

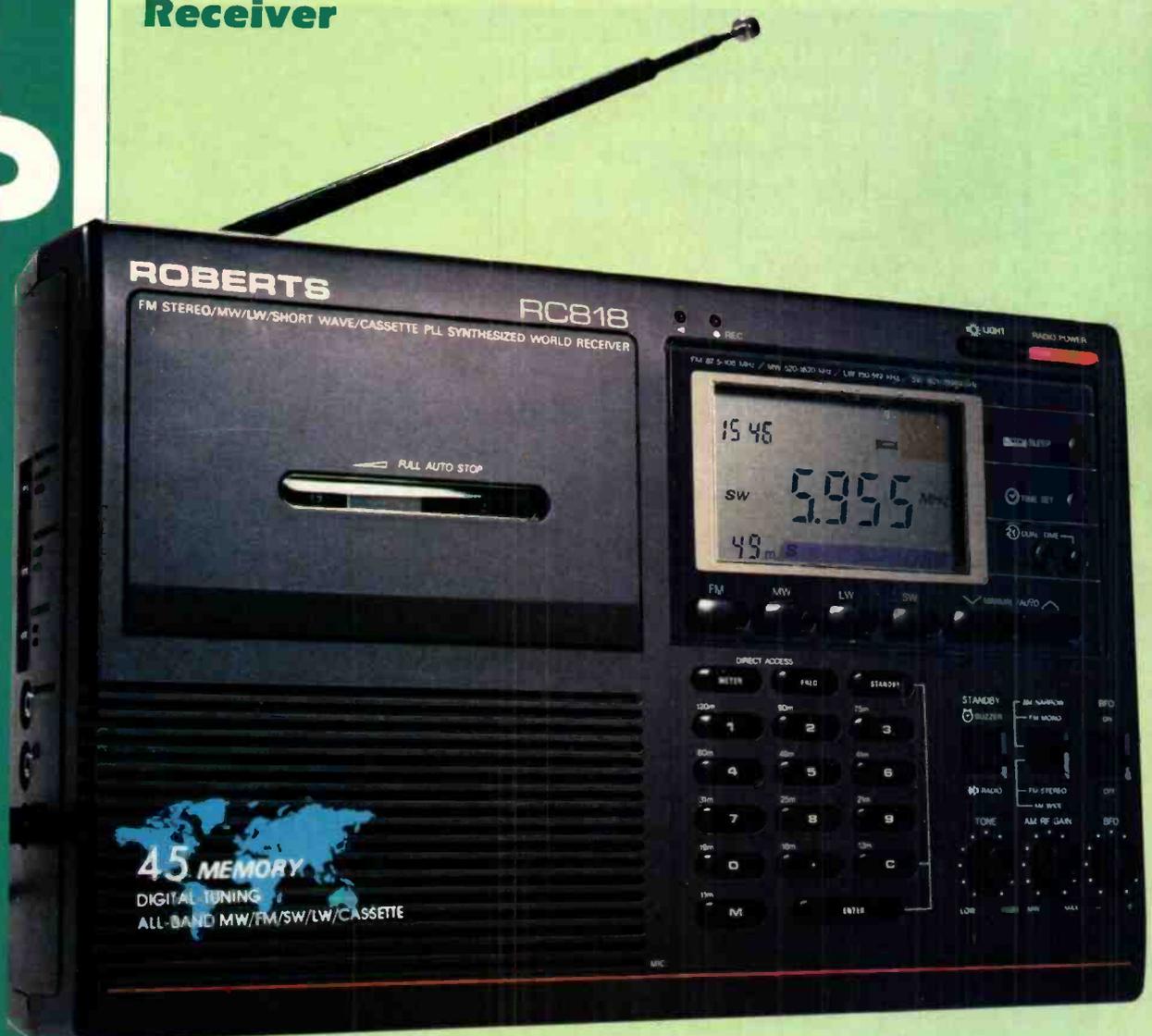
FOR THE
RADIO LISTENER

shortwave magazine

July 1992 £1.75 ISSN 0037 - 4261

CRIPPEN CAPTURED! Wireless - The Invisible Bloodhound

REVIEWED AOR WX-2000 FAX Decoder and Roberts RC-818 Radio Cassette Receiver



CONSTRUCTIONAL PROJECT Build a Novel 3.5MHz Receiver

Regular Features Include

Airband, Scanning, Junior Listeners, SSB Utility Listening, Propagation, Amateur Bands, Long, Medium & Short Waves, Satellite TV Reports, Weather Satellites and More!

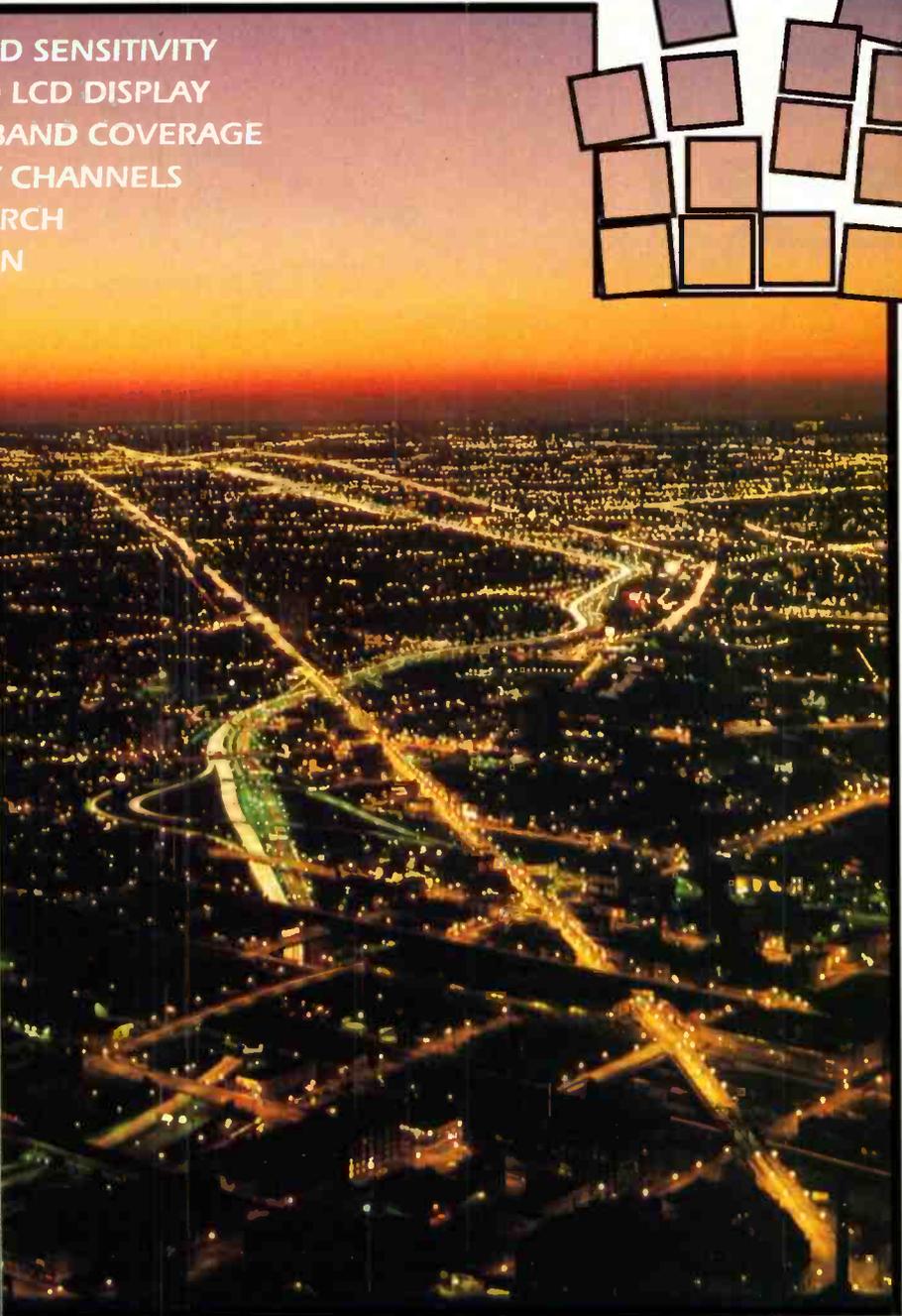


YUPITERU MVT-7000

ONLY
£289

THE ULTIMATE WIDEBAND SCANNING RECEIVER

- ★ UN-SURPASSED SENSITIVITY
- ★ ILLUMINATED LCD DISPLAY
- ★ SUPER WIDEBAND COVERAGE
- ★ 200 MEMORY CHANNELS
- ★ MEMORY SEARCH
- ★ PRIORITY SCAN



Specifications

Frequency Range: 100kHz-1300MHz
(100kHz - 8MHz at reduced sensitivity)

Receive Modes: AM, FM, + Wide FM

Frequency Steps:

5/10/12.5/25/50/100kHz

Sensitivity: 0.5 μ V for 12dB SINAD
(FM narrow mode)

Search Rate: 20 steps/sec

Scan Rate: 16 channels/sec

Each set is supplied complete with a set of NiCad rechargeable batteries, 240V mains charger, cigar plug, telescopic antenna and earphone.

Available from your local dealer or direct from the UK distributors:

NEVADA COMMUNICATIONS
189 LONDON ROAD
PORTSMOUTH PO2 9AE

USE YOUR CREDIT CARD FOR SAME DAY DESPATCH
ORDER HOTLINE (0705) 662145

**VOL. 50 ISSUE 7 JULY 1992
ON SALE JUNE 25**

(Next Issue on sale JULY 23)

EDITOR: Dick Ganderton, C. Eng., MIEE, G8VFH

ART EDITOR: Steve Hunt

NEWS & FEATURES: Elaine Richards G4LFM

EDITORIAL

Enefco House, The Quay,

Poole, Dorset BH15 1PP

TEL: (0202) 678558

FAX: (0202) 666244

CREDIT CARD ORDERS: (0202) 665524

(Out of hours service by answering machine)

ADVERTISEMENT DEPARTMENT

ADVERTISEMENT MANAGER

Roger Hall G4TNT

TEL: 071-731 6222

FAX: 071-384 1031

ADVERTISEMENT PRODUCTION (Poole)

Marcia Brogan

TEL: (0202) 676033

FAX: (0202) 666244

© PW PUBLISHING LTD. 1992.

Copyright in all drawings, photographs and articles published in *Short Wave Magazine* is fully protected and reproduction or imitation in whole or in part is expressly forbidden. All reasonable precautions are taken by *Short Wave Magazine* to ensure that the advice and data given to our readers is reliable. We cannot however guarantee it and we cannot accept legal responsibility for it. Prices are those current as we go to press. *Short Wave Magazine* is published monthly for \$45 per year by PW Publishing Ltd., Enefco House, The Quay, Poole Dorset BH15 1PP. Second class postage paid at Middlesex, NJ. Postmaster: send address changes to *Short Wave Magazine*, c/o C & C Mailers International Inc., 900 Lincoln Boulevard, PO Box 177, Middlesex, New Jersey, 08846, USA. The USPS (United States Postal Service) number for *Short Wave Magazine* is: 006696.

contents

12 AOR WX-2000 FAX Decoder
Reviewed
Mike Richards

16 Crippen Captured
Tim Wander

21 All At Sea
John L. Griffiths

25 Reference Books For The
Listener
Paul Essery GW3KFE

29 Roberts RC-818 Radio Cassette
Receiver Reviewed
Mike Richards

33 Algarve Holiday
E. Dunlop

37 A Novel 3.5MHz Receiver
with Reaction - Part 3
Ian Hickman

REGULARS

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.



- | | | | |
|----|------------------------|----|-----------------------|
| 48 | Airband | 64 | Listen With Grandad |
| 45 | Amateur Bands Round-up | 59 | Long, Medium & Short |
| 42 | Bandscan Europe | 6 | News |
| 70 | Book Service | 64 | Off The Record |
| 56 | Decode | 41 | RadioLine |
| 46 | DXTV Round-up | 11 | Rallies |
| 3 | Editorial | 43 | Satellite TV News |
| 23 | First Aid | 51 | Scanning |
| 11 | Grassroots | 3 | Services |
| 54 | Info in Orbit | 41 | SSB Utility Listening |
| 72 | Index to Advertisers | 22 | SWM Subscribers' Club |
| 5 | Junior Listener | 73 | Trading Post |
| 3 | Letters | | |

...GOOD LISTENING

TRADING POST
COUPON SWM JULY 1992

uniden® **Beancat** Scanners

by

PRESIDENT

ELECTRONICS EUROPE

S.A. 20.000.000 FF

**SCANNING NEW
HORIZONS!**

PRESIDENT

● **Your reasoning**

Quality, reliability, solidity, from a wide-worldly known brand:

uniden

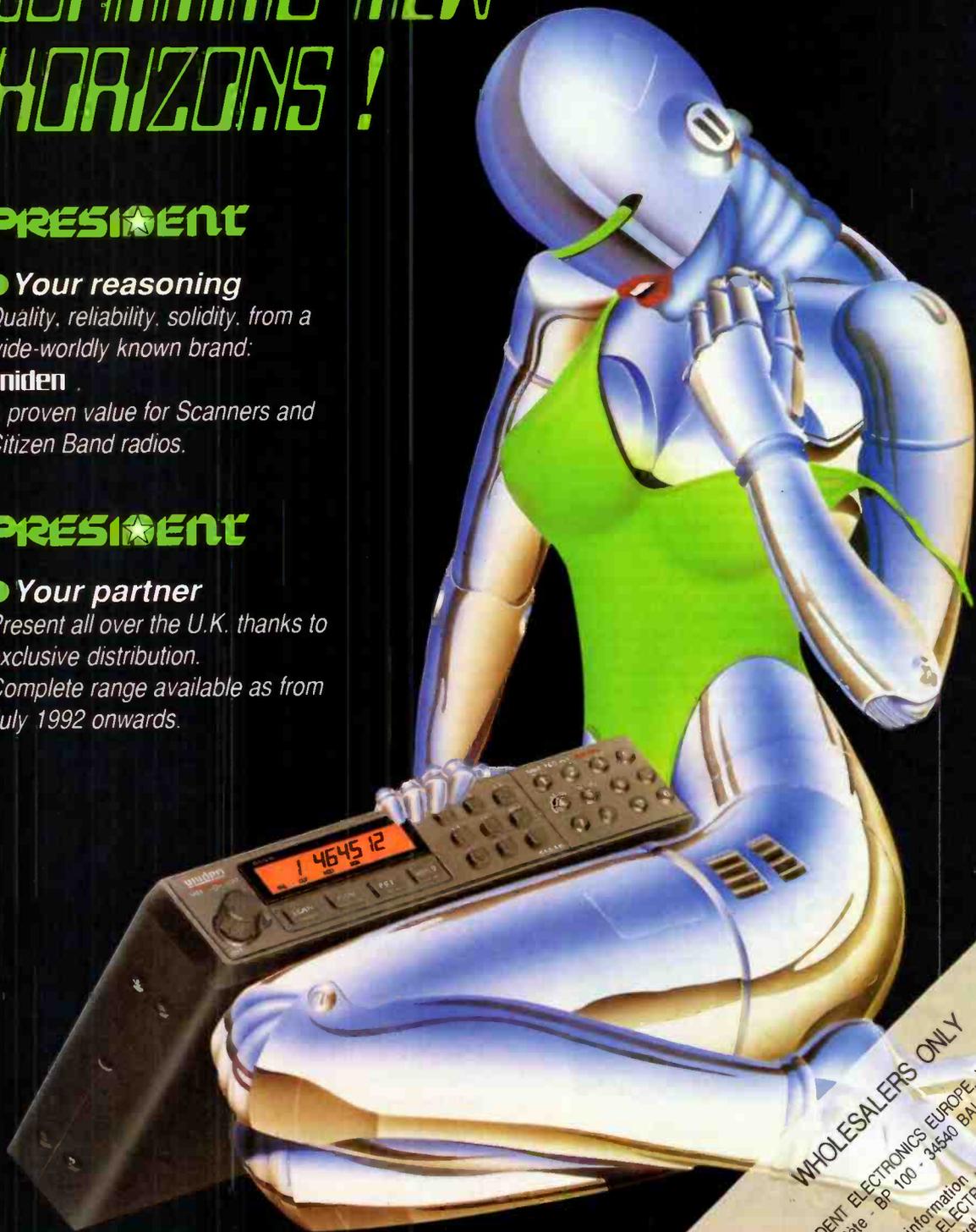
A proven value for Scanners and Citizen Band radios.

PRESIDENT

● **Your partner**

Present all over the U.K. thanks to exclusive distribution.

Complete range available as from July 1992 onwards.



Drawing non contractual.

WHOLESALE ONLY
PRESIDENT ELECTRONICS EUROPE - Head office
Route de Sete - BP 100 - 34540 BALARUC - France
For more information, please contact:
PRESIDENT ELECTRONICS BENELUX
Woluwe-laan, 141 B
1831 DIEGEM Belgium
Tel : +32 2 725 48 90
Fax : +32 2 725 58 38

editorial

SWM SERVICES

Subscriptions

Subscriptions are available at £21 per annum to UK addresses £23 in Europe and £25 overseas. Subscription copies are despatched by Accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £36 (UK) £39 (Europe) and £41 (rest of world).

Components for SWM Projects

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

The printed circuit boards for SWM projects are available from the SWM PCB Service.

Back Numbers and Binders

Limited stocks of most issues of SWM for the past five years are available at £1.80 each including P&P to addresses at home and overseas (by surface mail).

Binders, each taking one volume of the new style SWM, are available price £5.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

Orders for p.c.b.s, back numbers, binders and items from our Book Service should be sent to **PW Publishing Ltd., FREEPOST, Post Sales Department, Enefco House, The Quay, Poole, Dorset BH15 1PP**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in sterling.

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Poole (0202) 665524. An answering machine will accept your order out of office hours.

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.



G8V FH

letters

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 makers, 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**

IF YOU HAVE ANY POINTS OF VIEW THAT YOU WANT TO AIR PLEASE WRITE TO THE EDITOR. IF YOUR LETTER IS USED YOU WILL RECEIVE A £5 VOUCHER TO SPEND ON ANY SWM SERVICE.

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

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 minds 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**

letters

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 been standardised. I personally prefer Radio Nederlands coding system, but what about everyone else?

Tony Vaughan
Southampton

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! Something 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, QSL 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 than to actually listen to the content of the programme. For those in the quest of QSLs, of course,

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 'winkling 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 thank-you 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 criss-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, ancillaries and computer 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 home-made baking tin chassis, all band receiver based on the 1T4 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 where one could, for a few shillings, obtain surplus receivers or transmitters which readily lent themselves to modification, reconstruction or 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./l.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 co-ordinate the biggest LAs DX club, GRP, and we make every month *Conexion*, 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 Icom 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 fussion, 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 *Conexion* and some another thing from South America DX.

Jorge (George) Aloy
PO Box 465
1900 La Plata
Argentina

junior listener



Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

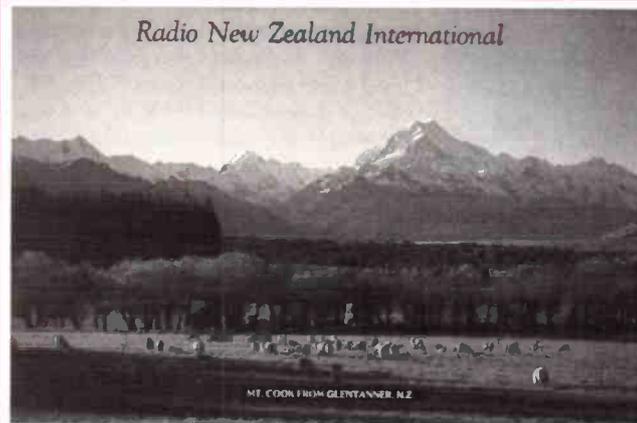
GB2RS - What is it?

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 1830. If you're going to listen on s.s.b., then 0900, 0930, 100, 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/read the news on both 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 Lambda House, Cranbourne Road, Potters Bar, Herts EN6 3JE. Tel: (0707) 59015, they will be able to give you the necessary details.



A QSL card from Radio New Zealand International.

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 VHF/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.

RNZI

Scott Caldwell (14) wants some details on Radio New Zealand International. First their address: PO Box 2092, Wellington, New Zealand. Their Mailbox programme - which includes SW News - goes out at 0430 Mondays, 0830 Thursdays and 1930 Fridays. Often, their Pacific broadcasts on 17.770MHz between 2130 and 0800 reach the UK in the early morning. Alternatively, try 15.120MHz between 1845 and 2130, but this is prone to co-channel interference. Finally try 9.7MHz around 9am.

If you send them 1 IRC (which you buy from your local Post Office) they will send you an up-to-date schedule.

If anyone else wants details about a short wave station, write and ask and I'll see what I can do.

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 users treat them with the respect they deserve. But in general terms what can be done about interference and abuse of the airwaves. This is where the Radio Investigation Service comes in and I suggest that Michael asks the DTI for document RA78 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.

Short Wave Magazine, July 1992

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 *WRTH* 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.

TVDX News

Rumania has allowed several independent f.m. radio stations which may be possible to receive in good Sporadic-E conditions - they will operate in both the OIRT and standard f.m. bands and are located in and around Bucharest - Fun Radio on 67.81MHz at 80W; Uni-Fan on 69.80MHz at 80W; Radio Nova 22 on 92.3MHz at 200W; Radio Contact on 96.10MHz at 50W; Radio Delta on 93.50MHz at 1kW. The latter is sited at Bucharest University and runs daily 17 hours of Radio France International World Service and 7 hours of local Rumanian programming.

The Norwegian TV2 network will open September 1992 and will have the first transmitters as shown -

- Ch. E30 Kristiansand
- Ch. E53 Kristiansand North
- Ch. E24 Mandal
- Ch. E32 Sogne
- Ch. E40 Kvinesdal
- Ch. E25 Arendal
- Ch. E42 Grimstad
- Ch. E22 Lillesand
- Ch. E30 Fevik
- Ch. E27 Tvedestrand
- Ch. E47 Manvikheia.

Oslo and Bergen have been rumoured for Ch.E12 allocations.

In Czechoslovakia Ch. R41 now operates from Domazlice/Vranz with CTV at 100kW e.r.p.

Good news for transatlantic m.w. DXers, the FCC have proposed extending the a.m. band from 1605 to 1.705MHz which will give 10 more channels containing up to 250 stations operating up to 10kW daytime, 1kW nights maximum. Stations operating the new segment will be transferred from the existing 540-1600kHz band, the FCC wanting to thin out the existing allocations to ease congestion and interference, though will 'simulcast' on both frequencies for a running in period. As of January 1992 there were 4987 a.m. stations licensed in the USA!

And finally wonderful news for all DXers - myself included - that have suffered spectrum abuse by poorly designed and screened computer/VDU equipment, I've suffered industrial VDU radiation in excess of 200MHz from 50 yards distance in the past! *Popular Communication* an equivalent USA version of *Short Wave Magazine* reported that the FCC issued over 100 violation notices of exhibitors at the Autumn '91 COMDEX computer trade show, in these cases the equipment not meeting technical standards relating to signal radiation which could interference to receiving equipment etc. Penalties in the 'States are profound and instant with both very high fines and imprisonment, fines compounding up each day the offence continues. **Roger Bunney**

Ukrainian Service

The BBC World Service began broadcasting in Ukrainian on June 1. The BBC Ukrainian Service went on the air with a special one-hour broadcast including an interview with British Prime Minister John Major and the Ukrainian President Leonid Kravchuk.

It is the first time the BBC has broadcast in any language of the former Soviet Union other than Russian, and the first new language service it has introduced since Pashto (for Afghanistan and surrounding regions) in 1981.

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*



Radio Nederland Wereldomroep

Radio Nederlands

In the period January to March this year, Radio Nederland received several thousand letters from European listeners complaining that they didn't want to miss their programmes, even though an evening transmission is technical impossible. So Radio Nederland have listened and now have been able to find a solution to at least maintain their presence on the European short wave scene. There is a special daily English transmission for Europe. It is at 1230UTC on 9.855MHz, in the 31m band.

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 EDXC 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 QSL card.

If you are interested in attending the 1992 EDXC 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.l. 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 CEPT Amateurs (UK Licensees)
- RA187 - Radio Amateur Information CEPT Amateurs (Visiting Licensees)
- 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.**

WACRAL 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, Hoddesdon, Hertfordshire. The inclusive cost will be £50.

Further information can be heard on the Sunday morning 'Christian Net' at 8pm around 3.762MHz or from **G4EZX, 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.**



**RADIOCOMMUNICATIONS
AGENCY**

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 (TAO) 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.

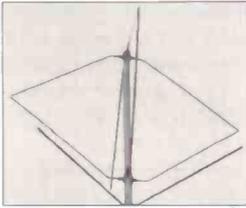
To log on to TAO, dial 071-275 9996 then enter XMNET at the services menu to get to the Viewdata system, followed by account name GUEST and password PUBLIC when prompted, terminating the entry in each case with a hash (#), then goto page 8102 (*8102#).

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.**



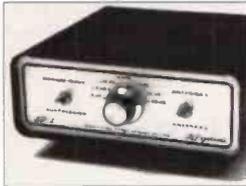
Aerial Systems for serious listeners Look to Lowe



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.

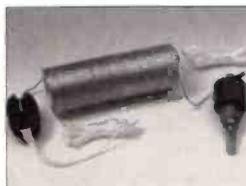


Magnetic Longwire Balun

£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

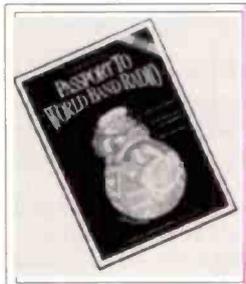
A complete passive wire antenna with a built-in MLB, the MLB Antenna: Mark I has excellent performance on long, medium, and short waves. It is 12.5 metres in length and can be mounted vertically or horizontally. Frequency range 100kHz - 40MHz.

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.

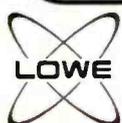


THE LISTENERS' BOOK OF THE YEAR GETS EVEN BETTER

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.



LOWE ELECTRONICS LIMITED

Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone: 0629 580800 Fax: 0629 580020

For the very best in Communications Receivers Look to Lowe

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 winking 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 demon-

stration 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

FREE

Send four first class stamps to cover the postage and we will send you, by return, your FREE copy of 'THE LISTENERS GUIDE' (2nd edition); a commonsense look at radio listening on the LF, MF and HF bands. Its unique style will, I am sure, result in a 'good read'; but underneath the humour lies a wealth of experience and expertise. You will also receive detailed leaflets on our range of receivers and a copy of our current price list.



BOURNEMOUTH: 27 Gillam Road, Northbourne Tel: 0202 577760

BRISTOL: 6 Ferry Steps Ind Estate Tel: 0272 771770 CAMBRIDGE: 162 High St, Chesterton Tel: 0223 311230 CUMBERNAULD:

Cumbernauld Airport Foyer Tel: 0236 721004 LONDON (HEATHROW): 6 Cherwell Close, Langley Tel: 0753 545255

LONDON (MIDDIX): 223/225 Field End Rd, Eastcote Tel: 081-429 3256 NEWCASTLE: Newcastle Intn'l Airport Tel: 0661 860418

Short Wave Magazine, July 1992

LOWE ELECTRONICS

The new SRX-50 from Lowe

A
Price
Breakthrough in
Shortwave Listening
Only £39.95



For the beginner who wants to try out the fascination of short wave listening;

For the experienced short wave enthusiast who needs a Go-Anywhere portable;

For anyone who just wants to keep in touch, the SRX-50 is an amazing receiver.

Just look at the features:-

- Quartz controlled PLL synthesised for accuracy.
- Clear digital LCD frequency readout.
- Coverage of :-
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.
- Supplied with stereo earphones.
- 20 memories (5 on each band) for storage and recall of favourite frequencies.
- 24 hour digital clock with alarm and timer function.

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

grassroots

rallies

* Short Wave Magazine & Practical Wireless in attendance *

***June 26/28:** Ham Radio '92, Friedrichshafen, Germany. The largest amateur radio show in Europe and well worth a visit. The Flea Market alone is worth the trip, let alone the SWM/PW stand in Hall 71 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, Dodinghurst Road, Brentwood, Essex. Doors open from 10.30am to 6pm. Bar & Cafe serving hot meals and drinks all day, Bring & Buy area, massive car park. **CLPK, 18 Litchfield Close, Clacton-on-Sea, Essex CO15 3SZ.**

June 28: The 35th Longleat Amateur Radio Rally will be held, as usual, in the grounds of Longleat House. There will be over 140 companies this year, as well as a large craft fair. Free car parking and on site camping available and there will be a beer tent and plenty of on-site catering. **Shaun G8VPG. Tel: (0225) 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, rear of Bennetts' Dairy. Doors open 9am to 6pm. Tables for Boot Sale are £4. Entry to fair and rally is £1. **Dave Edwards. Tel: (0527) 546075.**

July 5: The York Radio Rally will be held in the Tattersell Building, York Racecourse, Knavesmire, York. Doors open at 11am (10.30am for disabled visitors). Admission £1. Ample free parking. Amateur Radio, Electronics & Computers, Arts & Crafts, Morse Tests, Licensed Bar and Cafe. Talk-in on S22. **Dave Moreland G7FGA. Tel: (0904) 790079.**

***July 11:** The Cornish Rally will be held at the same venue as last year, Penair School, Truro. As in past 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 10.30 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 A5, 3 miles east of Rugby. Open from 10am, admission is £1 per car and facilities include a good cafeteria and toilets. Talk-in on S22 by GB6CBS. Pitches are £7 pre-booked or £9 on the day. **Peter. Tel: (0455) 552449 or Kevin (for bookings). Tel: (0203) 441590.**

***July 26:** The Scarborough Radio, Electronics & Computer Rally will be held in The Spa, South Foreshore, Scarborough. Doors open 11am.

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. July 21 - Critique on QRP Field Day. Paul Truitt G4WQO. 071-938 2561.

Aylesbury Vale RS: Wednesdays. The Village Hall, Hardwick. The Novice Licence by Hilary Claytonsmith. Martin G4XZJ. (0296) 81097.

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. July 21 - 2m Direction Finding Evening. Geoffrey Milne. 081-462 2689.

Chelmsford ARS: 1st Tuesdays, 7.30pm. Marconi College, Arbour Lane, Chelmsford. July 7 - Satellite Weather Pictures. Roy Martyr. Chelmsford 353221 ext 3815.

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. July 1 - Junk Sale, 8th - Barbecue at Drum Hill, 15th - Wind Power by Terry Young of East Midlands Electricity, 22nd - Time by Mr P Dawkins of John Smith & Sons, Clock Makers, 29th - Video Show. Richard Buckby. Ambergate 852475.

Edgware & DRS: 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. June 25 - Audiometry by G4GKA, July 9 - Informal, 23rd - Commercial radio in the 1930s by G0PQB. Hank Kay G0FAB. (081-205 1023).

Hastings E&RC: 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. Fridays, 8.30pm. Ashdown Farm Community, Downey Close, Hastings. Reg Kemp. 7 Forewood Rise, Crowhurst.

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. July 9 - A Natter Night, 23rd - DF Hunting by G3ZVW. Roy G4UNL. 081-804 5643.

Horndean & DARC: 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. July 2 - Fast Scan TV by Mike Sanders. S.W. Swain. (0705) 472846).

Mansfield ARS: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. July 2 - The Early Days of Radar by G0KIU. Mary G0NZA. (0623) 755288.

Midland ARS: 3rd Tuesdays, 7.30pm. Headquarters Unit 22, 60 Regent Place, Birmingham B1 3NJ. July 27 - Computer Night, 31st - Atari Night. John Crane G0LAI. 021-628 7632 (evenings).

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. July 1 -

Component Testing Evening, 8th - Mobile DF Hunt, 15th - Informal & Committee Meeting, 22nd - NARC Rally Final Briefing, 29th - Visit to BR Crown Point Depot. Jack Simpson G3NJQ. (0603) 747992.

ARC of Nottingham: Thursdays, 7.30pm. Sherwood Community Centre, Mansfield Road, Nottingham. June 25 - Contest Techniques by G0FDG. Rex Beastall. (0602) 733740.

Oxford & DARS: 2nd & 4th Thursdays, 7.45pm. British Legion Club, Haddon Road, Crotch Crescent, Marston Road, Oxford. July 23 - Junk Sale. Terry Hastings. (0865) 863526.

Pontypool ARS: Tuesdays, 7pm. Pontypool Community Education Centre, The Settlement, Pontymoile, Pontypool. Con Lonsdale. (0495) 762604.

Preston ARS: Alternate Thursdays. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood. July 9 - Legging - Locking - Congoozling by Mr Astin, 23rd - General Discussion Evening. Eric Eastwood G1WCC. (0772) 686708.

Reading & DARC: 2nd & 4th Thursdays, 8pm. The Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading. July 9 - WAB Organisation by G0HZK, 23rd - New Repeater Hardware by G8JIP. Nick Challacombe. (0734) 722489.

RSGB City of Bristol Group: last Mondays, 7pm. The Small Lecture Theatre, Queens Building, University of Bristol, University Walk, Bristol. July 27 - Modern Amateur Radio Equipment. Dave Coxon G0GHM. (0275) 855123.

Sevenoaks & DARS: Sevenoaks DC, Council Offices, Argyle Road, Sevenoaks. June 29 - Visit to Vintage Wireless Museum, West Dulwich.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitchurch. July 1 - Home Brew 1st Evening, 8th - 70cm Evening, 15 - Antique Radios, 19th - Fox Hunt, 22 - Voice You Opinion on Club Matters, 29th - Computer Evening. Len Baker. Whitchurch 832222.

Southgate ARC: 2nd & 4th Thursdays. Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. July 9 - Contesting & DXpedition by G3SXW, 23rd - SSB Contest Simulation by G3KTZ. Brian Shelton G0MEE. 081-360 2453.

South Notts ARC: Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. July 3 - Final Planning for VHF Field Day, 10th - Junk Sale, 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 G0CXJ. 060-882 495.

Sudbury & DARC: 1st Tuesdays, 8pm. The Five Bells Inn, Great Cornard, Sudbury. Colin Muddimer. (0787) 77004.

Three Counties RC: Alternate Wednesdays, 7.30pm. The Railway Hotel, Liphook, Hants. July 1 - Novice Licence by G7CND, 15th - Emergency Communications in Surrey with Surrey County Council, 29th - Interfacing Computers to Amateur Radio. Kevin G8GOS. (0420) 83091.

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. July 24 - VCRs Through the Ages. Walt G3HTX. (0803) 526762.

West Kent ARS: 3rd Fridays, 8pm. The School Annex, Albion Road, Tunbridge Wells, Kent. July 17 - Fox Hunt. John Taylor G30HV. (0892) 664960.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. July 10 - General Activity Evening, 31st - Camp briefing. Chris Frost. 081-397 0427.

Club Secretaries:

Send all details of your club's up-and-coming events to;
'Grassroots',
Lorna Mower
Short Wave Magazine, Enefco House,
The Quay, Poole, Dorset BH15 1PP

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 WS-2000 can decode satellite picture 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./l.f or satellite receivers. The h.f. input required a signal of approximately 0.7V in 600R. 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 eighteen 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.

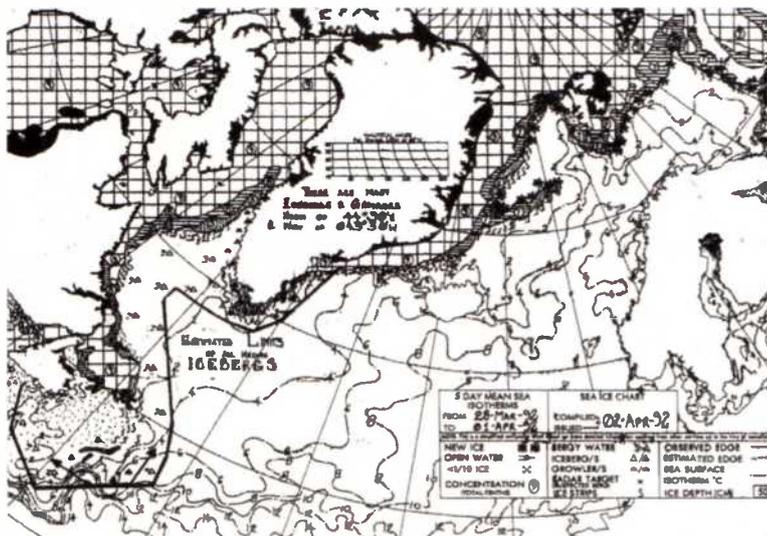
HF FAX Reception

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 $\pm 400\text{Hz}$ from the nominal transmission frequency. The most common FAX signals use -400Hz to represent pure black and $+400\text{Hz}$ 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 it expects to see frequencies in the range 1500Hz to 2300Hz. To help adjust the receiver tuning to give this range an i.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 i.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

**Bracknell MET
4.782MHz
decoded on the
WX-2000.**



South Midlands Communications Ltd.

Southampton (0703) 255111 Leeds (0532) 350606 Chesterfield (0246) 453340
Birmingham 021-327 1497 Axminster (0297) 34918

LISTEN OUT

with **SMC**
SONY at SMC

YAESU
JRC
AOR
SONY
ICOM
KENWOOD
DRAKE
FAIRMATE
BEARCAT
YUPITERU



The **FRG9600**, a premium scanning receiver covering 60-905MHz, SSB, CW, AM & FM modes. 99 memories 5, 10, 12.5, 25 & 100kHz scanning steps. Keyboard frequency entry. Optional converters to extend range from 0.15-30MHz and 800-1300MHz

Yaesu's serious about giving you better ways to tune in to the world around you. And whether it's for local action or world-wide DX, you'll find our HF/VHF/UHF receivers are the superior match for all your listening needs. When you want more from your receivers, just look to Yaesu. We take your listening seriously.



NRD535 from JRC

The new NRD535 epitomises the very best in communications receiver design. This high technology product is based on the abundant technical experience gained by JRC in the professional communications receivers field. This means that the NRD535 is arguably one of the best receivers available to meet the discerning listeners needs. Brief specifications are as follows. Frequency coverage: 0.1-30MHz. Operating modes: CW, SSB (LSB & USB), AM, FM, FSK & RTTY. Supply voltage: 240V A.C. or 13.8V D.C. ECSS, BWC & RTTY units available as options.

The **FRG8800** HF communications receiver. A better way to listen to the world. Continuous coverage from 0.15-30MHz optional module for VHF coverage from 118 to 174MHz. SSB, CW, AM & FM modes. Direct frequency entry keyboard.

JRC
NRD535



DRAKE
R8E



DRAKE R8E

Now available from SMC the new DRAKE R8E communications receiver. These receivers utilise the very latest in technology to meet the demanding requirements of today's listeners. Conveniently located front panel controls allow for rapid operator programming and ease of use. The R8E receiver covers 0.15-30MHz and with the optional VHF converter will also cover 35-55MHz and 108-174MHz. The large clear LCD display gives the operator full information about the current receiver status.

A COMPREHENSIVE RANGE OF RECEIVERS AVAILABLE AT MOST BRANCHES



SMC are pleased to be able to offer the SONY range of Multiband Receivers. They feature all the latest technology allowing unequalled coverage of both broadcast and shortwave bands, yet remaining both compact and easy to use. All the models illustrated cover VHF broadcast, SW

broadcast, and some models cover other bands as well. The very latest model available from SONY is the ICF-SW77. This receiver covers LW, MW, SW and FM stereo broadcast bands and has SSB reception on the SW bands. A comprehensive keypad and LCD display give easy control over the massive array of features available.

Other SONY products available include the miniscule ICF-SW1, the versatile ICF-SW7600, the popular ICF-2001D and for airband enthusiasts the AIR7 and ICF-PRO80.



AOR AOR AOR

SMC are pleased to be able to offer a large number of models from the very comprehensive AOR range which includes both hand portables and mobiles/base stations.

All the receivers are built to the highest possible specification yet remain very competitively priced. Often the leaders in the field, the AOR range is proving very popular amongst both professional and non professional users.

The top of the range model must be the AR3000 which covers 100kHz-2036MHz without any gaps. The mid range model is the AR2800 which is a convenient unit for mobile or base operation and covers 500kHz-600MHz and 800-1300MHz. Last but not least is the AR2000

which is an extremely flexible handheld scanner covering 500kHz-1300MHz.

