April various live and VTR playouts were carried for many European and American broadcast networks. In the CNN case the news inserts are fed west over the Atlantic at C Band and then reappear back in Europe over Intelsat VI F1 27°W which links onto the new CNN (Astra 1B) transponder 28 - 11.62GHz vertical for pan-European coverage. So if you see a brown 'timecode' footage over CNN Astra, that signal has passed through at least 5 satellite hops. And you probably can't see the joins!

An old friend Jean-Louis Dubler from a Montreux cable company has commented on the HDTV receiver situation in Switzerland. He has tested 3 receivers, from Philips, Thomson and Grundig. Thomson is noted the best buy, it has a built-in satellite tuner with dual input LNB switching, a D2MAC decoder and 6 Skart sockets to rear. It will run at 1250 lines 50Hz 10:9 format without further additional 'bits' and even a gold plated Skart for an outboard HDMAC decoder. The other receivers have various gimmicks such as twin tuner options that a 2nd programme can be inline in the main programme, digital zoom-in features and 3level audio noise reduction - the Grundi can display 6 different pictures on the screen simultaneously - OK for TVDXing all Band 1 channels instantaneously - but likely to produce domestic confusion! At the moment however you will need a large bank balance and an equally large house to own one of the HDTV receivers.

Peter de Jong in Holland snapped this test card over Astra 1B. The Canal Plus Canali Satellite programme is surrounded with financial problems. The French government are pushing for adoption of the D2MAC format on the Telecom 2A having spent 80 million French Fr. into the Thomson research bandwagon - and Thomson have indicated that if D2MAC is not selected for French use then the production line for D2MAC equipment will be closed down. (There is also the little matter of 100,000 D2MAC sets piled up in warehouses, unsold from the failure of the TDF satellitess!) Canal Plus however have commercial interests in retaining the SECAM system coupled with Negravision encryption - Canal Plus have some investments with the Swiss Nagra company who will manufacture the decoders - hence all Negravision decoders will be sold by Canal Plus to a captive audience. Canal Plus will soon have to make the decision based on politics and staying sweet with the French government (D2MAC) or to opt for the financial gains around the Swiss Negravision encryption system.

Signals Seen

Sat-zappers the night of April 20 would have found the Freddy Mercury/Queen memorial concert out of Wembley, London up and downlinking everywhere! Many European national networks were taking the concert in its entirety and it's interesting to witness on international screened events such as this the time lag between the local UK terrestrial service and the offering via satellite lagging by perhaps a second - caused by the longer satellite signal paths and studio centre frame stores.

TVE - Spain that same night were running a massive opening ceremony and firework display for Expo '92 from Seville - in colour very impressive.

May 9 saw an unusual test card with identification '200 TV' interspersed with pop videos, the latter spoofing back and running with yet more '200 TV' test cards, this on Eutelsat II F1 13°E at 12.52GHz - perhaps ZOO is a new pop group, eventually the carrier cut and the source was never identified!

Unfortunately hostilities and the inhumanity of war does make news and Yugoslavia is no exception. Intelsat VA1F1518°W has been carrying various news feed inserts, the May 8 snG downlink at 11.45GHz vertical on colour bars with inlaid identity - 'EBU Sarajevo Feedpoint' - though no news footage passed - presumably the link was being lined up for later use. Where as the Sarajevo identity is helpful as is the case in the HRF 40° on colour bars seen April 29 lunchtime on Eutelsat II F2 11.12GHz horizontal is a complete mystery!

There has been much activity on the Intelsat VI F1 craft 27°W following the transfers from the earlier VI F4 bird. The Brightstar trans-Atlantic feed East bound formally C band now appears in 525 lines NTSC at 11.01GHz horizontal - so if you want to check your field/line holds on that TVDX receiver for double hop Sporadic E from Canada/USA this is the signal for you. The Brightstar feed was carrying live NASA action of the Space Shuttle attempts at the Intelsat VI F3 satellite capture and repair evening of May 13 which was received on the re launched from the Shuttle cargo bay.

Rather a non event on 27°W on April 22 mid morning at 11.52GHz horizontal, there appeared colour bars inlaid with "London OB Unit 1" (DB - outside broadcast), which in turn excited BT Goonhill who returned fire with colour bars and inlaid "BT GOO 40° F" at 11.46GHz horizontal. Both were eventually went off-air with no video being seen.

SIS horse racing OB feeds can often be seen on Intelsat V5 F2 21°W from various courses around the UK - this is a inclined orbit and signals will vary from reasonable to non existent. An inclined orbit means that this elderly craft is exhausted of orbital slot correction fuel and the satellite will self orbit within and around the 21 degree slot over a period of hours. A polar mount dish with continuous elevation correction is needed for correct tracking of inclined birds. Check out 11.55 and 11.60GHz horizontal during the afternoons.

There are many satellite movements across the Darke Belt from day to day, the above sightings are just the icing on a very large cake, even a 90cm dish can be used for many of these signals - you certainly don't need a 'Jodrell Bank Two' in the back gardan!

Orbital News

The African continent is perhaps the next area for satellite exploitation. The BBC World Service TV has now leased a C Band transponder on Intelsat VI F1 at 27°W with a hemispherical beam covering Africa. With CNN, Worldnet already on board and shortly the South African M-NET service also taking C Band transponder facilities, a comprehensive English language coverage can easily be achieved with a fixed dish. Talk is that South African Broadcasting (SABC) will be arriving on 27°W now that the SABC TV have dropped B MAC in favour of INO. The BBC are rumoured to be adopting the M-NET Irdeto scrambling technique and with the SABC will be using the M-NET subscription centre and administration. It's also likely that terrestrial networks and cable operators will take signals off-air for local distribution since dish sizes may be in excess of 2m.

Gorizont

The Brightside Channel, an Atlanta based media group are still aiming for a general light entertainment channel to provide world wide coverage based on several strategically slotted Russian Gorizont satellites. Already test programmes have been carried on Gorizont 40E alongside CNN which is also downlinked from this craft. Russia has committed new improved Gorizont satellites by mid '93 for the 14W and 40E slots with options on a 3rd at between 80-95°E. The latter slot will provide Asian and Australasian coverage though Brightside hope that by 1995 to have their own high powered multichannel bird aloft using digital video compression for massive channel carriage. The Asian coverage will rival AsiaSat and signal levels from the Brightside Will allow use of 1.2m fixed dishes and consequently a relatively inexpensive installation. Brightside will appoint an agency in each country to administer sale/hire of decoders and general subscription fees. Already CNN is downlinked from Gorizont 40E.

Russian Service

Moscow Global Productions (MGP) are to provide a Russian language satellite service intended for their own peoples abroad via local cable using certain of the Russian global network of satellites (probably Gorizonts at 14W and 40E) - the service will be on a 24 hour basis using network Ostankino TV and infused with imported programming.
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Short Wave Magazine, July 1992
W ith the advent of solid-state receivers, some people believe a receiver can no longer be a hazard. Alas, if it is mains-driven, the 240V supply appears inside, even if only to the on/off switch and the mains transformer tags. If you are one of the many who still use velvety equipment, you have high-d.c. voltages around as well.

Start a safety check in your stock. Check your receiver mains leads are the correct way round; Red or Brown to the terminal, Black or Blue to the N terminal, Green or Green-yellow to the E terminal in the plug. Flat pin (13A) plugs have a fuse in the L side and this should be changed for one of the value quoted in the receiver handbook. Now unplug the receiver from the mains, open it up and check that the L side at the plug end goes to the on/off switch in the receiver. It’s no bad thing while you are at it check (or have checked) that L, N and E are correctly located on the mains socket top; go through the mains safety earth as well, and make sure you have continuity to a good earth, especially if you have a true communications receiver with a mains transformer.

In Greater Manchester’s Swinton district lives Gerald Bramwell, who has a problem with interference. Nonetheless, he put his c.w. ears to work thus: On 1.8MHz D44BS, DJKQJ, G4BBE, Y4D2K, H8CGC; on 3.5MHz, F6GDO, G0EBW, G4TP, HB9AAD, G4JCU; on 7MHz B4UVW, RB4IXS, ZU2YUA, L1DYJ, DJU2, ON4A, D44BS/GX, G8MBW, YVUKA, HD8MR, OH5KJC, YUJBS, M7CD8, CT1/WB6, PTVYJD. Still c.w. on going to 14MHz Gerald logged UA3GDM, UA1AKM, I1TFG9, LASEF, VY2A, the 18MHz crop of 14MHz, V005A, V015, W3K7Y, W2K6K, W2FW, W2Had, W9GQ, K1M, W3KBF, ZL1XX, ZL2EVE, ZL2EVEC; on 20MHz V019D on 24MHz and W4J, K2ABZ, both on 28MHz. The s.b. crop is far larger, so it has been dumped down to the more distant stuff. On Top Band that means UA4JUL, on 3.5MHz R9ACGW, 7Q2XX, Y4CHV, 584KH & 95XNH. On 7MHz there were no Us, but UAHEA, UA3KFV, P75SM, CT02Z, L1U1WV, F9GSC, EABBR & CT3P. On 14MHz there were an assortment of East Coast W and VE, WD9GQV, KJ1XC, 2B9FK, K08J8/TF 9H1EL, PY5EU, C4AC, P7TCP, CC8CM, PXEG, C4AC, P7TCP, 9KMC & J95YK. On 18MHz where Gerald noted the East Coast Ws, plus K02VR, V7EANS, U1RC, J1LIU, J1AIW, PW2Y, G4MSC/PB, BR1, JA1JAK, ZF2SD, H12AB, 65EVE, J2NNW0, P7T00U, JA2AKW, LUSZN, VKETU & JAL1JK. Over to 21MHz for a nice even sprinkling of W and VE stations, V02AVY, UL7BD, RZ8AXO, 9H1DE, ZD8SA, FBHCS, K4PFR, HFOPL, PY1HCD, CE5ABF, CT3F, PY5BI, Z4AFM. VK5HDM, S9L2B, LUL7FW, PY2GP, PY2JQ, Z5C1L, VU1NR & EABAE, while 24MHz yielded no Ws, but PR5TM, 4X6U, CT3D, ZL1UV, F6GFC, EABRR, CT3F. Finally on 28MHz we see a sprinkling of Ws and VeS, plus SH1EL, PY5EC, CX4AC, P7TCP, C04CM, LU4FC, 9KMC & J95ZK.

Vince Cutajar in Malta sticks to 18 and 24MHz s.s.b. on the former we see 2A6AP, T72B, VP2EON, 70XX, 5H3RA, Y11RM, 5UFM, F8KCP & 579DK; D as for the latter band it came up with SA96G, GD6CT, D6YSJ, VP2EON, F8KCP heard at 200BUTC by long path, 702H, S7RHP, Y5SGA, ZF0XZ & ITJA.

John Heys (Hastings) has a sloping arrangement for the bands 18-28MHz, cut for 21MHz and fed by soldered header and a tuner. On 7MHz there is a dipole, against the tuned line and the presence of the tuner, especially if it build and it set itself up for you improves the signal-pick-up at all frequencies away from the system’s natural resonance. Thus you get the best out of a bad situation. John’s Top Band pickings showed LY2BV, LY2BV & 156CTC on sideway, while on 18MHz we found K0K5, K0DK, LACX, KD2EM & UA1WDR. On 24MHz the c.w. was up to V0935, while s.s.b. managed UA4RMA & U0AZXG, 18MHz yielded WW70. On 21MHz 4K3BB went into the book, and on 28MHz 8P6BL, VP2EON, G4MSCBR & H8CBG. For the rest, it was gardening, gardening;

Don Robertson lives up in the far NE of Scotland, near Wick. This time he concentrated on c.w., with just F0BKP on account. So, on 7MHz he has PY3FSA, LW1EUX, YX0AI, UX3X3, UA4JAS, UA4JAK, ZL1ST, ZL2UV, JVOE, VK3RP, VK5NS, K4YD, 4K2CC, KC6WSS, KPN/K1DX, AP, WA2WYR, AJST, CM3RA & PPLU; a flip of the band-switch to 18MHz for 54W, W6S, JA5, KJ4JM, ZF2UR & KJ7UPS. On 14MHz Don winkled out 4X2LO, JVVOE & UA1DIW, and on 18MHz he found PW8QDN, UW0L0, UA0JHH, UA5CM, P4/DK5JF, UZ0AXX, HJL1UX, HJ7VU, HS5JY, JQW0G, BY5GA, F0BP, KV1/KW1L, Z2HIS, Z2K0H, W17WH, K3ACW, UI0UFP, WA0IUP, UA2WAK, WS & JA5. A quick basaf in 21MHz came by way of ZL1AQD, UA0JU, DZ2AG, UB4EG W & JAs before going to 24MHz for 9M2AX, 1J7PM, ZS0UI, C0BEC, Z2VE, ZS9D, 80J3C, V4KWM, ZS8V9P, YN/S001G, KY1TF, VAU2MR, UJ7WBM, PJS/X4K, KJ7AF, UJ3BA, YV9DG, WR4D, VP8SS, ZF7ZM, UJ3BM, WS & JA5. Poor old 28MHz had just one, L2KHE.

From Yevol D. McLean writes to say he found conditions a bit like the coconut’s egg. Stick ing to s.s.b., Don tried 14MHz for 5CS5G, CT3F, CU6Y, E8A1BY, F0OIC, IN0NU/T08E5, JAs, KL7XD, S92AA, TIZMEN, UA0GFC, UL70B, VKs, VK3C (Coles-Keeling), VP5K/AOS, VD05CM (S. Orkney), VU2JUQ, XEF2U, X9TQL, 5AYMM, ZW6CS/Z, ZL2A2V, ZS1DZ, SH3DC, 7X2WCK & 9L1MR, while 18MHz accounted as ZA66G, NL7W, ZA29A, ZA29A & W5. Am 24MHz accounted for A06DB, AL7TC, D4CSB, 6065F, JAs, J1HMAO/JD1 (Minimatisitorus), K8BMJ, NH4, NL7OT, P2BDX, RUB/N, S2/HAJH, S2/HAJH, UI6U, UV5, VP8SS (Goodwood), VP8SS (Goodwood), VP8SS (Goodwood), VP8SS (Goodwood), VIP1, X9Z, X92B, XT9QL & ZF2N/2FE. Turning to 24MHz we see D4BC, EX0FWR, F0CD, K0DK (Colorado), JP1KCD, JA4, V7IN & Ws. Am 24MHz accounted for KA1EF, ZL1MH, VK6HG, UI8AG, & JAs. Before going to 28MHz, ZL1AM, Z35JH, P2TV, VP8SS, VP8SS, VP8SS, VP8SS, VP8SS, VP8SS, VP8SS, VP8SS, VP8SS, VP8SS, VP8SS, VP8SS, VP8SS.