Why not contact us today for more details of the AOR range.



OTHER MAKES AND MODELS



The Bearcat 200XLT is the cream of the Bearcat handheld scanner range. With 200 memory channels and simple operation these are proving very popular. Frequency coverage 66-88, 118-174, 406-512 and 806-956MHz.



The compact HX850E is a basic scanner with a few memories. Ideally, suitable for a novice in the scanner market. AM/FM modes and a frequency coverage of 60-89, 118-136, 140-174 and 406-495MHz.



- Free Finance on selected items, subject to status. Details available on request.
- Up to £1000 instant credit, a quotation in writing is available on request, subject to status.
- Yaesu Distributor Warranty, 12 months parts and labour.
- Carriage charged on all items as indicated or by quotation.
- Prices and availability subject to change without prior notice.
- Same day despatch wherever possible.

Southampton (0703) 255111
SMC HQ, School Close
Chandlers Ford Ind. Est.
Eastleigh
Hants SO5 3BY
9am-5pm Mon-Fri
9am-1pm Sat

Leeds (0532) 350606
SMC Northern
Nowell Lane Ind. Est.
Nowell Lane
Leeds LS9 6JE
9am-5.30pm Mon-Fri
9am-1pm Sat

Chesterfield (0246) 453340
SMC Midlands
102 High Street
New Whittington
Chesterfield
9.30am-5.30pm
Tues-Sat

Birmingham 021-327 1497
SMC Birmingham
504 Alum Rock Road
Alum Rock
Birmingham B8 3HX
9am-5pm Tues-Fri
9am-4pm Sat

Axminster (0297) 34918
Reg Ward & Co. Ltd
1 Western Parade
West Street
Axminster
Devon EX13 5NY
9am-5.20pm Tues-Sat

KW

COMMUNICATIONS

Chatham Road, Sandling
Nr Maidstone, Kent ME14 3AY

Telephone: 0622 692773

Fax: 0622 764614

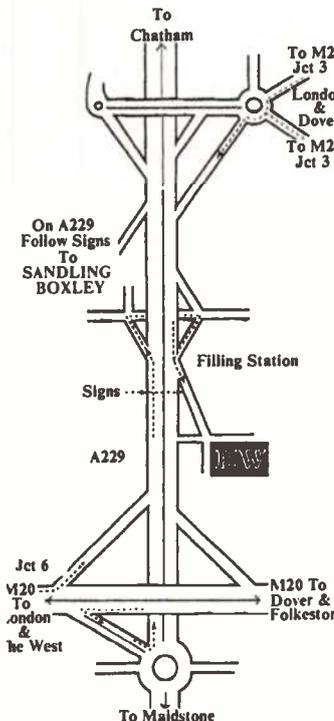


Instant credit available
Mail/telephone order by cheque
or credit card (E & OE)

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.



DON'T FORGET
We also have a range of pre used equipment - all fully warranted - and we'll be happy to take your receiver or scanner in part exchange. Simple, speedy mail order - ring for details



SCANNING RECEIVERS

ALINCO
DJX1 New!£269.00

ICOM
R1 Micro size scanner£369.00
R100 Excellent mobile£510.00
R7100E£1120.00
R9000E£4080.00

AOR
AR3000A New improved£765.00
AR2002 Old favourite£395.00
AR2800£395.00
AR2500 Ask about software!£419.00
AR2000£269.00
AR1500 Handheld inc. SSB!£299.00

SIGNAL
R537S Tuneable airband RX£59.95
R550 40 ch airband£129.00
R535 VHF, UHF airband£254.00

WIN
WIN108 Free binoculars!£179.00

YUPITERU
MVT7000 Great handheld£289.00
VT125UK Airband scanner£179.00

FAIRMATE
HP2000 Same spec AR2000£259.00

SONY
AIR7 Airband, AM/FM PSB£229.00

YAESU
FRG9600 Old faithful with SSB£520.00

ACCESSORIES

NEW FROM MALDOL
"ACTION HUNTER" series of wide band set top and mobile antennas to suit most scanners. Also TX on ham and cellphone! Call for details.

JIM M75 Scanner preamp£69.95
JIM PSU101 Base stand/charger£29.95
D505 Active mobile ant£69.95
D707 Active base ant£99.95
D130N Wide band discone£81.00
REVCONC Low cost discone£39.95
Headphonesfrom £9.95
TCM 84V Voice activated recorder£34.95
Magnetic longwire balun£36.00
AT1000 SWL ATU£79.00

Plus all the books, frequency guides, connectors, insulators, aerial wire and coax to compliment your equipment.

SHORTWAVE RECEIVERS

KENWOOD
R2000£549.00
R5000£895.00

ICOM
R72E£659.00
R71E£875.00

YAESU
FRG8800£649.00

SONY
SW1E£149.95
SW7600£149.95
2001D£279.95
SW77E£339.95

JRC
NRD535£1099.00

LOWE
HF150£329.00
HF225£429.00

OPENING HOURS:

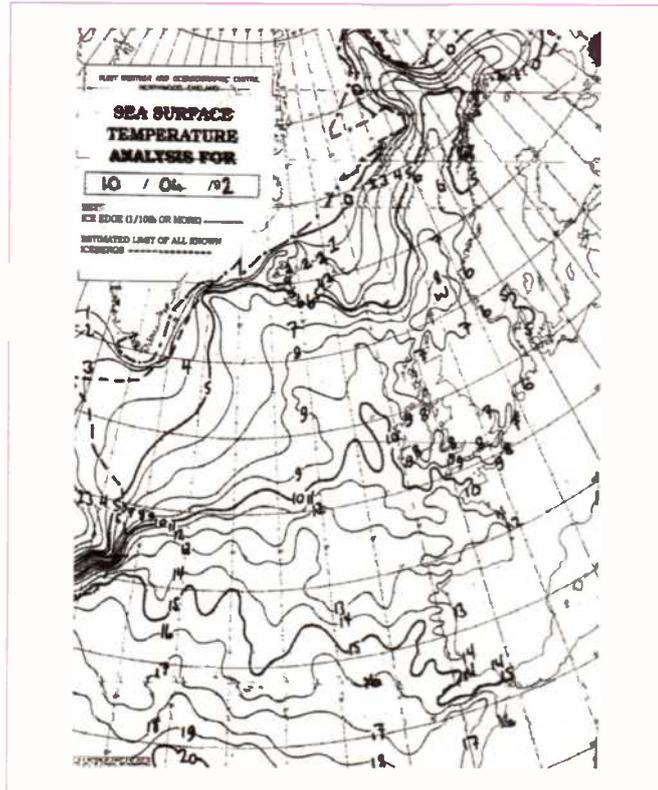
MONDAY-SATURDAY
9.30am-6pm
(MON open 10am,
SAT close 5pm)

Northwood. Received on 6.446MHz on 12 April 1992.

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 speed 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 l.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 l.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

Audio Input	f.m. 1900 +- 400Hz, 0.7V in 600R a.m. 2400Hz, 0-1V in 600R
Auto Start	APSS type WMO Synchronisation Independent
Printer	Thermal line printer, 8 dots/mm
Scale	2 (b/w) or 16 selectable
Paper Size	216mm x 30m
Drum Speeds	60, 90, 120 and 240 r.p.m. IOC576 or 288
Power	12-13.5V d.c. at 3 amps
Size	310mm (wide) x 70mm (high) x 200mm (deep)

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



Crippen is arrested. Reproduced by kind permission of GEC-Marconi Ltd.

starting a new life in the new world.

On July 31 1910 at Father 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-arranged 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

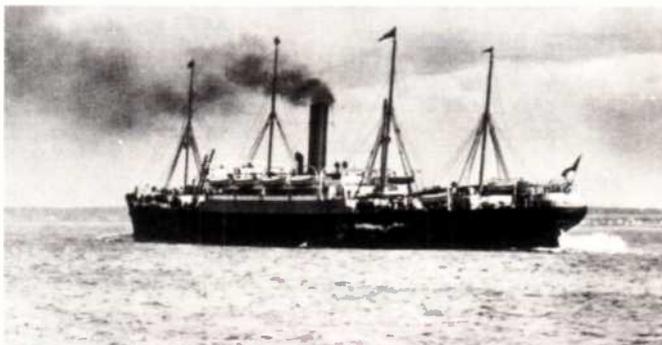
all, and that they had been buried without Crippen's knowledge, probably before he rented the house the previous autumn.

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 testimony 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



SS Lake Champlain - the first British ship equipped with wireless. Reproduced by kind permission of GEC-Marconi Ltd.

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.

Marconi 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.

NEVADA EVERYTH

YUPITERU

MVT 7000 HANDHELD

PROBABLY THE UK'S MOST POPULAR HANDHELD SCANNER!

- ★ Receives 8 to 1300 MHz 100kHz-1300MHz (at reduced sensitivity)
- ★ 200 Memory channels
- ★ Rotary or keypad freq. control
- ★ AM/FM/NFM
- ★ Large display with signal strength meter EACH SET IS SUPPLIED COMPLETE WITH:- Full set of high power NiCads, AC charger, DC power lead and carry strap **£289**



MVT 8000 MOBILE/BASE

This new model is the mobile version of the popular MVT 7000 Handheld above.

- ★ Receives 8 to 1300MHz 100kHz to 1300MHz (at reduced sensitivity)
- THIS RADIO IS ESPECIALLY SENSITIVE AT UHF FREQS. Set is supplied with mains power unit..... **£299**

MVT 6000 MOBILE/BASE

An economy version of the new MVT 8000 above housed in the same case.

- ★ Receives 25-550MHz, 800-1300MHz
- ★ 100 Memory channels
- SPECIAL PRICE £199**

AIRBAND RADIOS

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

A powerful pocket scanner that leaves the competition standing. - A super sensitive set designed for optimum performance on the Civil/Military Airbands.

- ★ Receives 108-142 MHz Civil Airband 222-391MHz Military Airband 149.5-160MHz Marine Band
- ★ 100 Memory channels
- ★ AM/FM on VHF
- ★ Priority channel function
- EACH SET IS SUPPLIED COMPLETE WITH:-** NiCads, earphone, carrying strap and mains charger **£229**



VT-125 UK CIVIL AIRBAND RECEIVER

Using the same technology as the VT-225, this set covers the full Civil Airband - hearing distant signals that are inaudible on some other scanners.

- ★ Covers 108-142MHz
- ★ 30 Direct entry memories
- ★ Search steps 25, 50, 100kHz
- SUPPLIED COMPLETE WITH NICADS AND UK CHARGER **£149**

FAIRMATE

HP2000

STILL ONE OF THE MOST POPULAR HANDHELD SCANNERS ON THE MARKET.

Over the last year the HP2000 has outsold almost all other models.

- ★ Continuous coverage from 500kHz to 1300MHz
- ★ 1000 channels of memory
- ★ Keypad or rotary control
- ★ AM, FM and WIDE FM modes
- ★ Search steps from 5 to 99.5kHz



EVERY SET COMES COMPLETE WITH:-

Full set of high power NiCads, 2 antennas, carrying case, earphone, DC cable, belt clip and strap, UK charger **£269**

MS1000 BASE/MOBILE SCANNER

MOBILE VERSION OF THE HP2000 HANDHELD

BUT WITH SEVERAL ADDITIONS:-

- ★ Switchable audio squelch
- ★ Tape recorder output socket
- ★ Automatic - signal operated tape recorder switching
- ★ All metal case for improved EMC compatibility
- ★ Receives:- 500kHz - 600MHz 805 - 1300MHz. Supplied with mains power supply..... **£279**



AOR SCANNERS

AR1500 HANDHELD

Covers 500kHz to 1300MHz receiving NFM, WFM, AM, and SSB. Supplied with a large selection of accessories including:-

- ★ Charger
- ★ Dry cell battery case
- ★ 5 mtr LW antenna
- ★ Ear piece ★ Soft case
- NOW IN STOCK £279**



AR2002 BASE/MOBILE

Receives 25 - 550MHz, 800 - 1300MHz, AM, FM, WFM Super-sensitive receiver **£399**

AR2500 BASE/MOBILE

Receives 5-550MHz, 800-1300MHz AM, NBFM, WFM, 1984 Memory Channels, Fast 36 CH/SEC Scan. Resolves SSB with BFO control..... **£399**

AR2800

- ★ Receives 500kHz - 600MHz, 800 - 1300MHz AM, FM, WFM. SSB capability with BFO.
- ★ 1000 Memory **£395**

SCANNERS

ALINCO DJ-X1 HANDHELD SCANNER

- ★ Covers 500kHz to 130MHz
- ★ 100 Memories
- ★ AM/FM/WFM
- ★ 3 Scanning speeds

PLEASE NOTE:-

ALINCO DO NOT INCLUDE BATTERIES AND CHARGER AT THIS PRICE **£249**

ALINCO ACCESSORIES

- Set 6 high power NiCads.....£11.40
- UK Charger.....£17.95
- Alinco EPP16N NiCad Pack.....£29.95
- Alinco EDC25 Drop-in Charger.....£18.95
- Alinco ESC15 Battery Case.....£10.95
- Alinco Soft Case.....£9.95

BEARCAT 200XLT

200XLT HANDHELD SCANNER Still one of the easiest to use and the most reliable scanners on the market, easy to program, sensitive receiver.

- ★ 200 Memories
- ★ 66-88, 118-174, 406-512, 806-956MHz
- ★ UK Charger/NiCad Pack supplied **£229**

BEARCAT 760XLT

A mobile/desktop version of the 200XLT above but with 100 memories. Supplied complete with mains adaptor **SPECIAL PRICE £199**

NEW FROM SONY

SW55 MULTIBAND RADIO

Complete with hard case and all accessories, antenna, earphones, mains adaptor.

Probably the very best from Sony. This radio is a real winner, with dual conversion receiver and a host of features:-

- ★ 150-30MHz
- ★ 76-108MHz
- ★ AM/FM/SSB
- ★ 125 memories
- ★ Digital world time clock/alarm
- ★ World map display
- ★ Four way tuning system - 125 memory presets, Manual tuning, Auto scan, 10 key direct tuning

Now in stock for immediate shipment at just **£249**

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 (150kHz to 136MHz). Receives AM, FM, and SSB **£299**

SW77

One of the new additions to the Sony range, the SW77 covers 150kHz to 30MHz plus 76-108MHz. With a rotary tuning dial, 125 scan memories, reception of AM, FM, USB, LSB, CW, tape record facility, this is a superb all rounder..... **£349**

SW800

A pocket size VHF and Shortwave radio, covers 76-108MHz, 3.7 - 17.9MHz Shortwave. With 60 memories and credit card style facility for programming..... **£99.99**

SWIE

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 - 30MHz Shortwave receives AM, FM, SSB..... Well Rated! **£149**

AIR 7

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

PRO 80

Combined Shortwave VHF handheld. Complete with add on converter for UHF Airband. This model comes also with the usual Handy Frequency Guide Booklet. Excellent S/VWave Results **£299**

ANI

An external active antenna with built-in pre-amp, covers 150kHz - 30MHz. Fully portable with easy to mount fixing brackets. **£57.95**

ANS

Active antenna for Aircraft and VHF reception, suitable for Sony Air 7 and others. **£54**

AR3000A NEW MULTIMODE SCANNER £765

AOR's top of the range model now improved.

- ★ Receives 100kHz - 2036MHz. Modes:- USB, LSB, CW, AM, FM, WFM.
- ★ Computer control is also available via the RS232 socket. Software for IBM PCs & clones is also available.

INTRODUCTORY OFFER SUPPLIED WITH FREE WIDEBAND DISCONE WORTH £49.95 **Note: This is a UK version from AOR and not a foreign grey import.**



SEND IN £2 FOR OUR NEW 72 PAGE COLOUR CATALOGUE (INCLUDES A £2 VOUCHER)

USE YOUR CREDIT CARDS FOR SAME DAY DESPATCH

ING FOR THE RADIO ENTHUSIAST

HUGE STOCKS - FAST DELIVERY - PERSONAL SERVICE

NEVADA COMMUNICATIONS, 189 LONDON ROAD, PORTSMOUTH PO2 9AE
TELEPHONE HOTLINE: (0705) 662145 FAX: (0705) 690626

SCANNER ACCESSORIES

LOW NOISE PRE-AMPLIFIERS

These new pre-amplifiers are a must for the scanner enthusiast and will allow reception of signals that were inaudible without them.

MODEL M75

For base and handheld scanners

- ★ 25-2100MHz
- ★ Low noise GaAs FET
- ★ Selectable filters for optimum performance
- ★ Variable gain/attenuation control



£69.95

MODEL M100

Same specification as the M75 above but with full RF switching. May be used with transceivers of up to 5 watts RF output Ideal for the latest TwinBanders

£79.95

TWO-WAY REMOTE MASTHEAD SWITCH

Uses one coax feeder to the masthead and remotely switches between 2 antennas with this unit. Very low loss up to 1.3GHz. Uses Greenpar N type connectors

£44.95

JIM PSU101 MK IV

A combined desk stand and power supply/charger for handheld scanners. Suitable for most popular models. Special versions now available please call for more details

£29.50

JIM BHA3

Desktop stand for handheld scanners

£9.95

JIM CH-A4

Mobile holder for use with handheld scanners in the car

£6.95

SCANNING ANTENNAS

NEVADA SCANMASTER (500 kHz - 1500MHz)

New high quality wide band receiving antenna uses fibre glass/stainless steel, with 4 small radials. 'N' type connector. Length 1.1 metres

£39.95

WB1300 DISCONE (25-1300MHz)

Stainless steel top of the range 'N' type connector. Complete with short mounting pole and clamps

£49.95

MICRO-SCAN (180-1300MHz)

New low cost ground plane antenna

£12.00

SKYBAND (25-1300MHz)

Stainless steel economy wideband Discone

£24.00

WB500 (50-500MHz)

Mobile scanner antenna on a magmount complete with cable

£27.95

LOG PERIODIC BEAM (105 - 1300MHz)

20-element wideband beam - can be used for transmit on VHF/UHF amateur bands. 12dB fwd. gain. £135.00

DIAMOND D707 (500kHz - 1500MHz)

A base antenna with 20dB pre-amp 3.5ft long fibreglass with mounting kit. Requires 12V DC supply. £99.00

DIAMOND D505 (500kHz - 1500MHz)

Mobile version of the D707 superb antenna. £69.00

TELESCOPIC SCANNER ANTENNA (BNC)

..... £5.75

RUBBER DUCK SCANNER ANTENNA (VHF/UHF (BNC))

..... £11.95

ICOM

ICOM We carry a varied selection of the Icom range of Amateur radio products including all of their latest models. However should you want something which is not in stock PAUL can get most things within 24 hours! (subject to availability). Icom have been known over the years for their Quality and Performance, here is just a small selection of their vast range!

IC R7100

Covers 25 - 2000MHz. Includes 900 memory channels with all mode capability. Five different scan options and an automatic record facility, what more you ask? Full brochure available.

£1500

IC R72

Covers 100kHz to 30MHz on the HF Bands and offers all mode reception (FM, with the optional board) Easy to use and ideally suited to the new corner. A full 99 memory channels with scan facility and a 10dB pre-amp fitted as standard

£589

IC R1

Icom's most popular pocket-sized wideband scanner Frequency from 150kHz to 1300MHz with 100 programmable memories. AM, FM and WFM Modes. Sleep timer and clock facility Optional NiCads, carry cases, and fast chargers are available.

NEW LOW PRICE £329

IC R100

Mobile or base extra wideband scanning receiver covering 500kHz to 1.8GHz with 100 memory channels and receives AM, FM & WFM Modes

£475

KENWOOD

R2000 RECEIVER

A good 'Middle of The Road' Receiver giving general coverage receive from 150kHz to 30MHz. Built in clock and timer facility. Ten user programmable memories Optional VHF Converter (Secondhand models usually available)

£529

R5000 RECEIVER

Based on the receive section of the TS440S HF Transceiver both in looks and design this model covers 100kHz to 30MHz all mode, 100 memories and facility for optional filtering.

RECOMMENDED £ CALL

SHORTWAVE RECEIVERS

LOWE HF-225

Receiver (30kHz - 30MHz) Optional extras inc FM/AM detector, Ni-cads, Speaker, Case & Active Ant.

£439.00

LOWE HF-150

Receiver Economy model but with an excellent set of 'EARS'. LCD display. Portable or Mains Power

£329.00

NRD-535

Japanese top of the range general coverage receiver, 0.1 - 30MHz lots of Options available

£1115

DRAKE R8E

New American top class receiver, 100kHz - 30MHz, supplied with all filters as standard. Really outstanding performance - see recent reviews

£965



DRAKE R8 VHF CONVERTER (35 - 55MHz)

(108 - 174MHz) £195

GRUNDIG SATELLIT 500

A full coverage receiver with 42 memories, receives LW, MW, FM and SVW bands

£299

SANGEAN ATS803A

Full short wave coverage portable receiver with FM stereo. 14 memory channels, 12 shortwave broadcast bands

£109.95

PHILLIPS D1875

Shortwave receiver covering all the major shortwave broadcast bands

SPECIAL PRICE £49.95

STEEPLETONE SAB9EP

A complete Airband pack comes with Airband Radio, Headphones & intro book

£29.95

STEEPLETONE MRB7

Multi-band Radio. This radio will appeal to both Aircraft Enthusiasts and the Marine Monitors. The multi-band 'jumbo' radio has almost everything you need to monitor these bands.



LW, MW, & SW plus the Marine and Aircraft Bands..... Good Starter! £69.95

TRADING POST

CASH, CASH, cash, got a 'RIG' want a scanner? give PAUL a ring for p/x details or as a 'Buy-in'.

- Yaesu FR101 Receiver c/w Ext. Spkr Ham Bands only Ex Cond £275.00
 - Marc2 'Hipster' Receiver 150kHz-520MHz all mode Banded V.G.C £199.00
 - Trio R1000 S/W Receiver. Digital Display with timer V. Clean £350.00
 - Trio R2000 Rx. Good middle of the road receiver. Avg. Cond £450.00
 - Icom R72 Gen. Cov. RX almost new still U/Glee. Bargain £500.00
 - Yaesu FRG7 Good old Faithful Receiver..... Still Going! £175.00
 - Realistic Pro37 200 Channel H/Hand Scanner. As new £175.00
 - Sony Air7 Handheld Airband Receiver. offers around £185.00
 - Nevada M51000 Base/Mobile Scanner. Exc. Cond. G/Tee £215.00
 - Regency 7000 Base/Mobile Scanner. V. Sensitive Radio. £215.00
 - Fairmate HP2000 'The ultimate' in handheld scanners full 1000 memories. v.g.c. but tatty box... £215.00
 - AOR AR3000A The best base station scanner money can buy All mode 150kHz - 2.1GHz Ex-demo model £699.00
 - Yupiteru MVT-7000 c/w PSU101 supply/stand. Avg. cond G/teed fully tested model £220.00
 - Alinca DJ X1 The latest model in excellent condition with box and all manuals incl. Frequency book. G/teed £225.00
- Wanted-Wanted-Wanted:**
Considering a new Drake R8? We are offering the best PX deals on the following . . . ICOM 71E's, 72's, 7000's & 7100's, KENWOOD R2000's & R5000's, YAESU FRG7's, 7700's & 8800's.
CALL US NOW!

BOOKS...BOOKS...BOOKS...BOOKS

- Shortwave Confidential Frequency List. £8.95
- Lists 0-30MHz Freqs. £5.95
- VHF/UHF Frequency Guide A real must for serious users £4.95
- Marine Frequency Guide Near the coast? Ideal book £6.95
- VHF/UHF Airband Guide At last, now back in print £8.95
- Scanners 2 by Peter Rouse, Both books full of good info £10.95
- Scanners 3rd Edition. £10.95
- Short Wave Communications. £8.95
- Renowned contributor to the popular Short Wave Magazine £3.95
- Air Traffic Radio 1991 (updated for '92) £2.95
- Sounds Easy Guide to Britain's Radio Stations £2.95
- Flight Routings Guide Book £4.95

Directory of Military Aviation Communications.

Space Shuttle operations, War games, in-flight refuelings, interception of Soviet BEAR Recon Bombers, Military Airshows, secret coded transmissions, these are only a taste of what's in store in this publication. Frequency, Locations & some maps for Europe & North Africa are included for reference £17.95

AOR ~ VERSATILITY

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 its 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.

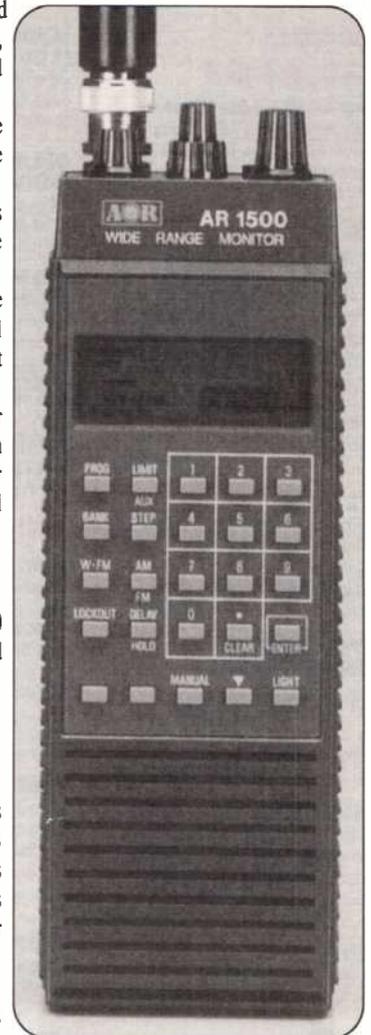
Radio Facsimile Terminal WX-2000 *(as reviewed in this issue)*

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.

Printing method: Thermal line printer 8 dots per mm
 Paper width: A4 (216mm) x 30m - Toshiba 01456410
 Auto start: APSS type
 Reception speed: 60, 90, 120 & 240 rpm, selectable
 Power input: 12 - 13.5V DC @ 3A

Printing scale: 2 (B/W) or 16, selectable
 Audio Input: FM 1900+/-400 Hz 0.7V/600 OHM AM 2400 Hz 0-1V/600 OHM
 Synchronisation: Independent type
 Collaboration factor: 576 or 288
 Size: 310mm (W) x 70mm (H) x 200mm (D)



**Recommended Retail Price ...
 £925.00 including VAT.**

If you are unable to obtain supplies of AOR products from your local dealer, you may order directly - we offer a fast mail order service. Please send a large S.A.E. (34p) for full details of AOR products.

AOR AOR (UK) Ltd.

Room 2, Adam Bede High Tech Centre,
 Derby Road, Wirksworth, Derbys. DE4 4BG.
 Tel: 0629-825926 Fax: 0629-825927

A subsidiary of AOR Ltd Japan E&OE

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 helds 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 Cell-phone 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.

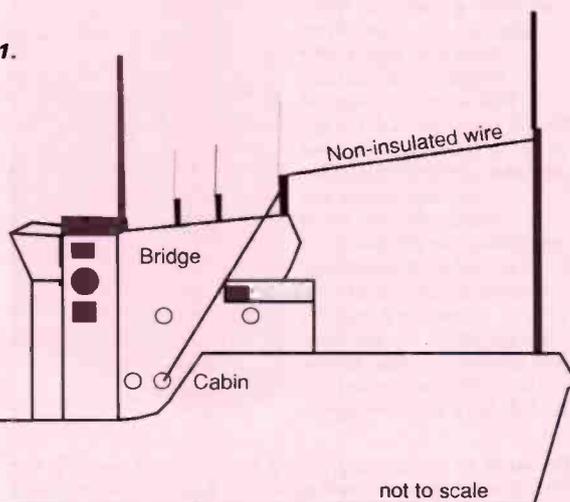
The Sony ICF-Pro 80 is used

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 foremast. 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

Fig. 1.



GAREX ELECTRONICS

WIDEBAND SCANNERS

All major brands available, with the all-important service back-up. AOR; BLACK JAGUAR; JIL; REVCO; ICOM; YUPITERU. Also good stock of secondhand sets. Ask for list.
 "SCANMASTER" Scanner Controller: versions for AOR2002, REGENCY MX8000, ICOM ICR7000, YAESU FRG9600. Built-in software expands the scanner to over 700 memories, with automatic logging and a host of features. Operates with a dumb terminal or any computer in terminal mode. £153.25

WIDEBAND ANTENNAS

"REVCON" premium quality British VHF/UHF Discone (guaranteed free from exaggerated advertising claims) SO239 connector £37.75
 N-type connector for improved UHF performance £39.80
 Optional vertical whip feature for experimenters.
 "RADAC" nest of dipoles: imitated but not equalled. Guaranteed Tx capability over customer specified 6 bands in the range 27-470MHz, with excellent wideband Rx performance.
 SO239 conn: £86.85 N-type: £88.89
 Special VHF/UHF Airband RADAC: 108-136MHz and 220-400MHz £80.75
 Top quality cable and connectors also available.

WIDEBAND PRE AMPLIFIERS

NEW GAREX GA-4 SERIES: 20MHz - 1GHz instrument grade amplifiers precision stripline construction for exceptional stability. 13dB gain at 1GHz with filter to reduce HF breakthrough problems.
 GA-4MN Inline Masthead Amplifier COMPLETE with stripline DC supply unit, requires 12v DC at 30mA, N connectors £49.50
 GA-4MS, as above, but PL/50 connectors, (reduced performance) £48.50
 "Local-use" versions, small die-cast box package, for 12v DC operation.
 GA-4B (BNC sockets): £35.75. GA-4S (SO239): £35.75. GA-4N (N sockets): £39.85.
 Mains adaptor for use with any of the above preamps: £8.95
 DC Supply Block: a precision stripline device for powering masthead amplifiers via the co-ax, suitable for 20MHz - 2GHz with VSWR better than 1.3:1, Insertion loss less than 0.5dB, N sockets £25.35
 Also with SO239 sockets (reduced performance) £25.35

MOBILE ANTENNAS

REVCO super Mag-mount + 5/8 for 2m £35.75
 Mag-mount + 4.5dB for 70cm £35.75
 Body-mount 1/2" or 3/8" hole (state which) + 5/8 for 2m £20.35
 3/8" hole mount + 70cm colinear (4.5dB) £20.35
 Mag-mount with 3dB 900MHz whip: improve the performance of your cell-phone or 900MHz scanner; in the car or on the office filing cabinet. £35.75
 REVCO unbeatable glassmounts, with tuned matching units for peak efficiency: 2m or 70cm: standard model: £40.95. Deluxe hinged whip models: £47.95. All with 4m feeder. Plugs on request.

Write, phone or fax for lists. Regular lines, components and bargains for callers. Open 10am - 5pm Mon - Fri (occasional Sats).

ALL PRICES INCLUDE UK CARRIAGE AND VAT AT 17.5%



GAREX ELECTRONICS



STATION YARD, SOUTH BRENT, SOUTH DEVON TQ10 9AL

Phone: (0364) 72770 Fax: (0364) 72007



HIGH QUALITY ACCESSORIES

FOR SCANNING MONITOR RECEIVERS

Jim PSU-101

1. **JIM PSU-101 MkIV.** A high quality UK manufactured fully regulated 220-240V AC power supply with RADIO BASE HOLDER combined. For use with FAIRMATE HP-100E/200E/2000/1000AB. AOR-1000/1500/2000. YUPITERU MVT-5000/7000/125. VT225. REALISTIC PRO-35/38. ICOM-R1. UNIDEN UBC50XL. BC55XLT. UBC70XLT, ALINCO DJ-X1. UBC100XLT. New unique features include 2 DC output sockets one for radio and the other for accessories. A bracket for BNC socket for antenna connection. Separate DC leads included. 9 volt version for Tandy, etc. available. **PRICE £29.95.**



2. **JIM BH-A3.** Universal base stand for handheld scanners-transceivers etc. convenient, safe support of radio. Adjustable front stop. Heavy duty chromed base. Bracket for BNC socket for base antenna connection. **PRICE £9.95.**

3. **JIM CH-A4.** Car mounting holder for handheld scanners- transceivers with BELT CLIP support. Safe and convenient use of scanner etc. in car, truck, boat etc. **PRICE £7.00.**

4. **JIM BC-4H.** Unique FAST Universal 4 hour + 14 hour Ni-cad charger. "auto-switch-off" timer (no more guessing). Ideal Fairmate, AOR, Yupiteru etc. Leads + 4 sizes of AA holders supplied. **PRICE £19.50.**

5. **JIM SM-A1** High quality S meter for scanners CB. **PRICE £26.95.**

6. **JIM SM-A2** Signal meter for scanners CB. **PRICE £16.00.**

Payment by postal order or cheque. Prices include postage

Further information on SSE products, send A4 SAE to:

SOLID STATE ELECTRONICS (UK)

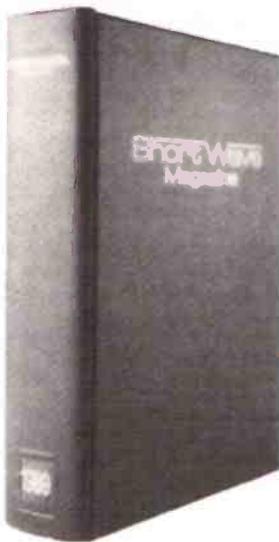
6 The Orchard, Bassett Green Village,
 Southampton SO2 3NA
 Tel: (0703) 769598

**NEW
 PSU-101 MK IV**

SWM SUBSCRIBERS' CLUB

If you have a subscription then you will know all about the Short Wave Magazine Subscribers' Club. If you don't then read on. Membership is free and automatic for all subscribers to this magazine and is our way of saying thank you to all those who have had faith to pay for it 'up front'. Each month there are Special Offers and occasional competitions with some really useful prizes to be won.

This month Subscribers' Club members can save up to £3 on SWM Binders. Keep your favourite magazine in pristine condition with our smart, light blue binders, each one holding 12 issues. The normal price is £5.50 each plus £1 post & packing for one binder, £2 for two. Our special price for Subscribers' Club members is £5.00 each inc. post & packing. Overseas members' binders will be despatched by surface mail at the special price. The offer is limited to two binders per member.



Be sure of your copy every month and qualify for the Subscribers' Club as well. Special offers and discounts normally available to all members.

Please indicate the type of subscription required:

SHORT WAVE MAGAZINE 1 YEAR

- £21.00 (UK)
- £23.00 (Europe)
- £25.00 (Rest of World)

PRACTICAL WIRELESS 1 YEAR

- £21.00 (UK)
- £23.00 (Europe)
- £25.00 (Rest of World)

SPECIAL JOINT SUBSCRIPTION 1 YEAR ONLY

- £36.00 (UK)
- £39.00 (Europe)
- £41.00 (Rest of World)

Prices current at June 1992

Subscription to commence with issue dated.....

Please send me SWM Binders at the special SWM Subscribers' Club price of £5.00 inc. P&P.

To: PW Publishing Ltd., FREEPOST, Subscriptions Dept., Enefco House, The Quay, Poole, Dorset BH15 1PP

Name.....

Address.....

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

Charge to my Access/Visa Card the amount of £.....

Card No.

Valid from to

Credit Card Orders can be taken on (0202) 665524.

Signature.....

If you do not want to deface your SWM a photocopy of this coupon will be accepted.

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 audible, as was marine v.h.f. activity in the port itself, but once at 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

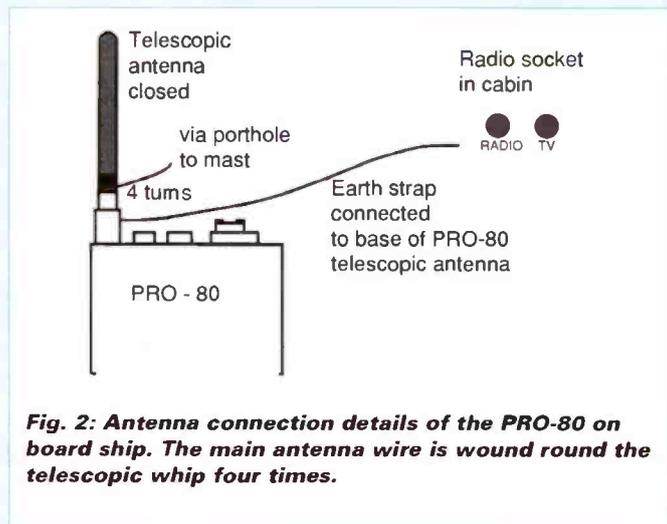


Fig. 2: Antenna connection details of the PRO-80 on board ship. The main antenna wire is wound round the telescopic whip four times.

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-Gs 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 FRQ-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, Rogalund 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 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 302C-1 and it was fitted into the Collins speaker console, part number 312B-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, Sharnbrook, 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 arrival times back to the USA or Canada.

I know that American and Delta flights use Rainbow Radio on 13.285MHz, 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 AR8 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, Wellingborough, 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 8HX.

HELP! Can anyone please help me on connecting my AOR3000A to an Elonex 386SXM/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 Hempland Drive, York YO3 0AY.

JAVIATION

THE VHF/UHF AIRBAND SPECIALISTS

AT LAST

Our new combined VHF/UHF frequency listing running to over 100 pages is now available. The new publication is in the same format as our previous individual lists and is updated with the same regularity. Not only have we *joined* both lists together but added some extra information as well. Compiled by enthusiasts for enthusiasts (sorry about the cliché!) – The best available or so we would like to think.



VHF/UHF Frequency Listing:

£6.50
+ £1p&p

AR-2000

In stock, £269.00 supplied with FREE leather carry case worth £14.99

MVT-7000

Excellent performance, easy to use, supplied with all accessories – £289.00

ICOM IC-R1

The smallest hand-held available. Special offer until end of March – £330.00

AOR AR-2500

We have a small number of units available at a special price of £399.00 including IBM PC software

Carlton Works, Carlton Street, BRADFORD, West Yorkshire, BD7 1DA
Telephone: 0274-732146 Facsimile: 0274-722627

C.M.HOWES COMMUNICATIONS

Mail Order to: Eydon, Daventry,
Northants NN11 6PT
Tel: 0327 60178



EASY TO BUILD KITS!

Building your own equipment is not only interesting and fun, but enables you to build up your station facilities without having to spend a fortune. You could update an older receiver with our new DFD4 Digital Read-out, or build yourself an excellent little rig for holiday and portable use. All our amateur band receivers have matching transmitter kits, so you can start with a simple receiver and build up your station in easy stages.



Novice kits housed in optional "hardware packs"

DFD4 ADD-ON DIGITAL READ-OUT

The HOWES DFD4 enables you to add modern digital read-out accuracy to analogue type receivers and transceivers. The 100Hz resolution will enable you to find stations accurately - be on the right frequency ready to catch those brief messages that you would otherwise miss whilst tuning randomly. The DFD4 can accommodate any IF frequency offset, and VFOs that tune normally or "backwards". We have designed this kit to be as versatile as possible. Why not give me a ring to discuss its use with your radio?

DFD4 Kit: £39-90 Assembled PCB modules: £59-90

ASL5 DUAL BANDWIDTH FILTER

Add extra selectivity to your receiver with the HOWES ASL5. The dual filters provide a narrow (300Hz) CW filter and sharper roll-off than crystal filters on SSB or other speech modes. A great addition to reduce noise and interference with all the popular general coverage receivers. No mods are required to the set, the ASL5 connects in-line with the external 'speaker or headphone socket.

ASL5 Kit: £15-90 Assembled PCB Module: £24-60

DXR10 10, 12 & 15M SSB/CW RECEIVER

The HOWES DXR10 is a super little receiver. It can receive signals from amateurs on three DX (long distance) bands, and makes an ideal receiver for those who would like to take up amateur radio with the new Novice Licence. Matching transmitter kits are available to convert it into a transceiver for 10 and 15M to give World-wide SSB and CW contacts.

DXR10 Kit: £26-60 Assembled PCB module: £39-90

SOME OTHER ACCESSORY KITS

		Kit	Assembled
AA2	HF Active Antenna 150kHz to 30MHz.	£8-50	£12-90
AA4	25-1300MHz Active Antenna for scanners	£19-80	£26-80
CBA2	Buffer to connect DFD5 to our receivers	£5-90	£9-50
CSL4	Additional SSB/CW filtering for our receivers	£10-50	£17-40
CTU30	HF Bands ATU for RX or 30W on TX	£31-50	£38-40
CV100	HF Converter for VHF Scanners	£26-50	£37-90
DCS2	"S Meter" for our receiver kits	£9-20	£13-80
DFD5	Digital Readout for use with our receivers	£41-50	£64-50
SPA4	Wide-band Receiver Pre-amp 4-1300MHz	£14-90	£20-90
ST2	Morse Practice/Side-tone Oscillator	£8-90	£14-30
SWB30	SWR/Power Indicator & load	£12-90	£18-50

PLEASE ADD £1-20 P&P for kits or £3-00 for hardware.