Letters

Let’s start with Ted Trowell, in Sheppage, who found conditions pretty bum. On May 10, a skim over 2MHz showed all signals very disturbed which Ted sees as evidence of something happening on the sun. Top Band saw ON7BW on sideway, plus c.w. from LY2BV & HB6DOWP. On 7MHz there was UA8QF; on 10MHz 9H3GQ & TATA. 14MHz yielded V7GFJE, and
While Joan was sorting some unidentified press cuttings she spotted a heading 'Televised 100 Miles Away' under which it was reported that a Telegram had been received by the BBC, at Alexandra Palace, from Newport, Isle of Wight. This read, "Congratulations on Cenotaph transmission. Perfect reception, conveying complete atmosphere." The item emphasised that this report represented a "successful television range of nearly 100 miles" and that the BBC's Chief Engineer had suggested that the average range for normal reception was "probably more like 30 miles." Judging by the tone of the piece and the use of a Telegram, this was a Band I signal that possibly extended its range due to an early winter Sporadic-E. Those were exciting times and to get a picture in your own home from even "30 miles" was for many people a big event. Like other engineers at the time, I spent many hours with large antennas, hefty low-loss coaxial feeder and pre-amps trying to get some form of reasonable picture, on a difficult path, in front of an excited customer. Now this band is used in the UK by excited DXers, hi!

Band I
The BBC originally used 41.5MHz for sound and 45MHz for vision (known as Ch. 1) in Band I for their transmissions from Alexandra Palace. As the demand for television grew they installed several, strategically sited, transmitters and utilised four more channels in the band from which they provided an almost nation-wide coverage. When the BBC vacated Band I it became a haven for the long distance television buffs to see overseas stations when ionospheric conditions are right. For instance, Simon Hamer (New Radnor) identified pictures from Dubai and Iran on Ch.E2 (48.25MHz), at midday on April 12, because the band is 'quiet' and a disturbance in the upper 'F2' region of the ionosphere was in progress. Also, during the evening of the 22nd, he received many 'pings' of pictures, on Chs. E2, E3 (55.25MHz) & E4 (62.25MHz) and R1 (49.75MHz) and R2 (59.25MHz), being deflected from the decaying trails of ionisation left by meteor particles burning up in the earth's atmosphere. This occurred as the earth passed through the peak of the Lyrids meteor shower on its orbit around the sun. Further such peaks are expected on July 8, 15 & 26 and August 2 (Capricornids), July 29 & August 6 (Aquarids), August 12 (Perseids), October 22 (Orionids), November 3 & 17 (Taurids & Leonids respectively) and December 13 & 23 (Geminids & Ursids respectively). More detailed information about these showers can be obtained from the meteor section of a good astronomy book.

Sporadic-E
By the time you read this we should have seen the first of the 1992 Sporadic-E openings and some of you may be wondering why the 'extra' signals are reaching your set. The reasons may sound a bit complicated at first, but the following brief explanation should help. Such openings are the cause of DX in Band I and although there are a number of short-lived events during the winter months, the main openings occur between May and September with peaks in June and July.

When the BBC used Band I their pictures were often distorted, especially at Wimbledon time, by transmitters using similar frequencies a good distance away. Through international planning and channel allocation it is possible for all sorts of transmitters to use the same or similar frequencies without interfering with each other. But, when a natural disturbance, like Sporadic-E, takes place signals can travel up to ten times their normal range and then really disrupt 'local' reception. This is known as co-channel (stations sharing the same frequency) and adjacent-channel (stations using nearby frequencies) interference respectively. Therefore, now that Band I is relatively 'quiet' here in the UK, pictures from those distant frequency sharers can be received. Good examples of this can be seen in Figs. 1 & 2 received by Bob Brooks (Great Sutton) during previous events. The former is a test card from Jordan (JTV Suwailmi) and the latter, a news programme from the USSR also showing the vertical lines of co-channel interference. The caption in the bottom left of Fig. 2 is 'TASS Report'.

Fading signals and glimpses of programmes are typical features of Sporadic-E, as shown by the test-card that I received from Finland, Fig. 3, back in 1978 and the Russian news title, Fig. 4, caught by Bob Brooks in July 1983. The most vulnerable frequency to be influenced by Sporadic-E is 50MHz, which means that we can expect to receive something on Chs. E2 and/or R1 even during a mild event. A programme from Russian TV, Fig. 5, was received early on 24 May 1991, by Lt. Col. Rana Roy (Mererut, India). With all this in mind it should be easier for you to understand the letter I had from David Glenday (Arbroath) who said that "signs of the Sporadic-E season kicking off," came on April 24, when, around 1500, he logged test-cards from Portugal (RTPI) and Spain (TVE2) and watched a Flintstones cartoon from an unidentified source, in Band I. Further evidence came from Russ Burke (Northampton) who received pictures from Italy (RAI-Uno) and Spain (TVE1 & 2) on April 11, 12, 13, 14 & 28 and a test-card from Russia (TSS) on the 18th.

Satellite TV
Simon Hamer watched a 45 minute documentary all about Sussex from German TV (ARD1 Plus) via the ASTRA satellite. He was pleased to see inside Petworth House, the South-Downs, Duncton, Goodwood and Midhurst. He tells me that "we can now have CNN International on Transponder No.28 with CNN radio on one of the sub-carriers".

On April 11, RAI signals on EUTELSAT II F2 were again very weak due to horrible weather there," said Peter de Jong (Leiden) and suggests that "several different such fade-outs show that the uplink station must be located near Rome". In recent months Peter received good colour transmissions from CNN, via ASTRA, Fig. 8 and a cable channel from Germany, Figs. 7 & 8 and a test-card from Hungary, Fig. 9, via EUTELSAT I F1 and F3 respectively.

Weather
Around 0222 on April 13, Peter de Jong was at home and awake when Holland experienced its strongest earthquake since 1692. Its strength was 5.5 near
Roemund, some 180km from where he lives in Leiden. "It is indeed a weird and frightful experience. It is like being weightless, with waves moving back and forth (instead of up and down) under you. The whole house shook, despite the distance from the epicentre," wrote Peter, adding, "Ultimately it is related to the same fault as the now active Etna volcano!" Local damage in Peter's area is currently estimated at £50m. Thanks for this first-hand account Peter, Joan's reaction to your report was, "it must feel like standing on a jelly!"

The variations in atmospheric pressure for the period March 26 to April 25, Fig.14, were taken at noon and midnight from the barograph installed at my home in Sussex.

It is said that 'every little helps'. Well, it certainly did in April when I recorded a welcome 4.22in of rain compared with 1.76in for the same period in 1991. The heaviest falls came on the 2nd (0.56in), 7th (0.55in), 13th (0.45in), 25th and 26th (0.30 & 0.36in) and the 28th when the highest (0.76in) daily amount fell.

**Tropospheric**

"April has been fairly good as far as previous Aprils go for TVDX," wrote David Glenday who also saw "powerful, local-strength, tropospheric activity from Danish, German and Dutch coastal transmitters during the afternoon and evening of the 8th". Simon Hamer had a good haul of Band III and u.h.f. DX while a tropospheric opening was in progress on April 8. He received good colour pictures from stations in Germany and all Scandinavian countries. Among the German ident's he saw were ARD1, Hessen 3, MDR3, NDR03, RTL+ & SAT1. He also had a new catch, Sweden's 'twittering' picture, on Ch. E46 and E50, "both floating beyond Sutton Coldfield!"

During the month David Ashley (Norwich) kept a watch on the u.h.f. band and received pictures, at varying strengths, from Belgium (BRT TV1) on the 8th & 9th, Denmark (TV2) on the 8th, France (Canal+) early on the 20th, Germany (N3, ZDF) on the 9th & 10th, Holland (NED1, 2 & 3) on days 1, 7, 8, 9, 10, 11, 18, 20, 21, 22, 23 & 25 and the UK (Yorkshire & Tyne Tees) on the 10th & 19th. Russ Burke added Germany (ARD & ZDF) and Holland (NOS) to his u.h.f. DX log on the 16th & 17th.

On the 8th & 9th, David Glenday received pictures from Belgium (BRT1 & 2), Denmark (TV2), Germany (ARD1, NRD3, SAT1 & ZDF) and Holland (NED1, 2 & 3) on several spots in the band. With high pressure, cloudless skies and frost on his car roof over the weekend of 18-20th, George Garden (Edinburgh) received above average signals, at his location in Lawrencekirk, from the Black Hill transmitter of Scottish TV. George used his JVC 510GB receiver in an upstairs room fed by a high-gain Yagi and amplifier, "A mystery from last year," wrote David Ashley, who, at 1415 on July 11 was watching TVs from Rowridge, on a portable, with its own loop antenna, tuned to Ch. E27. When co-channel interference began to appear he slowly rotated the loop and resolved a faint test card on which he feels sure he saw RAI-Uma. I checked my records for that day and found David and the pressure was right for a tropo-opening, it had fallen from 30.2in (1022mb) at midday on the 10th to 30.0in (1015mb) by noon on the 11th. Furthermore my 1990 copy of the WRTH lists five Italian stations operating on Ch.27.

**SSTV**

In Glasgow, John Scott is delighted with the performance of the ROBOT 1200 that he now uses to decode the slow-scan television signals that he receives in the 7, 14 & 21MHz bands. These signals sound like variable 'twittering' and are heard around 7.043, 14.270 & 21.340MHz respectively. During April he copied 'CG' captions from stations in Czechoslovakia, Germany, Poland & Russia Fig.10, pictorial 'ident's from Germany, Switzerland Fig.11 and Sweden and a German report Fig.12, on the pictures that he received from Sweden. John plans to link the ROBOT to his PC computer via an interface and new software. While tuning around 14.230MHz at 2130 on the 27th, John heard W2PCG talking about SSTV and then, from a slow-scan net in New Jersey, came his first clear picture from that station and across the 'pond' from the USA.

In April, David Glenday recorded slow-scan signals, around 14.230MHz, mainly from Germany and among them, on the 12th, was the impressive caption from DF9NW Fig.13. David uses Technical Software's RX-8 package in his computer to decode the pulses.
My thanks to Fred Henley (Cannock) who kindly sent me some historical documents. Although my Museum deals with current and not historical aspects of aviation, I do have a personal interest in old things and am pleased to take charge of the various booklets and will cherish them as befits their age. Thanks for thinking of me.

As previously reported, London Upper Sector is now available at LATCC and Michael Hockley (Abingdon) fills in some of the details. The new sector overlaps the Daventry, Clacton, Bristol, Dover and Worthing sectors and has boundaries as follows. Join, with a straight line, the Belgium/London FIR boundary from a point east of Dover to the Editorial Offices at Poole Harbour. Continue north to Devizes in Wiltshire then turn east to RAF Henlow in Bedfordshire. Continue the boundary, heading south-east back to the starting point. Operation is between 0830 and 2300 inclusive.

As well as the primary frequency of 127.425MHz there is also a secondary allocation on 134.75MHz. Thanks for offering a map, Michael; I would be most grateful. Could you annotate the frequencies used by each sector, and may I publish it here?

You Write

What happens on the LATCC frequency of 128.125MHz? Is the aircraft actually being worked on another frequency? Duplex operation occurs during slack periods with the same controller talking on two frequencies at once. Could this be the case here? Keith Mayhew (Mansfield) wants to know.

Now some information from Paul Hilton (Newbury). Portishead has a little-known allocation at 23.142MHz, and Tim Christian's book does list it. The 1991 edition of World HF Aeronaautical-Mobile R/T Frequency Allocations costs £6.99 (inclusive of UK post) from Tim at Isoplethics, 157 Mundesley Road, North Walsham, Norfolk NR28 9DD. Another frequency spotted by Paul and listed by Tim is 13.327MHz (Lufthansa and Iberia company ops). On the other hand, 11.244MHz (Aviaco company ops) might be a new one.

Now for 13.354MHz at New York. This doesn't appear to be listed under NAT-A in my up-to-date Supplement so NAT-E is most likely. Lastly from Paul, Stockholm Radio's 13.945/5MHz is not in an airband and so it is hard for me to draw any conclusions.

The All Nippon Airways company frequency is mentioned by Adam Teyton (Acezo, on the Heathrow 27 approaches) and is 131.475MHz. On h.f. Zambian have 10.033 and 13.330MHz.

Colin Frewen (Burgess Hill) remembers the days when the shop at Queen's Building, Heathrow, sold airline logo badges. You're showing your age and I remember it too! Some badges, though not the older sort that we both remember, are sold by Stewart Aviation, PO Box 7, Market Harborough LE16 8XL. Write for a catalogue, if any reader has a source of badges, do write in.

What is the generic term for the sort of hobbyist who might read this column? Plane spotters are a limited bunch, and not all readers are pilots (let alone professionally involved in flying). No matter what your interest, I maintain that we all "aviation enthusiasts" and I hope that you find this title satisfactory, Colin.

Information Sources

From Truro, Robert Guscott writes. He would like information on aircrafts and beacons. Unfortunately, Robert, you didn't list those that you wanted to know about so I'll just mention the information sources available. Military caigns are not easy to identify, although many are known to enthusiasts; hence, try unsubscribing to this column. They also tend to change frequently. Some of the specialist magazines cater for military enthusiasts, but these are often only obtainable as part of a subscription to a society or club. One that's worth a look is Airstrip, and comes as a benefit of membership of the Midlands Branch of Air-Britain. Contact the Secretary, John Withers, 7 Nailers Drive, Burnwood, Staffordshire, WS7 0ES, and see if any sample copies are available.

In the case of beacons, look back to May and try Airways (The Airband Shop) or the En Route Supplement (Aerad). Also good is the RAF's Supplement (such as the one for the British Isles and North Atlantic). For prices, contact 1 AIDU, RAF Northolt, West End Road, Ruislip, Middlesex HA4 8NG. Tel: 081-845 2300 ext 209.

Follow-Ups

In May I told Frank Kelk (Nottingham) that 'Seagull' was the callsign of TIA. What had slipped my mind, but of which I am now reminded by Graham Tanner (Hartington) and Ron Smith (Northolt). This is that this is also the callsign of the vehicles that drive around airports emitting pre-recorded bird distress calls. A turbine engine ingesting a bird tends to sustain serious 'FOD' (foreign object damage) as the RAF call it. It doesn't do much for the bird, either. The other danger area is the cockpit windscreen but these are very tough and are tested by having dead poultry shot at them by a pneumatic gun. The most humane solution, protecting the aircraft and the birds, is to scare away the latter by the distress calls (the avian equivalent of a Mayday). Canada geese, with their distinctive cry and unbelievable capacity for leaving a mess wherever they land, take a lot of scaring before they decide to leave!

A practical point. What if a TIA flight is working Tower at the same time as a bird scarer calls for clearance to cross the runway? There is scope for confusion here.

Another vehicle that is often encountered is also worth a mention. Unlike birds, aircraft aren't supposed to leave droppings but do sometimes make a mess. For example, a burst tyre can shred debris onto the runway and so cause a FOD hazard. A vehicle might be required to drive along the runway and pick up the pieces, in which case the callsign 'Checker' would apply. At smaller airfields, one operations vehicle might do everything and the callsign 'Ops' would then be typical.

Aerodrome identity letters also cropped up in May. I recommended the Aerad publications for looking these up, but you will need a separate volume for each part of the world. Graham suggests the Klingenfuss Air & Metro Code Manuals as an alternative and you can buy from our SWM Book Service. The advantage is that it covers the world in one volume, but the disadvantage is that it doesn't have a list of runways, aerodrome frequencies, etc. The choice is yours!

Talking of picnic sites, Graham kindly offers some outdated charts for my Museum. Many thanks, Graham, and if you send them along by the cheapest method of post then I will refund your costs.

Returning to second channel (image) reception, as mentioned in April, 2 x 10.7 added to 128.9 would come out at 152.3MHz. I'm not sure what's on 128.9, the nearest I can think of is London Volmet (South) 300kHz away at 128.6. So I'm not being of much help to A.W. Guy (Cambridgeshire) and I apologize for quoting the wrong frequency in April.

ILS Markers

Ron Smith decided to search for the 23 outer marker at Heathrow. At 4nm from the threshold, and of course in line with the runway, I reckon it to be just west of South Greenford Halt station. Ron reports there to be no visible beacon here, but there is a water tower and the antennas might be atop this and so out of sight. A typical marker consists of a couple of upwards-pointing Yagi-type parasitic arrays and I showed an example in April.

All markers are on 75MHz. The outer marker is amplitude modulated with dashes at 400Hz, and triggers a blue light in the cockpit. The middle marker's modulation is alternating dots and dashes at 1300Hz, triggering an amber light. Inner markers radiate dots with a 3000Hz tone and the corresponding light is white; the same equipment is also used to mark progress along certain airways. Genuine inner markers are rare nowadays but runway 24 at Hatfield still has one.

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Short Wave Magazine, July 1992
I have now received more information on the new AR1500 hand-held which should be available by the time you read this. As well as the addition of s.s.b., which I know many readers (particularly aviation enthusiasts) have been looking forward to, AOR have also included an automatic search and store facility. This operates by setting upper and lower search limits in search bank 9, the receiver then locates active frequencies within the search band and automatically jumps them into memories 500-999. This is ideal if you want to switch on the receiver to do all the work for you, especially at events such as air shows where you can remove the external antenna and use the facility to just find local transmissions. I know several readers who are already interested in the receiver who will try it out with the exact frequency in memory when a station is received. The reason for this is no, like most scanners fitted with a b.f.o. it will only store frequencies in multiples of the smallest tuning step - in this case 5KHz. I hope to try out an AR1500 soon and will include more details in a future column.

**Bugging**

Judging from the letters I receive one of the most popular subjects featured in this column over the past few years has been 'Bugging'. This has been the news recently with several readers sending me copies of an article which featured on the front page of The Mail on Sunday on May 10. The article was based on the experiences of reporter Michael Robotham who spent four days driving around central London with a scanning receiver in the company of a 'Counter Surveillance Expert'. The purpose of this exercise was to try and see if there could identify any bugs operating within detection range. This may seem rather like searching for a needle in a haystack, but they were successful and managed to identify several devices including one that was actually being planted. You must bear in mind that when a bug has been planted it is usually not worth the risk of covering it once its original purpose has been served. Some mains powered devices have been known to continue operating for many years. In one case a bugging device was discovered when building work was being carried out on a private house, it transpired that the house had changed hands four times since the device was thought originally planted.

The sophistication of and availability of bugging devices has greatly increased over the past few years. Most devices used to be based on TV or video cameras or audio bug kits salvaged from scrap TV sets. Modern c.c.d. video cameras are becoming increasingly smaller and cheaper. Maplin electronics sell a very small camera p.c.b. complete with built-in lens which is very easy to conceal. All that is required is a d.c. power supply, simple 1.3GHz f.m. TV transmitter (which are available in kit form for amateur use) and a satellite TV receiver to use as a remote surveillance system. Professional systems tend to make use of frequencies around 10GHz but there are plenty of 1.3-1.4GHz systems in operation. In fact several have been monitored by Amateur tv enthusiasts over the past decade.

So far no readers have written to me to say that they have actually monitored a bugging device. There have been several near misses which turned out to be either radio microphone systems or harmonics of baby alarms. Given the number of devices being sold through advertisements in papers such as Exchange and Mart or via shops in Tottenham Court Road, I am sure it is only a matter of time before someone detects a real one - please let us all know if you do!

**Interference**

Several readers are still trying to resolve reception difficulties, particularly those associated with interference from paging systems, which do seem to cause more than their fair share of problems. I can only assume this is due to the fact that many paging transmitters are sited in urban areas. This is necessary to provide a strong signal for the paging receivers which have to operate reliably inside well screened concrete office blocks. The digitally coded modulation and close channel spacings used by paging transmitters also cause problems for scanning receivers, most of which have a less than ideal intermodulation performance.

Ian Wicker of Norfolk has obtained some of the helical filters I mentioned in the April column. He wonders if I could supply more details relating to the re-winding of the coil. I used some silver plated copper wire that I had salvaged from some other filters. Silver plated wire is a bit of a luxury and doesn't make much difference to the overall performance (it just widens the notch bandwidth slightly). You could use ordinary tinned copper wire of about 1mm diameter, the actual size will depend on the length of coil and number of turns required. I would not recommend using silver loaded paint on the wire as it does not give as productive a coating as true silver plated. The coil was wound on a suitably sized former so that when the tension was released and the former removed the coil had about the same external diameter as the original winding. One end of the coil was then soldered directly to the centre connection of the coaxial 'tee' at the top of the filter housing. The spaces between adjacent coil windings were filled with Araldite to improve rigidity.

H. G. Odd of Kent is another reader who is experimenting with notch filters. He wonders if you could provide more details for the resonators together with a quarter wavelength of coaxial cable. Don't forget that this has to be around 0.66 times the wavelength in free space due to the

---

**Scanning**

Alan Gardener
PO Box 1000, Eastleigh, Hants S05 5HB.

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Short Wave Magazine, July 1992
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<tr>
<td>AR-950</td>
<td>Base/mobile scanner</td>
<td>£199.95</td>
</tr>
<tr>
<td>AR-2000</td>
<td>Series II 0.5-1200MHz, 1000 memories</td>
<td>£269.00</td>
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<tr>
<td>AR-1500</td>
<td>NEW - as above, with SSB</td>
<td>£299.00</td>
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<tr>
<td>AR-2002</td>
<td>25-550 &amp; 800-1300MHz</td>
<td>£399.00</td>
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<tr>
<td>AR-2500</td>
<td>Base/Mobile 5-550 &amp; 800-1300MHz, RS232</td>
<td>£419.00</td>
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<tr>
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Short Wave Magazine, July 1992
velocity factor of the dielectric material used in the cable. The main reason for using helical resonators in this application is that they produce a sharp response which minimises the effect on adjacent frequencies and do not exhibit additional resonances at harmonically related frequencies. If you are not worried about some of these factors, for example if a paging system at 138 or 153MHz is affecting reception at 145MHz and you are only interested in monitoring that band you could try a simple quarter wave length coaxial stub as described in the Dec 1990 column.

Both these types of interference are narrow band in nature - that's to say only spot frequencies tend to be affected by it. Bill Cranleigh from Derbyshire has rather a different problem, in his case it can be heard on any frequency from a few hundred k.hz to beyond 15GHz. The interference sounds like a regular ticking noise with each 'tick' lasting about a second. Bill has checked around his house for any obvious sources and has even switched the mains off an listened with a transistor radio but the noise still persists. He has noticed that it changes slightly with weather conditions and wonders if anyone else has experienced similar interference. This is quite an interesting problem that I have experienced in the past. In my case it was particularly noticeable on the higher frequency shortwave bands and on 70 and 145MHz, I did eventually track the source down but wasn't able to do anything about it - I wonder if any readers have guessed what it was?

Well the answer is an electric fence! These used to cause a lot of problems but modern electronic design and the use of special woven conductive tape in place of more traditional fencing wire has reduced the amount of r.f. energy radiated. You may be able to get something done if the interference is affecting broadcast or radio reception, however it will cost you £31 to call out the DTI Radio Investigation Service.

One other alternative is to use some form of interference cancelling technique. This involves the use of two antennas, one of which is used to receive local interference which is then added in antiphase to the main signal path. The effect of this is to cancel out the interfering signal whilst keeping the wanted signal intact. As far as I am aware only one company actually produces such a unit which is called a 'QRM Eliminator'. This is only designed to operate on the shortwave bands up to about 60MHz, but it is very effective in dealing with interference in the form of wideband electrical noise. The disadvantage of the unit is that it requires retuning if the receive frequency is changed dramatically. For further details contact: S.E.M. Unit R, Union Mills, Isle of Man or ring (0624) 851277 for a catalogue.

**Airband 51**

What do these markers do? As you can see, they are real radio beacons and not imaginary reporting points. They are spaced along the approach path. The exact distance varies from one airfield to another but is always published in each aerodrome's chart.

Given a fixed glide slope, usually 3°, it is possible to determine the altitude at which each marker should be overflown. This is done by checking that the aircraft is on the i.s. glide slope. Also, if the aircraft is too far to one side of the localiser, the marker will be missed and not overflown. The airspeed gives a guide as to how long it should be between overflying the marker and seeing the runway, so if this time is exceeded then a go-around must be initiated. If you want to see a marker receiver in action, then I can arrange it for you at my Museum (see telephone number at end of article).

**Frequency and Operational News**

The CAA GASIL4/92 lists the following changes for the first time. The callsign of the new facility; Beverage (Linley Hill), on 123.05MHz, is now Beverley Radio. There is a new Aerodrome Flight Information Service facility at Perranporth on 119.75MHz. The Woodvale Frequency is now 121.00MHz. On the subject of beacons, the Clacton (CLN) n.d.b. is now on 429kHz and its old frequency, 294.5kHz, has now been allocated to a low-power marine n.d.b. on the Sunk Light, a lighthouse just 17nm to the east of Clacton. Also, some other marine stations have low-powered calibration facilities on 294.5 so the message for all n.d.b. users - whether in the air or at sea - is to confirm the identity of the beacon by listening for its Morse callsign and, in general, to be careful.

A new facility will be of general interest. Readily accessible and free of charge, information on current royal flights (purple airspace) and other temporary restrictions can be heard on a recorded message by telephoning (01903) 254929.

Another squawk code to add to the list is 0033 (see AIC 32/1992). Five minutes before the drop commences, a parachuting aircraft should set this code and then retain it until all jumpers have reached the ground. Just as a reminder, free-fall parachuting is often undertaken from above FL100, in which case a transponder is mandatory; they do drop through clouds; and they do drift downwind. Other pilots should therefore avoid known parachuting areas.

The next three deadlines (for topical information) are July 9, August 7 and September 4. Replies always appear in this column and it is regretted that no direct correspondence is possible. All letters to 'Airband', c/o The Goration Manning Aircraft Museum, 83 The Drive, Edgeware, Middlesex HA8 8PS. Genuine urgent information/enquiries: 081-958 5113.

**Levels of Air Traffic Service**

What do most people call the operator of an aeronautical ground station? The common parance is 'controller'. In fact, there are three main types of operator, of which only one is actually in control!

Air/Ground operators have a callsign like 'Somewhere Radio'. Qualifications can be minimal, for example, a pilot with an airborne radiotelephony licence would also be entitled to work this sort of station. The operator sorts out reports from aircraft and provides information that will enable the pilot to determine whether or not a proposed course of action is likely to be safe. The Air/Ground operator is not allowed to issue clearances and is not in control. For example, an aircraft might call 'Ready for departure'. If the Air/Ground operator can see no danger then the reply will be 'Take-off at your discretion'. If there is an airmiss or a collision, the pilot is responsible.

Flight Information Service Officers are restricted in the same way as Air/Ground operators and give information and not clearances. A typical callsign is 'Somewhere Information'. There is, though, one important exception. The Flight Information Service may read a clearance to an aircraft as long as that clearance was issued by some other competent authority. For example, a local airfield might be the point of departure for a flight that will later join the airways system. The airfield's Flight Information Officer could obtain the airways clearance by telephone. Such a clearance might be read as: 'London Centre clears G-BSWM to enter A20 at Biggin, FL60, squawk 4567'. Remember that it is the local aerodrome controller, not London Air Traffic Control Centre, that reads the clearance to the pilot and also listens to the pilot's read-back to make sure that it is correct. A Flight Information Service licence is required.

Lastly, there are real controllers! They deal with controlled or special rules airspace, so all flights must in this instance obey the controller (unless obvious danger would thereby occur). A controller's qualification is essential and there are various aspects to this, such as approach radar. Also, a validation is needed to ensure familiarity with the particular aerodrome (or airspace) being worked.

Note the correct phraseology that appears above. 'Departure' is an intention. The word 'Takeoff' is only spoken when actual takeoff clearance is being confirmed.
Lawrence Harris
5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5QB

Spring has been a busy time for many WXS monitors and I have been pleased to receive "phone calls from several SWIFreaders who have noted the satellite hopping and other changes going on amongst the METEOR constellation.