ANTENNA INTERFACE

CA30M Hardware Pack plus
CTU30, SWB30 & ST2 Kits.
CA30M: £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.

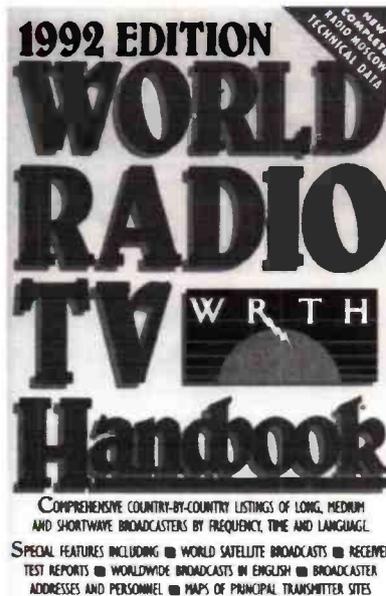
72 & 73 from Dave G4KQH, Technical Manager.

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, given a callsign 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 drape smoothly 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 us, 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 ruling 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-obeyed 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 it 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 'pipper' 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 pipper 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 'So-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*, but of course, it should be renewed every couple of years, as radio stations tend to QSY 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 buying 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?

MARTIN L

NATIONWIDE FORCE IN AMATEUR RADIO

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

£1149

Latest high performance receiver



Icom IC-R72E

£669

Budget priced SW Receiver. Used examples from £499



Drake R8E

£949

Receiver with most options fitted as standard



Yaesu FRG8800

£639

Excellent HF receiver. Used examples from £499



Icom IC-R9000

£3895

The flagship of communications receivers



Icom IC-R71E

£849

The big brother of the IC-R72. Used examples from £599



Kenwood R2000

£529

Kenwood's fine HF receiver. Used examples from £399



AOR 2800

£359

Wideband all-mode base/mobile scanner



Kenwood R5000

£885

Top of the range shortwave receiver. Used examples from £649.



AOR 3000A

£725

Genuine UK models at a special price for June only!



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.

MARTIN LYNCH
G4HKS
THE AMATEUR RADIO EXCHANGE CENTRE

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.

Phone or write in today!

Tel: 081-566 1120 ■ Sales ■ Service ■ M



YNCH. ■ ■ ■

■ Sales ■ Service ■ Second User ■ Mail Order ■

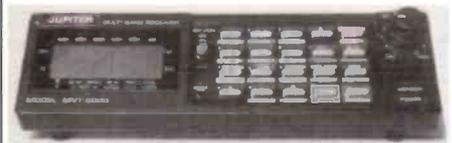
display at the London shop, organised to allow direct comparisons between them. See the Drake R8E, NRD535, ICR72E, ICR71E, FRG8800 plus many others all permanently wired for demonstration. Add all the scanners and the largest selection of used equipment you've ever seen, and you'll see why we are the busiest store in the U.K.

Only a few minutes from the M25/M4/M25 and just across the road from the Northfields Underground on the Piccadilly Line, (nearest store to Heathrow by tube), take the time to visit us. If you can't make it, phone me and I'll do a deal with you that you won't resist! Talk Turkey? You bet!
Martin Lynch

**Yupiteru
MVT8000**

£279

Mobile or base wideband scanner



**Yupiteru
MVT7000**

£269

Best performance receiver



Icom IC-R1E

£329

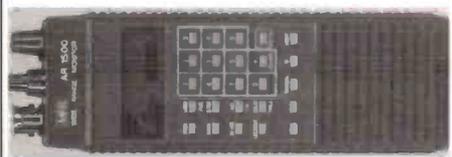
Still the world's smallest pocket scanner



AOR 1500

£279

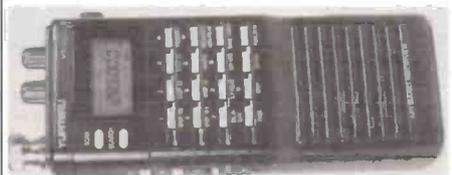
The latest all mode pocket scanner



**Yupiteru
VT225**

£229

The ultimate airband enthusiasts scanner



Lowe HF150

£325

A British built high performance receiver



Lowe HF225

£429

Excellent British made base receiver



**Icom
IC-R7100HF**

£1120

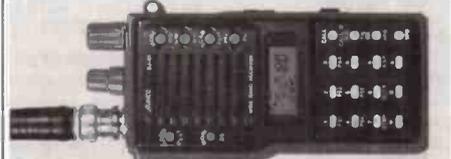
50kHz-2GHz all-mode receiver. Icom approved conversion. See our other ad on page 49



Alinco DJ-X1E

£239

Excellent miniature pocket receiver from Alinco



SUPPORT ✓ YOUR INDEPENDENT RETAILER
- It's the right thing to do !!

"NOW OPEN MONDAYS"

286 Northfield Avenue, Ealing, London W5 4UB.
Tel: 081 566 1120 Fax: (24hr) 081 566 1207

Shop opening hours:
Monday - Saturday 10 - 6pm
24 hour sales **Hot Line** 0860 339 339
(after hours only.)
Fax order line open 24 hours

Mail Order Tel: 081-566 1120 ■ Sales ■ Service ■ Mail Order

YAESU

STANDARD



ASK ELECTRONICS LTD



248 Tottenham Court Road, London, W1P 9AD Tel: 071-637-0353/0590 Fax: 071-637-2690

SONY

ICF-SW1E.....£134.95



ULTRA-COMPACT SHORTWAVE RADIO WITH PLL SYNTHESIZER CIRCUITRY

FM/LW/MW/SW reception • PLL synthesized circuitry • FM stereo • Continuous AM frequency coverage • 4 way tuning: 10 memory presets, auto scan, manual tuning, 10 key direct tuning • Programmable timer • Sleep function • Digital clock and alarm • LCD display with light function • Dual conversion system • 2 step tone control • Key protection • Record out socket • Supplied with stereo earphones, shortwave guide and compact aerial • Power: 2xAA size battery.

ICF-SW800.....£94.95

ICF-SW15 KIT.....£195

ICF-SW20.....£59

AN-1 ANTENNA.....£49



SONY SPECIALISTS 071-637-03531 071-637-0590 Fax: 637-2690

SONY ICF-SW55 "SUPERADIO"

- World time zones • SSB
- Full digital p/sets
- Multiband

£249 only

YOUR SONY SPECIALIST

Full Worldwide Guarantees from SONY! CALL THE SONY SPECIALISTS 071-637-0353/0590!! Mail Orders Welcome. 071-637-0590/0353 Fast - Efficient - Convenient. To your doorstep!!

ICF-SW7600.....£134.95



HIGH PERFORMANCE PORTABLE RECEIVER WITH PLL SYNTHESIZER CIRCUITRY AND CONTINUOUS AM FREQUENCY COVERAGE

LW/MW/FM/SW/SSB reception • PLL synthesized circuitry • FM stereo • Continuous AM frequency coverage • 4 way tuning: 10 memory presets, auto scan, manual tuning, 10 key direct tuning • Sleep function • Digital clock • Programmable timer • 2 step tone control • Antenna input socket • Headphone socket • Key protection • LCD display • Dual conversion system • Supplied with compact antenna, stereo earphones and AC power adaptor • Power: 4xAA size battery.

ICF-PRO80 Air/marine band scanner.....£275

ICF-AIR7.....£229

WA-8800 Full SW M-band stereo cassette recorder.....£199

CR-V21 world band receiver - fax printout, RTTY weather rec.....£2699

SONY CAR "DISCMAN" Full range

D808K.....£229

D802K.....£189

D800K.....£169

D202.....£145

ROBERTS

R727 5 bands - FM/MW/SW/LW/SW1-4.....£79.95

R747 3 bands.....£92.95

RF-M3 Tiny.....£59.95

RP-26 FM/MW/LW.....£81.95

RP-14 Cassette radio 4 FMs.....£60.95

RC-30 Mono cassette radio.....£51.95

AWARD WINNERS

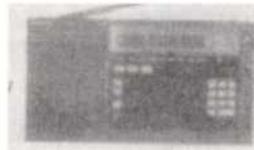
071-637-0353/0590

AN AWARD WINNING MASTERPIECE

ICF-2001D Kit.....£319.95 ONLY
Finest all-round pro-receiver in the business.

FW/LW/MW/AIR multi-band reception • 32 station preset memory • Synchronous detector circuit • PLL quartz-locked synthesiser circuit digital/analogue tuning • 2-way scan tuning (memory, broadcast, define) • 2-position tone control • Direct metre band access • 4-event programmable time • AM attenuator SSB reception • External antenna for AM, FM and AIR band • 288x159x52mm (w/h/d) 1.7kg. 2001 DSYSTEM-ICF-2001D with active antenna AN-1 in one complete package.

NEW ICF-SW77 Similar specification to 2001D but with jog-shuttle dial tuning for accuracy.....£329



D33.....£119

DT66.....£189

D350.....£250

D99.....£189

DZ555.....£325

"Flagship machine"

WC's equaliser memories

GRUNDIG

SATELLIT 650.....£459.00

SATELLIT 500.....£275.00

SATELLIT Cosmopolit.....£91.90

YACHT BOY 220.....£56.99

YACHT BOY 230.....£73.00

CONCERT BOY 225.....£36.70

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

PHILIPS

D2345

• Portable Radio • LW/MW/FM/2 x SW • Fine Tuning Control • Mains/battery supply.....£24.95

D1875

• Compact 12-band Portable Radio • LW/MW/FM/9 shortwave • Large tuning control • Tuning LED indicator • Telescopic and Ferrarceptor aerial • DC supply connection • Earphone connection • Wrist strap • Attractive pouch.....£49.95

DAT

digital audio tape

Sony TCD3.....£425

Casio DA7.....£575

Casio DA100.....£389

• All electrical digital world receiver • LW/MW/FM/13 x SW • Continuous tuning over total AM band • Direct keyboard tuning • 9 station memory • Variable pitch BFO for CW/SSB reception • Touch panel switching • LCD frequency display • Mains/battery supply

STILL ONLY!

£119.95

BEST BUY!!

PHILIPS

D2935 RADIO

CALL NOW FOR IMMEDIATE DESPATCH! MAIL ORDER LINES 071-637-0590/0353!!



PROFESSIONAL W/BAND RECEIVERS.....£2699

WORLD BAND RECEIVER WITH MULTIBAND/SATELLITE RECEPTION AND RTTY/WEATHER FAX PRINTOUT

FM/LW/SW/SAT reception • Reception and print out of weather fax and RTTY weather satellite information with optional AN-P1200 aerial • Built-in printer • Triple loop PLL synthesized circuitry • 5 way tuning: 421 memory presets, scan tuning (auto, define and memory), spectrum analysed tuning (using graphical display of signal strength), manual tuning with jog dial, 10 key direct tuning • Continuous waveband coverage AM 9.29999.99 KHz, FM 87.5, -108 MHz, SAT 137.62/141.12 MHz • Synchronised detection system • Auto memory input for easy automatic storage of up to 10 stations • Priority reception • 8 Programme/1 week timer • TCXO (Temperature Compensated Crystal Oscillator) for ultimate stability of the reception frequency • Active search system • Memory list • Sleep function • Cassette player /computer interface for data storage and other uses • Built-in high resolution thermal printer using 110mm paper with horizontal resolution of 860 dots • Printer with enlargement capability • Dual power supply - AC adaptor/rechargeable battery pack • External active antenna • AF filter • Digital quartz clock • Large LCD display with contrast control • Squelch control • Key protection • AM attenuator, dual conversion system • RF gain control • Record out • External aerial sockets • Supplied with AC adaptor, Rechargeable battery pack, battery charger, active antenna with bracket and cable kit, dust cover, printer paper, shortwave guide, fax guide and operation table • Power: NP22.

MULTI-BAND RADIOS/SCANNERS/TRANCEIVERS

LONDON'S PREMIER COMMUNICATION EQUIPMENT BARGAIN CENTRE

071-637-0590/0353

"FULL RANGE KENWOOD COMMUNICATIONS EQUIPMENT"

AN P1200

Offset Parabolic antenna and frequency converter • Designed to augment the CRF-Y21 • Capable of receiving fax broadcasts from meteorological satellites • Size: 1.25m x 2m x 1.5m (wxd).....£1599

SALE

PANASONIC RF-B900 W/BAND RECEIVER

YUPITERU AIR-POWER AT YOUR FINGERTIPS

VT-125 II.....£169.95

MVT-7000.....£289.95

PANASONIC

RF-B10 World band receiver - pocket size.....£59.95

RF-B65 S/pro multi band digital radio - memories preset...£169.95

RF-B45 Digital m/band radio.....£129.95

071-637 0353/0590

ICOM

SCANNERS/TRANCEIVERS

IC-R1 15-1300 MHz

100 memories...only £359.95

IC-2SET.....£289

ICR-7000.....£899

FULL RANGE STOCKED



GOVT. AND LOCAL AUTHORITY ORDERS ARE WELCOME. TAX-FREE EXPORT! MAIL ORDER IMMEDIATE DESPATCH

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.



Roberts RC-818

Radio Cassette Receiver

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

Specification

Frequency Range	87.5-108MHz 150-519kHz 1.621-29.999MHz
Antennas	Built-in ferrite bar Telescopic antenna or external antenna
Output Jacks	800mW at 10% t.h.d. d.c. power Headphone 3.5mm a.m. antenna 3.5mm
Tape Speed	4.76cm/sec $\pm 3\%$
Wow & Flutter	0.35% w/r.m.s.
Frequency Response	125-8000Hz
Signal to Noise	35dB
Power Sources	d.c. 4 x D cells 3 x AA cells a.c. Optional 6V adaptor
Dimensions	296 wide x 192 high x 68mm deep
Weight	2kg without batteries

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 include 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 noticeable 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 its 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.

Roberts RC-818

**PAY A
VISIT TO**

SUPER

HAMSTORES

TOP VALUE AT SUPER HAMSTORES THIS MONTH THE NEW ICOM IC-728 HF TRANSCEIVER

- All HF Bands Tx
- General Coverage Rx
- Speech Compressor
- Passband Tuning
- Direct Digital Synthesizer
- 26 Memories
- Handmic Supplied
- 3 Scanning Functions

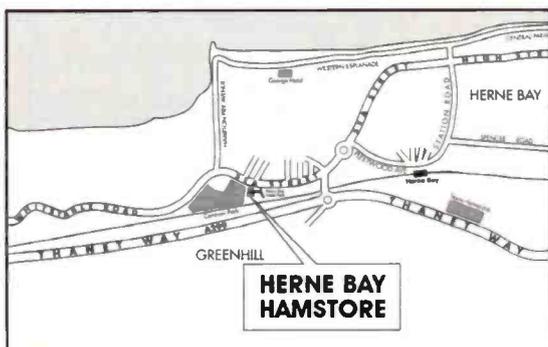


The exciting NEW IC-728 represents excellent value at only **£825.00 inc. VAT.** The IC-728 is at Hamstores NOW! Come along and put ICOM's newest rig through it's paces.

HAMSTORES stock a wide range of new Amateur gear plus a large selection of second-hand and ex-demo stock including; BARENCO, DIAMOND, COMET, SONY, AOR, LOWE, DRAE, CUSHCRAFT, KANGA KITS, DEECOMM, ALLGON, TOYO, AEA, CDR, MET, MFJ, AKD, ICOM, YAESU, KENWOOD, ALINCO, JRC ETC. Watch this space for more news, 73s, Chris G8GKC, Gordon G3LEQ & John G8VIQ.

**BOTH STORES NOW OPEN TUESDAY - SATURDAY. 09:00 - 17:00
WEEKDAYS. 09:00 - 16:00 SATURDAYS.**

HERNE BAY



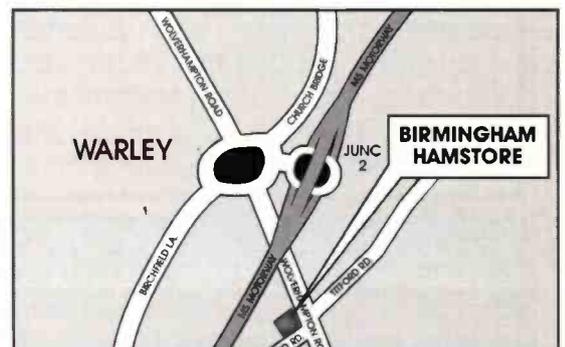
Unit 8, Herne Bay West Industrial Estate,
Sea Street, Herne Bay, Kent CT6 8LD
Telephone: (0227) 741555, Fax: (0227) 741742

Payment by Access, Visa and Switch. Part-exchanges welcome, finance can easily be arranged (subject to status). Interest free credit is available on selected new ICOM products.

If you cannot visit an ICOM HAMSTORE in person we operate an efficient, computer-based Mail order service. Stock items normally despatched within 24Hrs.



BIRMINGHAM



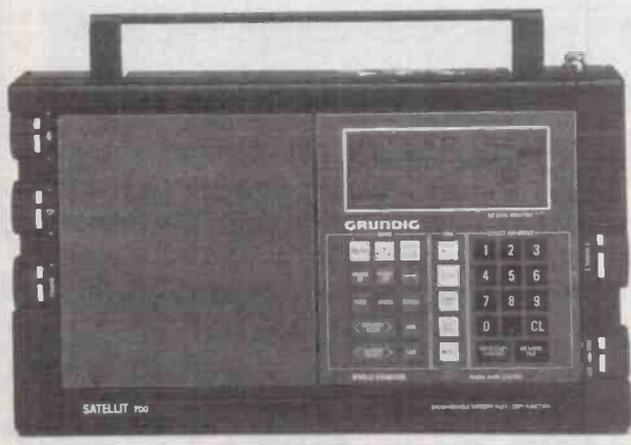
International House, 963 Wolverhampton Rd.
Oldbury, West Midlands B69 4RJ
Telephone: 021 552 0073, Fax: 021 552 0051

SRP 'SPECIALS'

WANTED

Shortwave
Receivers and
Scanners!
CASH PAID

NEW!



Now in stock £349

World receiver with microcomputer-controlled PLL frequency synthesizer tuning. DATA Monitor. RDS - Radio Data System. Indication of station name in the display. 64 station memory positions with 8 alternative frequencies (included). ROM chart. Direct frequency input. Last station memory. Copy function. Storecompare mode. Memory scan. LCD quartz timer clock with 2 time zones.

SANGEAN ATS 803A

(Direct key-in world receiver with quartz alarm clock timer)

unable BFO SSB/CW!

Specifications and features

★ 150-29.999 continuous tuning with no gaps. Phase locked loop-double conversion Superheterodyne ★ Full shortwave/AM/SSB 150-29999kHz no gaps! + FMB7.5-108 mono/stereo ★ Five tuning functions: Direct press button frequency input auto scanning, manual scanning memory recall and manual tuning knob ★ Built-in clock and alarm. Radio turns 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 or AC mains adaptor. ★ 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 RF GAIN control to prevent overloading when listening close to other strong stations or if there is interference. ★ New improved wide/narrow filter (6/2.7kHz) ★ BFO control (Beat Frequency Oscillator) enables reception of SSB/USB/LSWB (single side band) and CW (Morse Code) transmissions. ★ Illuminated display to facilitate night-time use. ★ Designed for both portable and desk top use. ★ Five dot LED signal strength indicator.



DIMENSIONS: 29.2cmx16.0cm (11.5inx6.3inx2.36in). OUTPUT: 1200mW (10%THD) WEIGHT: 1.7kg (3.75lbs) without batteries. Wide/narrow filter switch.

£109.95 + £5 check, test and p&p.

SKY SCAN

Desk Top Antenna Model Desk 1300

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

£49.00 + £3.00 p&p



SKY SCAN V1300 Antenna

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

£49.95 + £3.00 p&p



SKY SCAN Magmount MKII

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

£24.95 + £3.00 p&p



SAMLEX®

Regulated 13-8V DC power supply

WITH SHORT CIRCUIT PROTECTION

Model
RPS1210-
10-14 amp.
£49.95 +
£5.00 p&p

Model
RPS1215-
15-20 amp.
£69.95 +
£5.00 p&p

S.R.P. TRADING

Manufacturers and distributors of communications equipment

Unit 20, Nash Works, Forge Lane, Belbroughton, Near Stourbridge, Worcestershire.

Telephone: (0562) 730672 Fax: (0562) 731002

Showroom opening times: Monday - Friday 9.00 - 5.30pm Saturday 9.00 - 1.00pm. Callers welcome.



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 Atlantis 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 Albufeira. 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 mid-day 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 English 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!

Algarve Local FM Radio Stations.

MHz	Name	Location
90.1	R. Alvor	Alvor
90.5	R. Guadiana	Vila Real de S. Antonio
90.0	R. Santa Maria	Faro
92.1	R. Racal	Silves
92.2	R. T Atlantico	Olhao
94.0/99.7	Solar Radio	Albufeira
94.8	R. Gilao	Tavira
95.5	R. Clube Lago	Lagos
99.1	R. ASA	Faro
99.4	R. Voz do Mar	Lagos
99.7	R. Clube de Loule	Loule
99.7/94.0	Solar Radio	Albufeira
100.4	R. Onda do Atlantico	Vila do Bispo
100.6	R. Algarve	Faro
101.1	R. Clube S. Bras	S. Bras de Alportel
101.2	Kiss FM	Albufeira
101.6	R. Clube do Sul	Faro
101.9	R. Algarve	Faro
102.3	R. Restauracao	Olhao
103.0	Antena Dez	Castro Marim
103.1	R. Corridinho	Almancil
104.0	R. Atlantico Sul	Lagos
105.7	R. Foia	Monchique
106.5	R. Barlavanto	Portimao

Waters & Stanton Electronics

UK's largest stockist of specialist receivers



MVT-5000 scanner £199
25-550MHz & 800-1300MHz AM/FM

The MVT-5000 is a superb budget priced scanner with amazing sensitivity added to which it is very simple to use. The only gap in its range is the TV broadcast band and if you can live with 100 memories it offers incredible value! Hundreds are in use, many by professional users and like all Yupiteru equipment it has proved to have unsurpassed reliability. Available from stock with our 12 month parts and labour warranty.

SONY SW-7600 £149
200kHz-30MHz + FM BROADCAST SSB/CW/AM
Includes free AC supply aerial and case!

The classic portable for those on the move who want to keep in touch with the world broadcasts. In addition it gives good reception of SSB and is a travellers joy! All our stocks are genuine UK Sony.



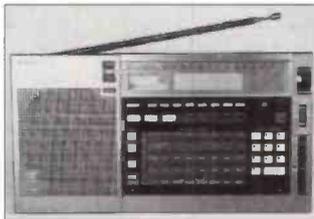
NEW LOCAL STORES
Most receivers on these two pages can now be purchased from us via your local MAPLIN stores in:

**BIRMINGHAM
MANCHESTER
READING
BRISTOL
LEEDS
BRIGHTON
GLASGOW**

Now you can call at your local store and enjoy the full Waters & Stanton after sales warranty. Contact your nearest store today for the Maplin convenience and the Waters & Stanton technical back-up and warranty.

SONY ICF-2001D £289
150kHz-30MHz + FM + airband USB/LSB/CW/AM (sync)
Includes free universal AC adaptor

If you want a truly portable communications receiver that performs as well as base station models yet fits into the domestic scene, look no further. At £399 it would be good value. At £289 it's an absolute bargain.



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 162 preset stations. Fabulous!



"It's Fantastic!"
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!

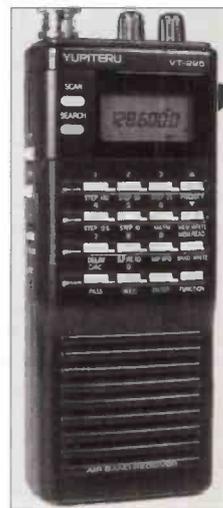
- HIGHLY ACCURATE COUNTER
- BNC AERIAL SOCKET • INTERNAL NI-CADS • AC CHARGER • VARIABLE GATE TIME • HOLD FUNCTION
- AMAZINGLY SENSITIVE!

YUPITERU MVT-7000 £289
1MHz-1300MHz FM/AM/WBFM
Includes ni-cad pack and charger

The Yupiteru MVT-7000 is the very latest scanning receiver to leave the factory, being a complete update of the MVT-5000. Its sensitivity is unsurpassed and its logical controls and beautiful design make it one of the smartest and slimmest scanners around. Our professional customers love it and you will too when you try it. Fully featured it has 200 memories, extensive scanning features, is fully programmable and even has an adjustable contrast control on the LCD. To try it is to buy it, so be warned!

YUPITERU VT-225 £229
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.



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 stockist of receivers, we can offer you the kind of back-up service that such an advanced product needs.

Retail and Mail Order: 22 Main Road, Hockley, Essex SS5 4QS. Tel: (0702) 206835/204965 Fax: (0702) 205843
Retail Only: 12 North Street, Hornchurch, Essex. Tel: (04024) 44765
VISA & ACCESS MAIL ORDER. 24 Hour Answerphone. Open 6 Days a Week 9am-5.30pm
Rail: Liverpool St./Hockley or District Line/Hornchurch

ALINCO's

"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: 50Ω 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)
Memories: 100 in banks.

UK "Gold Seal" Warranty
Now With Every Unit
Look for the sign on the box!

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 ★ 100 memories in 3 banks ★ Auto memory loading ★ Priority channel ★ Dual rate battery saver ★ Large battery pack ★ Rotary frequency control ★ Illuminated key pad ★ Auto illumination mode ★ Dual antennas ★ 5 programmable bands ★ Widest range of frequency steps ★ Super front end sensitivity ★ Memory lockout ★ Mode scanning ★ Auto power off ★ Wide range of battery packs ★ Wide range of accessories ★ Intelligent mode programme ★ Rapid tuning rates of 1MHz/10MHz.

*Each unit now comes with the UK Gold Seal Warranty. Look for the sign on the box!

NOW IN STOCK AT MAPLIN STORES IN:

BIRMINGHAM - MANCHESTER - READING BRISTOL - LEEDS - BRIGHTON - GLASGOW

OTHER ALINCO STOCKISTS:

AVON: G4TJB (0934) 512757 : Uppington Tele-Radio Ltd (0272) 557732 : Amdat (0272) 699352
BUCKINGHAMSHIRE: Photo Acoustics Ltd (0908) 610625 CAMBRIDGESHIRE: Link Electronics (0733) 346770
CHESHIRE: CB37 Communications (0270) 588440 : Flightdeck Ltd 061-499 9350 CORNWALL:
RV Heming Ltd (0637) 872191 : Marine Instruments (0326) 312414 COUNTY DURHAM: Border
Communications 091-4109 6969 DORSET: Poole Logic (0202) 683093 EIRE: Intronic 010-35321 631007:
Long Comms 010 3537337152 ESSEX: Waters & Stanton (0702) 206835 : Selectronics (0268) 691481
HAMPSHIRE: Famborough Communications (0252) 518009 : Siskin Electronics (0703) 207155 : Nevada
Communications (0705) 662145 HERTS: Potters Bar Radio 0707 49456 ISLE OF MAN: Audio & Domestic
Spares (0624) 815889 LANCASHIRE: Holdings Amateur Electronics (0254) 59595 : Stewarts Radio (0253)
21163 LONDON (CENTRAL): Pali-Fones 071-436 0022 : Lee Electronics 071- 723 5521 : Ask Electronics
071-637 0590 : Ramsons 071-724 2373 LONDON (EAST): Waters & Stanton (04024) 44765 LONDON
(NORTH): Radio Shack 071-624 7174 LONDON (WEST): Martin Lynch 081-566 1120 MERSEYSIDE: Amateur Radio Comms (09252) 29881 NORFOLK: Eastern
Communications (0692) 650077 : DP Hobbs Ltd (0603) 615786 NORTH HUMBERSIDE: Heatherlite Communications (0964) 550921 NORTHERN IRELAND
(LONDONDERRY): Omnicomm (0504) 48295 NORTHERN IRELAND: Tyrone Electronics (0662) 242043 NOTTINGHAMSHIRE: RAS Nottingham (0602) 280267
SCOTLAND: Jaycee Electronics Ltd (0592) 756962 SURREY: Syon Trading (0372) 372587 SUSSEX: BREDHURST ELECTRONICS (0444) 400786 TYNE & WEAR:
Alyntronics 091-2761002 WALES: TMP Electronics (0244) 549563 : Electromart (0792) 842135 WEST MIDLANDS: Aviation Hobby Centre 021-782 6560 : Hewards Home
Stores Ltd 021 354 2083 : Dewsbury Electronics (0384) 390063 WEST YORKSHIRE: Fish Communications (0484) 420774 WORCESTERSHIRE: Johnson Sound Services
(0905) 25740 : SRP Trading (0562) 730672 YORKSHIRE: Air Supply (0532) 50981.

£249.95

UK Distributors: Waters & Stanton Electronics
22 Main Road, Hockley, Essex Tel: (0702) 206835



Communications Centre (Photo Acoustics Ltd.)

TWO-WAY RADIO ● AMATEUR RADIO ● AUDIO VISUAL ● SALES & SERVICE
58 High Street, Newport Pagnell, Bucks MK16 8AQ. Tel: (0908) 610625 FAX: (0908) 216373



New! AR1500 with SSB New! Only £279.00 p&p £5.00

Specification

Model...	AR1500	Receiver sensitivity...	FM(narrow) 0.5µV or better for 12dB SINAD across most of the range AM 3.0µV or better for 10dB S/N across most of the range SSB 1.5µV or better across most of the range
Receiver coverage...	500kHz-1300MHz	BFO range...	Continuous -4kHz-+6kHz (approx)
Receiving modes...	AM, FM(narrow) FM(wide) and SSB with the BFO switched on (USB, LSB and CW)	Aerial connection...	One 50 OHM BNC socket on top case
Number of memory channels...	900 plus 100 reserved for 'auto-memory' in bank 9. 1000 total (10x100)	Audio output...	>100mW @ 10% distortion
Scan rate...	20 channels per second (approx)	Power requirement...	6V DC from built-in NiCad battery pack or 11-18V DC from CHG jack or 4xAAA dry cells (dry case provided)
Number of scan banks...	10 total. Bank 9 reserved for 'auto-memory'	Power consumption...	100mA approx
Scan delay time...	2 seconds (approx)	Size...	55mm (W)x152mm (H)x40mm (D) approx excluding projections
Search banks...	9 standard search banks plus one search bank for the automatic search pair of bank 9.	Weight...	360g approx including NiCad pack
Search rate...	20 steps per second (approx)	Display...	Liquid Crystal (LCD) with switchable light for areas of low level lighting
Search step size...	Programmable in 5 and 12.5kHz steps to a maximum of 995kHz (i.e. 5, 10, 12.5, 15, 20, 25, 50kHz etc)		
Priority channel (AUX)...	Any one of the 1000 memories may be used as priority. Sampling is every 2 seconds (approx)		

*Specifications subject to change without notice due to continuous development of the receiver. E&OE

ALINCO'S £249.95 "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: 50Ω 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)
Memories: 100 in banks.

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 brand 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.

The new exciting DJ-X1 is available now. Try it out for yourself, experience the superior design and performance. Compare it with "yesterday's" models and find out just how far advanced the new ALINCO scanner is! But just to wet your appetite, here's a few of its features:

- ★ 3 scanning speeds ★ 3 scanning modes ★ 100 memories in 3 banks
- ★ Auto memory loading ★ Priority channel ★ Dual rate battery saver
- ★ Large battery pack ★ Rotary frequency control ★ Illuminated key pad
- ★ Auto illumination mode ★ Dual antennas ★ 5 programmable bands
- ★ Widest range of frequency steps ★ Super front end sensitivity
- ★ Memory lockout ★ Mode scanning ★ Auto power off ★ Wide range of battery packs
- ★ Wide range of accessories ★ Intelligent mode programme ★ Rapid tuning rates of 1MHz/10MHz.

*Each unit now comes with the UK Gold Seal Warranty. Look for the sign on the box!



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 162 preset stations. Fabulous!



HF-150 COMPACT COMMUNICATIONS RECEIVER £329 INC VAT

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'.



New from AOR

The NEW AR3000A is an evolutionary step onward from the highly acclaimed AR3000 and many major improvements have been implemented at the request of enthusiasts. The AR3000A still covers an extraordinarily wide range from 100kHz-2036MHz without gaps and offers ALL MODES: AM, NFM, WFM, USB, LSB & CW. The LCD is larger and the viewing angle has been changed to further improve visibility. SCAN and SEARCH speed has been greatly increased and new programmable DELAY, PAUSE and PRIORITY facilities have been added. The rotary tuning control is 'free running' to increase user friendliness for SSB/CW listening. Memory clear and microprocessor reset are now available from the front panel.

£765 inc VAT



AUTHORISED AGENTS FOR KENWOOD, ICOM, YAESU & ALINCO. FULL SERVICE FACILITIES AVAILABLE

SPEND UP TO £1,200 INSTANTLY WITH A PHOTO ACOUSTICS LTD. CREDIT CHARGE CARD

PART EXCHANGE WELCOME. ASK FOR KERRY G6IZF OR ANDY G4YOW

RETAIL SHOWROOM OPEN MONDAY - FRIDAY 9.30 - 5.30, Saturday 9.30 - 4.30

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



PHOTO ACOUSTICS

A Novel 3.5MHz Receiver with Reaction

Part 3

Ian Hickman concludes this interesting project with the printed circuit board and some hints on using the completed receiver.

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

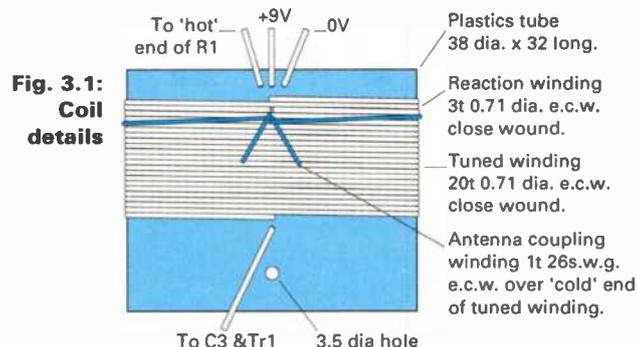
probably be best to set S1 to position A, to avoid the larger antenna damping the tuned circuit excessively. In fact, position A should always be selected for preference, particularly when receiving strong signals such as the a.m. signals in the 75m broadcast band, which this receiver also covers. It 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 when 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.

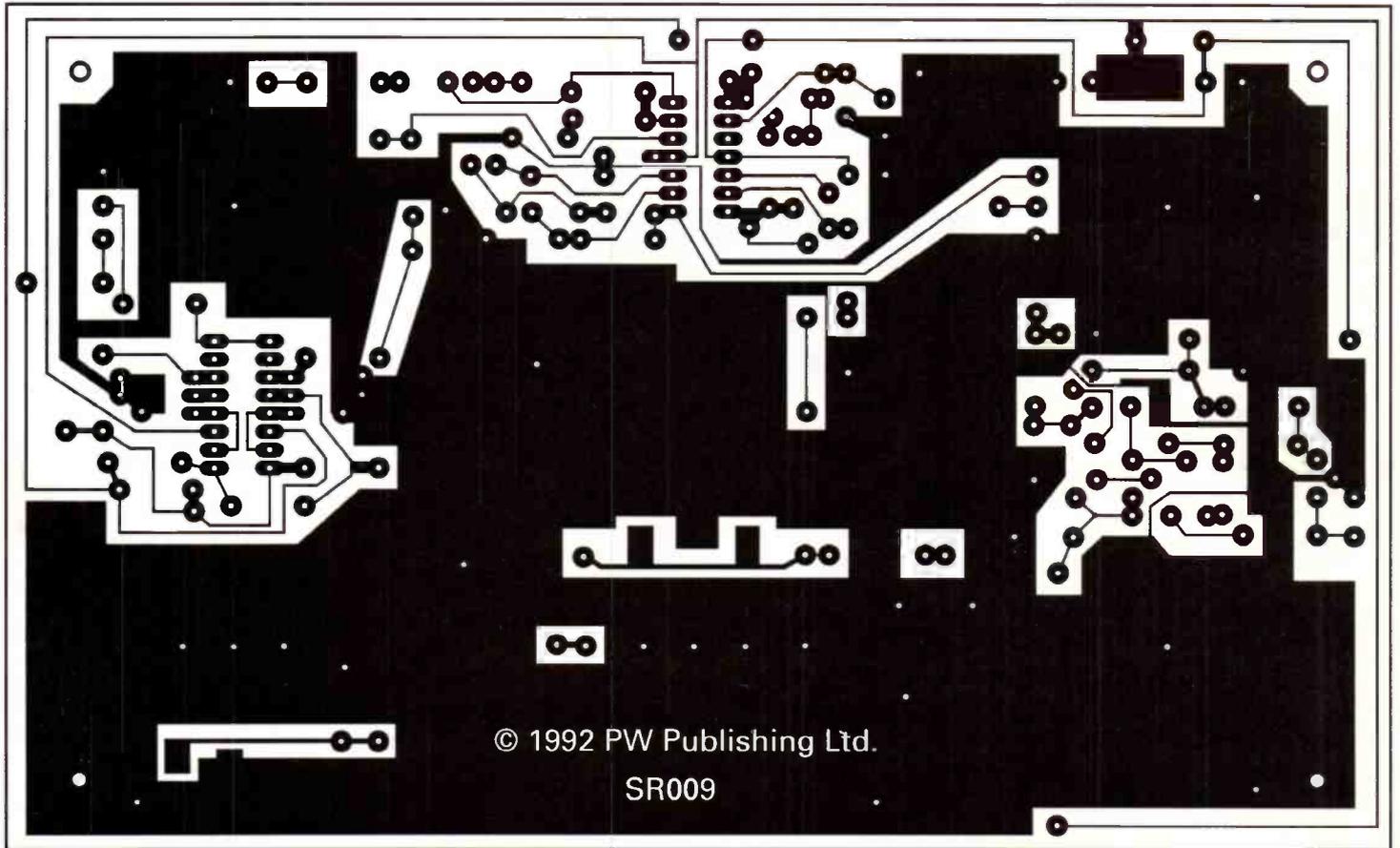
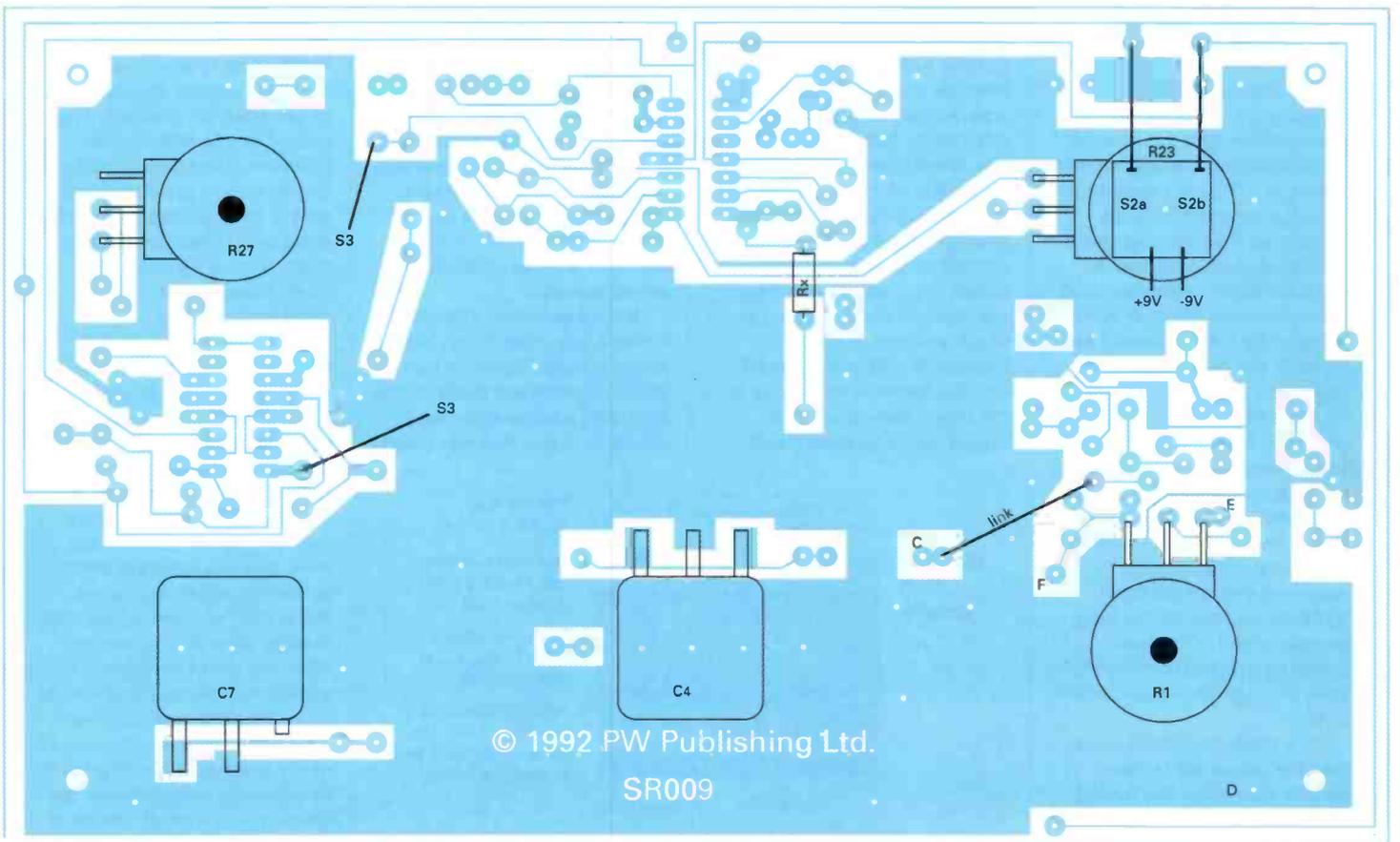


Fig. 3.2.