Dave Rogers and Brian Dudman were amongst those who rang up shortly after METEOR 3-3 came back to life on 137.40MHz in late April. I was away for a few days so I didn't catch the first bleeps. Also noticed was the strange sound from METEOR 3-4 which, when decoded, showed large black areas, possibly due to a faulty scanner. Then METEOR 2-20 lost its phasing bars and grey scales! As of mid-May the problem remains with METEOR 2-20 but pictures can still be decoded on either framestore (which normally have a built-in 240Hz tone to synchronise the picture) or by computer if the program caters for picture format changes. We can expect METEOR 2-19 to be operating by the time this appears. The problem with METEOR 3-4 must have been corrected because current images show no sign of the fault.

Greenland

Several correspondents have mentioned their observations of the coast of Greenland. METEOR 3-4 has been providing some superb images (on 137.30MHz) and I received a disk from Brian Dudman containing some samples. His images show that he has a better northerly vantage point than I have. Brian & Matt Taylor Woking have constructed a 5-element Yagi which they use to hand track, with an antenna rotor, to improve signal strength from satellites going towards the North Pole. They have concentrated on the last (westerly) passes of METEOR 3-4 from which they sent me a picture (see Fig. 1).

Fig. 1: West coast of Greenland (MET 3-4) from Brian Taylor.

I took a March 31 at about 1600UTC showing the melting icebergs. They have also seen clear pictures of Nova Scotia.

NOAAs 10 and 12

The American polar orbiting satellite NOAA 10 was apparently scheduled to have its a.p.t. (low resolution weather picture transmissions) on 137.50MHz switched off from May 3. This happens every few weeks when NOAA 10 starts to crash with NOAA 12, which uses the same frequency. For some reason NOAA 10 was left transmitting a.p.t. until at least May 6, so some interference was inevitable. A glance at the Kepler elements for these satellites shows that NOAA 10 covers about 14.24 orbits per day while NOAA 12 does about 14.22 orbits. This means that NOAA 10 overtakes NOAA 12 for a few days after which they are again separated for a few weeks.

Sun-glint

Between April and September the sun reaches a good elevation over Europe and all of the weather satellites can provide well-illuminated images. NOAAs produce their best pictures during the summer months and even the METEORS, which normally don't show land features at all well, can provide some detail. If you use contrast stretching facilities (or a computer) to examine METEOR pictures you will see that there is plenty of detail present. A striking feature of the pictures from all of these satellites is the reflection of the sun in the sea. The morning NOAA pictures always contain sections where a whole area is flooded with the sun's reflection. Usually the Mediterranean Sea catches the sun first, but often one of the UK's coastlines will be bathed in sun-glint. Only the visible section of the NOAA picture is affected. This glint is also seen from METEOSAT images, particularly over the Atlantic Ocean around mid-day.

METEOSAT

Despite leaving my tape recorder set up to monitor 137.40MHz I have only heard METEOR 3-3 using this frequency. Neither have I received any reports of others hearing any of the METEOSAT series of Russian oceanographic satellites. OKEAN does have recording facilities so it could be still being used, though it is unlikely to escape detection! One or other of the OKEAN satellites has previously been used to track icebergs and make other measurements around the Finnand and Bothnia regions for many years.

Fig. 2: METEOSAT 4 from Peter de Jong.

is completed. METEOSAT and GOES are compatible satellites but METEOSAT is quoted as having a lower resolution in the visible, a south to north scanner and has provided hourly images. After checking out M3 in early 1993, the satellite will be moved westwards to 75°W, where it will remain until replaced by a new GOES satellite. From that position we (in the UK) will no longer be able to receive direct images from M3.

METEOSAT 5

Although launched many months ago this latest METEOSAT still has imagery problems. I have come across a schedule of tests being carried out with this satellite and, interestingly, it's apparently broadcasting a weekly image on Thursdays between 0800 and 0900UTC. I am not sure whether this is WEFAX or digital but it's not too difficult to check! If WEFAX, this will be included in the picture label on each format for the hour concerned. Meanwhile METEOSAT 4 has been operating normally and correspondent Peter de Jong of Holland sent me a picture (see Fig. 2) showing the exceptionally long cloud formation seen on January 3. Peter experienced the earthquake on April 13 at 0220UTC and sent a graphic account of it. He says that although "100 miles away, it is a weird and frightful experience ... like being weightless ... the whole house shook."

GOES Operations

The operation of the American geostationary weather satellites is being changed shortly and I have received some details from various sources including the newsletter of the American National Weather Association.

GOES-2: Here in the UK we can sometimes receive data from GOES-2 by pointing a dish at the western horizon and tuning in on the METEOSAT frequency of 1894.5MHz. GOES-2 acts as the 'east-WEFAX' transmitter of the GOES constellation, and some years ago we could receive it from this position. With the satellite now having a large inclination, from the UK it appears to move in a loop, sometimes reaching 18° elevation during the night, but falling to only a degree or so twelve hours later. Many parts of the UK will have difficulty in receiving a good signal but it is worth a try. Having recently added a 1.8m dish for METEOSAT Primary Data use I pointed this dish towards GOES-2 during the evening when the satellite reaches a good elevation and I was delighted with the signal strength. Instead of the marginal picture that I have become used to, I was able to receive a near perfect image! This results from the 1.8m dish having over three times the collecting area compared with my normal 1m dish.

GOES-7: The main American operational geostationary weather satellite, is now approaching the end of its five-year design life, and will be left in its current position at 112°W to conserve its remaining fuel. For the past few years of single GOES operation, GOES-7 has been stationed
at 98°W for the summer hurricane season and then moved to 108°W for the winter. G0ES-7 is now on station and continues to operate normally, and it seems that the spacecraft will remain healthy for some time. Unfortunately, its five-year fuel supply is very low and so its orbital inclination will now only be kept within about one degree. NESDIS (National Environmental Satellite Data Information System) hopes to be able to conserve enough fuel to maintain G0ES-7 through 1993 with usable imagery.

G0ES-NEXT continues to experience developmental problems and delays, and the most likely launch date for G0ES-1 is December 1992 or later.

G0ES Positions

METEOSAT 3-50°; G0ES-2 (east) 59°; G0ES-6 (west) 135°; G0ES-7 Prime 112°.

Letters

A large number of letters arrive requesting Kepler elements and so distribution will remain one of my objectives since it is quite clear that these are of great use, despite the increasing number of modems which of course can be used to collect this data. Josep Jerba Casanovas of Barcelona was one of several overseas correspondents to request Kepler's and he had an experience which included a number of receivers plus a 386SX PC. Josep is setting up his own METEOSAT station.

Many of the letters that I receive are from readers who have just discovered this hobby and want more information. One reader from Malvern already has an AOR 1000 scanner and an 8086 PC, and wonders whether these can form the basis of a picture decoding system. Without modification this scanner is unsuitable for decoding pictures but could be used to hear the satellites. The PC is not suitable for running most of the commercial software for picture production but could be used to run tracking programs, particularly if it uses a VGA monitor.

Space Information

Michael Hockley of Abingdon has kindly sent me a selection of lists including the frequency bands used in the fixed-satellite service and asks me about the possible publication in this column of this type of data plus more shuttle information. The main problem is space. I receive and retain a considerable amount of space-related information regarding the shuttle, all of the weather satellites, and very large amounts of other data. Occasionally correspondents ask me for data and when available I pass it on.

Info in Orbit is primarily for weather satellites though my own interests go far wider! I write columns on astronomy and computing for our local Plymouth paper, the Evening Herald. Each month in SW1M try to cover all recent WXSAT matters and also squeeze in extra info on subjects like the Shuttle, for which I know readers are looking for information. I have a huge list of frequencies used by Shuttle operators, of which about six can be usefully used, and so these are the ones mentioned previously.

M Beddis of Cheltenham is a retired digital electronics engineer who has set up a WXSAT receiving station using an Amstrad 6128 computer running suitable software, and using an extensively modified Maplin decoder and Cirtix receiver. I think that this is the first report that I have received from someone using the 6128 computer for actually decoding a.p.t. signals. My son Tim and I wrote satellite predictions software for this machine several years ago, before Tim recently modified it to run on a PC. The original program took 35 minutes to calculate a chronological listing of all satellite passes for a given few hours. On our recently purchased ‘386’ the same data takes 8 seconds to run!

Ray Howgego G4DTC is another accomplished electronics person who has recently designed and built a dedicated WXSAT i.f. circuit with demodulator which plugs into his Icom R7000. Ray has offered to provide copies of this circuit to readers with the necessary experience to build the strip. I will forward correspondence to Ray but please enclose an s.a.e. Ray has also sent me a listing of WXSAT re-transmissions from various h.f. and v.f. FAX stations.

Keep in Touch

Geoffrey Chance of Redruth makes the suggestion that perhaps some sort of direct contact could be made between WXSAT enthusiasts if a readership list could be established. The idea is that people with similar equipment might wish to contact others to provide help or experience. If we can sort out a method which gives privacy to those preferring it then this could be of help to newcomers.

Beginners - Kepler elements Part 3

So far we have looked at the Object number (satellites, or parts of them have a unique number in the NASA catalogue); Epoch (the time at which the set of elements were measured); orbital inclination; orbital period (related to Mean Motion), and the RAAN (the right ascension of the ascending node). There are still a few more parameters to cover.

Eccentricity. The orbits of satellites are rarely simple circles; they are always some variation of an ellipse.

Even if a satellite was put into an exactly circular orbit, the earth is itself not uniform and so the orbit is subjected to different gravitational forces which, over time, cause the orbit to change!

Technically a satellite can have any of several differently shaped orbits but the common ones vary between an elongated ellipse and a near circle.

The eccentricity is the measure of this difference. A circle has an eccentricity (ecc) of 0; an elongated ellipse has an ecc of nearly 1. Eccentricities will therefore lie between 0 and 1.

Such an elongated orbit is often used for communication purposes, e.g., the amateur radio satellites, because a satellite in a highly eccentric orbit travels more slowly while it is further away from the earth, meaning that communications via it can last for a longer period. If you glance at the eccentricities of various satellites you will be able to understand which are likely to be used for such purposes. The weather satellites are in virtually circular orbits.

Argument of Perigee: All of the previous parameters now allow us to draw the orbit fairly accurately, but we still don’t know how to orientate the elliptical orbit in its position around the earth. To where does the long axis of the ellipse point? Imagine a line drawn between the apogee and the perigee - this is in fact the long diameter (or major-axis) of the ellipse. The Argument of Perigee is the angle (measured from the centre of the earth) from the ascending node (described two months ago) to the perigee, previously described. It varies between 0° and 360°. The word argument is a mathematical one meaning a parameter - in this case, an angle.

PDUS

Last month I mentioned my recent purchase of the just released METEOSAT primary data user system from Timestep Weather Satellite Systems. I am writing a review of this equipment, but it occurs to me to mention that the equipment appears to cost within sight of the considerably more common WEFAKX unit. It could be that within a year or two there will be a rapid increase in the number of PDUS stations around the world.

Frequencies

N0AAS S, 11 a.p.t. on 137.625MHz N0AAS 10, 12 on 137.500MHz METEOR-2-19 or 2-20 on 137.850MHz METEOR 3-4 or 3-5 on 137.300MHz METEOR 3-3 on 137.400MHz recently

Kepler Elements

I will send a print-out of the latest elements upon receiving a stamped, addressed envelope. All recently operating weather satellites are included, together with their transmission frequencies when on. This data is supplied courtesy of NASA and Paul Wilson.

Fig. 3: NOAA 11 from Geoff Chance.

Fig. 4: NOAA 11 from Roger Ray.
Andrew Collins from Nottingham has been a computer enthusiast for many years and has recently expanded this to include utility listening. He's operating a completely home built station using a receiver design from R.A. Penfold. This has been supplemented by a modified Howes digital frequency counter and the latest addition, which is a Maplin terminal unit.

He intends to use this set-up to receive the Bracknell weather coded weather transmissions on 4.489MHz. However, it has three questions that I'll attempt to answer here. His first is where to find full details of the Bracknell transmission format. Probably the best source for this information is the Klintfuss Air and Meteo Code Manual. Although perhaps not the easiest of books to interpret, all the information is there in great detail.

Next Andrew asks if he needs a licence to receive this transmission. Up until comparatively recently you needed a readily available licence to receive weather stations. However, this requirement has now been withdrawn and you are free to receive and use these transmissions for amateur and self-educational purposes.

Finally, Andrew asks if a schedule is available. As far as I know they don't transmit a schedule, just 24 hour weather data. I hope this helps clarify the situation for a number of readers.

Incidentally if your looking for a sophisticated processing system for this type of weather data, the SYNOP package from Skyview Systems looks interesting. I've yet to try a copy, but Roger Barker of Boston has supplied me with a few screen dumps. The output looks very impressive and certainly makes full use of the weather data.

J. A. France of Shrewsbury is in the enviable position of being able to choose any of the top range decoders. But this freedom of choice brings its own set of problems - how do you decide between the various models. I have to admit that it's not easy. The best advice I can offer is to start by looking at the sales brochures for the various models and thinking seriously about where your interests lie. You then need to think about how your interests may develop and whether or not the decoder you've chosen can be upgraded. Having been through this process, the next step is to arrange a demonstration of your first and second choices.

Steven Verhaegen of Brussels has recently bought one of the new Lowe HF-150 receivers for utility listening. He also bought the keypad and accessories kit that contains a whip antenna and a set of NCads. Steven reports great results and is delighted with the HF-150's performance. He's also sought some technical information from Lowe and reports that they've been very helpful. This must be good news for anyone who are considering buying one of the Lowe HF range of receivers.

Marine Page

Since I first mentioned this service in my review of the ICS FX-2, I've received several letters asking for more information. Thanks to a letter from BT's Maritime Development Manager, Mike Wilton, I now have some news for you. The Marine Page service was formally launched in January this year to complement its Autolink RT service. This latter service operates on the 2.6, 12, 16MHz and v.h.f. bands. Autolink RT enables ships fitted with the appropriate equipment to dial call direct. This provides an upgrade to the conventional technique of having to set-up calls via the coast station radio office.

As its name suggests, Marine Page is a paging system for contacting vessels whilst at sea. The Marine Page transmitter is currently located at Cullercoats Radio in Tyne and Wear and uses 441kHZ. This gives an approximate service area of Dover Straits through to the northern part of Shetland. Mike states that this coverage may be extended in the future.

The transmission mode used is selective FEC (more on that later) with each vessel being allocated a five digit Marine Page number. To use the system, you simply dial the special Marine Page phone number at Portishead Radio and give the Radio Officer the appropriate details or message. Typically the originator would supply his/her name, phone number and the name of the person to be contacted. This information is then entered into a PC which processes the data and sends it in the appropriate format to the Cullercoats transmitter. There are no delays in the system and the transmitter is keyed immediately a message is ready for transmission. At the receiving end (on board ship) the output from the ship's receiver is passed to an appropriate decoder (ICS FX-2) where the paging message is then printed out. The charging arrangements for the service are the same as conventional paging services i.e. the ship pays a quarterly subscription and the caller just pays for the phone call to Portishead. As this is a newly introduced service don't be surprised if you find a distinct lack of activity on 441kHz. I'd like to thank Mike Wilton for taking the trouble to write with this information.

FEC

Now I've given you a general overview of the service, I'd better explain a little about the workings of FEC. So, to start with, what does FEC mean? The answer is Forward Error Correction which means exactly what it says. The basic principle follows exactly what happens when people converse under poor conditions. If you listen on the amateur bands, you will soon notice that important information like callsigns and signal reports are often spoken twice. This is to give the best chance of the information being received accurately under difficult conditions. You will also notice that the information is repeated immediately rather than just saying the whole message twice. It's this principle that's used for the FEC transmission system. In this case the message is transmitted with the repeated message interleaved and delayed by three characters. The overall transmission rate with this mode is approximately 50 baud. However, achieving this with the repetition I've described, means that the transmitted baud rate has to be 100 baud.

The next question, of course, is how does the decoder know which is the correct message if one becomes corrupt? The secret lies in the use of an alphabet code that includes some form of error detection system. The code used for FEC is the CCIR476-4 which is the same as that used for conventional SITOR transmissions. In this particular code, each character is allocated a unique seven unit code that always contains four log 0 and three logic 1s. At the receiving station, the decoder will reject any characters that don't conform to the 4/3 ratio. It's this system that enables the decoder to decide which of the two received characters it will print. As you can see, the process is basically quite straightforward. One other important feature of FEC is that it's synchronous. This means that the transmission will continue even if there's no message to send. There is also a need to go through a phasing process at the start of the transmission and indicate when the transmission is ending. In order to do all this, we need a few extra codes that we can use. This is achieved with just three codes. These are called alpha or phasing signal 1, Beta, and RQ or phasing signal 2. The start of the transmission is marked by sending alternate phasing signals 1 and 2. On receipt of this signal, the receiving system switches from standby to active mode. It's then ready to start receiving messages as I've described earlier. If there's a gap in the message the transmitting unit fills in the spaces with the Beta idle character. When they reach the end of the transmission a series of at least three alpha characters are sent consecutively. This causes the receiver to switch back to stand-by mode. To help you get to grips with this I've shown a diagram of the process in Fig. 1.

So far I've only described the most common FEC mode which is used primarily to broadcast a message to many ships. The system used for Marine Page is slightly different as the page has to be received by only one ship. This calls for the use of Selective FEC or SEL-FEC. The principles are exactly the same as conventional FEC except that a callign or paging number is also transmitted. SEL-FEC transmissions start with the same phasing 1/2 sequence, but this is followed by the callsign and a carriage return/line feed sequence. The message comes next and is padded out with beta idles. Other than the inclusion of a callsign the main difference between FEC and SEL-FEC is that fol-

![Fig. 1: Standard Mode B FEC signal.](image1)

![Fig. 2: SEL-FEC signal using callsign 56789.](image2)
lowing the initial phasing signals, all the codes are inverted. This means that instead of each character comprising four 0s and three 1s, this is reversed to three 0s and four 1s. Because of this inversion, you will need a special SEL-FEC decoder to receive this type of transmission. I've shown the construction of a typical SEL-FEC signal in Fig. 2.

So that about concludes this insight into the workings of Marine Page and SEL-FEC. If you have any other modes you'd like me to explain, please drop me a line and I'll see what I can do.

Press FAX

Following the demise of TASS and DPA, Jan Nieuwenhuis has written with his compilation of active press FAX stations. This will, I'm sure, be of great interest to many FAX enthusiasts, so I've reproduced it in full here. The format used is: frequency, callsign, time and station name.

5.775MHz, LRD26, 1400-0400UTC, AP Buenos Aries
6.82MHz, JKI4, 0900-100UTC, JIJI Tokyo
6.87MHz, LR897, 1400-0400UTC, AP Buenos Aries
7.3637MHz, MF/HF68, 0000-1200UTC, KCNA Pyongyang
7.931MHz, LR048, 2200-3000, NA Buenos Aires
8.14MHz, 9VF44, 0500-1600UTC, JIJI Singapore
8.1675MHz, LDB8, 2200-2400UTC, DyN Buenos Aries
9.135MHz, JKB4, 0500-1600UTC, JIJI Tokyo
9.242MHz, LR064, 2200-2400UTC, DyN Buenos Aries
9.25MHz, JKI4, 0900-100UTC, KCNA Pyongyang
9.34MHz, 3MA26, 0200-1500UTC, CNA Taipei
9.405MHz, JKE6, 0500-1600UTC, JIJI Tokyo
9.437MHz, -. 0000-1200UTC, KCNA Pyongyang
10.677MHz, LR112, 1400-0400UTC, AP Buenos Aries
11.69MHz, AZ3G41, 1400-0400UTC, AP Buenos Aires
11.451MHz, LR075, 2200-2400UTC, DyN Buenos Aries
11.411MHz, HM62, 0000-1200UTC, KCNA Pyongyang
11.475MHz, MFM52, 0000-1200UTC, KCNA Pyongyang
12.169MHz, 3MA26, 0200-1500UTC, KCNA Pyongyang
12.580MHz, HF366, 0000-1200UTC, KCNA Pyongyang
13.76MHz, 3MA26, 0200-1500UTC, CNA Taipei
14.685MHz, 3MA25, 0200-1500UTC, CNA Taipei
15.67MHz, 3MA24, 0200-1500UTC, CNA Taipei
16.27MHz, 9VF207, 0700-1000, 1400-1800UTC, KYODO Singapore
16.23MHz, JAG06, 0700-1000, 1400-1800UTC, KYODO Tokyo
17.672MHz, LGZ67, 1400-0400UTC, AP Buenos Aries
19.680MHz, 3MA23, 0200-1500UTC, CNA Taipei
20.738MHz, LSA000, 1400-0400UTC, AP Buenos Aries
22.850MHz, 3MA26, 0200-1500UTC, CNA Taipei
23.855MHz, 9VF235, 0700-1000, 1400-1800UTC, KYODO Singapore

Individual options being selected using the arrow keys (will we have mouse operation soon?)

Another area that badly needed improving was the BIT storage options. This has been given the new graphics treatment and is now much more user friendly. This update also applies to the ASCII storage option.

Moving onto the decoding modules, there are a number of refinements designed to make operation simpler. The unshift-on-space has been enhanced to include a shift-on-space option. This will be a boon to those who regularly copy five-digit SYNOP weather reports. However, there have also been some changes in the link between the Speed-shift measurement module and the decoders. You can no longer use the shift-only key by pressing B the shift being set using the S-0 function. You can also import that last measured shift and offset by pressing SS. This is

An example from Skyview's SYNOP program.

Great when using a receiver with coarse tuning steps.

This is but a small selection of the changes and I'll give you a full report when I receive my own copy of version 4. Thanks to Day for supplying the info.

Frequency List

Now on to this month's selection of frequencies. The frequencies listed here have all been sent in by readers over recent weeks, so represent stations that should be receivable by most. The contributors for this month's selection are: Jan Nieuwenhuis, Dave Woods, Lee Williams and Day Watson. If you would like a copy of my full listing, just send three first or second class stamps to the address at the head of the column.

I've kept to the standard format for the list which is: frequency, mode, speed, shift, callsign, time and notes.

The press abbreviations used are as follows:

Hoka Update

Good news for all Code-3 users with the release of version 4. I've yet to get my hands on a copy, but Day Watson has sent me a report on the main changes. One of the most common criticisms I receive is the poor presentation of the package with its rather crude menu system. This has now been corrected in the new version which has a full colour display and makes good use of drop down menus.

3.731MHz, FAX, 120, 576, GZH, 2003, USN Thurso
6.835MHz, RTTY, 50, 400, 2200, DFI, Bracknell
6.9185MHz, FAX, 120, 576, ECA7, 1734, Madrid Met
7.621MHz, RTTY, 75, - , IBN, 1300, USAF Vicenza
7.801MHz, RTTY, 50, 400, - , 2000, Tanjiq press
7.856MHz, RTTY, 50, 400, - , 2050, IRNA Tehran
7.866MHz, RTTY, 50, 400, - , 2120, Belgrade press
9.22MHz, FAX, 90, 576, RT826, 1950, Novosibirsk Met
10.215MHz, RTTY, 100, - , HZNA8, 2008, Jeddah Met
10.25MHz, ARQ-E, 192, 150, DMK, 0007, MFA Bonn
10.53MHz, RTTY, 50, - , 2200, Halifax met
10.63MHz, RTTY, 50, 400, - , 1850, MAP Rabat
10.655MHz, RTTY, 50, 400, - , 2100, Bracknell
11.08MHz, RTTY, 50, - , SYR, 1585, SANA Damascus
11.13MHz, RTTY, 50, - , BZG4, 1849, XINHUA Beijing
11.14MHz, RTTY, 50, 400, EIP, 1249, Shannon Air
12.278MHz, RTTY, 75, 400, SW22, 0000, Polish embassy
12.7275MHz, FAX, 120, 576, NWC, 1924, US H.E. Holt
12.8875MHz, RTTY, 50, 400, - , 2245, EAD44 Aranjuez radio
12.801MHz, CW, - , - , 0745, TAH Istanbul radio
12.972MHz, CW, - , - , 0815, URF Lenigrad radiotraffic
14.4972MHz, RTTY, 50, - , CSY, 2048, Santa Maria Air SYNOP
14.497MHz, RTTY, 50, 400, CSY, 1223, Santa Maria Air
14.674MHz, RTTY, 75, 400, DDFG, 0168, MFA Belgrade
14.88MHz, RTTY, 50, - , JMG4, 2040, Tokyo Met, English
14.9385MHz, RTTY, 50, 400, - , 1200, APS Algeria
15.3955MHz, RTTY, 100, - , CJI, 0701, MFA Nicosia
17.163MHz, RTTY, 75, - , RNO, 0735, SA/AAMC TEUS satellite data
17.947MHz, RTTY, 50, - , 9VF78, 1729, Dakar Met SYNOP
19.88MHz, RTTY, 50, - , BSCG3, 1729, IRNA Tehran
20.0118MHz, Twinplex, 100, - , - , 1403, MFA Islamabad
20.822MHz, ARQ-E, 72, 400, RFFX, 1437, FE Bangui
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Short Wave Magazine, July 1992
Long medium & short

If you are heading for your chosen summer holiday location, be sure to take a small portable receiver with you so that you can explore the bands once you have settled in. When you return home please send along a report to me for 'L&M&S'.

Long Wave Reports

Note: I.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (+GMT). Unless otherwise stated, all logs were compiled during the four week period ending April 30.

Occasionally the 10kW I.w. transmissions from Calcutta, India on 18kHZ are heard in the UK after dark, but a first report of daylight reception has come from John Wells in East Grinstead. At 1518UTC he picked up a broadcast in Indian 18B, it was weak but clear. The data in the World Radio TV Handbook (WRTH) indicated Calcutta and the bearing of his loop confirmed that the signal was coming from the expected direction! He monitored 18B again after dark, but the signal was poor.

Another report of unusual daylight I.w. reception came from George Millmore in Wootton, IOW. He was surprised to receive Tipaza, Algeria on 2950 (1500/750kW) at 0122Z.

Medium Wave Reports

Encouraged by his reception of m.w. transatlantic signals from Canada last month, Ron Damp (Wortthing) has been searching the band well into the night! At 0235 he logged CJYJ in St John's, NF on 930kHZ as SINPO 3222. Later, he heard for the first time a signal from the USA. It was WNEW in New York, hearing tip over at 2202Z. 044. Both signals were affected by deep slow fades.

The broadcasts from CJYJ on 930 were also heard by Tim Bucknall in Congleton. He rated them as 3034 at 0120. At 0140 he logged an unidentified Canadian station on 580 as 2242. Tim suspects it was VOCM in St John's, NF. Although the giant 4m square loop which Jim Willett (Grimsby) uses contributes to his success, the propagation conditions are the most important factor. Throughout March, Jim found signals from S. America were noticeably absent, but one night in April the logged R.Bobo in Rio, Brazil on 1220, their signal peaked 0122Z at 0315. Several broadcasts from Canada and the USA were also heard, all rated 0122Z. The first reached him at 2300 and was WINS in New York, on 1010. VOCM in St John's, NF became audible on 590 at 2330. The signals from the Atlantic, Barnes, Turks & Caicos is 1510 peaked 0122Z at 0210.

Sky wave signals from the Middle East and N.Africa have also been reaching the UK after dark! Very weak signals from Dubai, Saudi Arabia on 594 (2000kW) were heard by Darren Beasley in Bridgwater at 2100. Some stations in Algeria, Morocco and Tunisia were noted in the reports, see chart. George Millmore logged Gafsa 585 (350kW) as 0122Z, Djedja 59W (100kW) SI0435, Alger 851 (620/300kW) SI0444, Alger 381 (610/300kW) SI0434 and Sebas-Aboun 1044 (300kW) SI0333.

Since the closure of BBC R Nottingham's Trowell outlet Roy Patrick (Derby) has been hearing I.R.L. Mercury via Duxford on 1521 (0.64kW) relaying 'First Gold Radio', broadcast by IFR County Sound via Peshamreg on 1476 (0.5kW). Roy tells me that IFR Hereford Radio have split the programming of their i.w./v.h.f. outlets. An older format is now broadcast via Gunthorpe on 1332 (0.6kw) under the title 'WGNM - Worlds Greatest Music Station'. Please let me know if any changes are expected in your area.

Short Wave Reports

Although the level of solar activity is decreasing, good reception from many areas has been noted in the UK.