Fig. 3.3.



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

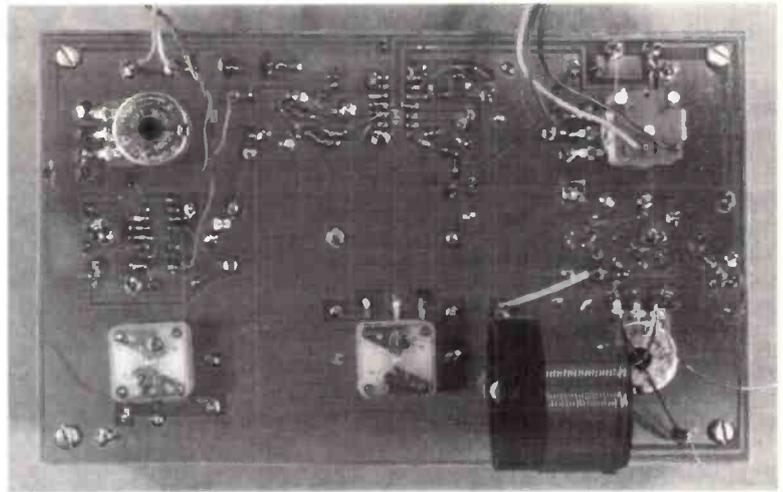
Once you have mastered the operation, you will find that receiving DX on this receiver provides much more satisfaction than using a £500 plus box with all the bells and whistles, due to the operating skill you have acquired.

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.

The copper track side of the p.c.b. Compare this with Fig. 3.3.



The component side of the p.c.b. Compare this with Fig. 3.4.

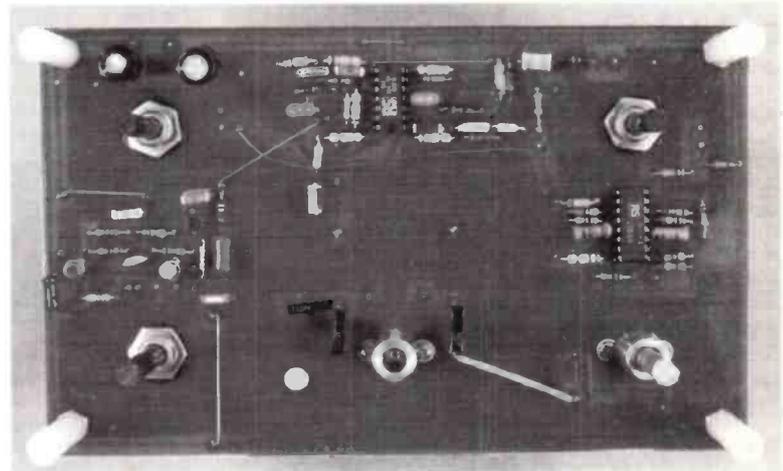
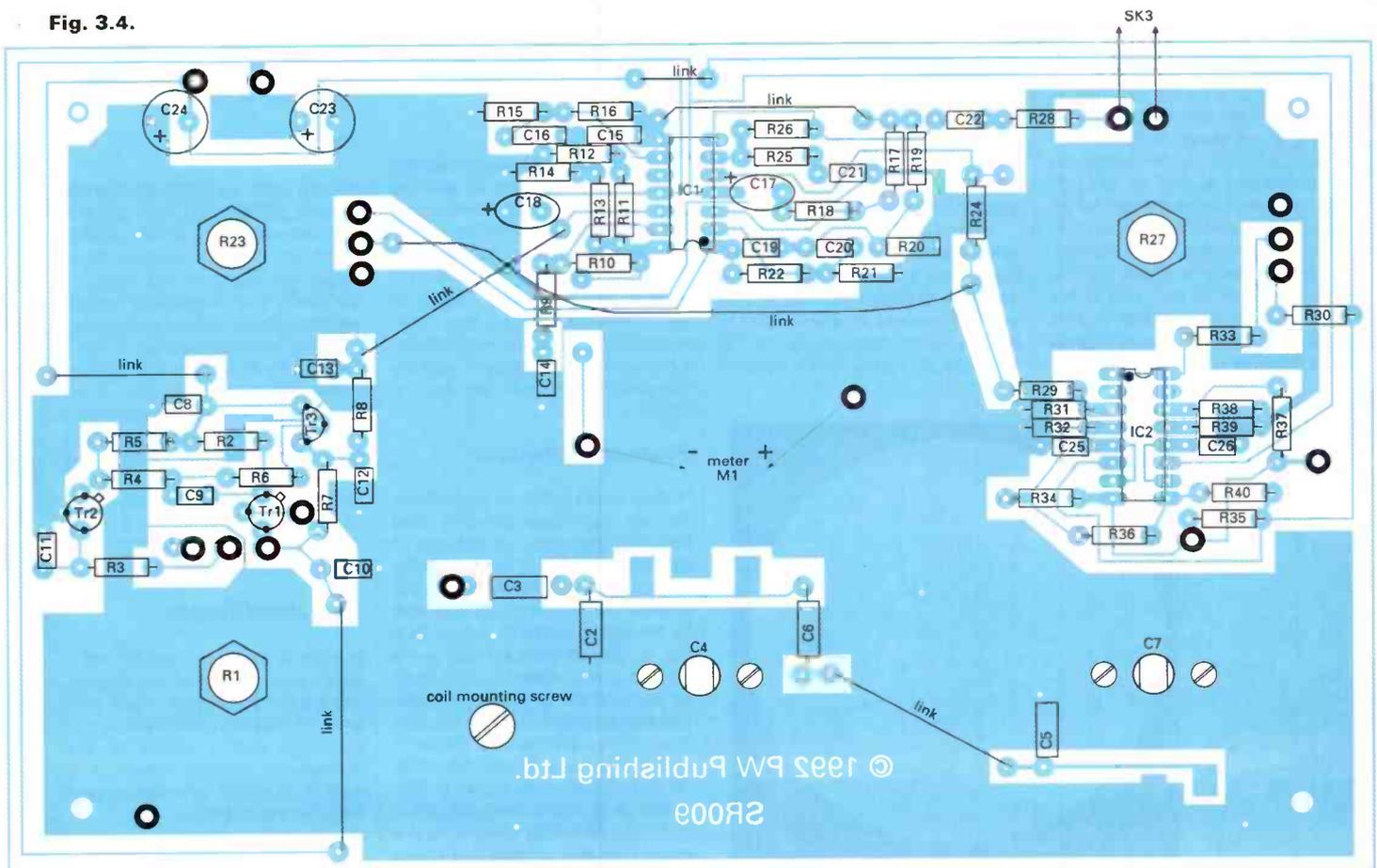


Fig. 3.4.



propagation

by Ron Ham
Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

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, **Cmdr. 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 6th; 1grp, 15fs & 6 very small qps on the 18th; 2grps, both slightly active, 16fs & 5 qps on the 19th and 4grps, one very active, 17fs & 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 26th 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, 6fs & 5 small qps on the 5th; 16fs & 4 small qps on the 9th; 1grp, 12fs, 5 small qps and a 'very long straight thin filament, in the SE-quadrant', on the 10th and 5grps (two active), 16fs & 7qps on the 20th.

From his observatory in Bristol, **Ted Waring** counted 11 sunspots on April 8, 8 on the 12th and 31 on the 19th. On 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, 22, 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, 11th & 27th. Auroral reflected (tone-A) radio signals were detected on the 50 and 144MHz

Fig. 1.

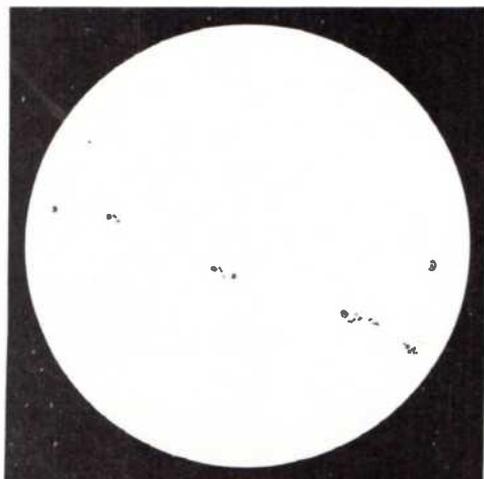


Fig. 2.

Beacon	March					April																											
	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
DF0AAB	X	X				X	X	X	X								X	X	X											X	X		
DL0IGI	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
IY4M	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
KA1NSV						X	X	X	X	X													X	X									
KC4DPC			X	X	X	X	X	X																									
KD4EC	X	X	X	X	X	X	X	X								X	X	X				X	X	X									
KF4MS	X	X	X	X	X	X	X	X																									
KJ4X			X	X	X	X	X	X								X	X	X				X	X										
KW7Y		X																															
LA5TEN															X																		
NX20	X		X	X	X	X	X	X							X																		
NZJNT					X			X																									
N4MW										X									X														
OH2TEN		X																															
PT7BCN						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
PY2AMI	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
SK5TEN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
VE2HOT										X																							
VE3TEN										X	X																						
VK2RSY	X	X				X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
VK5WI	X	X										X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
VK6RWA	X	X														X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
VK6VF	X	X				X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
WA4DJS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
WA6APQ	X																X																
WC8E	X	X		X		X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
W3VD	X	X		X	X	X	X	X							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
W8UR				X		X																											
W8UXD				X		X										X	X																
YQ2X																																	
ZS1LA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
ZS5VHF			X			X	X											X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Z21ANB	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5B4CY	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
5Z4ERR																	X																

bands by **Doug Smillie** (Wishaw) on March 17, 21 and 26 and **Gordon Foote** (Didcot) copied weak auroral warning signals from the German beacon DK0WCY (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 n.f.m. stations between 29 and 34MHz. "Later 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.". He 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** (Cheadle 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

First my 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 26 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 WA4BIK (28.257MHz) which he copied at 1312 on March 24. Briefly, Kerry (KB4MKS) and Philip (WA4BIK) 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 the Shuttle being most significant. The beacon will not be used if a launch takes place when the band is open. Reception reports will be welcome by either Kerry or Philip (QTHR) or direct to KB4MKS on 28.3985MHz 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 Middlesborough/Sunderland football match which he realised was coming from the Sandale transmitter of Radio Cumbria. He also logged ILR 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 the atmospheric pressure (March 26 to April 25) in my 'DX television' column elsewhere in this issue.

ssb utility listening

Graham Tanner, 42 David Close, Harlington, Middlesex UB3 5EA.

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 device 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 the airline, so long 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' and a summary of airline call signs. 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 4.470MHz 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 call signs 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 call sign. 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 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 Heathwell Road, Denton Burn, Newcastle Upon Tyne, NE15 7UP. *Intercept* has several sections, covering h.f., v.h.f./u.h.f. and utility logs, 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. airband frequencies having changed in early May, there is plenty of 'new' information out there).

Queries

Stephen L of Gosport writes to ask if any readers can help to identify a station that he hears operating on 6.746MHz at various times throughout the day. A station with the call sign 'Cosmos 6' is heard in contact with 'Cosmos Control'. Both are English stations, and may be connected with shipping as they have been heard passing information about the anchoring of vessels. Also, Stephen mentions 'Cosmos 6' speaking with 'Cosmos 10' regarding their collision between a ship and a piece of driftwood, but reported that they would 'continue their patrol'. Any ideas?... who is/are 'Cosmos', and do they use any other frequencies?

Another 'mystery' station operates on 6.719MHz and uses the call sign 'Grove Control'. I have heard them controlling a ship just off the south coast, and arranging for an aircraft to overfly the ship at 3000 feet. Presumably this is some sort of military training exercise. Can anyone confirm who uses this call sign, and has anybody heard them operating on any other frequencies. I have a few ideas of my own as to who 'they' might be, but I would rather hear others ideas first!

New ATC Frequency

Another new h.f. air traffic control frequency has been heard. The new frequency is 13.354MHz, which has been reported by Paul H. Aircraft have been heard being told to contact San Juan Centre (Puerto Rico), so this new frequency could be either part of the CAR-A network or NAT-A or NAT-E network. Also, New York Radio has been heard controlling aircraft here. Again, does anyone know for sure?

THE UP-TO-DATE NEWS & INFORMATION SERVICE FOR THE LISTENING ENTHUSIAST

RADIO LINE

0891 654676

UPDATED EVERY SATURDAY

RADIO LINE

Calls charged at 36p per minute cheap rate,
48p per minute at all other times.

bandscan

EUROPE

Peter Shore

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; French TV channel goes bankrupt...

Who would have thought this would be the way of the world in 1992? Dramatic changes in life 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 every last Swiss canton and suggesting that the Europe of the future, far from being one federal entity, may be comprised of 50 or more different states. So how many international radio stations will there be on the European continent? And just when we thought that congestion of the short wave broadcast bands was decreasing as stations such as Radio Free Europe move from high-powered short wave transmissions to local rebroadcasting arrangements providing their audiences, who until relatively recently had to suffer the effects of systematic jamming, hi-fi quality radio programmes.

Japan's NHK is now transmitting some 17 hours a day of Radio Japan programmes from the Skelton transmitter site owned by the BBC. Located in Cumbria, the site beams towards east and west Europe, north Africa and the Middle East. Radio Japan is making 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.

The European radio scene has undergone a remarkable transformation in the last months. More European international broadcasters are shifting their emphasis from 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 Espana, Deutsche Welle and Deutschlandfunk, 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 very little notice, WRN started operations on April 27, 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 0400UTC to 2230, carrying programmes of Radio Canada International, Radio Australia, Radio Moscow, Israel Radio, Radio



21st-24th August
EDXC 92
P.O. Box 212
SF-33101 TAMPERE, FINLAND

Finland, Austrian Radio and others. WRN claimed that a terrestrial transmitter in Moscow on 918kHz 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 Miosga, one of the three people behind WRN. He told me that it is planned to make the service permanent in September, all being well. It depends on finding sponsorship to meet the costs of the satellite transponder (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 1200 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 button from time to time. Keep watching '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 continues 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 1.125MHz 24 hours a day and on 1.134 during night and 774kHz during the day.

Radio Netherlands' European listeners proved to be a 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 1230 to 1330 on 9.855MHz. The station also suggested to listeners in Europe that they try the 1830 African transmission on 21.59 and 21.515MHz. 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 is on the Comedy Channel transponder at 11.597GHz, with audio at 7.74MHz (yes, it's the Adult Channel during the night). English is heard at 1330-1400 and 2130-2230 in parallel with short wave frequencies and 1.197MHz 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 0600, 0800, 1100, 1300, 1500, 1700, 2000, 2200, 2400, 0200 and 0400UTC.

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.

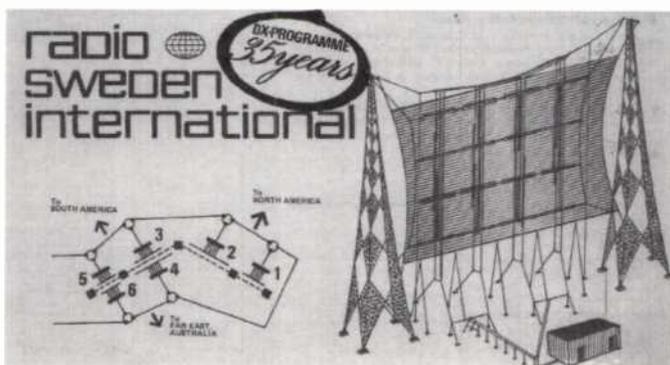
Listeners to Radio Moscow will have noticed a change of name. It is now announcing as Radio Moscow International. Some major changes are expected during the summer months and *SWM* will keep you up-to-date.

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 6.01MHz and at 0000 on 17.69, 11.77, 10.344 (upper side band), 9.87, 9.785, 9.685, 9.64, 7.24, 7.195 and 6.145MHz.

Radio Vilnius in Lithuania also has two English language transmissions. They are at 2130 on 9.71 and 9.675MHz and at 2300 on 15.58, 13.645, 11.78, 9.71 and 10.344 (upper side band).

If you have not yet 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 Friday 21 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 organisers 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 on offer to delegates, although you can make your own accommodation arrangements if you wish. Details are available from EDXC '92, PO Box 212, SF-33101 Tampere, Finland. Alternatively, telephone +358 0 191 3133 or FAX +358 31 161 857.



satellite tv news

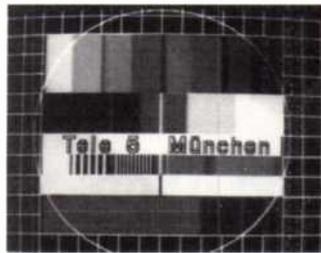
Roger Bunney, 33 Cherville Street,
Romsey, Hants SO51 8FB

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 that satellite news pictures take to reach the TV production studio was vividly illustrated in a letter from Ian Waller (Lincoln Satellite). ITN have apparently despatched their UK17 SNG unit (Satellite News Gathering) to Afghanistan to report on the internal strike and conflict. Signals from the ground are then uplinked at Ku band onto Intelsat V F5 66°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 12.56GHz horizontal and received in the Maxat satellite earth station atop the ITN building in Grays Inn Road and thence fed downstairs 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 over the Atlantic at C Band and then re-appear 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 any Afghanistan SNG 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 voted 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 16/9 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 terrestrial tuners so that a 2nd programme can be inlaid on the main programme, digital zoom-in features and 3 level audio noise reduction - the Grundig can display 9 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



Peter de Jong in Holland snapped this test card over Astra 1B.

balance and an equally large house to own one of the HDTV receivers.

The Canal Plus *Canal Satellite* programme is surrounded with uncertainty. 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 satellites!) Canal Plus however have commercial interests in retaining the SECAM system coupled with Nagravision encryption - Canal Plus have large investments with the Swiss Nagra company who will manufacture the decoders - hence all Nagravision 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 and adopt the Swiss Nagravision 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 'ZOO TV' interspersed with pop videos, the latter spooling back and rerunning with yet more 'ZOO TV' test cards, this on Eutelsat II F3 16°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 VA F15 18°W has been carrying various news feed inserts, the May 8 an SNG downlink at 11.45GHz vertical on colour



Seen over Eutelsat II F1 11.618 V on 16 April 92.

bars with inlaid ident - 'EBU Sarajevo Feedpoint' - though no news footage passed - presumably the link was being lined up for later use. Where-as the Sarajevo identification is helpful as to source, one such as 'SFP HFR 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 eventually secured, repaired and relaunched 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' (OB = outside broadcast), which in turn excited BT Goonhilly who returned fire with colour bars and inlaid 'BT GOO 40 G' at 11.48GHz horizontal. Both signals 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 bird is 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 Clarke 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 garden!

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



VTM-Brussels ident log for their SNG operation, Eutelsat II F3 16 East.

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 Irdeto. 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 for subscription collection 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 further 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 service 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.

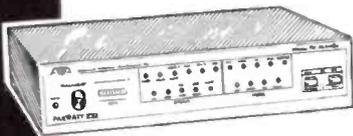
Russian Service

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 infilled with imported programming.

ICS

FIRST FOR PERFORMANCE, VERSATILITY ... AND VALUE

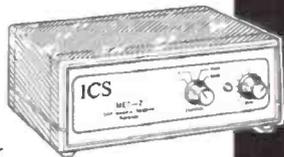
ICS pioneered computerised amateur data reception in the UK. Our experience and expertise are second to none. Today we have the finest range of data and facsimile receiving equipment available and we pride ourselves on its superior performance, reliability and excellent value for money.

PK-232

**PK-232 MBX
Multi-Mode
Terminal Unit**
£339.95

The most popular terminal unit ...ever. Receive and transmit Fax, RTTY, Amtor, Sitor, CW, ASCII, Morse, Navtex and Packet on your IBM-PC. Unique Signal Identification and Acquisition (SIAM) mode plus the best HF demodulator there is. Very easy to use. Supplied complete with all cables and software.

MET-2 Satellite Receive System £939.95

**MET-2**

Receive Meteostat weather satellite pictures live on your own PC. New, very advanced version with super VGA support, 3D display effect, 100 frame animation, NOAA option with gridding and much more... Exceptional value for money.

ICS-FAX II

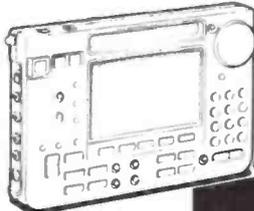
ICS-FAX II
£129.95

Displays superb weather fax images on an IBM-PC. Also includes Navtex, RTTY

and FEC as standard. Cheaper and easier to use than similar products. Connects to any HF SSB receiver. 9 to 25 pin interface adaptor included. Colour Upgrade £49.95.

SONY ICF-SW55 Communication Receiver £249.99

Perfect for use with ICS-FAX II. Displays station name and up to 5 channels for each station. 150KHz to 30MHz plus FM stereo. USB, LSB, AM. 50Hz tuning resolution. 125 memories.

**ICF-SW55**

Prices include VAT at 17.5%. Add £6.00 Postage & Packing. Please contact us for free catalogue and price list.

Our products are available direct and from dealers throughout Europe. Callers by appointment.



ICS Electronics Ltd. Unit V,
Rudford Industrial Estate, Arundel,
West Sussex BN18 0BD
Tel: (0903) 731101 Fax: (0903) 731105

ICS

OUT NOW!

Summer '92 Electronic Constructors Catalogue



Many new
products including:

- **Audio Amplifier Modules**
Range of 14 high power audio modules, encapsulated to an integral heatsink in Bi-polar, MOSFET and Class A formats with power outputs from 15 to 180 watts.
- **Books**
18 new titles from the top electronics publishers.
- **Burglar Alarm**
Volumetric alarm triggered by change in air pressure eg an opening door, easy to install - no wiring required.
- **Spectrum Analyser Adaptor**
Converts a conventional scope into a low cost, 250MHz spectrum analyser.
- **Low Profile Mains Transformers**
Encapsulated, top quality PCB mounting mains transformers.
- **Airband Scanning Receiver**
100 programmable channels, covering civil and military frequencies.
- **Stereo Valve Amplifier**
Top quality stereo hi-fi amp from Velleman - at a very competitive price!
- **Extended Ranges**
of connectors, equipment cases, filters, crystals, fuses, fans, kits, ATUs, semiconductors, loudspeakers, sounders and toroidal transformers.

With 24 product sections, 192 pages,
3000+ lines and £££s of discount vouchers,
be sure to get your copy now!

Available from most newsagents or
directly from Cirkit.

£1.70
+ 30p p&p

Cirkit

CIRKIT DISTRIBUTION LTD

Park Lane · Broxbourne · Hertfordshire · EN10 7NQ
Telephone (0992) 444111 · Fax (0992) 464457

amateur bands round-up

Paul Essery GW3KFE, PO Box 4, Newtown, Powys SY16 1ZZ

With 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 valved equipment, you have high d.c. voltages around as well.

Start a safety check in your shack. Check your receiver mains leads are the correct way round; Red or Brown to the L 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 to check (or have checked) that L, N, and E are correctly located on the mains socket too; 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 metal panel and case. Finally, go to the hardware or d.i.y. shop, buy an r.c.d., and USE it. Plug it into the wall outlet, plug your gear into it. Check the r.c.d. using its instructions and the 'Test' button, every time you use the rig. An easy routine is to trip the r.c.d. when you switch the rig off, so when you come back to the shack you have to reset it before you can switch the receiver on.

To rub the lesson home, a neighbour of mine found out the hard way that a plug was returned from a loan wired wrong way round - enough said! At least he's recovering.

Letters

Let's start with **Ted Trowell**, in Sheppey, who found conditions pretty bum. On May 10, a skim over 28MHz showed all signals very distorted which Ted sees as evidence of something happening on the sun. Top Band saw ON7BW on sideband, plus c.w. from LY2BVJ & HB0SDW/P. On 7MHz there was UA0QFC; on 10MHz 9H3GQ & TA7A. 14MHz yielded VG7FJE, and

18MHz VE2EXR, 3B8CF, UB9X/UB2KA, 4L3D, SV0HS/SV5. 21MHz saw the logging of E08BBD, LU1LHM, IL7/10RKV, WB21SL, W5/HK0BKX, TU4SR, VG1NH, WO8L, VP5/WB9HRO; on 24MHz I note 7Q7XX, and at 28MHz the score was PY3CJI, TA7L, ZP6CW, TA2EC, PY2SHS, 7P8SR, PU2FDN & N9ND; all these were c.w..

P. Manoj wrote from Trivandem in India as soon as he got his April issue, to point out that the VU2RG claimed by D. L. McLean was obviously a pirate as the call VU2RG belonged to the late Prime Minister, Rajiv Gandhi, who was assassinated a year ago. While I'm sure both Don McLean and I were aware of this fact in the sense that we had seen the information in print, neither of us spotted this pirate. Double thanks to P. Manoj then, and let us hope his action will have silenced this pirate.

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 GD4BEG, DJ9KG, G14BBE, Y42DK, HB9CJG; on 3.5MHz FE6DQE, G0EBW, G4ITP, HB9AAD, G4CJU; on 7MHz UB4UW, RB4IXQ, UZ3UZA, LY1DC, DL2JY, DN4ARA, OE6MRD, GM3AWF, YU3KAB, HB9ARF, OH5KCI, YU3BS, SM7CBS, CT1/W6IZC, PT7VJD. Still c.w. on going to 14MHz Gerald logged UA3GDM, UA1AKM, IT9FGH, LA9EF, YZ1AA; the 18MHz crop including W6DET, W1NV, N1KA, W1FZY, N1GPK, U1RC, TM5NN, G0CUH, IL3SP; while on 21MHz we find WA2ISE, K9UIY, WB0IHR, WB9HGJ W2CBA, UA4AHT, RZ6AXO, UA1THF, RB5JZ, LZ1KDE, LZ2EV, HZ00CH/MM, plus V47YD on 24MHz and N4WJ, KA2BZS, both on 28MHz. The s.s.b. crop is far larger, so it has been pruned down to the more distant stuff. On Top Band that means UA9JLL, on 3.5MHz RA9CQW, 7Q2XX, YC4VH, 5B4KH & 9X5NH. On 7MHz there were no Ws, but UH8EA, UA9XFY, PR7SM, 4X6UU, CT3DZ, LU11V, FG5FC, EA8RR & CT3FF. On 14MHz there were an assortment of East Coast W and VE, WD9GQV, XJ1XC, ZB2FK, KD9JB/TF 9H1EL, PY5EG, CX4AC, PT7CP, CO4CB, PY5EG, CX4AC, PT7CP, 9K2MC & JY9ZK. Now to 18MHz where Gerald noted the East Coast Ws, plus K0VZR, VE7ANS, U1RC,

JL1UJG, JA1JWK, PY2WZ, G4SMC/P/8R1, JA1JAK, ZF2SD, HZ1AB, 6Y5EW, JE3NWQ, PT700, JA2AKW, LU2SN, VK3ETU & JA1JRK. Over to 21MHz for a nice even sprinkling of W and VE stations, VQ2GUY, UL7BD, RZ6AE, 9H1DE, ZD8SA, FH8CB, KP4RF, HF0POL, PY1HCD, CE8ABF, CT3FF, PY5BI, 5Z4FM. HK5HDM, S92LB, LU7FW, PY2JQP, PY2EEL, ZS2CL, VU2NTR & EA8AOE, while 24MHz yielded no Ws, but PR7SM, 4X6UU, CT3DZ, LU11V, FG5FC, EA8RR, CT3FF. Finally on 28MHz we see a sprinkling of Ws and VEs, plus 9H1EL, PY5EG, CX4AC, PT7CP, CO4CB, LU4FC, 9K2MC & JY9ZK.

Vince Cutajar in Malta sticks to 18 and 24MHz s.s.b.; on the former we see C6AFP, TI2TB, VP2EOH, 7Q7XX, 5H3RA, 6Y5CE, Y11RM, 5U7M, FK8CP & S79CK/D; as for the latter band it came up with S9AGD, VS6CT, OY9JD, VP2EOH, FK8CP heard at 2048UTC by long path, 7Q7XX, S79HP, JY5GA, ZF2SD & JT1JA.

John Heys (Hastings) has a sloping arrangement for the bands 18-28MHz, cut for 21MHz and fed by slotted feeder and a tuner. On 7MHz there is a dipole, again fed by tuned line and a tuner. The presence of the tuner, especially if you build it and set it up for yourself 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 LY2BVQ, LY2BVZ & 15TGC on sideband, while the key accounted for OK2PMT, OK3TKG, DK6ED, LA0CX & UA1WDR. On 24MHz, c.w. was the way to pick up VQ9RS, while s.s.b. managed UM8MBA & UZ0AAX. 18MHz yielded WW7Q. On 21MHz 4K3BB went into the book, and on 28MHz 8P6BL, VP2EOH, G4SMC/8R1 & FH8CB. 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 F08PT booked in on s.s.b.. So, on 7MHz he has PY7SA, LW1EXU, YX0AI, VU2KSE, UA9AFS, UA9LAK, ZL1ST, ZL2UV, JW0E, VK3RP, VK9NS, KP4YD, 4K2CC, KC6/W6SS, KP5/N1DX, AP/WA2WYR, AJ6T, CM3RA & PP7IU; a flip of the band-switch to 10MHz for P49V, W6s, JAs, VK2BJH, AP2UR & KL7UPS. On 14MHz Don winkled out 4K20LQ, VJW0E & UA11DW, and on

18MHz he found PW8QN, UW0LO, UA0JH, UA9CM, PJ4/DK9FN, UZ0AAX, HL1LUX, NL7VJ, HV3SJ, JW0GB, BY9GA, F08PT, BV/K1VWL, Z21HS, ZS6QU, ZL1MH, VK6HG, U18AG, UW0FP, RVOAJU, UZ0AWK, Ws & JAs. A quick basinful of 21MHz came by way of ZL1AOD, UA0JU, 3D2AG, U18AG Ws & JAs before going to 24MHz for 9M2AX, J37FM, ZS6QU, CO6CG, 4K2CC, V2/VE5RA, 8Q7CW, VK4AYX, 9K2MU, N6AV/VP9, YN/SM00IG, VK1FT, VU2MIR, UM8MBA, PJ5/N4XO, KL7AF, UL8PA, RVOAM, VQ9RS, W1XP/VP9, FY5YE, ZF2NM, UJ8JMM, Ws & JAs. Poor old 28MHz had just one, HL2KHE.

From Yeovil **D. L. McLean** writes to say he found conditions a bit like the curate's egg. Sticking to s.s.b., Don tried 14MHz for C53GB, CT3FF, CU2YA, EA8BYR, FO0CI, I10NU/IT9ESZ, JAs, KL7XD, S92AA, TI2MEN, UA0QFC, UL70B, Vks, VK9CL (Cocos-Keeling), VP5/KN4UG, VQ8CFM (S. Orkney), VU2JQJ, XE2FU, XX9TQL, YA5MM, WZ6C/S2, ZL2AAV, ZS1DZ, 5H3DC, 7X2WCK & 9L1MR, while 18MHz accounted for A92BE, NL7WH, S92AA, VE7IM & Ws. At 24MHz Don knocked off AA6DB, AL7CQ, D44BS, CE6DFY, JAs, JH1MAO/JD1 (Minamitorishima), KB7MJ, N16H, NL7DU, P29DX, RU6B/RZ4HXX, S2/HA5BUS, UU6U, Vks, VP8SSI (South Sandwich), WL7E, XB9Z, XX9TQL & ZF2NE/ZF8. Turning to 24MHz we see D44BC, EX0FWR, FO0CI, K0DK (Colorado), JP1KDC/JD1, JAs, NH6C, PY0FZ, PZ1EL, RA0AL, RJ8JMM, UA9QCP/R10, UL0A, Ws, XE1L, XX9AW, YA5MM, ZB2AZ, 3B8AD, 4S7NE, 7Q7XX & 9M2AX; which leaves 28MHz for AP2AF, F5ZU/T, FO0CI, G4IRS/MM in the Gulf, HD0T, HZ1AB, J8/W8KKF, JAs, KA5FSB (New Mexico), P49V, RE9C, RY0U, S2/HA5BUS, SV8/SM0TXM, TI1C, TL8NG, Vks, VP5/KB4IRS, VP8CBG, VP8CEH, VP8SSI (S. Shetland), VP9GE, VP9MN, VS6CM, VQ910, VU2WAP, W71TN (Idaho), W7LOW (Montana), WA7PEE, XT2BW, XX9AW, ZF2RW/ZF8, ZS6AMP, 3B8FU, 8P6CK & 8P9CW.

So - that's it for another time. The deadline for next time will be August 7, and as always to Box 4, Newtown Powys SY16 1ZZ. If your letter arrives too late to be embodied, it will be held over, so you get your mention but a month later!

**Be sure of getting your copy of SWM each month.
Place this regular order form with your
newsagent... today**

Dear Newsagent, please reserve / deliver my monthly copy of SHORT WAVE MAGAZINE

Distributed by Seymour

NAME
ADDRESS

Signed

If you can't see SWM on the bookshelf at your local outlet, please call the Editorial Office in Poole and we will talk to our distributors to find out why!

dxtv round-up

Ron Ham, Faraday, Greyfriars, Storrington,
West Sussex RH20 4HE

While Joan was sorting some unidentified press cuttings she spotted a heading 'Televised 100 Miles Away' under which it 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 nationwide 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 (Aquadrids), 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 Suweilih) 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

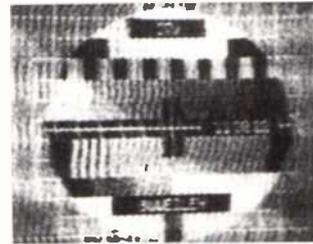


Fig. 1: Jordan.



Fig. 3: Finland.

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** (Meerut, 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 (RTP1) 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)



Fig. 2: USSR.



Fig. 4: Russia.



Fig. 5: Russia.



Fig. 6: CNN, via ASTRA.

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. 6** and a cable channel from Germany, **Figs. 7 & 8** and a test-card from Hungary, **Fig. 9**, via EUTELSAT II 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



Fig. 7: Germany (cable).



Fig. 11: SSTV Switzerland.



Fig. 12: SSTV Germany.



Fig. 13: SSTV Germany.



Fig. 8: Germany (cable).

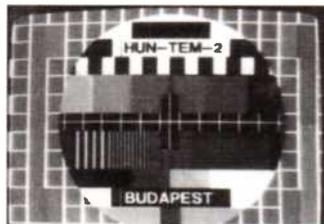


Fig. 9: Hungary.

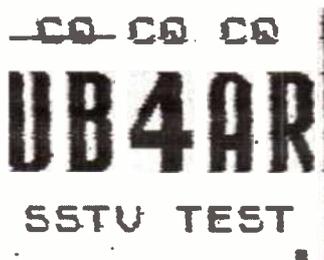
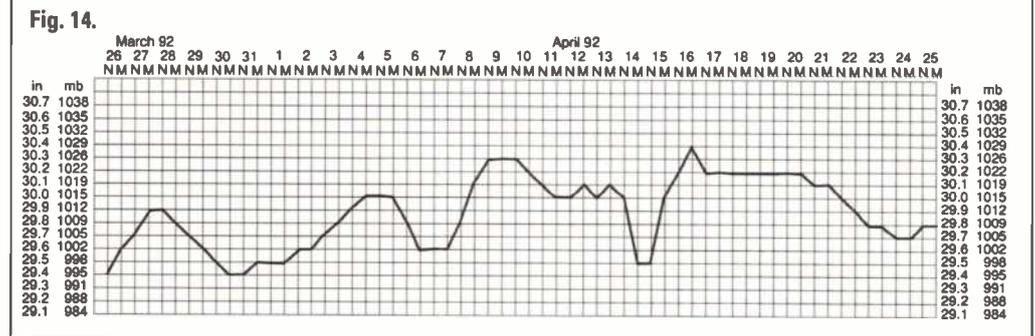


Fig. 10: SSTV Russia.

Roemund, some 160km 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 £30m. 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 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 6. He received good colour pictures from stations in Germany and all Scandinavian countries. Among the German idents he saw were ARD1, Hessen 3, MDR3, NORD3, RTL+ & SAT1. He also had a new catch, Sweden's TV 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, 19, 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, NDR3, 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 Lawrence Kirk, from the Black Hill transmitter of Scottish ITV. George used his JVC 610GB 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-Uno. I checked my records for that day 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, 14.230 & 21.340MHz respectively. During April he copied 'CQ' captions from stations in Czechoslovakia, Germany, Poland & Russia Fig.10, pictorial idents 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 W2PQC 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.

Godfrey Manning G4GLM
c/o The Godfrey Manning Aircraft Museum,
63 The Drive, Edgware, Middlesex HA8 8PS

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 roughly 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 0630 and 2300 and covers FL300 and above. 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 Aeronautical-Mobile R/T Frequency Allocations* costs £6.99 (inclusive of UK post) from Tim at Isoplethics, 157 Mundesley Road, North Walsham, Norfolk NR28 0DD. Another frequency spotted by Paul and listed by Tim is 13.327MHz (Lufthansa and Iberia company ops). On the other hand, 11.224MHz (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 13.9425MHz 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 Toynton (Acton, on the Heathrow 27 approaches) and is 131.475MHz. On h.f. Zambian have 10.033 and 13.330MHz.

Colin Frowen (Burgess Hill) remembers the days when the shop at Queen's Building, Heathrow, sold airline logo badges. You're showing



EGSX-91-13 Sea Vixen. Wings fold so as to take up less room on aircraft carriers. Photo: Godfrey Manning.

your age - and I remember it too! Some badges, though not the old 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 are 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 callsigns 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 callsigns are not easy to identify, although many are known to enthusiasts; hence, try submitting them 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, Burntwood, 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 6NG, Tel: 081-845 2300 ext 209.

Follow-Ups

In May I told Fran Kelk (Nottingham) that 'Seagull' was the callsign of TIA. What had slipped my mind, but of which I am now reminded by Graham Tanner (Harlington) and Ron Smith (Northolt) 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 & Meteo Code Manual* as an alternative and you can buy it 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 places worldwide, 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 150.3MHz. 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 apologise 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.

CONTINUED ON PAGE 53



EGSX-91-14 Chichester-Miles Leopard. Jet-powered private aircraft.

Photo: Godfrey Manning.

What you've all been waiting for...!

- ✓ Multi-standard TVs & VCRs
- ✓ Satellite Equipment
- ✓ Signal Strength Meters
- ✓ TV DXing Equipment
- ✓ Rotators
- ✓ Masthead Amplifiers
- ✓ Filters
- ✓ Accessories

It's now available!

Write in for your copy today!