Daily variations in propagation have been evident in the 25Mhz (11m) band, but generally broadcasts have reached their targets well. In his report from Thumrait,
ARE are pleased to announce that we have re-opened under new management and with what is the widest range of equipment ever offered from a single store in London. Not only do we offer our very popular Icom modifications but we also keep an extensive range of other receivers available, plus a good range of secondhand equipment with realistic prices.

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Short Wave Magazine, July 1992
## Local Radio Chart

### Frequency Chart

<table>
<thead>
<tr>
<th>Freq</th>
<th>Station</th>
<th>Country</th>
<th>Power</th>
<th>Listener</th>
</tr>
</thead>
</table>
|156| Bechir| Algeria| 500| A,B,D,F,G,H|J
|153| Donned| Germany| 500| A,B,C,D,F,G,H|J
|158| Rave| Romania| 1000| E,F,G,H |J
|171| Kaliningrad| Russia| 1000| E,F,G,H |J
|173| Melit| Morocco| 2000| H|J
|199| Damiet| Germany| 2000| E,F,G,H |J
|180| Sebast| Germany| 500| F,G,H,|J
|160| Calais| France| 1000| E,F,G,H |J
|149| Project| France| 1000| E,F,G,H |J
|137| Warsaw 3| Poland| 2000| E,F,G,H |J
|135| B.C.Wich| Poland| 2000| E,F,G,H |J
|128| Malen| Poland| 500| E,F,G,H |J
|125| Gier| France| 500| E,F,G,H |J
|213| Rado| France| 1500| E,F,G,H |J
|208| RMC Rooomk| France| 1500| E,F,G,H |J

### Notes
- Entries marked * were logged during darkness.
- All other entries were logged during daylight or at dawn/dusk.

### Long Wave Chart

<table>
<thead>
<tr>
<th>Freq</th>
<th>Station</th>
<th>Country</th>
<th>Power</th>
<th>Listener</th>
</tr>
</thead>
</table>
|205| Bechir| Algeria| 500| A,B,C,D,F,G,H|J
|202| Donned| Germany| 500| A,B,C,D,F,G,H|J
|200| Rave| Romania| 1000| E,F,G,H |J
|217| Kaliningrad| Russia| 1000| E,F,G,H |J
|219| Melit| Morocco| 2000| H|J
|236| Damiet| Germany| 2000| E,F,G,H |J
|243| Sebast| Germany| 500| F,G,H,|J
|252| Calais| France| 1000| E,F,G,H |J
|255| Project| France| 1000| E,F,G,H |J
|260| Warsaw 3| Poland| 2000| E,F,G,H |J
|262| B.C.Wich| Poland| 2000| E,F,G,H |J
|264| Malen| Poland| 500| E,F,G,H |J
|266| Gier| France| 500| E,F,G,H |J
|271| Rado| France| 1500| E,F,G,H |J
|277| RMC Rooomk| France| 1500| E,F,G,H |J

### Notes
- Entries marked * were logged during darkness.
- All other entries were logged during daylight or at dawn/dusk.

---

Oman Jana Arunachalam noted very good general reception of the daily broadcasts to Africa from RFI via Issoudon on 25.820 (Fr 0700-1500), rating them as 44444 to 120. Potent signals also reach Oman from DW via Julich 25.740 (Ger to Japan, E/S/Asia, M.East, Europe 1100-1255), a typical rating being 45555 at 1210. Also active are the Voice of the UAE in Abu Dhabi 25.890 (Ar to Far East 0900-1100) and N.Rederlands 25.940 (Dtl 1030-1125, Sun only).

In the 21MHz (13m) band good reception from R.Austria has been noted in the UK. The Carkonnoi broadcast to Asia 21.775 (Eng0100-0800) was 43444 at 0710 by Chris Shorten in Norwich, to C.Pacific areas via Shepperton 21.740 (Eng 2130-0300) SID444 at 0710 by Cyril Kellem in Sheffield; to S.Asia via Darwin 21.725 (Eng 7-1257) 55544 at 1025 in Bridgewater.

Also heard in the morning was R.St.Petersburg via Moyabi 21.575 (Eng to Europe, to M.East, Armavir 21.520 (Eng to Europe 0800-0845) 55544 at 0802 by Eddie McKeown in Norwich; R.Austria int. via Mosbroum 21.490 (Ger Engto Austria 0800-1100) SID344 at 0840 by Kenneth Buck in Edinburgh; R.Pakistan, Islamabad 21.510 (Eng to Europe 1100-1200) SID444 at 1100 by John Coulter in Winchester, H.C.B.J. Ecuador 21.455 (world-wide u.s.b. + p.c.) 55544 at 1130 in Worthing and 55544 at 1206 by David Edwarsdon in Wallsend; Voice of the UAE in Abu Dhabi 21.515 (Ar to Europe?) 44444 at 1210 by Chris Haigh in Huddersfield; RFI via Montgomery 21.765 (Fr, Sp to S.Amercia 1200-1400) SID444 at 1240 by Ron Galliers in N.London.

During the afternoon R.Moscow via Armavic 21.765 (Eng to Africa 0700-1700) was 44444 at 1345 by PeterPison in St Andrews; R.Finland via Pori 21.550 (Eng to USA 1430-1500) 44444 at 1426 by Vera Brindley in Woodhall Spa; also 21.550 (Eng to Europe, M.East, Africa 1500-1530) 45423 at 1515 by P.R.Guruprasad in Madikwe, S.Africa; BSBSA, Arabi Arabia 21.505 (Ar) (Home Service) to N.Africa 1300-1700) SID444 at 1510 by Ted Walden-Vincent in Staryrmont; U.A.E R.Dubai 21.605 (Ar, Eng to Europe 0615-1645) 55544 at 1510 by Peter Pollard in Rugby; R.Japan via Moyabi 21.700 (Jap to Europe, M.East, Africa 1600-1700) SID322 at 1600 by Philip Rambout in Macclesfield; BBC via Ascension was 27.660 (Eng to Africa 0700-1745) 45555 at 1700 in Thimnnr.

Later, WCSSN, MN 21.549 (Eng to Europe 1900-2000) was 33333 at 1925 by Robert Connolly in Kilcre; Riki via Sackville 21.675 (Eng to Europe 1930-1955) 44444 at 1957 by Rohdeick Illan in Detroit, MI, FL 21.525 (Eng, Fr, Port to Africa 1600-2000) SID435 at 2010 by Clifford Stapleton in Torquay, also 21.651 (Eng, Ger to Europe 1600-17) SID444 at 2012 by Bill Clark in Rottember; R.Nederlands via Bonaire 21.590 (Eng to Africa 1730-2025) 44444 at 2019 by Ken Moline in Basingstoke; VOFC Taiwan via FL 21.720 (Eng to Europe 0800-0830) SID450 at 2230 by Sheila Hughes in Morden.

The 17MHz (16m) broadcasts from R.New Zealand to Pacific areas have been received quite well in the UK. Typical ratings for their 100kW transmission from Rangatapu at 17.770 (Eng to Pacific areas 2130-0800) were 33323 at 2300 in Worthing and 33333 at 0045 in Morden. Three of Australia's 16m broadcasts have also been received here: Shepparton 17.715 (Eng to Pacific areas 0000-0800) SID444 at 0715 in Sheffield; Darwin 17.790 (Eng to Asia 0800-0900) 33322 at 0807 in N.London & 17.565 (Eng to Asia 1300-1800) SID444 at 1548 by Richard Radford-Reynolds in Guildford.

Of the 16 signals to Europe come from the Voice of Israel, Jerusalem 17.590 (Eng 1300-1325, also to Russia, USA) SID434 at 1300 by Tom Smyth in Co.Fermanagh, WCSSN, MN 17.510 (Eng 0800-0820) SID435 at 1615 in Manchester; WVWC Nashville 17.535 (Eng 1200-2200, also to USA) 33322 at 1800 by Bernard Curtis in Slabbridge; R.Africa int. via Bouchao 17.745 (Fr Eng 1700-1800, also to M.East) SID434 at 1700 by Michael Williams in Redhill; R.Havana, Cuba 17.705 (Eng 2000-2100) 43444 at 2040 in Kilke; R.I via Sackville 17.875 (Eng 2100-2159) SID444 at 2159 in Torquay, H.C.B.J. Ecuador 17.790 (CJ, Sw, Ger, Fr, Eng Sp 1800-2230) SID444 at 2205 by Antonio De Abru-Teixeira in Evesham; VOFC Taiwan via FL 17.750 (Eng 2200-2300) SID444 at 2210 in Herford.

Many programmes in a variety of languages are beamed to other areas.

---

Short Wave Magazine, July 1992
Those noted came from: R.Japan via Yamaha 17.835 (Eng, Jap to Asia 0100-0300), 24433 at 0135 in Thurzait; R.Romania Int, Bucharest 17.805 (Eng to Pacific areas 0645-0715) 55555 at 0645 in Norwich; KHB, N.Marina is 17.55 (Eng to N.Asia, Russia 0800-1200) 44333 and 0850 in Bridgewater; Voice of Greece, Athens 17.525 (Fr, Eng to Asia 1000-1500) 32232 at 1045 in Woodhead Spa and 55555 at 1200 by Bill Griffith in Debrecon, Hungary; DW via Wachtelch 17.765 (Engto Africa 1100-1500) S1032 at 1115 by Francis Hearn in N.Bristol; Vatican, R. Italy 17.695 (Fr, Ta, Mal, Eng to Asia 1500-1600) 44444 at 1500 in Oxford, RTM, Morocco 17.595 (Fr, Eng to M.East, N.Africa 1400-1700) S1043 at 1533 in Rotherham; R.Nederlands via Flavo 17.560 (Eng to SE Asia 1500-1620) 32232 at 1530 in Newry; VOA, via Greenfield 17.650 (Eng to Africa 2000-2200) 44333 at 1700 by Darran Taplin in Brenchley, R.W.Africa via Africa 17.820 (Eng to N.Europe 1800-1825 Mon-Fri, 1800-1850 Sat/Sun) S1044 at 1830 in Edinburgh; R.Nederlands via Bonaire 17.605 (Eng to W.Africa 1300-2025) 44333 at 1930 in Basingstoke; VOA, via Timisoara 17.765 (Eng to S.E.Asia 2100-0100) 33433 at 2325 by Robin Harvey in Bourne.

Regarding some of R.Australia’s 15MHz (19m) broadcasts have been clearly received in UK, with reports by 1:530 to Papua, New Guinea (Eng 2100-0730) S1044 at 0658 in Sheffield & 15.240 to Pacific areas (Eng 0000-0930) 34333 at 0815 in Morden; Gurney 15.170 to Asia (Eng, China 1800-2000) S1022 at 0917 in Macclesfield.

Among the signals to Europe logged were H.C.B., Ecuador 15.270 (Eng 0700-0900) at 0748 by Jack Caldwell in Warrington; R.Japan via Yamaha 15.250 (Eng, Japan 0700-0900, also to M.East, Africa 33333 at 0755 in N.London; RFPI Costa Rica 15.300 (Eng 1800-2000) 24443 at 0840 in Guildford; Voice of Turkey, Ankara 15.325 (Tur 1000-1700) S1044 at 1135 in Winchester; R.Norway Int, Oslo 15.720 (Nord 1300-1330, also to W.Asia 55555 at 1305 in Newry; R.Finland via Port 17.140 (Eng 1400-1437) 33433 at 1410 in Oxted; WCSN Scotts Corner 15.665 (Eng 1400-1600) 44444 at 1531 in Basingstoke; Voice of Israel, Jerusalem 15.560 (Eng, Fr 1700-1730, also to USA) 45544 at 1700 in Huddersfield; WVCNR Nashville 15.560 (Eng 1200-0000) 33433 at 1820 in St Albans; R.Kwiat, Sulaibiyah 15.595 (Iraq 1800-2000) 33433 at 1855 in Newry; R.Finland via Port 15.440 (Eng 1830-1900, also to M.East, Africa) 44433 at 1832 in Brenchley, R.Eu Ruus, Argentina 15.345 (Ar, Eng, Fr, Ger, Sp 1700-2000) 44444 at 1900 in Debrecen; RNB Brasilia, Brazil 15.265 (Eng, Ger 1800-2020) 22232 at 1919 by Gordon Milton in Emsworth; R.Gamarus, Syria 15.056 (Eng 2005-2105, also to USA) S4434 at 2026 in

- **Tropical Bands**

<table>
<thead>
<tr>
<th>Freq MHz</th>
<th>Station</th>
<th>Country</th>
<th>UTC</th>
<th>DXer</th>
</tr>
</thead>
<tbody>
<tr>
<td>24433</td>
<td>BBC Asian Service</td>
<td>Australia</td>
<td>1945</td>
<td>D.B.</td>
</tr>
<tr>
<td>2355</td>
<td>BBC Baltic Service</td>
<td>Australia</td>
<td>1945</td>
<td>D.</td>
</tr>
<tr>
<td>2275</td>
<td>BBC Caribbean</td>
<td>Australia</td>
<td>1945</td>
<td>D.</td>
</tr>
<tr>
<td>2190</td>
<td>BBC Miramar</td>
<td>Australia</td>
<td>1931</td>
<td>H.</td>
</tr>
<tr>
<td>2130</td>
<td>BBC Mozambique</td>
<td>Mozambique</td>
<td>1931</td>
<td>H.</td>
</tr>
<tr>
<td>2090</td>
<td>BBC Roma</td>
<td>S.Africa</td>
<td>1931</td>
<td>H.</td>
</tr>
<tr>
<td>2051</td>
<td>BBC Russia</td>
<td>S.Africa</td>
<td>1931</td>
<td>H.</td>
</tr>
<tr>
<td>1994</td>
<td>BBC Swaziland</td>
<td>Swaziland</td>
<td>1931</td>
<td>H.</td>
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<tr>
<td>1956</td>
<td>BBC Zimbabwe</td>
<td>Zimbabwe</td>
<td>1931</td>
<td>H.</td>
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<tr>
<td>1902</td>
<td>BBC Zambia</td>
<td>Zambia</td>
<td>1931</td>
<td>H.</td>
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<tr>
<td>1857</td>
<td>BBC Kenya</td>
<td>Kenya</td>
<td>1931</td>
<td>H.</td>
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<tr>
<td>1810</td>
<td>BBC Ghana</td>
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<td>1931</td>
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<tr>
<td>1765</td>
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<td>A.B.M.</td>
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<td>BBC Congo</td>
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<tr>
<td>1675</td>
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<td>South Africa</td>
<td>1931</td>
<td>B.C.F.L.J.M.</td>
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<tr>
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<td>France</td>
<td>1931</td>
<td>F.R.</td>
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<tr>
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<td>BBC Manchester</td>
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<td>1931</td>
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<tr>
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<td>BBC Greece</td>
<td>Greece</td>
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<td>1515</td>
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<td>Belgium</td>
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<td>Lebanon</td>
<td>1931</td>
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<td>R.</td>
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<tr>
<td>1318</td>
<td>BBC Turkey</td>
<td>Turkey</td>
<td>1931</td>
<td>R.</td>
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<tr>
<td>1281</td>
<td>BBC Thailand</td>
<td>Thailand</td>
<td>1931</td>
<td>R.</td>
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<tr>
<td>1242</td>
<td>BBC Tunisia</td>
<td>Tunisia</td>
<td>1931</td>
<td>R.</td>
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<tr>
<td>1203</td>
<td>BBC Malaysia</td>
<td>Malaysia</td>
<td>1931</td>
<td>R.</td>
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<tr>
<td>1164</td>
<td>BBC Nepal</td>
<td>Nepal</td>
<td>1931</td>
<td>R.</td>
</tr>
<tr>
<td>1125</td>
<td>BBC Nepal</td>
<td>Nepal</td>
<td>1931</td>
<td>R.</td>
</tr>
<tr>
<td>1086</td>
<td>BBC China</td>
<td>China</td>
<td>1931</td>
<td>R.</td>
</tr>
</tbody>
</table>

Canada 1700-0000) 54444 at 2300 in Norwich.

Some of the 1MHz (25m) broadcasts to Europe originate from HCJB, Ecuador 11.730 (Eng 0700-0830) 44444 at 0800 in Morden, R.Finland via Pori 11.730 (Eng 1400-1430) 44444 at 1408 in Oxford; BBC via Wofferton 12.095 (Eng 0630-2200, also to M.East, N.Africa) S10333 at 1700 in Rowley Regis; UAE R.Dubai 11.795 (Ar, Eng 1600-2100) 34343 at 1635 in Worthing; R.Finnland via Pori 11.755 (Eng 1830-1900) S10434 at 1850 in Redhill; Voice of Israel, Jeru-

Also logged were R.Havana, Cuba 11.760 (Eng to N/C-America 0400-0600) S10433 at 0430 in Sheffield; R.Netherlands via Bonaire 11.695 (Eng to Pacific Areas 0730-0825) S10333 at 0730 in Bristol; HCJB Ecuador 11.925 (Eng to S.Pacific 0730-1125) 33343 at 0850 in Norwich; VOA via Green ville 11.915 (Eng to Caribbean 1000-1200) S10222 at 1132 in Macclesfield; R.Beijing, China 11.815 (Eng to Asia 1400-1600) 43343 at 1400 in Troubridge, Malta; Voice of the Mediterranean, Malta 11.925 (Eng, Ar to N.Africa 1400-1600) 32222 at 1430 in Woodland Spa; R.Romania int, Bucharest 11.940 (Eng to Asia 1500-1530) 33333 at 1502 in St Andrews; R.Pakistan, Islamabad 11.570 (Eng to M.East, N.Africa 1630-1630) 54444 at 1624 in Guildford; BBC via Kranj 11.955 (Eng to SE.Africa, Aus-
tralia 1800-0030) 21432 at 1840 in Madikwe and 43333 at 2000 in N.London; RDF Portugal 11.840 (Porto Brazil 2200-0230) S10343 at 2230 in Evesham; R.Sweden 11.730 (Engto Asia 2030-2130) 22322 at 2032 in Basingstoke; Wings of Hope, Lebanon 11.530 (Eng/Mto East 2000-2030) S10433 at 2140 in Hereford; BBC via Ascension Is 11.750 (Eng to S.America 2200-0330) 44444 at 2252 in Bourne; Voice of Greece, Athens 12.105 (Gr, Port, Sp to C/S.America 2200-2300) 55555 at 2355 in Kilkee; R.Netherlands via Talata Volon 11.655 (Eng to S.Africa 0300-0330) 32322 at 0344 in Newry.

In the 5MHz (30m) band good reception from R.New Zealand Int. via Rangataiki on 7.070 (Eng to Pacific areas 0800-1205) has been noted in the UK. In Wallsend their signal was 34543 at 0855. Two of R.Australia's broadcasts via Camaroon have also reached our shores; 9.475 to Asia (Eng 0900-1010), S10333 at 0958 in Hereford; 9.860 to S.A. (Eng 7-2100) 53243 at 1900 in Norwich.

Amongst the 31m broadcasts to Europe noted in the reports were Croatian R, Zargreb 9.830 (News in Eng) 34333 at 1210 in Worthing; R.Netherlands via Reva 9.855 (Eng 1230- 1330) S10444 at 1230 in Redhill; R.Fiji via Alouss 9.805 (Fr, Eng 0600-1400) S10444 at 1340 in GT Yarmouth; Polish R, Warsaw 9.525 (Eng 1500-1555) 44444 at 1500 in Brechin; R.Tirana via Lushnjeh 9.769 (Eng 2200-2230) S3323 at 2208 in Guildford.

Also logged were SRI via Schwerzenburg 9.569 (Eng to Asia, Australia 0900-0930) S10323 at 0900 in Co.Fermanagh; VOA via Kavala 9.700 (Eng to M.East, Africa 1500-1600) 34333 at 1524 in St Andrews; R.Mediterranean Int, Nordor 9.575 (Ar, Fr to N.Africa 0500-1000) S10433 at 1715 in Macclesfield; AIR via Delhi 9.910 (Eng to Australia, NZ 2045-2230) 55445 at 2120 in Rugby; R.Caracas Nova, Br Fr 9.795 (Port to Br) S10333 at 0010 in Evesham; BBC via Sakville 9.590 (Eng to Canada 2100-0330) S10333 at 0200 in Rowley Regis.

The 7MHz (41m) broadcasts to Eu-
rope include Croatian R, Zargreb 7.240 (News in Eng) 33553 at 0604 in Wallsend; R.Czechoslovakia, Prague 7.345 (Ger, Eng 0600-1300) S10444 at 0940 in Hereford; AIR via Algier 7.412 (Eng 1845-1945) 54444 at 1900 in Wor-
ning; R.A. Rome, Italy 7.275 (Eng 1935-

The 6MHz (49m) broadcasts to Eu-
rope from RTL Luxembourg 6.080 (Fr, Eng 0600-0620) 44443 at 1015 in Oxford; R.Sweden, Stockholm 6.065 (Eng 2010- 2130) 85555 at 2033 in Warrington; R.Budapest, Hungary 6.110 (Eng 2100-
2200) S10222 by Julian Wood in Elpin; R.Austria Int, Moscrownt 6.155 (Eng 2130-2200) S10545 at 2130 in Co.Fermanagh. Also logged were CKZJ St John's, NF 16.0 (Eng to USA, Canada 0930-0930) S10322 at 2255 in Rotherham; R.Gaucha, Brazil 6.020 (Port 24hrs) as S10222 at 2320 in Evesham; BBC via Ascension Is 6.005 (Eng to Africa 0300-0330) 33222 in St Albina.
Alternative Radio
This page, and SWM, have received publicity in the pirate radio media. It is hoped that listeners to the v.h.f. (f.m.) pirates will discover the short wave bands and use this magazine as a guide to equipment and technical information. Pirate Express is a news sheet giving good coverage of v.h.f. pirate activity, and gives comprehensive lists of station names and locations. It also includes details of raids made by the Radio Investigation Service and subsequent Court appearances. Their address will be familiar to most readers of this page - Alternative Radio Service (England), PO Box 220342, W/5600, Wuppertal, Germany.

The Official View
I received a letter from Peter Lloyd of the Home Office, Queen Anne's Gate, London SW1H 9AT, on the subject of the possibility of licensing low powered short wave broadcasting stations in the UK. One relevant paragraph is quoted as follows: "At present the Radio Authority does not have access to any short wave frequencies. This is primarily due to two reasons; firstly, the historical position has meant that only the BBC has been permitted to use short wave frequencies in this country for broadcasting its World Service; secondly, since SW transmissions have the characteristics of travelling very great distances, they have enormous potential to cause interference and very careful technical planning has been necessary to ensure adequate reception for existing services within the band, which is highly congested. In the circumstances it could be difficult to accommodate new services on short wave, but it is helpful to hear the views of listeners or potential listeners, as we will continue to bear them in mind."

Radio Caroline 101.5MHz.
The MV Ross Revenge was back on the air for 28 days from April 7, with a Restricted Service Licence issued by the Radio Authority. Programmes were broadcast from studios aboard the ship in Dover Harbour via a microwave link to a 25W f.m. transmitter located on the cliffs at Dover Castle. Reception was excellent in Dover town, but a French station in Boulogne on 101.5MHz made more distant listening impossible. The Caroline DJs intend to host a party at Folkestone's 'Tonight's' nightclub in June.

Off The Record
By Andy Cadier
Former offshore radio presenter Johnny Lewis, now Programme Manager with Kent's Invicta Radio, tells me he and his team work best when faced with competition.

Russian Pirates
Alex Garner of Glasgow, while attending the Audio Engineering Society Convention in Vienna, came across information on pirates in the former Soviet Union using 1.605 - 1.820MHz and 2.000 - 2.400MHz. Some now use the 6MHz frequencies popular in Western Europe. (Newswatch, Radio World.)

This edition of Off The Record has been heavily curtailed following some heavy interest by the Radiocommunications Agency. Fraser Murrey, of the Radio Investigation Service of the RA, wrote to the Editor pointing out that "My attention has been drawn to an article by Andy Cadier, in the October 1991 edition of your magazine, entitled Pirates Off The Record. Mr Cadier lists several stations operating in the HF band. The Radiocommunications Agency views with great seriousness the misuse, by an irresponsible minority, of frequencies in frequency bands assigned exclusively to the maritime mobile and aeronautical services. As a licensed radio amateur yourself, you will understand the need for frequency use to be planned and adhered to, especially if the use of the authorised use has implications for the safety of life. The Agency has publicised extensively its concern at the unauthorised use of the HF-band and has reinforced this concern with several successful prosecutions. Moreover, the unauthorised use of this part of the spectrum has brought formal complaints from other overseas administrations. Let us be under no illusion. They can and do cause potentially harmful interference to authorised uses of radio.

Furthermore, I read in Mr Cadier's column in the January 1992 edition that he proposes to publish a list of FM pirates. You and he should both be aware that under Section 1C it is an offence to publish the times or other details of any unauthorised broadcasts made by a pirate broadcaster. The maximum penalty for this offence is an unlimited fine and/or two years' imprisonment. It is our policy to take action in respect of unauthorised broadcasting offences. Perhaps you would give the matter some consideration before publishing another article of this nature."

Listen With Grandad
By Leon Balen and David Leverett
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Short Wave Magazine, July 1992
From Roberts Radio comes a range of world radios and radio cassette recorders which combine audio excellence with ease of use.

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**RC818**  
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 side-band and CW transmissions as well as stereo FM on headphones and stereo playback of cassettes. Comes complete with a mains adaptor.

- 5 Tuning methods - direct frequency keying, auto-scan, manual scan, memory recall and rotary • 45 memory presets • SW metre bands from 120m to 11m • BFO control for reception of CW and SSB • FM stereo on headphones • AM wide/narrow filter • Waveband coverage: LW 150-519 kHz • MW 520-1620 kHz • SW 1.621-29.999 MHz • FM 87.5-108MHz • Radio standby function • Pre-programmable radio to tape recording • LCD display • signal strength and battery condition indicator • sleep timer • safety lock switches • Adjustable RF gain • 700 mW power output •

**R808**  
Multi-band Digital Preset Stereo World Radio  
Offers all the outstanding features of the RC818, minus the cassette section. Featuring the latest technology and a huge bandwidth accessed from the keypad and LCD display. One of the finest world radios available.

**R101**  
9-Band Miniature World Radio (FM/MW/SW1-7)  
Exceptional sound quality and facilities in a truly pocket-sized, ultra light receiver. Easy to tune with featherlight touch-band switches. LED tuning/stereo and waveband indicators. Wide SW bandspread tuning with stereo FM via ear or headphones. Complete with soft carrying pouch and stereo earpieces.

**R621**  
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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.
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?

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- DDP/800/4800/1200 Simplex A/C
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FOR SALE Citizen TC532.5in colour TV, v.h.t., u.h.t., Nicad charger plus AR88FL 1.5 to 32MHz receiver, both perfect working order, £90 each o.n.o. Would EXCHANGE for h.f. radio TX-RX. Please write: Mr S Crompton, 60 Lowerhouse Lane, Widnes, Cheshire WA8 7EF.

FOR SALE AOR3000 scanner 100kHz-2036MHz a.m., s.s.b., w.f.m., mint condition. Guarantee till Aug '92 with Yeasu SP55 external speaker and frequency guides, £485. John. Tel: 0171-622 2802 SW London.

FOR SALE Icom IC-R9000 in perfect boxed condition with DrellasAR1500 and AR250. Absolute bargain at £900 o.n.o. Steve Harris. Tel: (0224) 854448 daytime.

FOR SALE Kenwood R2000 4 hours use only, 9 months warranty, boxed, mint condition, £480. Also Realistic PRO2600 base scanner 400 channels, boxed, mint condition, £250. Tel: 091-285 3709 Tyneside.

FOR SALE R2000 communications receiver with v.h.f. condition virtually unused, owner returned from months abroad. Boxed with instruction, £495. Buyer collects or extra for Securicor delivery. Reverend Peckett, 50A Finchley Road, Westcliff-on-sea, Essex ES5 8AF. Tel: (01372) 326267.


FOR SALE Yeasu FRG-7700 receiver and FRG-7700 v.h.f. converter with manuals, £250 n.o.n. Heavy duty Drawa rotator with neon indicator round control, £60 o.n.o. Tony G1JHX. Tel: 061-885 7986 Manchester.

FOR SALE Lowe HF-225, £330 ERA Microreader including SITOR, AMTUR modes. £120. Global a.u. £50. Will accept £450 for complete outfit, v.g.o. Mr Hayes. Tel: (0623) 863976 Notts.