Building on our success story over the past decade, we are proud to present our latest catalogue, now regarded as a reference work in it's own right for both the trade and enthusiast markets.

We've got it all listed, from satellite equipment to TV-DXing, from SECAM/PAL transcoders to Canal Plus decoders, from an F-plug to a multi-standard video recorder, from a VHF/UHF signal strength meter to an NTSL/PAL/SECAM teletext TV.

We've even developed a full facility manually tuned enthusiasts' satellite DXing receiver to find those weak transponders. And we've stocked all those little bits and pieces that no-one else keeps.

Send £1 for our glossy brand new 34 page catalogue, which you will receive back by return of post.

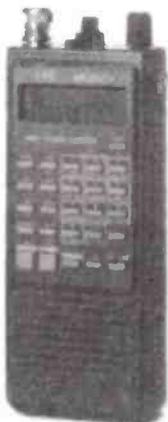


Aerial Techniques

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

SIGMA EURO-COMM

**Importers of Communication Equipment
Manufacturers of Antennas & Accessories
AMATEUR - SCANNERS - ANTENNAS - CB**



AOR2000
500kHz-1300MHz
£249

• Free SE700 Discone •
also available

AOR3000A -
AOR2800 - AOR2500
'PHONE FOR A GREAT DEAL!'

Now available
**YUPITERU
MVT7000**

Hand held
1MHz-1300MHz
FM/AM/WBFM
£269 with FREE SE700



FREE with all Scanners sold via Mail Order - DISCONE ANTENNA



SIGMA SE1300
20-1300 MHz Receive
Transmit 50, 144, 430,
900, 1200 MHz input
power rating: 200 watts
input impedance: 50 ohms.
£49.00 + p&p



SIGMA SE700
70-700 MHz Receive
Transmit 70-500 MHz
Max power on transmit
500 watts impedance
50 ohms.
£22.00 + p&p

Mail Order: Cheques and P.O. made payable to Sigma Euro-Comm.

TRADE ENQUIRIES WELCOME

After 6pm and Weekends 021 705 3441 and 0922 414836

Sigma Euro-Comm, Unit 14, 272 Montgomery St., Birmingham Enterprise
Units, Sparkbrook, Birmingham B11 1DS. Tele/Fax: 021 766 8146

MARTIN LYNCH

G4HKS
THE AMATEUR RADIO EXCHANGE CENTRE

286 Northfield Avenue, Ealing, London W5 4UB. Tel: 081 566 1120 Fax: 081 566 1207

**ANNOUNCING
THE NEW ICOM
ICR-7100HF Mk. III**



**FROM CHRIS PARNELL, THE SKILLED
DEVELOPMENT ENGINEER WHO
ORIGINATED THE ICOM ICR-7000HF,
MARTIN LYNCH CAN NOW OFFER THE
NEW ICR-7100HF.**

After months of specialist engineering, I can now offer the receiver with a frequency range of 50kHz to 2000MHz. By pressing the original dimmer button on the front panel, the ICR-7100 transforms into a high performance HF receiver in addition to its VHF/UHF capabilities. You do not have to guess at the display like other attempts at the modification. 14.200.00MHz reads as displayed. Employing a modified version of the ICR-7000HF module, Icom UK have approved the installation so you have total peace of mind.

**AT ONLY £1120 INCLUDING VAT,
THE NEW ICR-7100HF IS AVAILABLE FROM
STOCK.**

**PART EXCHANGE WELCOME.
081-566 1120**

Mk. III version with R.I.T. on SSB

**DEALER AND OVERSEAS
ENQUIRIES WELCOME**

**BUYING
OR SELLING...
DIAL
081-566 1120
NOW!**

ALINCO

KENWOOD

AOR

YAESU

ICOM

STANDARD

Authorised Dealer

Martin Lynch is a Licensed Credit Broker.
Full written details upon request. Typical APR 32.9%

PHONE 081-566 1120

For fast mail order Tel: 081-566 1120.

Please add £10.50 for 48 hour delivery.

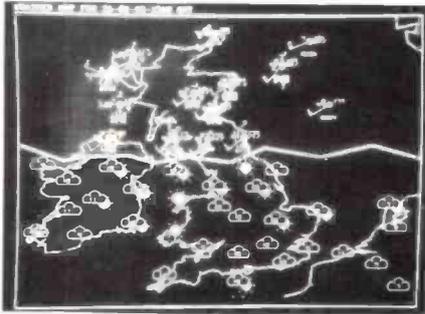
SHOP OPENING HOURS: Monday - Saturday 10 - 6pm.

24 hour Sales HOT LINE 0860 339 339 (after hours only.)

FAX order line open 24 hours.

SKYVIEW

SYNOP



£99.00 INC VAT

NEW CONCEPT IN WEATHER IMAGING

- Includes full RTTY/NAVTEX System & Hardware interface.
- Plot detailed Weather Maps.
- Uses RTTY met data.
- Supports VGA, EGA.
- Pictorial and Synop plot facilities.



NEW



SATFAX



£199.00 INC VAT

NEW INTERGRATED SAT/FAX SYSTEM

- Modes FAX, METEOSAT, NOAA.(APT)
- Timetable - Automatic Switching.
- Supports VGA, EGA, CGA, + HERC.
- 640 x 800 Resolution, 16 Grey Scales.
- Includes S/ware & H/ware interface.

*SKYVIEW SYSTEMS LTD. Skyview House,
Cockayne, Alresford, Essex. CO7 8BZ.*

Sales: 0206 823185 / FAX: 0206 825328

Technical Sales: 0205 359658

THE AVIATION HOBBY CENTRE



1st FLOOR, MAIN TERMINAL BUILDING,
BIRMINGHAM INTERNATIONAL AIRPORT
BIRMINGHAM B26 3QJ

Telephone: 021 782 2112 or 021 782 6560

OPEN 7 DAYS A WEEK (including bank holidays)

Why not pay us a visit and watch the aeroplanes at the same time. We have two shops, one on the first floor by Mag-Lev (have a free ride to BR station and back) and one in the airport's viewing gallery (viewing gallery open everyday - admission 30p).

Airband radios from £9.95 and scanners from £149 plus a variable selection of good secondhand and part exchange models.

We stock radios by Fairmate, Jupiter, Icom, Steepleton, Texet etc., models and prices to suit you.

Come and see the finest range of books on aircraft and associated subjects there is; by publishers such as Ian Allan, Airlife, Putnam, PSL, Haynes, MCP and many more. Air maps, frequency charts, books on ATC, even books on how to fly a Cessna or a Jumbo Jet, we stock 'em all. Books for the student pilot and PPL, checklists, flight cases, current topo charts always in stock, nav-flight computers and much more. We also stock aviation postcards, posters and badges (callers only). Can't visit? Then send £1 for our mail order catalogue or telephone us on:

021 782 2112 or Fax: 021 782 6423

We accept all major credit cards and cheques with bankers card number (up to £500 for personal callers with I.D.)

ALSO: Why not take advantage of our **SPECIAL OFFER:-**
Our most popular multi-band radio with a 'rubber duck' aerial -
Airband - FM - PSB, batteries included,
12 months guarantee - **£24.95** POST FREE!

THE KITS WITH ALL THE BITS!

Guaranteed complete to the last nut!

COMPACT 80m CW QRP Tx/Rx

DTR3 Kit - £87.50 P&P £3.00 Ready Built - £140.00

★ Stable VFO ★ Sidetone ★ Audio Filter

★ Requires 12/14 VDC ★ Very detailed

Instructions ★ Black steel case

★ Printed panel

40m & TOP BAND VERSIONS

ALSO AVAILABLE

ANTENNA TUNING UNITS

TU1 Kit - £41.25 Ready Built - £57.50

TU2 Kit - £51.00 Ready Built - £72.00

P&P £3.00

★ Large dia. coil ★ High grade capacitor ★ Built in balun ★ Circuits to match your antenna ★ Up to 30 Watts of CW ★ TU2 has sensitive QRP/SWR meter

★ TU1 is ideal for SWL

QRP SWR METER

★ Specially designed for QRP ★ HF 1-30MHz

★ Can be set down to 1/2 watt for FSD

★ Ideal for milliwattling ★ Low insertion loss 0.2dB

TUA1 Kit - complete with case & meter £18.00 P&P £1.00

CARLTON (Receiver)

80-40-20m Dc Rx

★ Receives USB, LSB and CW ★ Very sensitive

and selective ★ Simple modular construction

★ 12-14 volt battery operated ★ Printed facia

Kit complete with case - £69.50 P&P £3.00

PSU 15 REGULATED POWER SUPPLY

★ Ready built ★ Mains input ★ 13.8V @ 1.5A

output ★ Ideal for DTR3 & 'Carlton' ★ Fully

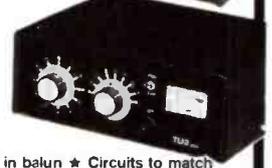
protected

Supplied ready built - £52.00 P&P £4.00

Send SAE for brochure or call Alan G4DVW on 0602 382509

LAKE ELECTRONICS

7 Middleton Close, Nuthall, Nottingham NG16 1BX
(callers by appointment only)



Alan Gardener
PO Box 1000, Eastleigh, Hants SO5 5HB.

I have now received more information on the new AR1500 handheld 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 dumps them into memories 900-999. This is ideal if you want to sit back and let the receiver 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 wonder if it will store the exact frequency in memory when a station is received in the s.s.b. mode. The answer to 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 in 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 they 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 placed it is usually not worth the risk of recovering 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 to have been 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 a free-running oscillator circuit tuned to operate somewhere in the 88-108MHz v.h.f. f.m. broadcast band. As f.m. radio became more popular the

operating frequencies tended to move a little bit higher up to the 108-118MHz v.h.f. aircraft navigation band. The majority of these devices were very simple and used w.b.f.m. with an output power of around 5-10mW. About 5 years ago new designs, which would originally have been produced for the 'professional' market, became more generally available. This was partially due to improved miniaturisation techniques resulting from surface mount technology and secondly the marketing of the devices which make them appear as though they are just another high tech consumer gadget.

These more up-market devices are crystal controlled and use n.b.f.m., this has the advantage of minimising tuning drift (which is a major problem with designs based on a free running oscillator) and secondly provides a much greater operating range for the same level of transmitter power. This last factor is perhaps the most important as the lower the power the less likely it is that the device will be detected and the longer the batteries will last.

The most popular operating frequencies for crystal controlled bugs are in the bands 129.4-140.0MHz and 390.0-450.0MHz with the most common v.h.f. devices operating on 139.0, 139.6, 139.8 and 140.0MHz. Most u.h.f. devices tend to operate at around 400MHz. A skilful buggist will try and mask the operation of a device by selecting an operating frequency adjacent to a strong local transmission. This is usually sufficient to confuse a simple bug detector of the type often used by company security departments. One useful trick is to try searching for harmonics of bugging devices. Because of the perceived need to keep the device as small as possible very little attention is paid to output filtering. As a consequence 3rd and 5th harmonic radiation can often be received over just as great a range as the intended signal, especially if the bug only uses an electrically short antenna. The 3rd harmonic of the most popular v.h.f. bugs lie in a very quiet part of the spectrum between 417-420MHz. A small directional beam antenna and hand held receiver makes detection and location relatively easy.

Although less common than audio bugging there is an increasing trend towards remote video surveillance. 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 tuner and you have a complete 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.

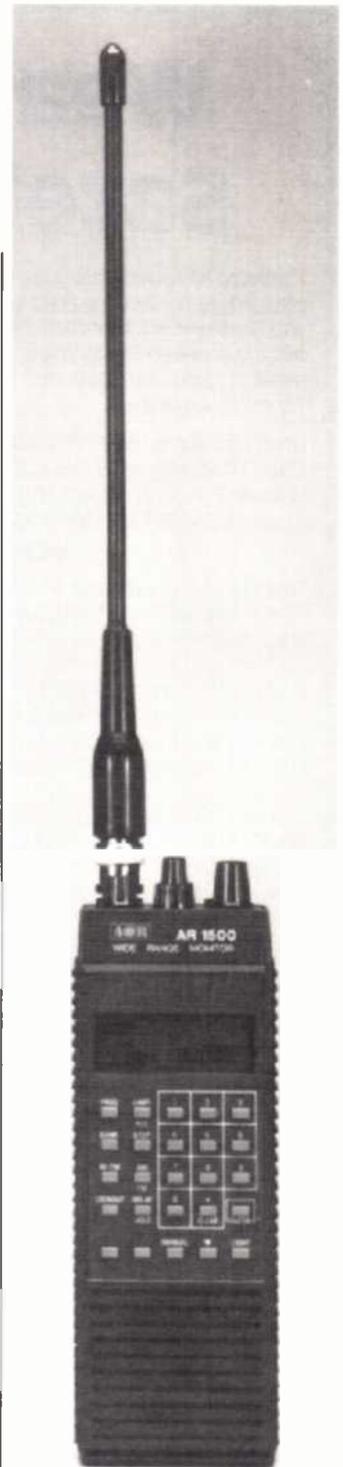
So far no readers have written to me to say that they have actually monitored a bugging device. There have been several near misses which turned out to be either radio microphone systems or harmonics of baby alarms. Given the number of devices being sold through advertisements in papers such as *Exchange 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 conductive a coating as true silver plating. 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 co-axial '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 he could use any similar sized containers for the outer body of the resonators. Yes you can, but there is an optimum size for a given coil



diameter. Try and take a look at a copy of the RSGB *VHF/UHF Handbook* for further details. The coil is capacitively coupled to the centre of the BNC 'tee' for u.h.f. operation. This is achieved by extending the centre connection of the 'tee' so that it runs down inside the centre of the coil for the first few turns. The diameter of this central wire can be increased if necessary in order to improve the coupling factor, for v.h.f. operation the end of the coil is connected directly to the 'tee'.

If you want to improve the depth of the notch and sharpen the response you can use more than one resonator. In this case connect the resonators together via a quarter wavelength of co-axial cable. Don't forget that this has to be around 0.66 times the wavelength in free space due to the

Weather Satellites

Timestep have been producing inexpensive weather satellite equipment for 7 years. Following our success in both the UK and North American education market, we are now bringing our expertise to the amateur satellite user. All of our equipment is designed, built and fully supported in Britain, by Timestep engineers.

Lawrence Harris uses Timestep equipment for his column in Short Wave Magazine. Les Currington who received the first Chinese Feng Yun image and presented it to Chinese Diplomats, also uses Timestep equipment.

PCSAT III

This innovative package will receive NOAA, METEOR, OKEAN, FENG YUN, METEOSAT, GOES and GMS. All images are received automatically on any PC with CGA, EGA, VGA or SVGA display.

Zoom, Pan, Contrast Stretch, False Colour, and Laser Print are just some of the features this system offers. Extensive filtering and a precision A-D are used on an internal PC Half Card, for superior image quality.

Animation from Meteosat is no mere gimmick! The atmosphere is a fluid in constant motion. Follow the dynamic progress of storms and cloud cover, on up to 100 full frames continuously animated images!

The really important feature is the ability to display in 800 pixels 600 lines and 256 colours, all at the same time. Some other systems will display 256 colours but only in far less resolution. Nearly all VGA and SVGA graphic cards are supported.

Full Satellite Resolution is received and stored by the system in a massive 512Kb file. This enables the stunning image quality and image processing.

Only £199.00 inc VAT & postage
Upgrade for £99.00 and your PC GOES in exchange.

Meteosat Receivers

Meteosat Yagi	£124.95
Meteosat Preamplifier	£92.00
20m Meteosat cable	£16.00
Meteosat receiver	£199.00
PCSAT III cable	£9.95
PCSAT III system	£199.00

Complete Meteosat system as above only £640.00 inc.

Polar Systems

We produce a professional scanning receiver for NOAA, METEOR, OKEAN and FENG YUN; and low cost antenna systems. INSTANT TRACK is the ultimate Polar tracking program for up to 200 satellites at £24.95 inc.

Computers

We can supply PCs to any specification at really good prices. Call us if you need details or if you want to purchase a complete "turnkey" solution.

Call or write for a full catalogue.

Timestep Weather Systems
Wickhambrook Newmarket
CB8 8QA England
Tel 0440 820040 Fax 0440 820281

RADIO SHACK



AR3000A

The latest full coverage receiver/scanner covering all frequencies from 100 kHz to 2036 MHz. Available from stock **£765.00**

SCANNERS FROM RADIO SHACK

AR-950	Base/mobile scanner	£199.95
AR-2000	Series II 0.5-1300MHz, 1000 memories	£269.00
AR-1500	NEW - as above, with SSB	£299.00
AR-2002	25-550 & 800-1300MHz	£399.00
AR-2500	Base/Mobile 5-550 & 800-1300 MHz RS232	£419.00
AR-2800	Base/Mobile 0.5-600 & 800-1300MHz	£395.00

ALL AOR PRODUCTS STOCKED

PRO-38	10 Channel handy scanner	£79.95
PRO-2022	200 Channel search & scan	£199.95
PRO-2024	60 Channel search & scan)	£99.95
PRO-37	200 Channel SPECIAL PRICE UNTIL JANUARY 31	£169.95
PRO-2006	400 Channel 25-560 & 720-1300 MHz	£329.95
IC-R-1	Icom's min.100kHz-1300 MHz 100 Ch. scanner	£369.00
IC-R-100	High performance base/mobile	£485.00
IC-R7100	25-2000MHz high performance receiver/scanner	£1120.00
BJ MK3	Black Jaguar	£179.00
DJ-X1	Alinco's latest	£269.00
UBC-200XLT	200 Channel Handy Bearcat	£229.00
MVT-6000	Jupiter base/mobile station	£249.00
MVT-7000	Latest hand-held Jupiter	£279.00
HP-200E	From Fairmate 1000 memories	£269.00
MS-1000	Nevada Base receiver	£279.00
R-535	Signal Airband Receiver	£199.00



DRAKE R8 RECEIVER £965.00

HF-225	Low high performance compact receiver	£429.00
R-2000	Kenwood's HF receiver, 10 memories	£549.00
VC-10	VHF converter for above	£165.00
R-5000	Kenwood's De-luxe HF set	£895.00
VC-20	VHF converter of R5000	£170.00
FRG-8800	Yaesu HF Receiver	£649.00
FRV-8800	VHF converter for above	£100.00
NRD-535	JRC-HF receiver	£970.00
IC-R71E	Icom HF receiver	£875.00
IC-R72E	Latest set, mains with internal battery pack	£589.00
IC-9000	The ultimate radio	£4080.00

Carriage free in U.K. Call us for our tax free export prices.

We will be pleased to quote you for anything you require in the communications and computer field. We are pleased to hear from you and see you. We aim to give you the attention you deserve, so please call before you come along.

73s Terry Edwards G3STS

RADIO SHACK LTD

188 Broadhurst Gardens, LONDON NW6 3AY



(Just around the corner from West Hampstead Station on the Jubilee Line)



Tel: 071-624 7174 Fax: 071- 328 5066

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 either 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 effected 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 kHz to beyond 1GHz. 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 and 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 short wave 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 TV 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 short wave 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.

BC200 AM Modification

I. Gellard of Essex has tried the modification I described in the May 1992 column for providing AM reception on a Uniden BC200XLT hand-held scanner. It would seem that this does not work on the 66-88MHz band. Has anyone else tried this mod yet - if so have you experienced the same

problem? If this is the case I can only suggest using the other modification which was featured in the February 1990 column and is known to work.

Information Wanted

I would like to discuss the use of scanning receivers in other countries in a future column. This is largely as a result of readers asking me about the legality of using radio equipment whilst on abroad on holiday. I would be interested in any information or details of readers experiences connected with this subject. As usual all letters to the address at the top of the page. Until next month - Good Listening.

Airband 51 ➡

What do these markers do? As you can see, they are real radio beacons and not just 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 charts. Given a fixed glide slope, usually 3°, it is possible to determine the altitude at which each marker should be overflown. This gives a cross-check that the aircraft is on the i.l.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 *GASIL 4/92* lists the following changes for the first time. The callsign of the new facility, Beverley (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 lightship 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 (0500) 354802.

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 Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS. Genuinely 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 parlance 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 so 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 WXSAT monitors and I have been pleased to receive 'phone calls from several SWM readers who have noted the satellite swopping 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 scale! As of mid-May the problem remains with METEOR 2-20 but pictures can still be decoded on either framestores (which normally have a built-in 2400Hz 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 that 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 rotator, 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.



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

1) taken on March 31 at about 1640UTC 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 clash 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. The

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 (on your 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.

OKEAN?

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 OKEAN 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 Finland and Bothnia regions for many years.

METEOSAT-3

This satellite was operated by the European Space Agency (ESA) and positioned at 50° longitude (eastern coast of America) to provide coverage of the Atlantic Ocean for hurricanes and tropical storms. Here in the UK we have been able to monitor good signals, both WEFAX and digital data, but its location means that the ground station which controls it, Darmstadt in Germany cannot see M3 if it moves any further west. Because of this, the Americans are now building a METEOSAT Command and Data Acquisition (CDA) station at Wallops Island. ESA has agreed to let the US take control of M3 as soon as the station

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 is apparently broadcasting a weekly image on Thursdays between 0800 and 0900UTC. I am not sure whether this is WEFAX or digital but it is 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 towards the western horizon and tuning in on the METEOSAT frequency of 1694.5MHz. GOES-2 acts as the 'east-WEFAX' transmitter of the GOES constellation, and some years ago we could receive clear signals 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 some twelve hours later. Many parts of the UK will have difficulty in receiving a good signal but it is worth a try. Having recently acquired 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



Fig. 2: METEOSAT 4 from Peter de Jong.

at 98°W for the summer hurricane season and then moved to 108°W for the winter. GOES-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 Service) hope to be able to conserve enough fuel to maintain GOES-7 through 1993 with usable imagery.

GOES-NEXT: continues to experience developmental problems and delays, and the most likely launch date for GOES-1 is December 1993 or later.

GOES Positions

METEOSAT 3 50°; GOES-2 (east) 59°; GOES-6 (west) 135°; GOES-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 Jorba Casanovas** of Barcelona was one of several overseas correspondents to request Keplers and he described his station which includes 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 '8088' 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 *SWM* I 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



Fig. 3: NOAA 11 from Geoff Chance.

operators, of which about six can be usefully used, and so these are the ones mentioned previously.

M Boddis of Cheltenham is a retired digital electronics engineer who has setup a WXSAT receiving station using an Amstrad 6128 computer running suitable software, and using an extensively modified Maplin decoder and Cirkit 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.l.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. This also means that one diameter of the orbit is longer than the other, so during one part of the orbit the satellite will come nearer to the earth - this point is called the perigee. The point furthest from the earth is called the apogee.

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 WEFAX 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

NOAAS 9, 11 a.p.t. on 137.62MHz
NOAAS 10, 12 on 137.50MHz
METEOR 2-19 or 2-20 on 137.85MHz
METEOR 3-4 or 3-5 on 137.30MHz
METEOR 3-3 on 137.40MHz 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. 4: NOAA 11 from Roger Ray.

Mike Richards G4WNC
200 Christchurch Road, Ringwood, Hants BH24 3AS.

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, he 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 Klingenfuss *Air and Meteor 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 Shrewbury 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 accessory kit that contains a whip antenna and a set of NiCads. 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 FAX-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, 8, 12, 16MHz and v.h.f. bands. Autolink RT enables ships fitted with the appropriate equipment to dial calls direct. This provides an upgrade to the conventional technique of having to set-up calls via the coast station radio officer.

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 FAX-2) where the paging message is then printed out. The charging arrangements for the service are the same as conventional paging systems 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 logic 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 we 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 callsign 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-

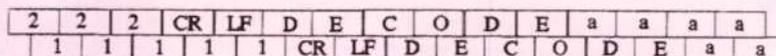


Fig. 1: Standard Mode B FEC signal.

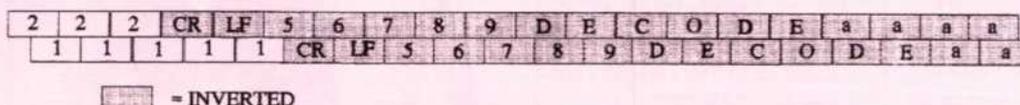


Fig. 2: SEL-FEC signal using callsign 56789.

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.

5.7775MHz, LRO26, 1400-0400UTC, AP Buenos Aries
 6.82MHz, JKA2, 0500-1600UTC, JIJI Tokyo
 6.874MHz, LRB79, 1400-0400UTC, AP Buenos Aries
 7.3637MHz, HMF88, 0000-1200UTC, KCNA Pyongyang
 7.931MHz, LRO48, 2200-2300, NA Buenos Aires
 8.14MHz, 9VF44, 0500-1600UTC, JIJI Singapore
 8.1675MHz, LQB9, 2200-2400UTC, DyN Buenos Aries
 9.135MHz, JKB4, 0500-1600UTC, JIJI Tokyo
 9.242MHz, LRO64, 2200-2400UTC, DyN Buenos Aries
 9.26MHz, JKA3, 0500-1600UTC, JIJI Tokyo
 9.34MHz, 3MA34, 0200-1500UTC, CNA Taipei
 9.4105MHz, JKE6, 0500-1600UTC, JIJI Tokyo
 9.4937MHz, -, 0000-1200UTC, KCNA Pyongyang
 10.677MHz, LRN2, 1400-0400UTC, AP Buenos Aries
 11.480MHz, AZG641, 1400-0400UTC, AP Buenos Aries
 11.451MHz, LRO75, 2200-2400UTC, DyN Buenos Aries
 11.4117MHz, HMG62, 0000-1200UTC, KCNA Pyongyang
 11.4757MHz, HMF52, 0000-1200UTC, KCNA Pyongyang
 12.1697MHz, -, 0000-1200UTC, KCNA Pyongyang
 13.580MHz, HMF36, 0000-1200UTC, KCNA Pyongyang
 13.766MHz, 3MA26, 0200-1500UTC, CNA Taipei
 14.685MHz, 3MA25, 0200-1500UTC, CNA Taipei
 15.878MHz, 3MA24, 0200-1500UTC, CNA Taipei
 16.27MHz, 9VF207, 0700-1000, 1400-1800UTC, KYODO Singapore
 16.23MHz, JAQ66, 0700-1000, 1400-1800UTC, KYODO Tokyo
 17.672MHz, LQZ67, 1400-0400UTC, AP Buenos Aries
 19.680MHz, 3MA23, 0200-1500UTC, CNA Taipei
 20.736MHz, LSA600, 1400-0400UTC, AP Buenos Aries
 22.850MHz, 3MA36, 0200-1500UTC, CNA Taipei
 23.865MHz, 9VF235, 0700-1000, 1400-1800UTC, KYODO Singapore

The press abbreviations used are as follows:

AP; Associated Press, CNA; Central News Agency Inc, DyN; Diarios y Noticias, JIJI; Jiji Tsushin Sha, KCNA; Korean Central News Agency, KYODO; Kyodo Tsushin, NA; Noticias Argentinas. The loggings have been compiled from a combination of reference books and personal loggings.

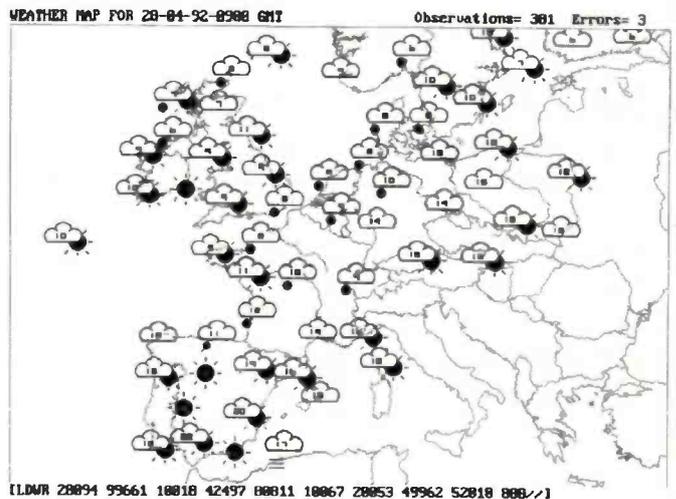
Hoka Update

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 menuing system. This has now been corrected in the new version which has a full colour display and makes good use of drop down menus.

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. There have also been some changes in the link between the Speed-shift measurement module and the decoders. You can now transfer the speed only by pressing B the shift being set using the S 1-0 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 sent 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.

3.731MHz, FAX, 120, 576, GXH, 2032, USN Thurso
 6.835MHz, RTTY, 50, 400, -, 2320, GFL Bracknell
 6.9185MHz, FAX, 120, 576, ECA7, 1734, Madrid Met
 7.621MHz, RTTY, 75, -, IBH, 1930, USAF Vicenza
 7.8051MHz, RTTY, 50, 400, -, 2000, Tanjung press
 7.958MHz, RTTY, 50, 400, -, 2050, IRNA Tehran
 7.996MHz, RTTY, 50, 400, -, 2120, Belgrade press
 9.22MHz, FAX, 90, 576, RTB26, 1950, Novosibirsk Met
 10.215MHz, RTTY, 100, -, HZN48, 2008, Jeddah Met
 10.2886MHz, ARQ-E, 192, 150, DMK, 0607, MFA Bonn
 10.5345MHz, RTTY, 50, -, 2200, Halifax met
 10.634MHz, RTTY, 50, 400, -, 1650, MAP Rabat
 10.685MHz, RTTY, 50, 400, -, 2100, Bracknell
 11.08MHz, RTTY, 50, -, SYR, 1858, SANA Damasas
 11.133MHz, RTTY, 50, -, BZG41, 1849, XINHUA Beijing
 11.44MHz, RTTY, 50, 850, EIP, 1248, Shannon Air
 12.2278MHz, RTTY, 75, 400, SNN299, 0600, Polish embassy
 12.7275MHz, FAX, 120, 576, NWC, 1924, USN H.E. Holt
 12.8875MHz, RTTY, 50, 400, -, 2245, EAD44 Aranjuez radio
 12.801MHz, CW, -, -, -, 0745, TAH Istanbul radio
 12.927MHz, CW, -, -, -, 0815, URD Lenigrad radiotraffic
 14.4972MHz, RTTY, 50, -, CSY, 2048, Santa Maria Air SYNOP
 14.497MHz, RTTY, 50, 900, CSY, 1223, Santa Maria Air
 14.674MHz, RTTY, 75, 400, DFZG, 0616, MFA Belgrade
 14.88MHz, RTTY, 50, -, JMG4, 2040, Tokyo Met, English
 14.9305MHz, RTTY, 50, 400, -, 1200, APS Algeria
 16.3395MHz, RTTY, 100, -, CJL, 0701, MFA Nicosia
 17.163MHz, RTTY, 75, -, RNO, 0735, SA/AAMC TBUS satellite data
 19.747MHz, RTTY, 50, -, 9VU79, 1729, Dakar Met SYNOP
 19.98MHz, RTTY, 50, -, 9BC33, 1726, IRNA Tehran
 20.0118MHz, Twinplex, 100, -, -, 1403, MFA Islamabad
 20.822MHz, ARQ-E, 72, 400, RFFXI, 1437, FF Bangui

Amateur Radio
Communications Ltd



ONE STOP SHOPPING!

EVERYTHING THE AMATEUR & LISTENER NEEDS UNDER ONE ROOF

Definitely Drake R8E receiver



- ★ All mode receiver
- ★ Easy to use
- ★ 100kHz-30MHz (new eeprom)

Interested in Icom? IC-R7100



- ★ Wideband coverage
- ★ All mode
- ★ HF option available
- ★ Window dual scan
- ★ Large display

Asking for AOR? AR-3000A



- ★ 100kHz-2036MHz
- ★ AM/FM/FMW/SSB/CW
- ★ Smooth tuning control
- ★ Increased scanning and search speed

AUTHORISED DEALERS FOR:

- ★ YAESU ★ ICOM ★ STANDARD ★ REVCO ★ G WHIP ★ DRAE ★ STAR MASTERKEY ★ WELZ ★ DATONG ★ I.C.S. ★ FAIRMATE ★ YUPITERU ★ ALINCO ★ AOR ★ TONNA ★ JAYBEAM ★ KENWOOD ★ SANDPIPER ★ BNOS ★ AKD ★ REVEX ★ MFJ ★ ERA ★

INSTANT FINANCE AVAILABLE SUBJECT TO STATUS.
Prices correct at time of going to press.

E&OE

Now, anything you require in ham radio equipment is available at 38 BRIDGE STREET. What more could anyone ask for? We offer a service second to none, a friendly atmosphere, expert advice, excellent back-up (by one of the top engineers in the country, Frank), plus the usual humorous banter from Peter and Richard and even more important a cup of MY coffee or tea.
73 Elaine

AR-1500

- ★ 1000 memories
 - ★ 100kHz-1300MHz
 - ★ Rotary Tuner
 - ★ Plus all the features of the AR-2000
- The latest AOR now with SSB using a BFO.

Just Real Class NRD-535



- ★ Easy to read display
- ★ Excellent selectivity
- ★ Pass band shift
- ★ Notch control

A comprehensive range of hand-held scanners on display

IC-R1

Icom's mini 100kHz-1300MHz 100 channel scanner

NOW ONLY
£349

MVT-7000

Latest Hand-held Jupiter

£289

HP-2000

From Fairmate 1000 Memories

£269

OUR ENGINEER. EITHER CALL IN OR PHONE US FOR LATEST UPDATE.

Please send S.A.E. for details on above or for brochures on new equipment required.

MAIL ORDERS RECEIVED BEFORE 3 O'CLOCK SAME DAY DESPATCH PROVIDING EX STOCK

Amateur Radio Communications,
38 Bridge Street,
Earlestown,
Newton-le-Willows,
Merseyside
WA12 9BA.

TEL: (0925) 229881
FAX: (0925) 229882

OPEN TUES-SAT
10-5PM
1 MILE FROM J23, M6 and
4 1/2 MILES OFF J9, M62

GUIDE TO FACSIMILE STATIONS

12th edition • 416 pages • £ 20 or DM 50

The recording of FAX stations on longwave and shortwave and the reception of meteorological satellites are fascinating fields of radio monitoring. Powerful equipment and inexpensive personal computer programs connect a radio receiver directly to a laser or ink-jet printer. Satellite pictures and weather charts can now be recorded automatically in top quality.

The new edition of our FAX GUIDE contains the usual up-to-date frequency lists and precise transmission schedules, including those of Bracknell Meteo and Royal Navy London. It informs you about new FAX converters and computer programs on the market. The most comprehensive international survey of the "products" of weather satellites and FAX stations from all over the world is included: 358 sample charts and pictures were recorded in 1991 and 1992! Here are that special charts for aeronautical and maritime navigation, the agriculture and the military, barographic soundings, climatological analyses, and long-term forecasts, which are available nowhere else.

Additional chapters cover

- List of 310 frequencies monitored in 1991 and 1992. Call sign list.
- Exact schedules - to the minute! - of 90 FAX stations, and of meteorological satellites GMS (Japan), GOES (USA), and METEOSAT (Europe).
- Abbreviations. Addresses. Regulations. Technique. Test charts.

Further publications available are *Guide to Utility Stations* (10th edition), *Radioteletype Code Manual* (11th edition) and *Air and Meteo Code Manual* (12th edition). We have published our international radio books for 23 years. They are in daily use with equipment manufacturers, monitoring services, radio amateurs, shortwave listeners and telecommunication administrations worldwide. Please ask for our free catalogue, including recommendations from all over the world. For a recent book review see the *Decode* section in *Shortwave Magazine* 8/91. All manuals are published in the handy 17 x 24 cm format, and of course written in English.

Do you want to get the *total information* immediately? For the special price of £ 88 / DM 245 (you save £ 15 / DM 40) you will receive all our manuals and supplements (altogether more than 1700 pages!) plus our *Cassette Tape Recording of Modulation Types*.

Our prices include airmail postage to everywhere in the world. Payment can be by £ or DM cheque, cash, International Money Order, or post giro (account Stuttgart 2093 75-709). Dealer inquiries welcome - discount rates on request. Please mail your order to ☺

Klingenfuss Publications
Hagenloher Str. 14
D-7400 Tuebingen
Germany
Tel. 01049 7071 62830

PACKET/DIGITAL RADIO

"KANTRONICS VERSION 5.0 UPDATE NOW IN STOCK"

EXCITING NEW PRODUCTS FOR 1992!

Over the past year we have spoken to many of you at radio rallies and telephone to find out the sort of products you want to see in 1992. As a result we have come up with what we feel are interesting new additions to our already extensive range (the UK's biggest).

OUR NEW 4 PORT PC-TNC.....

For those with really serious applications in mind by the time you read this ad our new FOUR port PC card will be available. The impressive specifications includes:
Port 1 - VHF/UHF 1200 baud
Port 2 - HF (300) & VHF/UHF 1200 Baud
Port 3 - 9600 baud (licensed from G3RUH of course)
Port 4 - Hi-speed/PSK header

A FEW OF OUR OTHER PRODUCTS..

AEA
PK-232MBX+AMTOR MAILBOX...£339.95
PK-88 VHF/HF TNC + new MBX...£149.95
PCB-88 PC internal card TNC.....£149.95
KANTRONICS
KPC2 HF/VHF with Wefax£168.50
KPC4 VHF/VHF dual port£247.25
KAM all mode with Wefax.....£291.00

The world standard G8BQP networking software has already been written for the card and is of course provided free of charge with the card together with a modified version of the excellent BayCom terminal for those who just want to get out there and enjoy packet at it's best. **AVAILABLE NOW!**
Phone/write for details

OUR AMAZING MINI-PAK SYSTEM....

If you are not using packet yet and you own a PC you ought to be seriously considering our Mini-Pak system. At under £80 it represents excellent value and uses an especially prepared version of the excellent BayCom software (under license). **AVAILABLE NOW!** Phone/write for details. **SEE MARCH 91 HRT REVIEW!**

PACCOMM
HANDIPACKET as used on MIR...£199.00
PC-320 dual port PC card£ 159.00
TINY-2 with PMS version 3.0.....£ 149.00

SOFTWARE & LEADS

We supply software for most computers **FREE** of charge with all TNCs & Multimodes. We also stock leads for just about any TNC - Computer/Radio radio plus on real-time clocks, back-up and software DCD boards.

CONFUSED NEWCOMER?

Don't be shy, we are here to help. Call or write for our latest catalogue/price list. We also stock good books and demonstration tapes. **Call anytime from 8am-8pm Mon-Sat.**

If it's in stock (and it usually is) we will despatch it the same day.

NOTE: Prices include VAT, carriage extra.

Siskin Electronics Ltd

2 South Street,
Hythe, Southampton,
SO4 6EB.
FAX: 0703-847754



Tel: 0703-207587,207155

SUPPORT

YOUR INDEPENDENT

RETAILER

- It's the right thing to do !!



OUR AIM IS 100%
SATISFACTION

long medium & short

Brian Oddy G3FEX, Three Corners, Merryfield Way, Storrington, West Sussex RH20 4NS

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 'LM&S'.

Long Wave Reports

Note: l.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 l.w. transmissions from Caltanissetta, Italy on 189kHz 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 Italian on 189, it was weak but clear. The data in the *World Radio TV Handbook (WRTH)* indicated Caltanissetta and the bearing of his loop confirmed that the signal was coming from the expected direction! He monitored 189 again after dark, but the signal was poor.

Another report of unusual daylight l.w. reception came from **George Millmore** in Wootton, IOW. He was surprised to receive Tipaza, Algeria on 252 (1500/750kW) at SIO222.

Medium Wave Reports

Encouraged by his reception of m.w. transatlantic signals from Canada last month, **Ron Damp** (Worthing) has been searching the band well into the night! At 0325 he logged CJYQ in St. John's, NF on 930kHz as SINPO 32222. Later, he heard for the first time a signal from the USA. It was WNEW in New York, 1130 and rated 32222 at 0445. Both signals were affected by deep slow fades.

The broadcasts from CJYQ on 930 were also heard by **Tim Bucknall** in Conleton. He rated them as 33354 at 0120. At 0140 he logged an unidentified Canadian station on 590 as 22423. Tim suspects it was VOXM 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 he logged R.Globo in Rio, Brazil on 1220, their signal peaked SIO222 at 0315. Several broadcasts from Canada and the USA were also heard, all rated SIO222. The first reached him at 2300 and was WINS in New York, on 1010. VOXM in St. John's, NF became audible on 590 at 2330. The signals from the Atlantic Beacon, Turks & Caicos Is 1510 peaked SIO222 at 0210.