FOR SALE AEA Pakratt PK232MBX multi-mode terminal unit c/w manual and all documentation driver program for BBC used for receive only, little use. Mint condition, £70 post paid. Tel: 051-6257871 after 7pm. West Kirby, Wirral.

FOR SALE Alloy tube 1.5 and 2in diameter coupled with 2in mast coupler to form 21 foot mast, no base, 3-8mm tubulars, 3 guywires, thimbles, £12. Tel: (0375) 643426.

WANTEDSony R88009-b band world-wide RX, good price for good rig. Similar considered. Tel: (0332) 418029 after 6pm Weston-super-Mare.

FOR SALE Yeasu FRG-7, £120. Yeasu FRG-7000, £140. Sony AR26, Sony 2001D, £180. All excellent with original manuals and boxes. Brian. Tel: (0689) 876065 Orpington.

WANTED British Mk1x 13 TX-RX (working) and accessories. FOR SALE in immaculate condition. £250 o.n.o. (Tel: 0366) 500867 evenings. Norfolk.

FOR SALE Bushvallen radio, early 1940s, good condition, working order, three waveband, tone control, model type unknown, collector's piece, offer over £100 invited. Tel: 081-974-2443 after 6pm. Cheshunt, Surrey.

FOR SALE Grundig 650 receiver, all wave bands, s.s.b., f.m. (unmarked) handbook, boxed, £200. Sony ICF-880W synthesised receiver, 31 bands, f.m., s.s.b., nice condition, handbook, warranty. £490. £320 o.n.o. (Tel: 01-526 7062, 7082. & Wear.

FOR SALE CW1E 10RTY c.w. decoder, £80. Datong UC1 converts 144 148, 90kHz to 30MHz to 28 to 30MHz, £70. Datong active antenna AD720, £30.0 (Tel: 09176) 262555 evenings. Wrexham.

FOR SALE SX200 scanner, v.h.f. 26-88MHz 106-180MHz f.m. 380-514MHz £100. Also AR8806 hand portable scanner, boxed, £100. (Tel: (0264) 275207).

FOR SALE AR1000 hand-held scanner, excellent condition, 1000 memories, boxed, complete with soft protective case, mains and car charger, Nicad batteries, earpiece, flexible antenna, a.m., n.f.m., w.f.m., £150o.n.o. (Tel: 0753) 895620 Windsor, Berks.

EXCHANGE Lowe HF-225 key-pad and ERA Microreader MkII and Datong Multi-mode filter model FL3, all in v.g.c. for Icom IC-RI communications receiver, £250. Tel: (0203) 412769 anytime after 6.30 in not home answering machine will take call. Exeter.

WANTED Pyle/Philips charger type BC212D or similar. Peter. Tel: (0492) 531760 Clovelly Bay.

WANTED complete reception set 1010. Also reception set R122A (parts or complete) Chris Morgan, 10 Camel Parade, Uxst, Gwent NP5 1AA. Tel: (0291) 673849.

FOR SALE 'C' band satellite system 8 foot dish, i.n.b., polar mount, motor drive, £550 (with new Echosat receiver). Buyer collects. Tel: (0246) 212124.

FOR SALE HRO communications receiver c/w manual, coils, p.a.o. and speaker. Also HRO MX which needs attention. Offers Tel: (0234) 721388, (0381) 323804.

FOR SALE Sony AR7 airband scanner, instruction, boxed, mint, mains adapter, £100. Tel: (0277) 204122 Essex.

FOR SALE ARA30 active receiving antenna as new, £30. ZX Spectrum 48K computer, boxed, £20. RTTY Morse program for Spectrum, £5. Price firm. £20, Tel: (0303) 276273 Folkestone, Kent.


FOR SALE Icom IC-7100 v.h.t./u.h.f. RX, absolutely mint, under 12 months old, box, manuals, reason for sale, £325 o.n.o. WANTED Icom SP20 speaker. Tel: (0926) 54556 Kinlworth.

FOR SALE ICS-FAX 2 superfax weatherfax pictures includes NAVTEX, RTTY and FAX and QFE, requires IBM-PC, see review SWM May page 10 for general features, £80 post paid. G3RDG. Tel: 0437 483519 OTW, NW Lan's.

FOR SALE New book on number stations, £6 or £9 including cassette of over 40 different number station. Simon Mason. 26 Bloomfield Avenue, Hull, Humberside HU5 8NH.

FOR SALE Yeasu FT-290R 2m portable or base transceiver unit s.s.b., c.w., f.m., u.f.m., boxed, excellent condition, with mains to 12V power unit and 2m dipole antenna plus instruction manual, £225. Tel: (0843) 587614 afternoon or evening, Ramsgate, Kent.

FOR SALE Edystone EC10 communications receiver, excellent condition, 0.5-30MHz, £45. Tel: (0440) 730427.

FOR SALE Sony ICF-6700 f.m. radio 1.6-30MHz digital frequency display new, £120. HR050 nine coils all original, £80. Alan. Tel: (0344) 27869.

FOR SALE Edystone 640 short wave receiver, v.g. original condition, £90, HR050 all original nine coils, £80. Tektronix 545 scope, £120. Tektronix 465 100MHz portable scope, manuals and probes, v. good, calibrated, £295. Alan. Tel: (0344) 27869.

FOR SALE Avometer Model B Mk4 with leads, clips, etc. excellent condition, £95. Tel: (0636) 298113.

WANTED Philips D2299 or D2285 world band receiver in good working order. Please send full details, age, price, etc. J. K. Teifel, 50 South Avenue, Kidlington, Oxon OX5 1DQ.

More Trading Post on Page 76
Worried about the Morse test? Are you all ‘keyed up’ about Morse? Does the prospect of getting an ‘A’ licence ‘bug’ you? Do you want to put that final ‘polish’ on your ‘keying’? And do you then want to have the opportunity to take your test, while you’re enjoying a ‘short break’ weekend holiday? If so, why don’t you put your name down for the Practical Wireless Morse Weekend? For around the £160 mark, we’re planning to provide meals and accommodation in a good quality, comfortable Hotel. The weekend will start on the Friday evening, and finish after lunch on the Sunday. You will have the opportunity to have some Morse tuition, before you take the Morse test itself. You’ll also have the chance to see and try all the latest aids for c.w. working in amateur radio, meet the experts, other ‘key’ enthusiasts and have fun at the same time.

OTHER ATTRACTIONS
Originally planned for the late spring, we’re now looking at a weekend in September. There will be other attractions for friends and family members not joining in with the amateur radio events. Don’t forget that we’re very close to the delights of the New Forest, the Hampshire and Dorset sea-side resorts and some delightful ‘Stately Home’ attractions. With that in mind, we plan to organise some coach trips so that the weekend will have something for everyone.

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Alternatively, if you want to hear more about the Morse Weekend, why not call Rob Mannion G3XFD to talk about it? (Between 3 and 4pm please!)

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Short Wave Magazine, July 1992
WANTED: Eddystone EB35 or other transistorized model, must be in near mint condition. Also any Eddystone literature test reports, reviews, etc., good cash price paid. Radios can possibly be collected. Peter Lepino. Tel: (0372) 453841 anytime. Surrey.

WANTED: Eddystone 840C receiver, good working order. Tel: (0606) 76538.

EXCHANGE: Yaesu FRG-7700 receiver with FRG in good condition with manual and boxes for AR2000 handheld scanner or similar wide-band handheld. Tel: (066) 122076.

EXCHANGE: Olympus OM2 35mm camera complete with 28mm wide angle lens. Also 50mm lens, 125mm lens, 70-210mm telephoto lens, two flashes, plus silver metal carrying case for FRG-9600 or AOR3000 scanner. Tel: 01-751 5529.

WANTED: Kenwood R5000 communications receiver with v.h.f. converter fitted. In good condition, realistic price. Tel: (0648) 32183 after 6pm.

EXCHANGE: Black Jaguar MkIII handheld scanner with charger boxed and £50 cash for a Yaesu FRG-7 or Eddystone EC10. Or EXCHANGE for Sigma ATS 803 or Phillips D2935, Mr M Wood, 325 Mill Road, Deal Kent CT14 9BQ.

FOR SALE: active Hunter antenna with pre-amp 25-1300MHz only 23in long! £40. Also Revco discosc modified as instructions in SWJ Jan '86 issue, £10. Nigel T. Tel: (0733) 687086.

FOR SALE: Kenwood R5000 receiver in very good condition, v.h.f. converter fitted, in original box with manual, £300 o.n.o. Tel: (0799) 2627155 Safron Walden.

FOR SALE: AOR2500 two antenna manual, boxed, £300. Tel: (0423) 269839 after 6pm.

FOR SALE: Kenwood R5000 VC20 fitted, mint condition with a.t.u., £950. Tel: (0602) 266603.

EXCHANGE: HF-225 with detector and keypad, also Casio CT60 keyboard, full size 5 octave 450 variable sound auto chords, both mint condition, boxed but instruction wanted for Yaesu 9800 also mint. Tel: (0387) 63086.

FOR SALE: Tanga 550 £140, RX(4) disk for Commodore 64, £40. Racal RA17 reconditioned full set of valves, £200. Commodore 64 disk drive/ datasatette, 8 months old, £175. Charlie T. Tel: (0296) 21694 evenings and weekends, Aylesbury.

FOR SALE: Sony ICF-2001D receiver, mint condition, little used, boxed, £135. Prefer buyer collects. Tel: (0295) 763866 Warrington, Cheshire.

FOR SALE: Icom IC-3210E dual 2m/70cm mobile TX/RX as new, £345 including carriage. GWWT, QTHR. Tel: (0444) 452955 West Sussex.

EXCHANGE: Lowe HF-225 receiver, 12 months old, with active antenna, p.s.u. and handbook for receiver and transmitter R1155 and T1104 prefer unmodified units. Tel: (0985) 632545 Uxbridge.

FOR SALE: Military airband receiver. No doubt you've noticed the change, log your frequencies in order so you know what that frequency is! The logbook has pages running 118-135MHz and 225-400MHz in 25kHz separation - ideal for this time. Plus pages are rare for listing favourite airfields list. Only £5.00 including P&P. Mr T Fors. 94 Everingham Road, Sheffield S5 7LG.

FOR SALE: Sony CRF 330K £405 in mint condition. Also Normande, like Sony IC-7600, £60. WANTED: Barlow Wadley and Zenith Trans-Oceanic world radios, cash offered. Non-working considered. Tel: (0462) 441867.

WANTED: Heath SB101 mainly for spares but will consider 'goer' £300Y. Tel: (0706) 823191 day, (0706) 828128 evenings.

FOR SALE: complete DX h.f./v.f./u.f.h. listening station modified Spectrum computer RAMS IV programme decodes RTTY, SSTV, AMTOR and Morse, AR88B sounds/receiver, Realistic DX4000 h.f. receiver, realistic PR2004 scanner, discone antenna rotor, 145MHz beam, ATV, assorted antennas, etc. £375 o.n.o. Stewart Tel: (0296) 661452 Aylesbury.

FOR SALE: FRG-7, good condition with fluorescent frequency display and manual, £130. Maplin Nicam camera, completely built and cased with p.s.u., £80. 285 motherboards Ami Bios 1MBtype RAM, £45. Tel: (0604) 646104 after 6pm Northampton.


FOR SALE: Shack clearance standard AX700 with scope, £275. Fairmate HP-2000, 5-1300MHz, no gaps, daisywheel printer, £75. Icom IC-J32 dual handie IC-6ME, £250. and 70BNOS lines, £125 each. Icom IC-2S, £195. Yaesu FT-767SX, £825. Tel: (0708) 374043 evenings and weekends.

WANTED: PRO-206 scanner. Sell or swap ICF-PRO80 three months old, insured for three months, £250. Tel: (0634) 221001.

FOR SALE: Icom general coverage RX IRC1010 mini, boxed with manual, £380. PKL airband professional monitor, 720 channel a.m. handheld thumbwheel tuning, £68 with charger. G1PVU. Tel: (0458) 479719 Street, Somerset.

FOR SALE: Kenwood R5000, mint condition, hardly used, boxed with manuals, £985. Nick. Tel: (0603) 501563 between 4 and 6pm Norwich.

FOR SALE: Bearcat DX1000 all-mode 10kHz-30MHz receiver. Excellent condition, complete with original box and instruction manual. See HRT Review March 1987. Tel: 081-881 0824 North London.

FOR SALE: SWR Meter 1.8-200MHz, £50. Portable oscilloscope battery mains, single trace, £100. LCD frequency meter, 200MHz portable battery operated, £100. Trio 9130 2m TX/RX, £300. FT-101E 1.8-30MHz o.m., c/w, s.s.b. TX/RX, £350. KW G2Z, Match, £60. F.C. Herod. Tel: 01-512 3193.

FOR SALE: Trio R2000 with VC10, narrow c.w. filter, d.c. option, good as new, great receiver at half new cost, £400. Also R600 V.G.C., £150. Must collect Lancheshire. Tel: (0708) 218250 evenings.


FOR SALE: R210 RX/c.w. power pack (SWM Mar '91) & converter (SWM July '91), £60 o.n.o. £115 for RX/c.w. power pack no mods, £50. o.n.o. Buyers must please collect. Tel: (0460) 76143 Crewkerne.

WANTED: Sony Air band radio for £100, must be tidy condition, oric marine handheld radio. Tel: (0204) 398884 evenings. Bolton.

WANTED: Barlow Wadley World Radio, XCR 30 Mk2 and Zenith Trans-Oceanic World Radio. FOR SALE: Sony CRF330K world receiver in mint condition, £495 o.n.o. Tel: (0462) 441867.

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The IC-9000 shown above is the flagship receiver in the ICOM range. Other ICOM receivers to complement the IC-9000 include: 1. IC-R100 base/mobile, 2. IC-R72 HF, 3. IC-R7100 wideband 4. IC-R1 Handheld.

ICOM, so good to receive.

For further information about ICOM products and the location of your nearest authorised dealer please contact: Icom (UK) Ltd. Dept SW Sea Street Herne Bay Kent CT6 8LD Telephone: 0227 741741 (24hr). Fax: 0227 741742
From the longest of long wave to the top limits of the short wave spectrum, the HF-150 is designed to give you everything you needed in a real radio receiver.

There has quite literally never before been a receiver like the HF-150, because only now have technology and engineering been combined in such an effective package.

This is innovation at its very best.