Sky wave signals from the Middle East and N.Africa have also been reaching the UK after dark! Very weak signals from Duba, 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 (300kW) as SIO222, Oujda 594 (100kW) SIO433, Alger 891 (600/300kW) SIO444, Alger 981 (600/300kW) SIO434 and Sebaa-Aioun 1044 (300kW) SIO333.

Since the closure of BBC R. Nottingham's Trowell outlet **Roy Patrick** (Derby) has been hearing ILRR Mercury via Duxthorpe on 1521 (0.64kW) relaying 'First Gold Radio', broadcast by ILR County Sound via Peasmarsh on 1476 (0.5kW). Roy tells me that ILR Hereward Radio have split the programming of their m.w./v.h.f. outlets. An oldies format is now broadcast via Gunthorpe on 1332 (0.6kW) under the title 'WGMS - 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,

Medium Wave Chart

Freq kHz	Station	Country	Power kW	Listener
520	Hof-Saale	Germany	0.2	H* J*
531	Leipzig	Germany	100	B*, D.H*, J*, K*
531	Oviedo	Spain	10	H*
531	Bernmunster	Switzerland	500	B*
540	BRT-2 Wavre	Belgium	150/50	B*, G*, H*, I, K
549	Les Trembles	Algeria	600	B*, G*
549	DLF Bayreuth	Germany	200	B*, G*, H*, I, K
558	Valencia	Spain	20	B*, H*
567	Berlin	Germany	100	H*
567	RTE-1 Tullamore	Ireland (S)	500	B*, D.F.I, K, M
576	Stuttgart	Germany	500	B*, H*, I, K*
585	RF Paris	France	8	D, J
585	RNE-1 Madrid	Spain	200	B*, H*
585	Gafsa	Tunisia	350	H*
585	BBC-R Scor	UK	2	H*
594	Frankfurt	Germany	1000/400	B*, H*, I, K*
594	Lilongwe	Malawi	50	E
594	Oujda-1	Morocco	100	I*
594	Muge	Portugal	100	B*, D
594	Duba	Saudi Arabia	2000	B*
603	Lyon	France	300	B*, J
603	Sevilla	Spain	20	H*, I*
603	BBC Newcastle	UK	2	H*
612	RTE-2 Athlone	Ireland (S)	100	B*, D, I, K
612	Lerida	Spain	10	I*
621	RTB-1 Wavre	Belgium	80	B*, H*, I, K*
621	VOA	Botswana	50	E
621	Barcelona	Spain	10	B*, J*
630	Vigra	Norway	100	B*, H*, I*
639	Praha	Czechoslovakia	1500	B*
639	La Conuna	Spain	100	B*, H*, K*
648	P. de Mallorca	Spain	10	H*
648	BBC Orfordness	UK	500	B*, H*, I, K
657	Burg	Germany	250	H*
657	RCE-2 Madrid	Spain	20	B*, H*, I*
657	Rafha	UAE	20	A
657	BBC-R Wales	UK	2	K
666	Bodenseesender	Germany	300/180	B*, H*, J*, K*
666	Lisboa	Portugal	135	I*
666	Barcelona	Spain	20	H*
675	Marseille	France	600	B*, K
675	Hilversum-3	Holland	120	C, G, H*, J
684	RNE-1 Sevilla	Spain	250	B*, H*, J*
684	Beograd	Yugoslavia	2000	D
693	Berlin	Germany	250	H*
693	BBC-R5	UK	150	K
702	Aachen/Flensburg	Germany	5	B*, H*
702	Monte Carlo	Monaco	300	B*, H*
711	Rennes 1	France	300	B*, C, H*, I, K*, M
720	Langenberg	Germany	200	D, J*
720	Norte	Portugal	100	B*, H*
720	BBC-R4 Lots Rd	UK	0.5	B*, J
729	RTE-1 Cork	Ireland (S)	10	B*, I*, K
729	Oviedo	Spain	50	B*, I*, K
738	Paris	France	4	B*, M*
738	Poznan	Poland	300	C
738	RNE-1 Barcelona	Spain	250	B*, C, H*, I*
747	Hilversum-2	Holland	400	B*, C, H*, J, J
747	Gobabis	Namibia	100	E
756	Brunswick	Germany	800/200	B*, H*, J*
756	BBC-R4 Redruth	UK	2	I
765	Sottens	Switzerland	500	B*, H*, J*, K
774	BBC-Enniskillen	Ireland (N)	1	H*
774	RNE-1	Spain	60	B*, M, H*, I*
783	Burg	Germany	1000	B*, H*, J*, K*
783	R. Porto, Miramar	Portugal	100	H*
792	Limoges	France	300	B*, H*, J*
792	Sevilla	Spain	20	B*, H*
800	M'chen-Ismaning	Germany	300	B*, H*
800	Burgos	Spain	10	B*, H*
810	RNE-1 Lugo	Spain	20	I*
810	SER Madrid	Spain	20	B*, H*
810	Maqtaa	UAE	50	A
810	BBC- Burghead	UK	100	K
810	BBC-Westerglen	UK	100	D, F, H*, I*
819	Bordeaux	France	20	B*, H*
819	Warsaw	Poland	300	B*
828	Barcelona	Spain	20	B*
837	Nancy	France	200	B*, H*
837	R. Popular	Spain	10	B*, I*, M*
846	Rome	Italy	540	B*, I*, K
855	Murcia	Spain	125	B*, C, H*, I*
864	Paris	France	300	B*, I, K
864	RNE-1	Spain	10	M*
873	AFN/Frankfurt	Germany	150	B*, C*, H*, K, M*, N*
873	Zaragoza	Spain	20	B*, I*
873	R. Ulster	UK	1	H*
882	COPE Malaga	Spain	5	H*
882	BBC-Washford	UK	100	B*, H*, I, K
891	Algiers	Algeria	600/300	B*, G*, H*, I*, K*
891	R Lesotho	Lesotho	100	E
900	Milan	Italy	600	B*, H*
900	Qurayyat	Saudi Arabia	1000	H*
909	BBC B mans Pk	UK	140	K
918	R. Intercont.	Spain	20	B*, H*
927	BRT-1 Wolvenstein	Belgium	300	B*, C, H*, I, K
936	Bremen	Germany	100	B*, H*, I*
936	Venezia	Italy	20	B*
936	Agadir	Morocco	600	B*
936	Lerida	Spain	2	H*
945	Toulouse	France	300	B*, H*, I*
954	Dobrochov	Czechoslovakia	400	H*
954	RCE Madrid	Spain	20	B*, H*, I*
954	R. Swaziland	Swaziland	50	E
963	Sofia	Bulgaria	150	H*
963	Roni	Finland	600	B*, H*, I*, K
972	Tunis-Djedeida	Tunisia	200	B*
972	R. Botswana	Botswana	50	E
972	Hamburg	Germany	300	B*, H*, I*, K*
981	Alger	Algeria	500/300	B*, G*, I*

Freq kHz	Station	Country	Power kW	Listener
990	Berlin	Germany	300	B*, D*, H*
990	SER R. Bilbao	Spain	10	B*, H*
999	R. Popular, Madrid	Spain	20	B*, H*
1008	Hilversum-5 Flevo	Holland	400	C, G, I, K*
1008	Malaga	Spain	?	H*
1017	Rheinsender	Germany	600	D*, H*, I*, K*
1026	Graz-Dobl	Austria	100	H*, I*
1035	Prog. 3 Lisbon	Portugal	120	H*, I*
1044	Dresden	Germany	250	H*
1044	Sebaa-Aioun	Morocco	300	I*
1044	San Sebastian	Spain	10	H*, I*
1053	COPE Zaragoza	Spain	10	H*
1053	BBC-Droitwich	UK	150	K
1062	Kalundborg	Denmark	250	H*, I*
1071	Brest	France	20	H*, I*
1071	R. Zambia, Kirtve	Zambia	100	E
1080	Katowice	Poland	1500	H*, I*
1089	R1 Brookmans Pk	UK	150	D, K
1098	RNE-5	Spain	10	H*, I*
1107	AFN via Munich	Germany	40	H*, I*
1107	RNE-5 Barcelona	Spain	20	H*
1116	SER-Pontevedra	Spain	2	H*, I
1125	La Louviere	Belgium	20	H*, I
1125	RNE-5	Spain	10	H*
1134	Sulaybiyah	Kuwait	750	A
1134	Zadar	Yugoslavia	1200	H*, I*
1143	AFN via Stuttgart	Germany	10	H*, K
1152	RNE-5	Spain	10	G*
1161	Stara Zagora	Bulgaria	500	H*
1161	Strasbourg (F. Int)	France	200	C, D, H*, K
1170	Krasnodar	Russia	500	H*
1179	Santiago	Spain	10	G*, H*
1179	Solweborg	Sweden	600	G*, H*, I*, J*, K, N*
1188	Kuurne	Belgium	5	H*, I
1197	VOA via Munich	Germany	300	K
1205	Bordeaux	France	100	I*, M
1206	Wroclaw	Poland	200	H*
1215	COPE Castellon	Spain	2	H*
1224	Vidin	Bulgaria	500	H*
1233	Cape Greco	Cyprus	600	A, E
1233	Melnik	Czechoslovakia	400	H*
1233	Al Khaitash	Oman	100	A*
1251	Marczi	Hungary	500	H*
1251	Huisberg	Netherlands	10	H*
1260	VOA via Rhodes	Greece	500	H*
1260	Valencia	Spain	20	D, H*, J*
1269	Nuenster	Germany	600	C, D, H*, I*, K, N
1278	RTE-2	Ireland (S)	10	D, I*, K
1287	Litomyse/Libice	Czechoslovakia	300/200	D*, I*
1296	San Sebastian	Spain	5	K
1296	BBC Orfordness	UK	500	K
1305	Rzeszow	Poland	100	H*
1305	Orense (RNES)	Spain	5	H*
1314	Kvitsoy	Norway	1200	D, G*, H*, I*, K
1332	Rome	Italy	300	H*
1341	BBC-Lisnagarvey	Ireland (N)	100	I*, K
1350	Nancy/Nice	France	100	D*, H*, I, K
1359	Berlin	Germany	250/100	D, H*, K
1368	Manx Radio	I.O.M.	20	H*, L
1377	Lille	France	300	D, H*, J
1386	Kaliningrad	Russia	500	D, H*, I*, K
1395	R. Tirane	Albania	1000	H*, I*, K
1404	Brest	France	20	H*, I
1413	RCE Zaragoza	Spain	20	H*, I*, M*
1422	Huesweiler	Germany	1200/600	D, H*, I*, K*
1422	Riyadh	Saudi Arabia	20	A
1431	Dresden	Germany	250	H*
1449	Berlin	Germany	5	H*
1449	BBC-R4 Redmoss	UK	2	O
1467	TWR Monte Carlo	Monaco	1000/400	G*, H*, I*, K*, L*
1476	Wien-Bismberg	Austria	800	H*, I*, K
1494	Clermont-Ferrand	France	20, H*, I*	
1494	St. Petersburg	Russia	1000	H*
1503	Stargard	Poland	300	H*, I*
1503	Rome	Italy	2	G*
1512	BRT Wolvenstein	Belgium	600	G, H*, I, K, M
1512	Jeddah	Saudi Arabia	1000	E
1521	Kosice	Czechoslovakia	100	H*, I*
1530	Vatican Radio	Italy	150/450	H*, I*
1539	Mainflingen	Germany	700	H*, I*, K
1557	Nice	France	300	D, H*
1566	Samen	Switzerland	300	D, H*
1575	Burg	Germany	250	H*, I*, K
1575	Cordoba	Spain	5	G*
1583	Langenberg	Germany	400/800	B*, H*, I*, K*, L
1611	Vatican Radio	Italy	5	H*

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:

- A: Jana Arunachalam, Thumrait, Oman.
- B: Darren Beasley, Bridgwater.
- C: Vera Brindley, Woodhall Spa.
- D: Scott Caldwell, Warrington.
- E: P.R. Gunuprasad, Madikve, S.Africa.
- F: Francis Hearne, Bristol.
- G: Sheila Hughes, Morden.
- H: Eddie McKeown, Newry.
- I: George Millmore, Wootton I.O.W.
- J: Ken Milne, Basingstoke.
- K: Sid Morris, Rowley Regis.
- L: Tom Smyth, Co Fermagh.
- M: Ted Walden-Vincent, Gt. Yarmouth.
- N: Michael Williams, Redhill.
- O: Julian Wood, Elgin.

ARE

COMMUNICATIONS '92
"The shop with the smile"

NOW REVITALISED!

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.

REMEMBER, we are only a phone call away for good, honest, friendly advice, a brochure you may need or just a chat. Give us a call now or pop in and see us and you'll see why.

73's - Alan and Jez.

8 Royal Parade Hanger Lane, Ealing London W5A 1ET
Tel: 081-997 4476 Fax: 081-991 2585

OPEN MONDAY-FRIDAY 9.30-5.30 SATURDAY 9.30-3pm EASY PARKING AT THE REAR OF THE SHOP

Authorised agents for:

AOR SONY YAESU JRC DRAKE ALINCO LOWE ICOM YUPIITER KENWOOD

ICR100-SSB



Wideband base/mobile receiver with SSB.
100kHz-1856MHz

- IN STOCK -

SSB kits also available seperately

ICR7100-HF



Icom's base receiver with continuous coverage.
200kHz-2000MHz.

Phone now for details

HF kits also available seperately for ICR7100 and ICR7000

ICR1-SSB



The smallest pocket scanner available with SSB.
100kHz-1300MHz or convert your existing ICR1

PHONE NOW
ASK FOR DETAILS

Part exchange and equipment purchases welcomed! Credit facilities available subject to status. APR from 37.8%. Located next to Hanger Lane Tube Station (Central Line) and on the junction of the A406 & A40. DON'T DELAY PHONE TODAY on 081-997-4476

GOLD SEAL BP GARAGE

EDWARDS RD

NORTH WALSHAM RD

B1150

SHOP OPEN
MON-SAT 9.30-5.30

THE SHORT WAVE

CENTRE NORWICH



**Do you need a scanner or receiver ?
Do you need amateur radio equipment ?**

"Kenwood, Icom, Yaesu, Alinco, Yupiter, Aor etc"
But most of all do you need equipment serviced?
We have up to date test equipment, fully equipped workshop for all types of radio equipment.

Second Hand Equipment Available, Part Exchange Welcome.

TEL: OR FAX: 0603 788281

Prop: P. Gunther G4XBT, 95 Colindeep Lane, Sprowston, Norwich, Norfolk NR7 8EQ. VAT No. 595 1239 21

**NEW SHOP OPEN NOW!
"PHONE US NOW FOR BEST PRICES"**

long medium & short

Local Radio Chart

Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener	Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R	I	7.50	J,K,O	1161	Viking R (C.Gold)	I	0.35	B,C
585	R.Solway	B	2.00	B,C	1170	Ocean Sd (SCR)	I	0.12	J,O
603	Invicta Snd(Coast)	I	0.10	J,K,O	1170	R.Orwell (SGR-FM)	I	0.28	O
630	R.Bedfordshire	B	0.20	A,J,K,O	1170	Signal R.	I	0.20	C,D,K
630	R.Cornwall	B	2.00	E,J,O	1170	Swansea Sound	I	0.58	F
657	R.Clywd	B	2.00	B,C,D,J,K,O	1170	TFM Radio (GNR)	I	0.32	B,C
657	R.Cornwall	B	0.50	E,J	1242	Invicta Snd(Coast)	I	0.32	O
666	Devon Air R	I	0.34	E,J,O	1242	Isle of Wight R.	I	0.50	I*,J,K*,O
666	R.York	B	0.80	A,B,O	1251	Saxon R. (SGR-FM)	I	0.76	I*,L,O
729	BBC Essex	B	0.20	A,E,J,O	1260	GWR (Brunel R.)	I	1.60	J,O
738	Hereford/Worcester	B	0.037	C,K,O	1260	Leicester (GEM-AM)	I	0.29	E,K,O
756	R.Cumbria	B	1.00	B,C,I*	1260	Marcher Sound	I	0.64	C,D
765	BBC Essex	B	0.50	A,J,K*,O	1260	R.York	B	0.50	B
774	R.Kent	B	0.70	J,O	1278	Pennine R.(C.Gold)	I	0.43	B
774	R.Leeds	B	0.50	A,C,D	1305	R.Hallam (Gt Yks R)	I	0.15	B,C
774	Severn Sound (3CR)	I	0.14	C,K,O	1305	Red Dragon (Touch)	I	0.20	D,J,O
792	Chiltern R.	I	0.27	G,K*,O	1323	R.Bristol (Som.Snd)	B	0.63	O
792	R.Foyle	B	1.00	C	1323	S'thern Sound(SCR)	I	0.50	J,O
801	R.Devon	B	2.00	C,G,I*,J,O	1332	Hereward R.(WGMS)	I	0.60	A,B,K*,L,O
828	Chiltern Radio	I	0.20	E,G,O	1332	Wiltshire Sound	B	0.30	J,O
828	R.Airel(Magic 828)	I	0.12	A,C,D	1359	Essex R.(Breeze)	I	0.28	H,I*,O
828	R.WM	B	0.20	K	1359	Mercia Snd(Xtra-AM)	I	0.27	K
828	ZCR	I	0.27	J,O	1359	R.Solent	B	0.85	I*,J
837	R.Cumbria	B	1.50	B,C	1368	R.Lincolnshire	B	2.00	B,N,O
837	R.Furness	B	1.00	B,C,D,I*	1368	R.Sussex	B	0.50	J,O
837	R.Leicester	B	0.45	A,B,F,J,K,O	1368	Wiltshire Sound	B	0.10	I*,L,K*
855	R.Devon	B	1.00	E,J	1413	Sunrise R.	I	0.125	E,O
855	R.Lancashire	B	1.50	C,D,I*	1431	Essex R.(Breeze)	I	0.35	L,O
855	R.Norfolk	B	1.50	A,O	1431	R.210 (Cl. Gold)	I	0.14	J,O
873	R.Norfolk	B	0.30	D,E,O	1449	R.Peterboro/Cambs	B	0.15	J,O
936	GWR (Brunel R.)	I	0.18	E,J,K*,O	1458	GLR	B	50.00	J,O
945	R.Trent (GEM-AM)	I	0.20	C,D,E,I*,J,K,O	1458	GMR	B	5.00	C,D
954	Devon Air R.	I	0.32	J,O	1458	R.Cumbria	B	0.50	C,M
954	R.Wyvern	I	0.16	K,O	1458	R.Devon	B	2.00	J,O
990	WABC (Nice & Easy)	I	0.09	K,O	1458	R.Newcastle	B	2.00	B
990	R.Devon	B	1.00	J,O	1458	Radio WM	B	5.00	F,K
999	R.Solent	B	1.00	G,H,J,O	1476	C'ty Snd(1st Gold)	I	0.50	G*,J,O
999	R.Trent (GEM-AM)	I	0.25	A,O	1485	R.Merseyside	B	1.20	C,D,K,M
999	Red Rose R.	I	0.80	C,D,I*	1485	R.Sussex	B	1.00	J,O
1017	WABC Shrewsbury	I	0.70	B,C,D,J,K,O	1503	R.Stoke-on-Trent	B	1.00	B,C,D,J,K,O
1026	Downtown R.	I	1.70	C,D	1521	R.Mercury	I	0.64	J,I,O
1026	R.Cambridgeshire	B	0.50	A,G,O	1530	Pennine R.(C.Gold)	I	0.74	B,C
1026	R.Jersey	B	1.00	G,J,O	1530	R.Essex	B	0.15	H,O
1035	R.Kent	B	0.50	J,O	1530	R.Wyvern	I	0.52	J,K,O
1035	West Sound	I	0.32	C	1548	Capital R. (Gold)	I	87.50	J,O
1116	R.Derby	B	1.20	A,B,C,D,I*,K,O	1548	R.Bristol	B	5.00	O
1116	R.Guernsey	B	0.50	G,H,J,O	1548	R.City (City Talk)	I	4.40	C,D
1152	BRMB (Xtra-AM)	I	3.00	K	1557	Chiltern R.(Gold)	I	0.76	G,K*
1152	LBC (L.Talkback R)	I	23.50	G*,J,O	1557	Ocean Sound (SCR)	I	0.50	G,H,O
1152	Metro R. (GNR)	I	1.80	B	1557	R.Lancashire	B	0.25	C,D
1152	Piccadilly R.	I	1.50	C,D	1557	Tandring R.(Mellow)	I	?	O
1152	R.Broadland	I	0.83	I*,O	1584	R.Notttingham	B	1.00	B,G,O
1161	GWR (Brunel R.)	I	0.16	J,O	1584	R.Shropshire	B	0.50	K
1161	R.Bedfordshire	B	0.10	O	1602	R.Kent	B	0.25	E,G,I*,J,O
1161	R.Sussex	B	1.00	O					

Note: Entries marked * were logged during darkness All other entries were logged during daylight or at dawn/dusk.

Listeners:
A: Vera Brindley, Woodhall Spa.
B: Tim Bucknall, while at York.
C: Tim Bucknall, while at Llandudno.
D: Scott Caldwell, Warrington.
E: Ron Oamp, Worthing.

Oman **Jana Arunachalam** noted very good reception of the daily broadcasts to E.Africa from RFI via Issoudun on 25.820 (Fr 0700-1550), rating them as 44444 at 1200. Potent signals also reach Oman from DW via Julich 25.740 (Ger to Japan, E/SE.Asia, M.East, Europe 1100-1355), a typical rating being 45555 at 1210. Also active are the Voice of the UAE in Abu Dhabi 25.690 (Ar to Far East 0900-1100) and R.Nederlands 25.940 (Du 1030-1125, Sun only).

In the **21MHz (13m)** band good reception from R.Australia has been noted in the UK. The Carnarvon broadcast to Asia 21.775 (Eng 0100-0900) was 44344 at 0710 by **Chris Shorten** in Norwich; to C.Pacific areas via Shepparton 21.740 (Eng 2130-0730) SIO444 at 0710 by **Cyril Kellam** in Sheffield; to S.Asia via Darwin? 21.725 (Eng 7-1257) 55544 at 1025 in Bridgwater.

Also heard here in the morning were R.Japan via Moyabi 21.575 (Eng, Jap to Europe, M.East, Africa 0700-0830) SIO444 at 0700 by **Bryan Kimber** in Hereford; R.Pakistan, Islamabad 21.520 (Eng to Europe 0800-0845) 55354 at 0802 by **Eddie McKeown** in Newry; R.Austria Int. via Moosbrunn 21.490 (Ger, Eng to Australia 0800-1100) SIO354 at 0840 by **Kenneth Buck** in Edinburgh; R.Pakistan, Islamabad 21.520 (Eng to Europe 1100-1120) SIO444 at 1100 by **John Coulter** in Winchester; HCJB, Ecuador 21.455 (world-wide u.s.b. + p.c.) 55544 at 1130 in Worthing and 35553 at 1926 by **David Edwardson** in Wallsend; Voice of the UAE in Abu Dhabi 21.515 (Ar to Europe?) 44444 at 1210 by **Chris Haigh** in Huddersfield; RFI via Montsinery 21.765 (Fr, Sp to S.America 1200-1400) 33333 at 1240 by **Ron Galliers** in N.London.

During the afternoon R.Moscow via Armavir 21.785 (Eng to Africa 0700-1700) was 44444 at 1345 by **Peter Polson** in St.Andrews; R.Finland via Pori 21.550 (Eng to USA 1430-1500) 44344 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; BSKSA, Saudi Arabia 21.505 (Ar [Home Service] to N.Africa 1030-1700) SIO444 at 1510 by **Ted Walden-Vincent** in Gt.Yarmouth; UAE R.Dubai 21.605 (Ar, Eng to Europe 0615-1645) 55545 at 1510 by **Peter Pollard** in Rugby; R.Japan via Moyabi 21.700 (Jap to Europe, M.East, Africa 1600-1700) SIO322 at 1600 by **Philip Rambaut** in Macclesfield; BBC via Ascension Is 21.660 (Eng to Africa 0700-1745) 45555 at 1700 in Thumrait.

Later, WCSN, MN 21.545 (Eng to Europe 1800-2000) was 33333 at 1925 by **Robert Connolly** in Killeel; RCI via Sackville 21.675 (Eng to Europe 1930-1959) 44444 at 1957 by **Rhoderick Illman** in Oxted; WYFR, FL 21.525 (Eng, Ar, Fr, Port to W.Africa 1600-2200) SIO343 at 2010 by **Cliff Stapleton** in Torquay; also 21.615 (Eng, Ger, It to Europe 1600-?) SIO444 at 2012 by **Bill Clark** in Rotherham; R.Nederlands via Bonaire

21.590 (Eng to Africa 1730-2025) 44344 at 2019 by **Ken Milne** in Basingstoke; VOFC Taiwan via FL 21.720 (Eng to Europe 2200-2300) 44444 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 Rangataiki on 17.770 (Eng to Pacific areas 2130-0800) were 33323 at 2300 in Worthing and 33333 at 0645 in Morden. Three of R.Australia's 16m broadcasts have also been received here: Shepparton 17.715 (Eng to Pacific areas 0000-0830) SIO444 at 0715 in Sheffield; Darwin 17.750 (Eng to Asia 0800-0900) 32322 at 0807 in N.London & 17.565 (Eng to Asia 1430-1800) 55544 at 1458 by **Richard Radford-Reynolds** in Guildford.

Some of the 16m signals to Europe come from the Voice of Israel, Jerusalem 17.590 (Eng 1300-1325, also to Russia, USA) SIO434 at 1300 by **Tom Smyth** in Co.Fermanagh; WCSN, MN 17.510 (Eng 1600-1700) SIO444 at 1616 in Winchester; WWCR Nashville 17.535 (Eng 1200-2200, also to USA) 33322 at 1800 by **Bernard Curtis** in Stalbridge; R.Algiers Int. via Bouchaoui 17.745 (Fr, Eng 1700-1800, also to M.East) SIO434

at 1700 by **Michael Williams** in Redhill; R.Havana, Cuba 17.705 (Eng 2000-2100) 43444 at 2040 in Killeel; RCI via Sackville 17.875 (Eng 2100-2159) SIO343 at 2125 in Torquay; HCJB, Ecuador 17.790 (Cz, Sw, Ger, Fr, Eng, Sp 1800-2230) SIO444

at 2205 by **Antonio De Abru-Teixeira** in Evesham; VOFC Taiwan via FL 17.750 (Eng 2200-2300) SIO444 at 2210 in Herford.

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

Long Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	H*
153	Donebach	Germany	500	A,B,C,D,E*,F,G,H,J
153	Brasov	Romania	1200	E*,J
162	Allouis	France	2000	A,B,C,D,E*,F,G*,H,I,J
171	Kaliningrad	Russia	1000	B,D,E*,F,G*,H,J
171	Medi-1-Nador	Morocco	2000	H*,J
177	Oranienburg	Germany	750	A,B,C,D,E*,G,H,J
183	Saarouis	Germany	2000	A,B,C,D,E*,F,G*,H,J
189	Caltanissetta	Italy	10	J
189	Tbilisi	USSR	500	J
198	Warsaw 3	Poland	200	J
198	BBC Droitwich	UK	500	A*,B,E*,F,G,I,J
207	Munich	Germany	500	A,B,E*,F,H,J
207	Kiev	Ukraine	500	J
216	RMC Roumoules	S.France	1400	B*,C,D,E*,F,G*,H,J
216	Oslo	Norway	200	B*,E*,J
225	Konstantinow	Poland	2000	A,B*,E*,F,G*,H,J
234	Junglinster	Luxembourg	2000	B,C,D,E*,F,G*,H,J
234	St.Petersburg	Russia	1000	B*,C,E*,J
243	Kalundborg	Denmark	300	A,B,D,E*,F,G,H,J
252	Tipaza	Algeria	1500	B,D*,F,H*,J
252	Atlantic 252	S.Ireland	500	A,B,C,D*,E*,F,G,H,I,J
261	Burg	Germany	200	B*,F,J
261	Moscow	Russia	2000	B,C,E*,G*,H,J
270	Topolna	Czechoslovakia	1500	A,B,D*,E*,F,G*,H,J
270	Orenburg	USSR	15	B*,H*
279	Minsk	Byelorussia	500	B*,E*,H*,J

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:
A: Vera Brindley, Woodhall Spa.
B: Tim Bucknall, Congleton.
C: Scott Caldwell, Warrington.
D: Sheila Hughes, Morden.
E: Eddie McKeown, Newry.
F: George Millmore, Wootton, IDW.
G: Sid Morris, Rowley Regis.
H: Fred Pallant, Storrington.
I: Tom Smyth, Co.Fermanagh.
J: John Wells, East Grinstead.

long medium & short

Tropical Bands

Those noted came from R.Japan via Yamata 17.835 (Eng, Jap to Asia 0100-0300), 24433 at 0135 in Thumrait; R.Romania Int, Bucharest 17.805 (Eng to Pacific areas 0645-0715) 55555 at 0645 in Norwich; KHBI, N.Mariana Is 17.555 (Eng to NE.Asia, Russia 0800-1200) 44333 at 0850 in Bridgwater; Voice of Greece, Athens 17.525 (Gr, Eng to Asia 1000-1050) 32232 at 1042 in St.Andrews; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) 33222 at 1045 in Woodhall Spa and 54555 at 1200 by **Bill Griffith** in Oebrecen, Hungary; DW via Wertachtal 17.765 (Eng to Africa 1100-1150) SIO332 at 1115 by **Francis Hearne** in N.Bristol; Vatican R, Italy 17.865 (Hi, Ta, Mal, Eng to Asia 1500-1600) 44433 at 1500 in Oxted; RTM, Morocco 17.595 (Fr, Eng to M.East, N.Africa 1400-1700) SIO434 at 1533 in Rotherham; R.Nederlands via Flevo 17.580 (Eng to SE.Asia 1530-1625) 34223 at 1530 in Newry; VOA via Greenville 17.650 (Eng to Africa 1600-2200) 45434 at 1700 by **Darran Taplin** in Brenchley; RCI via Sackville 17.820 (Eng to Africa 1800-1829 Mon-Fri, 1800-1859 Sat/Sun) SIO444 at 1830 in Edinburgh; R.Nederlands via Bonaire 17.605 (Eng to W.Africa 1930-2025) 43434 at 1930 in Basingstoke; VOA via Tinang 17.735 (Eng to S.E.Asia 2100-0100) 33433 at 2325 by **Robin Harvey** in Bourne.

Some of R.Australia's **15MHz (19m)** broadcasts have been clearly received in the UK: Shepparton 15.320 to Papua, New Guinea (Eng 2100-0730) SIO444 at 0658 in Sheffield & 15.240 to Pacific areas (Eng 0000-0930) 34333 at 0815 in Morden; Darwin 15.170 to Asia (Eng, Chin 0900-1400) SIO222 at 0917 in Macclesfield.

Among the signals to Europe logged were HCJB, Ecuador 15.270 (Eng 0700-0830) 55545 at 0730 by **Scott Caldwell** in Warrington; R.Japan via Yamata 15.250 (Eng, Jap 0700-0900, also to M.East, Africa) 33333 at 0755 in N.London; R.FPI Costa Rica 15.030 (Eng 1800-1200) 24443 at 0840 in Guildford; Voice of Turkey, Ankara 15.325 (Tur 1000-1700) SIO444 at 1135 in Winchester; R.Norway Int, Oslo 15.270 (Norw 1300-1330, also to W.Africa) 55555 at 1305 in Newry; R.Finland via Pori 15.440 (Eng 1400-1430?) 43343 at 1410 in Oxted; WCSN Scotts Corner 15.665 (Eng 1400-1600) 44444 at 1551 in Basingstoke; Voice of Israel, Jerusalem 15.590 (Eng, Fr 1700-1730, also to USA) 45544 at 1700 in Huddersfield; WWCN Nashville 15.690 (Eng 1200-0000) 43332 at 1820 in Stalbridge; R.Kuwait, Sulaiybiyah 15.505 (Ar 1800-0000, also to N.Africa) SIO555 at 1830 in Edinburgh; R.Finland via Pori 15.440 (Eng 1830-1900, also to M.East, Africa) 44433 at 1832 in Brenchley; RAE Buenos Aires, Argentina 15.345 (Ar, Eng, It, Fr, Ger, Sp 1700-0100) 44444 at 1900 in Oebrecen; RNB Brasilia, Brazil 15.265 (Eng, Ger 1800-2020) 22232 at 1919 by **Gordon Milton** in Emsworth; R.Damascus, Syria 15.095 (Eng 2005-2105, also to USA) 54434 at 2026 in

Freq MHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	1845	D,R
2.325	ABC Tennant Creek	Australia	1845	O
2.485	ABC Katherine	Australia	1845	O
3.210	R.Mozambique	Mozambique	1840	O
3.215	R.Orange	S.Africa	1934	H
3.220	R.HCJB Quito	Ecuador	0410	R
3.255	BBC via Maseru	Lesotho	1840	O
3.270	SWABC 1, Namibia	S.W.Africa	1842	O
3.290	SWABC 2, Namibia	S.W.Africa	1940	H
3.295	Reykjavik	Iceland	1950	M
3.325	FRCN Lagos	Nigeria	2218	L
3.365	R.Rebelde, La Julia	Cuba	0324	F,R
3.365	BBC Radio 2	Ghana	1915	F,L,M,N,O
3.390	R.Candip Bunia	Zaire	1830	O
3.915	BBC Kranji	Singapore	1700	A,B,M
3.930	KBS Seoul	Korea	2210	R
3.950	PBS Qinghai Xining	China	2232	F
3.955	BBC Skelton	England	1815	B,L,M
3.955	Novosibirsk rly	URS	2000	O,O
3.965	RPI Paris	France	1900	B,C,E,F,J,L,M
3.970	RFE Munich	W.Germany	1915	M
3.980	VOA Munich	W.Germany	1900	B,C,F,J,L,M
3.985	R.Beijing, China	SRI Bieme	2000	B,L,M,P
3.985	SRI Berne	Switzerland	1905	B,C,F,J,L,M
3.995	DW Cologne	W.Germany	1905	A,B,F,J,L,M
4.050	R.Moskva 1(Yuzhno sk)	USSR	2124	I
4.055	R.Moskva 1 (Kalinin)	Russia	1935	B,C,F,I,L,O,P
4.080	R.Ulan Bator	Mongolia	2300	R
4.395	R.Moskva 2/3(Yakutsk)	URS	2142	I
4.485	R.Moskva (Ufa)	Russia	2045	E
4.485	Petro sk Kamchatskay	URS	1920	F
4.500	Kinjiang	China	2305	J,L,M
4.600	R.Baghdad	Iraq	1930	J,L,M,O
4.635	R.Dushanbe	Tadzhikistan	1815	L,O
4.735	Kinjiang	China	2308	L,M
4.740	R.Memora	Bolivia	0320	R
4.740	Ashkhabad	Russia	2309	L
4.740	R.Alghanistan	via Russia	2150	I
4.755	R.Meranhao	Brazil	2350	E
4.760	Yunnan Kuming	China	2224	O
4.765	Brazzaville	PR Congo	1910	F,G,I,K,L,M,N,O
4.765	R.Moscow	via Cuba	2345	E
4.770	FRCN Kaduna	Nigeria	1910	E,F,L,M,N,O,R
4.775	RRI Jakarta	Indonesia	1800	O
4.785	R.Baku	Azerbaijan	1930	J
4.790	TWR Manzini	Swaziland	1830	F
4.795	R.Douala	Cameroon	2109	N
4.795	R.Moscow (Kharkov)	Ukraine	1955	L,M
4.800	AQ Santiago	Dominican	0510	R
4.800	AIR Hyderabad	India	1730	O
4.800	R.Moscow Yakutsk	Siberia	1957	O
4.810	R.Yeravan	Armenia	1818	N
4.815	R.diff TV Burkina	Douagadgou	2230	O
4.820	La Voz Evangelica	Honduras	0300	F,R
4.820	R.Moskva 4(Khanty-M)	Russia	1835	F,L,O
4.825	R.Sicuan, Sicuan	Peru	2104	I
4.825	R.Moscow (Yakutsk)	Siberia	2005	L,M
4.825	Ashkhabad	Turkmenia	1930	F
4.830	R.Grigota, Santa Cruz	Bolivia	2107	I
4.830	R.Tachira	Venezuela	0114	F,O
4.832	R.Reloj	Costa Rica	0610	R
4.835	R.Tezulutan, Coban	Guatemala	2350	J
4.835	RTM Bamako	Mali	2030	F,M,N,O
4.840	R.Valera, Trujillo	Venezuela	0300	R
4.845	DRTM Nouakchott	Mauritania	2033	B,E,F,L,M,N,O
4.850	R.Yaounde	Cameroon	2030	E,L,M,N,O
4.850	AIR Kohima	India	1820	N
4.850	R.Tashkent 2	Uzbekistan	1935	L,M,O
4.860	AIR New Delhi	India	1834	J,N,O

St.Andrews; Voice of Vietnam, Hanoi 15.010 (Eng 2030-2100) SIO434 at 2040 in Redhill; RCI via Sackville 15.325 (Eng 2100-2159) SIO434 at 2100 in Torquay; R.Korea, Seoul 15.575 (Ger, Fr, Russ, Eng, Sp, Port, It 1800-2330?) 54444 at 2125 in Kilkeel.

Those noted to other areas were RFO, Tahiti 15.170 (Fr, Tah to SE.Pacific 1600-0930) 24532 at 0525 in Wallsend; R.Romania Int, Bucharest 15.380 (Eng to Pacific areas 0645-0715) SIO333 at 0700 in N.Bristol; UAE R.Dubai 15.320 (Eng to N.Africa 1330-1400) 44444 at 1340 in Thumrait; R.Veritas Asia, Philippines 15.140 (Eng ident 1500, Pil 1505-1600) 24322 at 1500 in Derby; R.Sweden, Stockholm 15.270 (Eng to M.East, Africa 1500-1530) 43343 at 1500 in Worthing; VOIRI, Iran 15.084 (Fa to Asia, Europe, USA 0730-0130) SIO444 at 1600 in Evesham and 53333 at 1926 by **Charles Beanland** in Gibraltar; Africa No.1, Gabon 15.475 (Fr to W.Africa 1600-2000) 55555 at 1820 in Bridgwater; FEBA,

Freq MHz	Station	Country	UTC	DXer
4.860	R.Moscow	Russia	1800	M
4.865	PBS Lanzhou	China	2200	B,D,M,O
4.870	R.Cotonou	Benin	2010	F,I,L,M,N,R
4.875	Super R.Roraima	Brazil	0200	O
4.885	R.Clube do Para	Brazil	0121	O
4.885	Voice of Kenya	Kenya	1821	N,R
4.890	RPI Paris	via Gabon	2230	B,F,L
4.895	Voz del Rio Arauca	Colombia	0150	J
4.895	R.Moscow (Kalinin)	Russia	1822	B,N
4.905	Anhanguera	Brazil	0050	E
4.905	R.Nat N'djamena	Chad	1945	F,M,N,O
4.910	R.Zambia, Lusaka	Zambia	1823	N
4.915	R.Ghana, Accra	Ghana	2029	L,M,N
4.915	Voice of Kenya	Kenya	1821	N
4.920	ABC Brisbane	Australia	2200	R
4.920	R.Quito	Ecuador	0230	O
4.920	AIR Madras	India	1845	J
4.930	R.Moscow	Russia	2030	B,F,G,L,M,N
4.935	Voice of Kenya	Kenya	1800	A,F,H,M,N,O
4.940	R.Kiev 2	Ukraine	1820	I,J,L,M,N,O
4.950	R.Moskva 2 (Yakutsk)	URS	2245	E,F
4.950	R.Nac Luanda	Angola	1851	N,O
4.950	RTM Kuching, Sarawak	Malaysia	1405	A
4.958	R.Baku	Azerbaijan	1950	O
4.960	AIR New Delhi	India	1925	J
4.970	R.Mumbos, Caracas	Venezuela	2245	E
4.975	R.Dushanbe	Tadzhikistan	0009	L
4.980	Ecos del Torbes	Venezuela	2215	M
4.990	FRCN Lagos	Nigeria	1800	M
5.000	VVTO Caracas	Venezuela	0420	R
5.005	R.Nepal, Kathmandu	Nepal	0025	J
5.010	R.Garoua	Cameroon	1810	O,E,F,L,M,N,O
5.015	R.Moskva 2(Arkhangelsk)	URS	2245	F,L
5.020	SIBC Tamil Home Sec.	Sri-Lanka	0105	H
5.025	BSS Thimpu	Bhutan	1420	A
5.025	R.Uganda, Kampala	Uganda	1751	N
5.035	R.Bangui	C.Africa	1856	E,L,N,O
5.035	R.Aime Ata	Kazakhstan	2030	M
5.040	R.Tbilisi 1	Georgia	1950	B,C,E,F,I,M,N,O
5.045	R.Cultura do Para	Brazil	0130	O
5.047	R.Togo, Lome	Togo	2052	B,L,N,O
5.050	R.Tanzania	Tanzania	2034	N,O
5.052	SBC R-1	Singapore	2300	R
5.055	Fero del Caribe	Costa Rica	0346	F
5.055	RFO Cayenne(Matoury)	Fr Guiana	0636	F
5.055	RRI Nabire, Ir.Jaya	Indonesia	2302	B
5.060	PBS Xinjiang	China	2301	J,L
5.065	R.Candip, Bunia	Zaire	1755	N,R
5.260	R.Aime Ata 2	Kazakhstan	2302	B,L,O
5.290	R.Moskva 1(Krasnoyarsk)	Siberia	2304	L
5.840	PBS Xinjiang	China	0025	R
5.800	PBS Xinjiang	China	2314	B

DXers:

- A: Jana Arunachalam, Thumrait, Oman.
- B: Tim Bucknall, Congleton.
- C: Scott Caldwell, Warrington.
- D: Bill Clark, Rotherham.
- E: Antonio De Abreu-Teixeira, Evesham.
- F: Ron Galliers, N.London.
- G: Bill Griffith, Oebrecen, Hungary.
- H: P.R. Gunurapad, Madikwe, S.Africa.
- I: Chris Haigh, Huddersfield.
- J: Sheila Hughes, Morden.
- K: Rhoderick Illman, Oxted.
- L: Eddie McKeown, Newry.
- M: Sid Morris, Rowley Regis.
- N: Fred Pallant, Storrington.
- O: Peter Perkins, Hemel Hempstead.
- P: Peter Pollard, Rugby.
- Q: Richard Radford-Reynolds, Guildford.
- R: Jim Willett, Grimsby.

Seychelles 15.120 (Fa to Iran 1800-1830) 44344 at 1825 in Norwich; VOA via Selebi-Phikwe 15.495 (Eng to Africa 1600-2200) SIO444 at 2000 in Hereford; KTN Salt Lake City 15.590 (Eng to USA 1500-0100) SIO333 at 2254 in Rotherham; R.Sofia, Bulgaria 15.330 (Eng to Latin America) 53344 at 2335 in Bourne; BBC via Woofferton 15.070 (Eng to C.America 2100-0030) SIO343 at 0015 by **Sid Morris** in Rowley Regis.

In the **13MHz (22m)** band good reception has been noted from many areas. Potent signals have been reaching the UK from R.Australia via Carnarvon on 13.755 (Eng to S.Asia 1430-2100). Typical ratings were 45554 at 1635 in Wallsend and 44433 at 1850 in Brenchley. They have also been received in Madikwe at 34323 around 1450. Their Carnarvon broadcast to C.Asia on 13.605 (Chin 1000-1100) was logged in N.London as 33223 at 1004.

Some of the other broadcasts noted in this band came from R.Austria Int,

via Moosbrunn 13.730 (Ger, Fr, Eng, Sp to Europe 0400-1700) SIO444 at 0730 in N.Bristol; R.Korea, Seoul 13.670 (Ger, Eng, Kor, Port, Sp to Europe 0715-1100) 54544 at 0900 in Bridgwater; SRI via Sottens 13.635 (Eng, Fr, It to Asia, Australia 1100-1215) 55555 at 1157 in Emsworth; KHBI, N.Mariana Is 13.625 (Eng to SE.Asia 1000-2000) 43443 at 1205 in Thumrait and SIO322 at 1739 in Rotherham; UAE R.Oubai 13.675 (Eng to Europe 1630-1640) 54555 at 1630 in Worthing; R.Austria Int, via Moosbrunn 13.730 (Ger, Eng, Fr, Spto S.Africa 1700-2100) 55555 at 1844 in St.Andrews; R.Kuwait 13.620 (Eng to Europe 1800-2100, also to USA) SIO343 at 1845 in Torquay and SIO334 at 2058 in Redhill; KSDA Agat, Guam 13.720 (Eng to S.Asia, E.Africa 1700-1900) 44333 at 1810 in Newry; RCI via Sackville 13.650 (Eng to Europe 1930-1959) 23121 in Oxted; Voice of the UAE in Abu Dhabi 13.605 (Ar to Europe) 44444 at 2200 in Morden; WHRI Red Lion 13.760 (Eng to Europe,

long medium & short

Canada 1700-0000) 54444 at 2300 in Norwich.

Some of the **11MHz (25m)** broadcasts to Europe originate from HCJB, Ecuador 11.730 (Eng 0700-0830) 44444 at 0800 in Morden; R.Finland via Pori 11.755 (Eng 1400-1430) 44433 at 1408 in Oxted; BBC via Woofferton 12.095 (Eng 0630-2200, also to M.East, N.Africa) SIO333 at 1700 in Rowley Regis; UAE R.Dubai 11.795 (Ar, Eng 1600-2100) 34343 at 1635 in Worthing; R.Finland via Pori 11.755 (Eng 1830-1900) SIO 434 at 1850 in Redhill; Voice of Israel, Jerusalem 11.587 (Eng, Fr 1900-1955, also to N/C.America) 45554 at 1909 in Wallsend; AIR via Aligarh 11.620 (Hi, Eng 1845-2230) SIO555 at 1930 in Edinburgh and 54333 at 1956 in Gibraltar; RAI Rome, Italy 11.800 (Eng 1935-1955) 44444 at 1942 in Warrington; R.Algiers via Bouchaoui 11.715 (Eng 2000-2100), heard in Derby; R.Damascus, Syria 12.085 (Eng 2005-2105) 55555 at 2105 in Debrechen; R.Havana, Cuba 11.930 (Eng 2200-2300) 44444 at 2210 in Rugby; R.Japan via Moyabi 11.735 (Jap, Eng 2200-0000) SIO322 at 2317 in Rotherham.

Also logged were R.Havana, Cuba 11.760 (Eng to N/C.America 0400-0600) SIO433 at 0430 in Sheffield; R.Netherlands via Bonaire 11.895 (Eng to Pacific Areas 0730-0825) SIO433 at 0730 in N.Bristol; HCJB, Ecuador 11.925 (Eng to S.Pacific 0730-1125) 33343 at 0850 in Norwich; VOA via Greenville 11.915 (Eng to Caribbean 1000-1200) SIO222 at 1132 in Macclesfield; R.Beijing, China 11.815 (Eng to Asia 1400-1600) 43343 at 1400 in Thumrait; Voice of the Mediterranean, Malta 11.925 (Eng, Ar to N.Africa 1400-1600) 32222 at 1430 in Woodhall 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 1600-1630) 54544 at 1624 in Guildford; BBC via Kranji 11.955 (Eng to SE.Asia, Australia 1800-0030) 21432 at 1840 in Madikwe and 43333 at 2000 in N.London; RDP Portugal 11.840 (Port to Brazil 2200-0230) SIO433 at 2230 in Evesham; R.Sweden 11.730 (Eng to Asia 2030-2130) 22232 at 2032 in Basingstoke; Wings of Hope, Lebanon 11.530 (Eng to M.East 2000-2200) SIO433 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 2300-2350) 55555 at 2355 in Killeel; R.Netherlands via Talata Volon 11.655 (Eng to S.Asia 0030-0330) 32322 at 0044 in Newry.

In the **9MHz (31m)** band good reception from R.New Zealand Int. via Rangitaiki on 9.700 (Eng to Pacific areas 0800-1205) has been noted in the UK. In Wallsend their signal was 34543 at 0805. Two of R.Australia's broadcasts via Carnarvon have also reached our shores: 9.475 to Asia (Eng 0900-1000), SIO333 at 0900 in Hereford; 9.860

Transatlantic DX Chart

Freq kHz	Station	Location	Time (UTC)	DXer
USA				
1010	WINS	New York	2300	C
1130	WNEW	New York	0445	B
1210	WOGL	Philadelphia	0130	C
1220	WKNR	Cleveland	0145	C
Canada				
590	VOCM	St.John's, NF	2330	C
620	CKCM	Grand Falls, NF	0225	C
820	CHAM	Hamilton, ON	0410	C
930	CJYQ	St.John's, NF	0120	A,B
C.America & Caribbean				
1570	Atlantic Beacon			
		Turks & Caicos Is	0210	C
South America				
1220	R.Globo	Rio, Brazil	0315	C

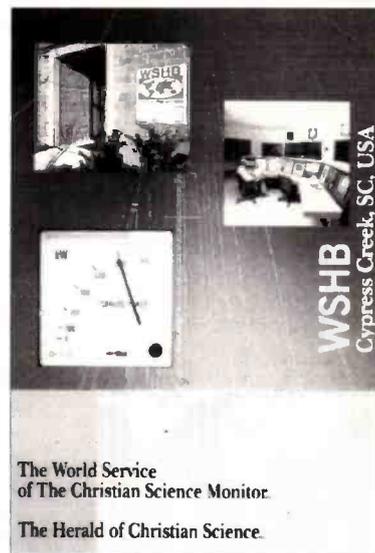
DXers:

A: Tim Bucknall, Congleton.
B: Ron Damp, Worthing.
C: Jim Willett, Grimsby.

QSL Verification Card
from WSHB, Cypress
Creek, S. Carolina, USA.

Equipment Used

Jana Arunachalam, Thumrait, Oman: Sony ICF-7600DS + 6m wire.
Charles Beanland, Gibraltar: Sangean ATS-803 + a.t.u. + r.w. or Howes AA2.
Darren Beasley, Bridgwater: Philips D2935 + Hex loop or a.t.u. + 10m wire.
Vera Brindley, Woodhall Spa: Sangean ATS-803A + whip or r.w.
Kenneth Buck, Edinburgh: Lowe HF-225 + r.w. in loft.
Tim Bucknall, Congleton: Sony ICF-2001D + AN-1.
Scott Caldwell, Warrington: Sony ICF-2001 + r.w. in loft.
Bill Clark, Rotherham: Sony ICF-2001D + built-in whip or r.w.
Robert Connolly, Killeel: Realistic DX100L + 30m wire in loft.
John Coulter, Winchester: Yaesu FRG-7 + r.w.
Bernard Curtis, Stalbridge: Grundig Satellit 2100 or Fairmate 2000 scanner.
Ron Damp, Worthing: Racal RA17 + Hex Loop or 30m inverted V dipole.
Antonio De Abreu-Teixeira, Evesham: Sony ICF-2001D + 9.5m wire.
David Edwardson, Wallsend: Trio R600 + inverted V trap dipole.
Ron Galliers, London: Philips D2935 + a.t.u. + 30m wire.
Bill Griffith, London: Sony ICF-2002 + 10m wire.
P.R.Guruprasad, Madikwe, S.Africa: Sony ICF-7600DA + built-in whip.
Chris Haigh, Huddersfield: Lowe HF-225 + Lowe W-225 or 20m wire.
Robin Harvey, Bourne: Matsui MR-4099 + s.w. loop.
Francis Hearne, N.Bristol: Sharp WQT370 + r.w.
Sheila Hughes, Morden: Sony ICF-7600DS + loop; Panasonic DR48 + 15m wire.
Rhoderick Illman, Oxted: Kenwood R5000 + Mag.Balun + 19m wire.
Cyril Kellam, Sheffield: Sony ICF-7600DS + AN-1 or 25m wire.
Bryan Kimber, Hereford: Zenith R7000 or Realistic SX190 + 25m wire.
Eddie McKeown, Co.Down: Tatung TMR-7602.
George Millmore, Wootton, IOW: Racal RA17L + v.l.f. converter + loops.
Ken Milne, Basingstoke: Matsui MR-4099 + 6m wire.
Gordon Milton, Emsworth: Sony ICF-2001D + r.w.
Sid Morris, Rowley Regis: Kenwood R5000 + 31m wire.
Fred Pallant, Storrington: Trio R2000 + r.w. in loft.
Roy Patrick, Derby: Lowe HF-125 + 22m wire.
Peter Perkins, Hemel Hempstead: Kenwood R5000 + 20m wire.
Peter Pollard, Rugby: Sony ICF-2001D + AN-1.
Peter Polson, St.Andrews: Lowe HF-225 + loop or indoor Joystick.
Richard Radford-Reynolds, Guildford: Sangean ATS-803A + 6m wire.
Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.
Chris Shorten, Norwich: Matsui MR-4099 + 10m wire.
Tom Smyth, Co.Fermanagh: Morphy Richards R191 or Vega Selena + whip.
Cliff Stapleton, Torquay: Trio R1000 + dipole or r.w.
Darran Taplin, Brenchley: Yaesu FRG-7700 + FRA-7700 or FRT-7700 + 35m wire.
Phil Townsend, London: LF converter + Lowe HF-225 + a.t.u. + r.w.
Ted Walden-Vincent, Gt.Yarmouth: Grundig Satellit 1400L + r.w.
John Wells, E.Grinstead: RCA AR88D + Loop, also v.l.f. converter.
Jim Willett, Grimsby: RCA AR77 + 4m loop or Trio 9R-59DS + a.t.u. + X dipole.
Michael Williams, Redhill: Realistic DX-400 + built-in whip.
Julian Wood, Elgin: Kenwood R2000 + Yaesu FRT-7700 a.t.u. + 6m wire.



The World Service
of The Christian Science Monitor
The Herald of Christian Science.

to S.Asia (Eng ?-2100), 53343 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 Flevo 9.855 (Eng 1230-1330) SIO444 at 1230 in Redhill; RFI via Allouis 9.805 (Fr, Eng 0600-1400) SIO444 at 1340 in Gt.Yarmouth; Polish R, Warsaw 9.525 (Eng 1500-1555) 44444 at 1500 in Brenchley; R.Tirana via Lushnje 9.760 (Eng 2200-2230) 53333 at 2208 in Guildford.

Also logged were SRI via Schwarzenburg 9.560 (Eng to Asia, Australia 0900-0930) SIO323 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, Nardor 9.575 (Ar, Fr to N.Africa 0500-0100) SIO433 at 1715 in Macclesfield; AIR via Delhi 9.910 (Eng to Australia, NZ 2045-2230) 55445 at 2130 in Rugby; R.Cancao Nova, Brazil 9.675 (Port 24hrs) SIO333 at 0010 in Evesham; BBC via Sackville 9.590 (Eng to Canada 2100-0030) SIO333 at 0020 in Rowley Regis.

The **7MHz (41m)** broadcasts to Europe include Croatian R, Zargreb 7.240 (News in Eng), 33553 at 0604 in Wallsend; R.Czechoslovakia, Prague 7.345 (Ger, Eng, Fr 0600-1300) SIO444 at 0940 in Hereford; AIR via Aligarh 7.412 (Eng 1845-1945) 54444 at 1900 in Norwich; RAI Rome, Italy 7.275 (Eng 1935-1955) 43343 at 1940 in St.Andrews; Polish R, Warsaw 7.270 (Eng 1930-2025) 41332 at 1941 in Basingstoke; Voice of Greece, Athens 7.450 (Gr, Eng, Fr, Ger 2000-2050), heard by Phil Townsend in E.London; R.Ukraine Int, Kiev 7.240 (Eng) 53553 at 2155 in Bridgwater.

The **6MHz (49m)** broadcasts to Europe from RTL Luxembourg 6.090 (Fr, Eng 0600-0200) 44433 at 1015 in Oxted; R.Sweden, Stockholm 6.065 (Eng 2030-2130) 55555 at 2033 in Warrington; R.Budapest, Hungary 6.110 (Eng 2100-2200) SIO222 by Julian Wood in Elgin; R.Austria Int, Moosbrunn 6.155 (Eng 2130-2200) SIO545 at 2130 in Co.Fermanagh. Also logged were CKZN St.John's, NF 6.160 (Eng to USA, Canada 0930-0500) SIO322 at 2255 in Rotherham; R.Gaucha, Brazil 6.020 (Port 24hrs) as SIO222 at 2320 in Evesham; BBC via Ascension Is 6.005 (Eng to Africa 0300-0330) 32222 in Stalbridge.

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 101.8MHz.

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 101.6MHz 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

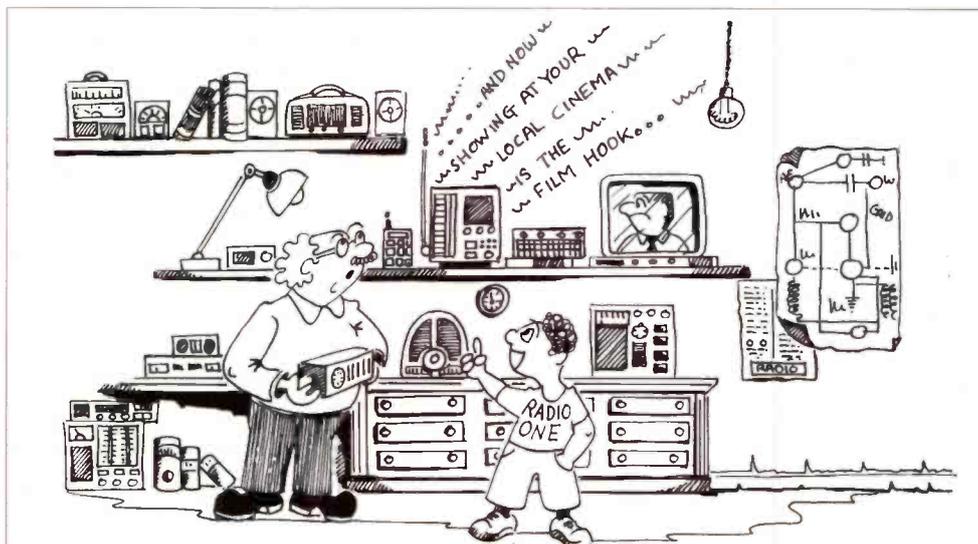
Radiocommunications Agency views with great seriousness the misuse, by an irresponsible minority, of frequencies in frequency bands assigned exclusively to the maritime mobile and aeronautical services. As a licensed radio amateur yourself, you will understand the need for frequency use to be planned and adhered to, especially where 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 prosecute in respect of unauthorised broadcasting offences. Perhaps you would give the matter some consideration before publishing another article of this nature."

Sorry, folks, but in view of the above response to this column, the Editor has decided to curtail its coverage until he can get some sort of guidelines from the RA on just what can and cannot be published. For example, is it illegal to publish reports of broadcasts that have been made - which is what this column has been doing - or is this sort of report just as bad in the eyes of the RA as printing a schedule for the next few weeks? If we are not allowed to listen to pirate broadcasts then how do we tell which station is a pirate and which is legitimate? Are the many anti-government stations active in the Third World countries pirates? This column will try to meet your needs in the future, albeit in a changed way. **Editor.**

Listen With Grandad By Leon Balen and David Leverett



Is that what they call pirate radio Grandad?

SCANNER OWNERS

Listen in when you are 'out' with the amazing AUTO-VOX

Connect to any receiver with a squelch control and the AUTO-VOX will automatically switch your tape recorder on and off as signals are detected. A MUST for all scanner owners.

Return to a neatly compressed tape of all the action

The AUTO-VOX may be fitted directly into larger scanners or recorders, taking its power from the rig itself, or housed separately in the free project box supplied.

Supplied as a kit with all parts and instructions or ready built and tested.

KIT £12.50 AUTO-VOX BUILT £25.00

Turbo-Charge your scanner with a little help from RADIO RESEARCH

AR 1000/2000 - FAIRMATE HP100/200 - Full coverage modification. 0.5-1300MHz. Upgrades your rig with NO GAPS - Why pay more?£5.00

Customising Packs for REALISTIC PRO-2004, 2005, 2006 & 2022. Full of useful mods for your set. (State pack required).....£5.00

400 Channel Upgrade for REALISTIC PRO-2004 with Super-Scan rate£5.00

Send a SAE for full details and prices of all our scanner upgrades

RADIO RESEARCH (SWM) 3 Pasture Close, Whitmore, Staffs. ST5 5DQ

ANORAK MONTHLY

Is a new monthly publication featuring news of Radio Caroline, Satellite Radio, Local Radio, Short Wave, International Radio and more.

For the latest issue send 50p plus a SAE (or £1.50 for last three issues) to:-
CM LEISURE SALES, DEPT. SW, P.O. BOX 46, ROMFORD RM11 2QE
 (our preferred method of payment is a coin taped to a piece of card, stamps or blank postal orders).

REMEMBER THE PIRATE STATIONS

If you would like a copy of our latest comprehensive catalogue featuring hundreds of souvenir items from the Offshore Radio eras of the Sixties, Seventies and Eighties.

Send a cheque or postal order for £2.50 made payable to "CM Leisure Sales" (refundable with first order) or, if you would like a sample copy of Anorak Monthly, as well, send £3.00 for both (or £4.00 including back issues).

ALAN HOOKER

SLIMLINE ■

£24.95 + £2p&p

HEAVY DUTY ■

£29.95 + £2p&p

Allows you to safely mount your hand-held or mobile radio where you can see the controls...

- Mounts any single flat surface.
- Adaptable to any vehicle or station use.

Construction made of high quality aluminium.

THE 'RIG SAVER'

APPROVED DEALER FOR

KENWOOD ICOM YAESU AOR

42 Nether Hall Road, Doncaster, South Yorkshire, DN1 2PZ
 Telephone: Doncaster (0302) 325690



SAVE £80*

*Pro-2006 Super Low Price
 25-520, 760-1300MHz, AM/FM
 12/240 volts, 400 memories
ONLY £249.50 - List £329.95

PRO-2022 - £179.95	(List £199.95)
PRO-9200 - £119.95	(List £129.95)
PRO-2025 - £89.95	(List £99.95)
PRO-35 - £159.95	(List £179.95)
PRO-37 - £199.95	(List £229.95)
FERGUSON SRB1 SAT. RX & DISH	£59.95

All scanners include FREE p&p in the UK. 12 months warranty

GOCVZ



Link Electronics

(Authorised Tandy dealer)

228 Lincoln Road, Peterborough PE1 2NE

(0733-345731) SAE for leaflet. Phone for latest on second-hand bargains

G6YTI



Access

AMDAT

4 Northville Road, Northville Bristol, BS7 0RG 0272 699352

VISA

The Leading Amateur Radio Retailer for Bristol and South Wales
At last! The first radio-controlled clock with time zone setting
 Ideal for use in the shack as you can now display GMT all the year round

Credit Available



Available in Anthracite or White 12.5 x 6.5 x 3.2 cm

The new generation of radio-controlled alarm clocks perform a large number of functions; these now include time zone adjustment.

Other features: Alarm time display (Hours/minutes), alarm readiness display, day of the week in a choice of 3 languages, eternal calendar (date/day/month), visual reception monitoring, internal time memory, illumination, alarm repetition, 24 hour automatic alarm system, battery charge indicator, transmitter check button.

The ability to change time zone allows operation throughout Europe
Ideal for the shack, office or home Available now only £54.95 inc p&p
 Large range of other JUNGHANS clocks in stock. Send SAE for details

STOP PRESS

Now in stock

AOR 1500 Handheld scanner

This long awaited radio gives SSB reception together with wide frequency coverage

Available now for only **£279.00**

AMDAT stocks a wide range of amateur radio equipment and accessories at our Bristol shop. Call in or send an SAE for a full catalogue.

Second hand radio equipment bought and sold.

Wide range of books and magazines available

Prices subject to change Prices shown include VAT except where shown



BY APPOINTMENT
TO HER MAJESTY THE QUEEN
RADIO MANUFACTURERS



BY APPOINTMENT
TO H.M. QUEEN ELIZABETH
THE QUEEN MOTHER
MANUFACTURERS AND SUPPLIERS OF
RADIO RECEIVERS



BY APPOINTMENT
TO H.R.H. THE PRINCE OF WALES
MANUFACTURERS AND SUPPLIERS OF
RADIO RECEIVERS

ROBERTS RADIO

sound for generations

From Roberts Radio comes a range of world radios and radio cassette recorders which combine audio excellence with ease of use.

The Roberts Radio range appeals to both the connoisseur and the casual consumer alike. From multi-band technology through to leading compact models, the Roberts name offers unequalled quality with the very latest in technology.

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 bandsread tuning with stereo FM via ear or headphones. Complete with soft carrying pouch and stereo earpieces.



R621

10-Band Compact Stereo World Radio (FM/MW/SW1-8)

All the functions of a much larger model are combined in this compact radio with clock/alarm. Easy SW bandsread 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.



ROBERTS RADIO CO. LTD

127 Molesey Avenue, West Molesey, Surrey KT8 2RL

Tel: 081 979 7474 Fax: 081 979 9995

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

HOKA ELECTRONICS HAVE THE ANSWER! There are some well-known CW/RTTY decoders with limited facilities and high prices, complete with expensive PROMS for upgrading etc., but then there is CODE3 from Hoka Electronics! It's up to you to make the choice – but it will be easy once you know more about Code3. Code3 works on any IBM-compatible computer with MS-DOS 2.0 or later and having at least 640k of RAM. The Code3 hardware includes a digital FSK Converter unit with built-in 230V AC power supply and RS232 cable, ready to use. You'll also get the best software ever made to decode all kinds of data transmissions. Code3 is the most sophisticated decoder available and the best news of all is that it only costs **£299!**

- Morse – Manual/Auto speed follow. On screen WPM Indicator
- RTTY /Baudot/Murray/ITA2/CCITT2 plus all bit inversions
- Sitor – CCIR 625/476-4, ARQ, SBRS/CBRS FEC, NAVTEX etc
- AX25 packet with selective call sign monitoring, 300 Baud
- Facsimile, all RPM/IOC (up to 16 shades at 1024 x 768 pixels)
- Autospec – Mk's I and II with all known interleaves
- DUP-ARQ Artrac – 125 Baud Simplex ARQ
- Twinplex – 100 Baud F78C Simplex ARQ
- ASCII – CCITT 5, variable character lengths/parity
- ARQ6-90/98 – 200 Baud Simplex ARQ
- SI-ARQ/ARQ-S – ARQ1000 simplex
- SWED-ARQ/ARQ-SWE – CCIR 518 variant
- ARQ-E/ARQ1000 Duplex
- ARQ-N – ARQ1000 Duplex variant
- ARQ-E3 – CCIR 519 variant
- POL-ARQ – 100 baud Duplex ARQ
- TDM242/ARQ-M2/4-242 CCIR 242 with 1/2/4 channels
- TDM342/ARQ-M2/4 CCIR 342-2 with 1/2/4 channels
- FEC-A – FEC100A/FEC101
- FEC-S – FEC1000 Simplex
- Press DPA – 300 Baud ASCII F78C
- Sports Info. 300 Baud ASCII F78C
- Hellsreiber – Synchron./Asynchron.
- Sitor RAW – (Normal Sitor but without synchronisation)
- ARQ6-70
- Baudot F788N

All the above modes are pre-set with the most commonly seen baudrate setting and number of channels which can be easily changed at will whilst decoding. Multi-channel systems display ALL channels on screen **at the same time**. Split screen with one window continually displaying channel control signal status e.g. idle Alphas/Beta/RQ's etc, along with all system parameter settings e.g. unshift on space, **Shift on Space**, multiple carriage returns inhibit, auto receiver drift compensation, printer on, system sub-mode. Any transmitted error correction information is used to minimise received errors. Baudot and Sitor both react correctly to third shift signals (e.g. Cyrillic) to generate ungarbled text unlike some other decoders which get 'stuck' in figures mode!

Six options are currently available extra to the above specification as follows: 1) Oscilloscope. Displays frequency against time. Split screen storage/real time. Great for tuning and analysis. £29. 2) Piccolo Mk 6. British multi-tone system that only we can decode with a PC! £59. 3) Ascii Storage – Save to disc any decoded ascii text for later processing. £29. 4) Coquelet – French multi-tone system, again only on offer from Hoka! £59. 5) 4 Special ARQ and FEC systems i.e.. TORG-10/11, ROU-FEC/RUM-FEC, HC-ARQ (ICRC) and HNG-FEC. £69. 6) Auto-classification – Why not let the PC tell YOU what the keying system is?! £59.

NEW VERSION 4.00 JUST RELEASED – Now with improved user interface and even more features!

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

Call or write for our comprehensive information leaflet – there is just not enough room here to tell you everything about Code3!
Professional users – please ask about our new CODE30 DSP unit available soon! (Piccolo down to -12dB S/N!!) Prices start from £1250.

HOKA ELECTRONICS (UK)

26 Bury Road, Shillington, Hitchin, Herts. SG5 3NY
Phone (0462) 711600 or Fax (0462) 711769



NEW

FAX and WEATHER SATELLITES

Full resolution charts and greyscale pictures from any SPECTRUM computer to a dot matrix printer. Basic system £40 plus interface for FAX £40 or WX SATS £59.

APT-1 WEATHER SATELLITE MODULE

Enables all weather satellite signals to be displayed on any FAX system. Plugs into RX-8 system direct. £59 or £39 if ordered with RX-8.

RX-8 8-MODE RECEIVE

Every possible feature and performance to receive FAX, HF & VHF PACKET, COLOUR SSTV, RTTY, CW, AMTOR, UoSAT and ASCII on any BBC computer. Reviews Oct. 89 Ham Radio Today and July 91 Rad Comm. Complete system of EPROM, interface, instructions, leads and demo cassette £259.

RX-4 RTTY CW SSTV AMTOR RECEIVE

Performance, features and ease of use make this still a best seller. Needs TIF1 interface. **BBC, CBM64** tape £25, disk £27. **VIC20** tape £25. **SPECTRUM** tape £40, + 3 disk £42 inc adaptor board (needs TIF1 also) or software-only version £25. **TIF1 INTERFACE** has 4-pole filtering and computer noise isolation for excellent HF and VHF performance. Kit £30, ready-made, boxed with all connections £40. Available only with software.

Also **MORSE TUTOR** £8, **LOGBOOK** £8, **RAE MATHS** £8 for **BBC, CBM64, VIC20** and **SPECTRUM**. **BBC LOCATOR** with UK, Europe, World maps £10. Disk £2 extra for all. Lots of information available about everything, please ask. Prices include VAT and p&p by return.



technical software (SWM)

Fron, Upper Llandwrog, Caernarfon LL54 7RF
Tel: (0286) 881886



PACKET RADIO

for
ATARI ST – PC COMPUTERS – COMMODORE 64
– NO TNC! –

Yes, we are now able to offer a modem, together with a free copy of **Public Domain Shareware Software** for all the above machines. This tried and tested method of operating packet radio is both simple and economical. When ordering, be sure to tell us which computer you require the modem for. (For Commodore state disc or tape). No charge will be made for the copy of the programme supplied with the modem.

STANDARD MODEM £50 – DE LUXE MODEM £55
Baycom Licensee With Tx & Rx LEDs

Send large SAE (33p stamp) for details of all our products.

J. & P. ELECTRONICS LTD.



Unit 45, Meadowmill Estate, Dixon Street,
Kidderminster DY10 1HH Tel: (0562) 753893



FOR SALE: 4CX250B Eimac/ITT, ex-equipment but fully tested at high power – £30 plus VAT, post paid each. Discounts for 10 or more pieces.

FOR SALE: 4CX350A Eimac, ex-equipment but unused appearance, fully tested at high power – £60 plus VAT, post paid each. Discounts for 10 or more pieces.

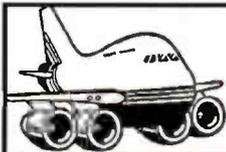
WANTED VALVES: KT66, KT77, KT88, PX4, PX25 valve collections, klystrons, magnetrons, transistors. Please post us list of what you have. Quick replies, cash waiting.

BILLINGTON EXPORT, Unit F2 Oakendene Industrial Estate, Near Horsham, RH13 8AZ.

Callers by appointment only. Tel: (0403) 865105 FAX: (0403) 865106.

Minimum order £50 + VAT. (UK/export).

G2VF LOOP ANTENNAS WITH ATU FOR HF HAM BAND TRANSMISSION (SWR One to One 40, 15 and 10 One Point Five to One 80 and 20) **AND SWLs LONG AND MEDIUM WAVE FOR BCLs**. Loops 21 inches square or triangle. No special skills required. Circuits, Parts Lists sources of supply assembly data. HIGH FREQUENCY LOOP 80 to 10 Metres £5. LONG AND MEDIUM WAVE LOOP FOR BCLs £3. LONG MEDIUM SHORT WAVE LOOP 1500 to 10 METRES FOR BCL SWL £8. SHORT WAVE ATU LOOP OR LONG WIRE £4. PRE AMP LW MW S WAVE £2. PHOTOCOPIER HRO MANUAL £4. MW LOOP WITH PRE AMP ATU £3. PRE AMP FOR G2VF HF LOOP OR ATU £4. SHORT WAVE ATU BUILT-IN PRE AMP FOR LOOP OR LONG WIRE £7. SAE details. All projects D.I.Y. METAL DETECTOR £2. **F. G. Rylands**, 39 Parkside Avenue, Millbrook, Southampton SO1 9AF. Tel: (0703) 775064.



FLIGHTDECK THE AIRBAND SHOP

192 Wilmslow Rd., Heald Green, Cheadle, Cheshire SK8 3BH
Telephone: 061-499 9350 Fax: 061-499 9349

ALL THE ENTHUSIAST NEEDS

Main Stockists of receivers by:

SONY, ICOM, LOWE, KENWOOD AOR, YUPITERU,
UNIDEN, SIGNAL, WIN, FAIRMATE.

Comprehensive range of accessories,
aerials, books, aero-charts etc.

PX welcome, finance available (subject to status).

Open: Monday to Saturday 9.30 a.m. – 5.30 p.m.

We are located on the A34 (Wilmslow Road), 2 miles South from the M63
Junction 10, just 3 miles from Manchester International Airport

Send 50p for illustrated catalogue from dept. SWM4

MODULATIONS COMMUNICATIONS

62 Wootton Road, Abingdon, Oxon. Tel: & Fax: (0235) 521400



FAIRMATE HP2000

As the UK distributor for Fairmate we are constantly working with them to update and produce new features and models.

- Continuous freq. Coverage from 100kHz to 1300MHz
- 1000 Channels of memory
- Keypad or rotary control
- AM, FM and wide FM modes
- Search steps from 5kHz to 995kHz

Every set comes complete with:- Full set of high power ni-cads, 2 antennas, carrying case, earphone, DC cable, belt clip, strap and charger. £289

MVT 7000 Handheld

The latest in a family of three!

- Frequency coverage from 8 to 1300MHz (100kHz-1300MHz at reduced sensitivity)
- 200 Memory channels
- Rotary or keypad frequency control
- AM/FM narrow and wide FM modes
- Large easy read display with signal meter.

Every set comes complete with:- Full set of high power ni-cads, telescopic antenna, 240vac mains charger, DC power lead and carry strap. £289



NEVADA AUTHORIZED DEALERS

ALSO CB RADIO STOCKISTS

Part exchange welcome/Mail order
Call John G1FEK or Val G1HQ8

AIR SUPPLY

83B HIGH STREET, YEADON, LEEDS LS19 7TA. Tel: (0532) 509581
Shop just two minutes from Leeds Bradford Airport.

AIR TRAFFIC CONTROLLERS

On hand to help you towards an interesting and rewarding pastime. Specialists in **AIR BAND RADIOS AND SCANNERS**. Hand held, mobile or base – AOR, Signal, Black Jaguar, Yupiteru, Icom, Uniden, Sony, Nevada: HF receivers from Sony, Icom, Lowe, Yaesu, Kenwood: wide range of accessories, aerials, plus CAA publications, maps, books, models from IMC, Wooster, Schabak, photos, souvenir products from British Airways and British Midland Airways. Large range of pilots products. Agents for Transair, AFE and Airtour. Plus lots more.

If you would like our info pack send large SAE and stamps to value of 50p.

Shop hours: 1000-1330: 1430-1700 (hours do vary) CLOSED WEDNESDAY

ELECTRONICS VALVES & TRANSISTORS

Phone for a most courteous quotation
081-743 0899

We are one of the largest stockists of valves etc, in the U.K.

COLOMOR (ELECTRONICS) LTD. 170 GOLDHAWK ROAD LONDON W12 8HJ

YORKSHIRE

Alan Hooker Radio Communications

42 Netherhall Road, Doncaster.
Tel: (0302) 325690 Open: Mon-Sat 10-5pm
Closed Thursdays.

KENWOOD

YAESU

ICOM
& most
Scanners

PC HF FAX 6.0

RECEIVE and TRANSMIT FAX IMAGES

This latest version of PC HF FAX not only enables you to receive weather charts, rebroadcast satellite pictures, amateur and press transmissions on your PC computer but also has the ability to transmit your own fax messages.

NEW FEATURES INCLUDE:

230 page manual with worldwide fax frequency and schedule list.

Integrated online fax broadcast schedules with multiple search fields.

Support for Super VGA displays as well as Hercules, CGA, EGA, VGA, LCD.

Standard capture resolution 640x800 with 16 grey levels, with VGA, and EMS memory images are saved at 1280x800 with 256 grey levels.

True colour press and satellite rebroadcast images in EGA, VGA and SVGA.

Printer support for 14" wide printers plus Epson compatible colour printers.

File compression, Image cropping, Digital noise reduction, Pixel photometry, and Contrast control.

Import of ASCII text files for conversion and transmission as fax files.

Installation is simple, both the demodulator and modulator plug into the serial port of the PC and are powered by the computer.

Upgrade for existing PC HF FAX users £39.95 p&p £1.50

£116.33 inc VAT p&p £3.25

Optional Transmit Modulator £59.80



All items come complete with a comprehensive manual, tutorial audio cassette and demodulator. They will work on any PC compatible computer from 8088 to 486 and notebooks. The demodulator plugs into the serial port of the PC and requires audio from a radio receiver. Suitable dedicated receivers and aerials are also available.

Call today for full details and brochures

COMAR ELECTRONICS

UNIT 10, SAMUEL WHITES ESTATE,
MEDINA ROAD, COWES,
ISLE OF WIGHT, PO31 7LP

Tel: 0983 200308 Fax: 0983 280402

PC GOES/WEFAX

PC GOES/WEFAX enables you to receiver both FAX and SATELLITE images on your PC computer

In FAX mode it will display weather charts, rebroadcast satellite images, press and amateur transmissions. In SATELLITE mode it will capture images from both METEOSAT and all Polar orbiting satellites. Some of its many advanced features are:

- Image resolution: 640x800-16 standard, 1280x800x256 with VGA and 1MB EMS
- Super VGA support
- Display in black/white, monochrome grey scale, blue/grey
- Colour or user programmable colour
- supports all known FAX and satellite transmission modes
- Start, stop, phasing tone recognition and tuning oscilloscope
- Latitude and longitude gridding on Polar orbiting images
- Interactive thermal infra red analysis
- Polar orbiting prediction program
- Multiframe animation
- Image brightness
- Contrast
- Reversal and rotation control.

Price only £199 inc VAT p&p £3.25

PC SWL 3.0

PC SWL is a complete package allowing decoding of data sent over radio

This new version contains the following facilities:

- RTTY baudot 45, 50, 75 and 100, or user selectable rate
- ASCII 75, 110, 150, and 300, or user selectable rate
- FEC/ARC including AMTOR/SITOR 75 and 100 baud
- MORSE CODE with automatic or manual speed control
- NAVTEX marine weather and navigational information
- RAW HEX for manual decoding
- Improved automatic signal analysis
- Integrated shortwave station log, to enable search, sort and store stations
- New drop down menus, integration with PC HF FAX.

Upgrade for existing PC SWL users £39.95 p&p £1.50

£99 inc VAT p&p £3.25

Order PC SWL and PC HF FAX together for only £178 p&p £3.25

SWM BOOK SERVICE



0202 665524

The books listed have been selected as being of special interest to our readers. They are supplied from our editorial address direct to your door. Some titles are overseas in origin.

HOW TO ORDER

POST AND PACKING; add £1.00 for one book, £2.00 for two or more books, orders over £40 post and packing free, (overseas readers add £1.75 for one book, £3.50 for two or more for surface mail postage) and send a postal order, cheque or international money with your order (quoting book titles and quantities) to PW Publishing Limited, FREEPOST, Enefco House, The Quay, Poole, Dorset BH15 1PP. Please make your cheques payable to Short Wave Magazine, payment by Access, Mastercard, Eurocard or Visa also accepted on telephone orders to Poole (0202) 665524. Books are normally despatched by return of post but please allow 28 days for delivery. Prices correct at time of going to press. Please note: all payments must be made in Sterling.

O/P = Out of print, O/S = Out of stock.

LISTENING GUIDES

FERRILL'S CONFIDENTIAL FREQUENCY LIST
Compiled by Geoff Halligey Completely revised, much larger and spirally bound. Now covers 1.6-28MHz covered in great depth, with new reverse frequency listing. Who's using what frequency and mode, what's that call sign? A very comprehensive book. 390 pages. £17.95

SOUNDS EASY (1991 EDITION)
Compiled by Ken Davies A complete guide to the numerous local radio stations in the UK. Invaluable if you travel a lot. Itemised by areas, it makes finding your kind of sounds easy. 52 pages. £2.95

AIR TRAFFIC RADIO (8th Edition 1992)
Compiled by Ken Davies Completely revised to make this one of the most comprehensive guides to the UK airband communications. Frequencies and abbreviations used in UK air traffic control. Where to listen for tower, ground and radar control in civilian and other airports. Includes a section on off-shore oil related use. 72 pages. £4.50

INTERNATIONAL RADIO STATIONS GUIDE (BP255)
New revision by Peter Shore As in, 'Broadcast Roundup', his column in PW, Peter Shore has laid this book out in world areas. There are sections covering English language transmissions, programmes for DXers and s.w.l.s. Along with sections on European m.w. and UK f.m. stations. 266 pages. £5.9

AIR BAND RADIO HANDBOOK (3rd Edition)
David J. Smith Listen to conversations between aircraft and ground control. The author, an air traffic controller, explains more about this listening hobby. 174 pages. £7.50

DIAL SEARCH
George Wilcox The listener's check list and guide to European broadcasting. Covers m.w., l.w., v.h.f. and s.w., including two special maps. 54 pages. £3.95

FLIGHT ROUTINGS 1992
T.T. Williams Identifies airline flights, schedule, charter, cargo and mail, to and from the UK and Eire and overflights between Europe and America. 124 pages. £5.75

GUIDE TO BROADCASTING STATIONS
20th Edition 1989/90. Philip Derrington Frequency and station data, receivers, antennas, Latin American DXing, reporting, computers in radio, etc. 240 pages. £10.95

GUIDE TO FACSIMILE STATIONS 11th Edition
Joerg Klingenfuss This manual is the basic reference book for everyone interested in FAX. Frequency, call sign, station name, ITU country/geographical symbol, technical parameters of the emission are all listed. All frequencies have been measured to the nearest 100Hz. 408 pages. £16.00

GUIDE TO FORMER UTILITY TRANSMISSIONS
3rd Edition. Joerg Klingenfuss Built on continuous monitoring of the radio spectrum from the sixties until the recent past. A useful summary of the former activities of utility stations providing information for the classification and identification of radio signals. 126 pages. £8.00

GUIDE TO UTILITY STATIONS
10th Edition. Joerg Klingenfuss This book covers the complete short wave range from 3 to 30MHz together with the adjacent frequency bands from 0 to 150kHz and from 1.6 to 3MHz. It includes details on all types of utility stations including FAX and RTTY. There are 15802 entries in the frequency list and 3123 in the alphabetical call sign list plus press services and meteorological stations. 534 pages. £21.00

HF OCEANIC AIRBAND COMMUNICATIONS
3rd Edition. Bill Lever HF aircraft channels by frequency and band, main ground radio stations, European R/T networks and North Atlantic control frequencies. 31 pages. £3.95

MARINE UK RADIO FREQUENCY GUIDE
Bill Lever A complete guide to the UK s.w. and v.h.f. marine radio networks. Useful information, frequency listings and the World Marine Coastal Phone Stations. 62 pages. £4.95

NEWNES SHORT WAVE LISTENING HANDBOOK
Joe Pritchard G1UQW A technical guide for all short wave listeners. Covers construction and use of sets for the s.w.l. who wants to explore the bands up to 30MHz. 288 pages. £14.95

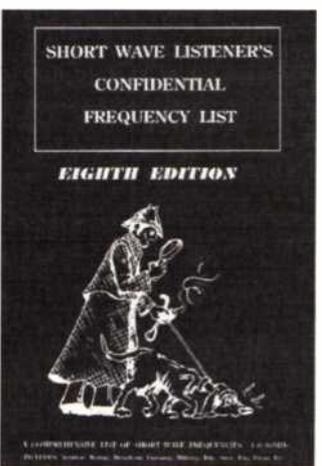
RADIO LISTENER'S GUIDE 1992
Clive Woodyear This is the fourth edition of the essential radio listener's guide. Simple-to-use maps and charts show the frequencies for all the radio stations in the UK. When travelling or at home, the guide gives you all the frequencies you'll ever need. 56 pages. £2.95

THE COMPLETE VHF/UHF FREQUENCY GUIDE
1991 Edition. This book gives details of frequencies from 26-2250MHz with no gaps and who uses what. Recently updated, there are chapters on equipment requirements as well as antennas, etc. 88 pages. £5.95

THE INTERNATIONAL VHF FM GUIDE
7th Edition. Julian Baldwin G3UHK and Kris Partridge G8AUI The latest edition of this useful book gives concise details of repeaters and beacons worldwide plus coverage maps and further information on UK repeaters. 79 pages. £2.85

THE POCKET GUIDE TO RTTY AND FAX STATIONS
Bill Lever A handy reference book listing RTTY and FAX stations, together with modes and other essential information. The listing is in ascending frequency order, from 1.8 to 27.1MHz. 80 pages. £3.95

SHORT WAVE LISTENERS CONFIDENTIAL FREQUENCY LIST
Bill Lever Covering the services and transmission modes that can be heard on the bands between 1.635 and 29.7MHz. £8.95



VHF/UHF AIRBAND FREQUENCY GUIDE
Fourth Edition A complete guide to the airband frequencies, civil and military, including how to receive these signals, the frequencies and services, VOLMET and much more about the interesting subject of airband radio. 124 pages. £6.95

WORLD RADIO TV HANDBOOK 1992
Country-by-country listings of l.w., m.w. & s.w. broadcast and TV stations. Receiver test reports. English language broadcasts. The s.w.l.'s 'bible'. 576 pages. £18.95

ANTENNAS (AERIALS)

ALL ABOUT CUBICAL QUAD ANTENNAS
DWilliam I. Orr W6SAI and Stuart D. Cowan W2LX The quad antenna came into being, and popularity, over 50 years ago. This book shows you how to design build and 'feed' this versatile antenna. If you just want to build one then, there are ready-to-go designs for bands between 7 and 50MHz. 122 pages. £6.75

THE ANTENNA EXPERIMENTER'S GUIDE
Peter Dodd G3LDO Although written for Radio Amateurs this book will be of interest to anyone who enjoys experimenting with antennas. You only need a very basic knowledge of radio & electronics to get the most from this book. 207 pages. £8.90

AN INTRODUCTION TO ANTENNA THEORY
(BP198) H. C. Wright This book deals with the basic concepts relevant to receiving and transmitting antennas. Lots of diagrams reduce the amount of mathematics involved. 86 pages. £2.95

ANTENNA IMPEDANCE MATCHING
Wilfred N. Caron Proper impedance matching of an antenna to a transmission line is of concern to antenna engineers and to every radio amateur. A properly matched antenna as the termination for a line minimises feed-line losses. Power can be fed to such a line without the need for a matching network at the line input. There is no mystique involved in designing even the most complex multi-element networks for broad band coverage. Logical step-by-step procedure is followed in this book to help the radio amateur with this task. 192 pages. £11.95

HF ANTENNA COLLECTION (RSGB)
Edited by Erwin David G4LQI This book contains a collection of useful and interesting h.f. antenna articles, first published in *Radio Communication* magazine between 1968 and 1989, along with other useful information for the antenna builder. 133 pages. £9.50

BEAM ANTENNA HANDBOOK (USA)
W. I. Orr W6SAI & S. D. Cowan W2LX Design, construction, adjustment and installation of h.f. beam antennas. 198 pages. £7.50

NOVICE ANTENNA NOTEBOOK
Doug DeMaw W1FB Another book from the pen of W1FB, this time offering "new ideas for beginning hams". All the drawings are large and clear and each chapter ends with a glossary of terms. 130 pages. £6.95

SIMPLE, LOW-COST WIRE ANTENNAS FOR RADIO AMATEURS (USA)
W. I. Orr W6SAI & S. D. Cowan W2LX Efficient antennas for Top Band to 2m, including "invisible" antennas for difficult station locations. 191 pages. £7.50

THE ARRL ANTENNA BOOK (USA) 16th Edition
A station is only as effective as its antenna system. This book covers propagation, practical constructional details of almost every type of antenna, test equipment and formulas and programs for beam heading calculations. £14.50

THE ARRL ANTENNA COMPENDIUM (USA) Volume One
Fascinating and hitherto unpublished material. Among the topics discussed are quads and loops, log periodic arrays, beam and multi-band antennas, verticals and reduced size antennas. 175 pages. £9.50

THE ARRL ANTENNA COMPENDIUM (USA) Volume Two
Because antennas are a topic of great interest among radio amateurs, ARRL HQ continues to receive many more papers on the subject than can possibly be published in *QST*. Those papers are collected in this volume. 208 pages. £9.50

THE RADIO AMATEUR ANTENNA HANDBOOK
William I. Orr W6SAI & Stuart D. Cowan W2LX Yagi, quad, quagi, l-p, vertical, horizontal and "sloper" antennas are all covered. Also towers, grounds and rotators. 190 pages. £6.75

W1FB'S ANTENNA NOTEBOOK
Doug DeMaw W1FB This book provides lots of designs, in simple and easy to read terms, for simple wire and tubing antennas. All drawings are large and clear making construction much easier. 124 pages. £6.95

WIRES & WAVES
Collected Antenna Articles from PW 1980-1984 Antenna and propagation theory, including NBS Yagi design data. Practical designs for antennas from medium waves to microwaves, plus accessories such as a.t.u.s, s.w.r. and power meters and a noise bridge. Dealing with TVI. 160 pages. £3.00

YAGI ANTENNA DESIGN
Dr James L. Lawson W2PV This book is a polished and expanded version of a series of articles first published in *Ham Radio* following on from a series of lectures by the author, who was well-known as the expert on Yagi design, includes practical designs. 210 pages. £10.95

25 SIMPLE AMATEUR BAND AERIALS (BP125)
E. M. Noll How to build 25 simple and inexpensive aerials, from a simple dipole through beam and triangle designs to a mini-rhombic. Dimensions for specific spot frequencies including the WARC bands. 80 pages. £1.95

25 SIMPLE INDOOR AND WINDOW AERIALS (BP136)
E. M. Noll Designs for people who live in flats or have no gardens, etc., giving surprisingly good results considering their limited dimensions. 64 pages. £1.75

25 SIMPLE SHORT WAVE BROADCAST BAND AERIALS (BP132)
E. M. Noll Designs for 25 different aerials, from a simple dipole through helical designs to a multi-band umbrella. 80 pages. £1.95

25 SIMPLE TROPICAL AND MW BAND AERIALS (BP145)
E. M. Noll Simple and inexpensive aerials for the broadcast bands from medium wave to 49m. 64 pages. £1.75

DATA REFERENCE

INTERNATIONAL TRANSISTOR EQUIVALENTS GUIDE (BP85)

A. Michaels

Possible substitutes for a popular selection of European, American and Japanese transistors. 320 pages. £3.95

NEWNES AUDIO & HI-FI ENGINEER'S POCKET BOOK

Vivian Capel

This is a concise collection of practical and relevant data for anyone working on sound systems. The topics covered include microphones, gramophones, CDs to name a few. 190 pages. Hardback £10.95

NEWNES COMPUTER ENGINEER'S POCKET BOOK

This is an invaluable compendium of facts, figures, circuits and data and is indispensable to the designer, student, service engineer and all those interested in computer and microprocessor systems. 203 pages. Hardback £10.95

NEWNES ELECTRONICS POCKET BOOK

5th Edition

Presenting all aspects of electronics in a readable and largely non-mathematical form for both the enthusiast and the professional engineer. 315 pages. Hardback £10.95

NEWNES RADIO AMATEUR AND LISTENER'S POCKET BOOK

Steve Money G3FZX

This book is a collection of useful and intriguing data for the traditional and modern amateur as well as the s.w.l. Topics such as AMTOR, packet radio, SSTV, computer communications and maritime communications are all covered. 180 pages. £10.95

NEWNES RADIO AND ELECTRONICS ENGINEER'S POCKET BOOK

18th Edition. Keith Brindley

Useful data covering math, abbreviations, codes, symbols, frequency bands/allocations, UK broadcasting stations, semi-conductors, components, etc. 325 pages. Hardback £9.95

POWER SELECTOR GUIDE (BP235)

J. C. J. Van de Ven

This guide has the information on all kinds of power devices in useful categories (other than the usual alpha numeric sort) such as voltage and power properties making selection of replacements easier. 160 pages. £4.95

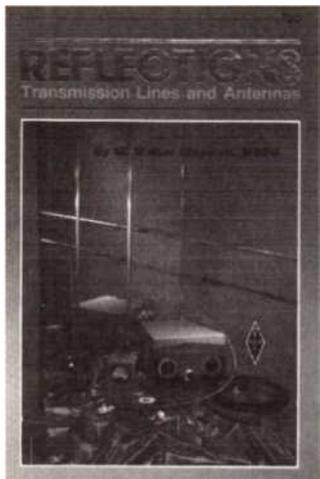
THEORY

FURTHER PRACTICAL ELECTRONICS CALCULATIONS AND FORMULAE (BP144)

F.A. Wilson

Contains sections about electrical basics, electrostatics, electromagnetism, mathematics, signal processing and generation, amplifiers, noise distortion and reliability. On the radio front there are sections about e., waves, spectrum matters, receivers, antennas and transmission line calculations. Finally, general formulae and conversion factors are given, with a short history of electronics. 450 pages. £4.95

REFLECTIONS Transmission Lines & Antennas
M. Walter Maxwell W2ZDU This will help dispel the half-truths and outright myths that many people believe are true about transmission lines, standing waves, antenna matching, reflected power and antenna tuners. 323 pages. £14.50



A BEGINNERS GUIDE TO MODERN ELECTRONIC COMPONENTS (BP285)

R.A. Penfold

This book covers a wide range of modern components. The basic functions of the components are described, but this is not a book on electronic theory and does not assume the reader has an in-

depth knowledge of electronics. It is concerned with practical aspects such as colour codes, deciphering code numbers and the suitability. 164 pages. £3.95

AUDIO (Elements of electronics - book 6)

F. A. Wilson

This book studies sound and hearing, and examines the operation of microphones, loudspeakers, amplifiers, oscillators, and both disk and magnetic recording. Intended to give the reader a good understanding of the subject without getting involved in the more complicated theory and mathematics. 320 pages. £3.95

EVERYDAY ELECTRONICS DATA BOOK

Mike Tooley BA

This book is an invaluable source of information of everyday relevance in the world of electronics. It contains not only sections which deal with the essential theory of electronic circuits, but it also deal with a wide range of practical electronic applications. 250 pages. £8.95

FILTER HANDBOOK A practical design guide

Stefan Niewiadomski

A practical book, describing the design process as applied to filters of all types. Includes practical examples and BASIC programs. 195 pages. £25.00

FROM ATOMS TO AMPERES

F.A. Wilson

Explains in simple terms the absolute fundamentals behind electricity and electronics. 244 pages. £3.50

PRACTICAL ELECTRONICS CALCULATIONS AND FORMULAE (BP53)

F. A. Wilson

This has been written as a workshop manual for the electronics enthusiast. There is a strong practical bias and higher mathematics have been avoided where possible. 249 pages. £3.95

SOLID STATE DESIGN FOR THE RADIO AMATEUR

Les Hayward W7Z0I and Doug DeMaw W1FB

Back in print by popular demand! A revised and corrected edition of this useful reference book covering all aspects of solid-state design. 256 pages. £10.95

THE ARRL ELECTRONICS DATA BOOK

Doug DeMaw W1FB

Back by popular demand, completely revised and expanded, this is a handy reference book for the r.f. designer, technician, amateur and experimenter. 260 pages. £8.95

TRANSMISSION LINE TRANSFORMERS

Jerry Sevick W2FMI

This is the second edition of this book, which covers a most intriguing and confusing area of the hobby. It should enable anyone with a modicum of skill to make a balun, etc. 270 pages. £13.50

AMATEUR RADIO

AN INTRODUCTION TO RADIO WAVE PROPAGATION (BP293)

J.G. LEE

How does the sun and sunspots affect the propagation of the radio waves which are the basis of our hobby? They affect the ionosphere, but differing frequencies are treated differently. Find out how to use charts to predict frequencies that will be the most profitable. What effect will noise have on the signal? Find out with this book. 116 pages. £3.95

AN INTRODUCTION TO VHF/UHF FOR RADIO AMATEURS (BP281)

I.D. Poole An excellent book to go with the new Novice or full call sign. Nine chapters and an appendix deal with all aspects and frequencies from 50 to 1300MHz. 96 pages. £3.50

W1FB'S DESIGN NOTEBOOK

Doug DeMaw W1FB This book is aimed at the non-technical amateur who wants to build simple projects and obtain a basic understanding of amateur electronics. 195 pages £8.50

QRP CLASSICS

Edited by Bob Schertgen KU7G Operating QRP is fun. This book increases the enjoyment by showing you how to build items that you can be proud of. They can hold their own against the 'Kenyaecom' rig, and come much cheaper too. Extracts from QST and the ARRL handbook, superbly packed in. 274 pages. £9.95

W1FB'S HELP FOR NEW HAMS

Doug DeMaw W1FB This book covers everything from getting acquainted with new equipment to constructing antennas, station layout, interference and operating problems to on-the-air conduct and procedures. 155 pages. £6.95

ALL ABOUT VHF AMATEUR RADIO (USA)

W. I. Orr W6SAI

VHF/UHF propagation, including moonbounce and satellites, equipment and antennas. 172 pages. £9.50.

AMATEUR RADIO CALL BOOK (RSGB)

1991/92 Edition

Now incorporates a 122-page section of useful information for amateur radio enthusiasts. 429 pages. £7.20

AMATEUR RADIO SATELLITES the first 25 years

Arthur C. Gee G2UK

This souvenir publication is mainly a pictorial account of the pattern of developments which have occurred over the last 25 years in amateur radio satellite operations. 34 pages. £2.25

AN INTRODUCTION TO AMATEUR COMMUNICATIONS SATELLITES BP290

A. Pickard

This book describes several currently available systems, their connection to an appropriate computer and how they can be operated with suitable software. 102 pages. £3.95

AN INTRODUCTION TO AMATEUR RADIO (BP257)

I. D. Poole

This book gives the newcomer a comprehensive and easy to understand guide through amateur radio. Topics include operating procedures, jargon, propagation and setting up a station. 150 pages. £3.50

HINTS AND KINKS FOR THE RADIO AMATEUR

Edited by Charles L. Hutchinson and David Newkirk

A collection of practical ideas gleaned from the pages of QST magazine. 152 pages. £4.95

HOW TO PASS THE RADIO AMATEURS' EXAMINATION (RSGB)

Clive Smith G4FZH and George Benbow G3HB

The background to multiple choice exams and how to study for them with sample RAE papers for practice plus maths revision. 88 pages. £6.70

PASSPORT TO AMATEUR RADIO

Reprinted from PW 1981-1982

The famous series by GW3JGA, used by thousands of successful RAE candidates in their studies. Plus other useful articles for RAE students. 96 pages. £1.50

PRACTICAL GUIDE TO PACKET OPERATION IN THE UK

Mike Mansfield G6AWD

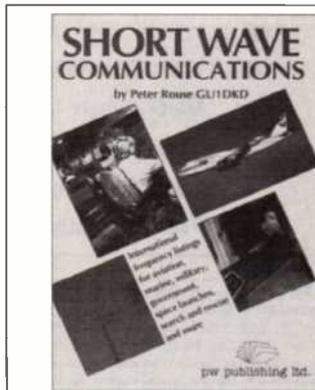
Completely revised and updated, this book introduces the concept of packet radio to the beginner. Problem areas are discussed and suggestions made for solutions to minimise them. Deals with the technical aspects of packet taking the reader through setting up and provides a comprehensive guide to essential reference material. The helpfiles are the latest the author has managed to obtain and there is a reproduction of the UK Packet Map 141 pages. £7.95

RADIO AMATEUR CALLBOOK INTERNATIONAL LISTINGS 1992

70th Edition

The only publication listing licensed radio amateurs throughout the world. Also includes DXCC Countries list, standard time chart.

This is only a small selection of our Book Service, selected as being of particular interest to SWM readers. See last month's issue for further titles. Our sister publication, Practical Wireless, carries titles of particular interest to the radio amateur.



beacon lists and much more.

Over 1400 pages. £19.50

RADIO AMATEUR CALLBOOK NORTH AMERICAN LISTINGS 1992

70th Edition Listings of US amateurs (including Hawaii). Also contains standard time chart, census of amateur licences of the world, world-wide QSL bureau and much more. Over 1400 pages. £19.50

THE ARRL HANDBOOK FOR RADIO AMATEURS

1992

The 1992 edition of this extremely useful reference book contains much new material. Packed with information, it's one of the most useful books available for the modern radio amateur. Approx 1000 pages. £16.95

THE ARRL OPERATING MANUAL

Another very useful ARRL book. Although written for the American amateur, this book will also be of use and interest to the UK amateur. 684 pages £12.95

THE ARRL SATELLITE ANTHOLOGY

The best from the Amateur Satellite News column and articles out of 31 issues of QST have been gathered together in this book. The latest information on OSCARs 9 through 13 as well as the RS satellites is included. Operation on Phase 3 satellites (OSCAR 10 & 13) is covered in detail. 97 pages. £5.95

THE ARRL UHF/MICROWAVE EXPERIMENTER'S MANUAL

Various Authors

A truly excellent manual for the keen microwave enthusiast and for the budding 'microwaver'. With contributions from over 20 specialist authors. Chapters covering techniques, theory, projects, methods and mathematics. 448 pages £14.50

THE COMPLETE OX'ER

Bob Locher W6KNI

Now back in print, this book covers equipment and operating techniques for the DX chaser, from beginner to advanced. 187 pages £7.95

THE RADIO AMATEUR'S QUESTIONS & ANSWER REFERENCE MANUAL

4th Edition.

R. E. G. Petri G8CCJ

This book has been compiled especially for students of the City and Guilds of London Institute RAE. It is structured with carefully selected multiple choice questions, to progress with any recognised course of instruction, although it is not intended as a text book. 280 pages. £7.95

THE RAE MANUAL (RSGB)

G.L. Benbow G3HB

The latest edition of the standard aid to studying for the Radio Amateurs' Examination. Updated to cover the latest revisions to the syllabus. 132 pages £6.70

YOUR GATEWAY TO PACKET RADIO

Stan Horzepa WA1LOU

What is packet radio good for and what uses does it have for the 'average' amateur? What are protocols? where, why, when? Lots of the most asked questions are answered in this useful book. It includes details of networking and space communications using packet. 278 pages. £8.95

Computer control of Your Radio with SCANCAT

- * One program controls all radios
- * Unlimited frequency disk files
- * Create your own presets
- * Scan between any frequencies in any increment
- * Create databases of popular frequencies
- * Load Memories
- * Kenwood R-5000 and others
- * Yaesu FRG-9600 and others
- * JRC NRD-525
- * AOR-5000 with Spectrum Analysis
- * Icom's R-71, R-72, R-7000 (most others)

Requires PC compatible with 1 serial port - Interface for Radio.
Once you use SCANCAT with your radio you will never use your radio again without SCANCAT!

J & J Enterprises - 4001 Parkway Dr. Bossier City, LA, USA 71112
PH. 518-631-3081 (1400-2100 GMT) or FAX 518-631-3082

\$49.95 plus \$3.00 post
FREE INFO
DEMO \$5.00 plus
\$2.50 post
Visa - Mastercard -
AmEx or Money Order

THE UK SCANNING DIRECTORY

Here is the book that every scanner owner has been waiting for! It fills in the parts that other books leave blank. Lists over 5000 spot UK frequencies nationwide from 30MHz to 1GHz, gives the band plan, covers public utilities, security, telephone, military and lots more. Price **£14.95** incl. UK postage. Overseas post add £2 for EEC and seairmail or £5 airmail.

NEW

INTERPRODUCTS
572, 8 Abbot Street, Perth PH2 0EB, Scotland
Tel & Fax: 0738-441199

Visa

SPECIAL NOTICE TO READERS

Although the proprietors and staff of *SHORT WAVE MAGAZINE* take reasonable precautions to protect the interests of readers by ensuring as far as practicable that advertisements in *SHORT WAVE MAGAZINE* are *bonafide*, the magazine and its Publishers cannot give any undertakings in respect of claims made by advertisers, whether these advertisements are printed as part of the magazine, or are in the form of inserts.

While the Publishers will give whatever assistance they can to readers having complaints, under no circumstances will the magazine accept liability for non-receipt of goods ordered, or for the late delivery, or for faults in manufacture. Legal remedies are available in respect of some of these circumstances, and readers who have complaints should address them to the advertiser or should consult a local Trading Standards Office, or a Citizen's Advice Bureau, or their own solicitor.

ALYNTRONICS
129 CHILLINGHAM ROAD, HEATON,
NEWCASTLE-UPON-TYNE NE6 5XL TEL: 091-2761002

THE ONLY AUTHORISED DEALER IN THE NORTH-EAST FOR

ICOM & YAESU

WE ALSO STOCK MANY OTHER ITEMS OF EQUIPMENT FROM
MFJ ★ BUTTERNUT ★ CUSHCRAFT TONNA ★ DIAMOND ★ AOR
BEARCAT ★ FAIRMATE ★ JUPITER ★ LOWE ★ TEAM
MIDLAND ★ NEVADA ★ CTE ★ WELZ
★ REVEX ★ BOOKS & MAPS ★

LICENSED CREDIT BROKER

OPEN 10am - 5.45pm TUES - FRI 10am - 4.45pm SAT

Visa

IBM PC SOFTWARE

RTTY, AMTOR, CW (Tx and Rx) SSTV, FAX, Audio Analyser (RX only). See **BY G4BMK** review PW June 1990 Page 66. A high performance multimode program for IBM PC compatibles, £80 complete. Any mix of modes to your choice - send SAE for details and prices.

ATARI ST

RTTY, AMTOR, CW and Analyser for Atari ST/STE works with hi-res or medium res display, £49. Printed manual £5. Use with ST5 Versaterm etc, or our matching built T.U. £56. State callsign, if any, and disk size with order. Add £1 P&P.

GROSVENOR SOFTWARE (SWM)
2 Beacon Close, SEAFORD, East Sussex,
BN25 2JZ. Tel: (0323) 893378

Index to Advertisers

Aerial Techniques	49	Garex Electronics	22	Practical Wireless	74
Air Supply	69	Grosvenor Software	72	President Electronics (Europe)	2
Alan Hooker	65, 69	Hoka Electronics	68	Radio Research	65
Alyntronics	72	Howes, C M	24	Radio Shack	52
Amateur Radio Communications	58	ICOM (UK)	31, Cover iii	Rapid Results College	74
Amdat	65	ICS Electronics	44	Roberts Radio	66, 67
AOR (UK)	20	Interproducts	72	Rylands, F G	68
ARE Communications 92	60	J & J Enterprises	72	Short Wave Centre, The	60
ASK Electronics	28	J & P Electronics	68	Sigma Euro Comm	49
Aviation Hobby Centre	50	Javiation	24	Siskin Electronics	58
Billington Valves	68	Klingenfuss	58	Sky View Systems	50
C M Leisure Sales	65	KW Communications	14	Solid State Electronics	22
Circuit Distribution	44	Lake Electronics	50	South Midlands Communications	13,
Colomor (Electronics)	69	Link Electronics	65	SRP Trading	32
Comar Electronics	69	Lowe Electronics	8, 9, 10, Cover iv	Technical Software	68
Datong	75	Martin Lynch	26, 27, 49	Technology Partners	75
Dewsbury Electronics	67	Modulations Communications	69	Timestep Weather Systems	52
Dressler	74	Nevada Communications	18, 19, Cover ii	Waters & Stanton	34, 35
Flightdeck	69	Photo Acoustics	36		

PUBLISHED on the fourth Thursday of each month by PW Publishing Ltd., Enefco House, The Quay, Poole, Dorset BH15 1PP. Printed in England by Southernprint (Web Offset), Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (0202) 622226. Distributed by Seymour, Windsor House, 1270 London Road, Norbury, London SW16 4DH. Tel: 081-679 1899, Fax: 081-679 8907, Telex: 881245. Sole Agents for Australia and New Zealand - Gordon and Gotch (Asia) Ltd.; South Africa - Central News Agency Ltd. Subscriptions INLAND £21, EUROPE £23, OVERSEAS (by ASP) £25, payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Enefco House, The Quay, Poole, Dorset BH15 1PP. SHORT WAVE MAGAZINE is sold subject to the following conditions, namely that it shall not without the written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

trading post

Fill in the order form on page 76 in **BLOCK CAPITALS** - up to a maximum of 30 words plus 12 words for your address - and send it, together with your payment of £2.35, to Trading Post, *Short Wave Magazine*, Enefco House, The Quay, Poole, Dorset BH15 1PP. If you do not wish to cut your copy of *SWM*, or do not wish to use the order form provided, you must still send the corner flash or your subscription number as proof of purchase of the magazine. Advertisements from traders, apparent traders or for equipment which it is illegal to possess, use or which cannot be licensed in the UK will not be accepted.

FOR SALE video transfer, 8mm films, slides, photos, titles plus sound track onto VHS. Send s.a.e. for details or Tel: (0570) 481076. Swyn-y-Nant, Drefach, Llantbther, Dyfed SA40 9YB.

FOR SALE Citizen TC532.5in colour TV, v.h.f., u.h.f., NiCads charger plus AR88LF 1.5 to 32MHz receiver, both perfect working order, £80 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., n.b.f.m., w.b.f.m., mint boxed, instruction, guarantee till Aug '92 with Yaesu SP55 external speaker and frequency guides, £485. John. Tel: 071-622 2820 SW London.

FOR SALE Icom IC-R9000 in perfect boxed condition with Dressler ARA1500 and ARA30. Absolute bargain at £3000 o.n.o. Steve Harris. Tel: (0524) 864449 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: 091-236 3708 Tyneside.

FOR SALE R2000 communications receiver with v.h.f. superb condition virtually unused, owner returned from months abroad. Boxed with instruction, £495. Buyer collects or extra for Securicor delivery. Reverend Peckett. 30A Finchley Road, Westcliff-on-sea, Essex SS0 8AF. Tel: (0702) 332667.

WANTED Eddystone model 811 diecast speaker enclosure for Eddystone 680X receiver. Standen. 4 Garden Mews, Linden Gardens, London W2 4HF. Tel: 071-229 6734.

FOR SALE Yaesu FRG-7700 receiver and FRV-7700 v.h.f. converter with manuals, £220 o.n.o. Heavy duty Diawa rotator with neon indicator round controller, £60 o.n.o. Tony G1JHX. Tel: 061-865 7896 Manchester.

FOR SALE Lowe HF-225, £330 ERA Microreader including SITOR, AMTOR modes, £120. Global a.t.u., £50. Will accept £460 for complete outfit, v.g.c. 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 used, Mint condition, £270 post paid. Tel: 051-6256781 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 turnbuckles, 3 guywires, thimbles, £12. Tel: (0375) 643428.

WANTED Sanyo RP88009-band world-wide RX, good price for good rig. Similar considered. Tel: (0934) 418829 after 6pm Weston-super-Mare.

FOR SALE Yaesu FRG-7, £120. Yaesu FRG-7000, £140. Sony AIR-7, £120. Sony 2001D, £190. All excellent with original manuals and boxes. Brian. Tel: (0689) 876805 Orpington.

WANTED British Mk123 TX-RX (working) and accessories. **FOR SALE** immaculate Collins 75S-1 receiver, £270 o.n.o. Tel: (0366) 500867 evenings. Norfolk.

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

FOR SALE Grundig 650 receiver, all wave bands, s.s.b., f.m. (unmarked) handbook, boxed, £200. Sony ICF-6800W synthesised receiver, 31 bands, f.m. s.s.b., nice condition, handbook, £180 o.n.o. Yaesu FRT tuner, £30 o.n.o. Tel: 091-526 7902. Tyne & Wear.

FOR SALE CWE 10E RTTY c.w. decoder, £80. Datong UC1 converts 144 146. 90kHz to 30MHz to 28 to 30MHz, £70. Datong active antenna AD270, £30. Tel: (0978) 262855 evenings. Wrexham.

FOR SALE SX200 scanner, v.h.f. 26-88MHz 108-180MHz u.h.f. 380-514MHz, boxed, £100. Also AR800E hand portable scanner, boxed, £100. Tel: (0246) 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., £150 o.n.o. Tel: (0753) 855620 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-R1 communications receiver hand-held. Tel: (0392) 421769 anytime after 6.30 in not home answering machine will take call. Exeter.

WANTED Pye/Phillips charger type BC21D or similar. Peter. Tel: (0492) 531760 Colwyn Bay.

WANTED complete reception set R107. Also reception set R1224A (parts or complete) Chris Moreton. 10 Castel Parade, Usk, Gwent NP5 1AA. Tel: (0291) 673849.

FOR SALE 'C' band satellite system 8 foot dish, i.n.b., polar mount, motor drive, £550 (£700 with new Echostar receiver). Buyer collects. Tel: (0246) 211254.

FOR SALE HRO communications receiver c/w manual, coils, p.s.u. and speaker. Also HRO MX which needs attention. Offers! Tel: (0234) 712938, (0831) 323804.

FOR SALE Sony AIR-7 airband scanner, instruction, boxed, mint, mains adapter, £100. Tel: (0277) 201423 Essex.

FOR SALE ARA30 active receiving antenna as new, £30. ZX Spectrum 48K computer, boxed, £20, RTTY Morse program for Spectrum, £5. Psion finance pack, £20. Tel: (0303) 276237 Folkestone, Kent.

FOR SALE AR77E, £90. Eddystones 940, £140; 888A, £95; 840C, £70. All in superb condition with manuals and spare valves. Racal MA150G synthesiser, matches RA117, £35. Prefer inspect and collect. Tel: 041-649 2328.

FOR SALE Icom IC-R71E, speaker SP3, f.m. unit EX257, s.s.b. filter FL-44A, c.w. filter FL-32A, £520. G1FTU RTTY, G1FTU SSTV, G4IDE FAX RX-4, RM3 for Spectrum each £10. All excellent condition. Tel: (0708) 349029 Romford.

FOR SALE Sony ICF-7600 DS receiver, mint condition includes 9V transformer, manual, Wave Handbook, earpiece, soft pouch, £115 o.n.o. Mr P Donald. Tel: (0604) 647992.

FOR SALE Lowe HF-125 with supply and manual. Buyer collects, £200. Tel: (0743) 361614 Shrewsbury.

FOR SALE RX4 software (disk) and interface for Commodore 64, £30 bargain for Morse (c.w.) reception. Tel: (0533) 353915.

FOR SALE AORAR3000 scanner 100kHz to 2036MHz all mode ultimate scanner, boxed like new, £500. Lowe HF-225 receiver 0-30MHz, as new, £300. Take scanner as PX. Ian Hatton. 55 Worcester Cres, Derby DE21 4ER.

FOR SALE satellite receiver and positioner. Uniden 7007 triple band, Uniden 771 excellent for DXing, very good condition, both for £240. Also Echostar SR4500 with new software v.g.c., £200. Norman. Tel: 081-319 3157.

FOR SALE Icom 2m TX/RX 271E, all mode, £475. Signal R-535 airband receiver, £150. AOR2001 receiver, £100. ICS FAX-1 decoder, £100. Chris. Tel: (0480) 62093 after 8pm. Cambs.

FOR SALE Icom R-7000 25-2000MHz TVFM adaptor SP20 speak manual, boxed, almost new, £650. Trio-2000 receiver, boxed, manual, mint condition, excellent performance, £350. Eddystone 1830 solid-state cal manual, excellent receiver, table-top model, £325. Grundig PRO 3400 excellent performance like Sony 320, £230. Tel: 081-571 5759.

EXCHANGE Trio 5000 cost £895 still guaranteed for lap-top computer, cash difference. Tel: (0293) 785073 anytime. Horley.

FOR SALE Bearcat UBC 100XLT hand-held, boxed, v.g.c., 100 memories, charger, manual, £100 including postage. Cliff. Tel: (0380) 813745 evenings.

EXCHANGE Lowe HF-125 RX for Sony ICF-PRO80 hand-held scanner, 12 months old 150kHz-108MHz, 115-223MHz, a.m., f.m., n.f.m., s.s.b., manual, case, NiCads. Tel: (0253) 811648. NW Lancs.

FOR SALE Icom ICR-7100 v.h.f./u.h.f. RX, absolutely mint, under 12 months old, box, manuals, reason for sale, £825 o.n.o. **WANTED** Icom SP20 speaker. Tel: (0926) 54556 Kenilworth.

FOR SALE ICS-FAX 2 superb weather FAX pictures includes NAVTEX, RTTY and FEC, requires IBM-PC, see review *SWM* May page 10 for general features, £80 post paid. G3RDG. Tel: 081-455 8831 QTHR, NW London.

FOR SALE New book on number stations, £6 or £9 including cassette of over 40 different number stations. Simon Mason. 26 Bloomfield Avenue, Hull, Humberside HU5 5NH.

FOR SALE Yaesu FT-290R 2m portable or base transceiver unit s.s.b., c.w., f.m., u.s.b./l.s.b., 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 Eddystone EC10 communications receiver, excellent condition, 0.5-30MHz, £45. Tel: (0440) 730247.

FOR SALE Sony ICF-6700 f.m., m.w. radio 1.6-30MHz digital frequency display like new, £120. HRO50 nine coils all original, £80. Alan. Tel: (0344) 27869.

FOR SALE Eddystone 640 short wave receiver, v. good original condition, £80. HRO50 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 8 Mk4 with leads, clips, etc., excellent condition, £95. Tel: (0635) 298113.

WANTED Philips D2999 or D2935 world band receiver in good working order. Please send full details, age, price, etc. J. K. Teifel. 50 South Avenue, Kidlington, Oxon OX5 1DQ.

practical Wireless

M · O · R · S · E - W · E · E · K · E · N · D

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.

EXCELLENT COMMUNICATIONS

Communications to this part of the UK are excellent. We've got superb train services from the north and Scotland and even abroad if need be! If you're interested, please send a fully refundable deposit of £25 per person to:

PW Morse Weekend, Enefco House, The Quay, Poole, Dorset BH15 1PP. Tel: (0202) 678558.

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!)

dressler

COMMUNICATIONS LIMITED

191 Francis Road, Leyton, LONDON E10 6NQ

Tel: 081-558 0854/556 1415

Fax: 081-558 1298

Telex: 8953609

24 hour hotline ansaphone

Open: Monday-Friday 9.00am - 5.30pm

Saturday 9.30am - 4.30pm

DRESSLER ACTIVE ANTENNAS

ARA60 ACTIVE ANTENNA
50kHz - 60MHz with limited performance up to 100MHz

ARA1500 50MHz - 1500MHz

Frequency	Gain
50-1000	11.5dB
100 - 1500	11.0dB

£163.00 - 'N' connection

SHORTWAVE ACTIVE ANTENNA

940mm High 64mm diameter complete with cable + PSU and interface £163

Now fully tuneable interface. Intercept point + 21dBm typical.

SHINWA SR001

Remote control full feature receiver. Still only

£299!

YAESU

ICOM

KENWOOD

STANDARD

KENWOOD

R5000inc ARA60£925
R2000.....£ PHONE
LOWE 225£429
LOWE 150£329



JRC

NRD535D+ECSS+BWC+1kHz filter inc. ARA60£1699
NRD535 only£975
NRD535 inc ARA60£1095



AOR

AOR3000A
AOR2000
AOR2800

YUPITERU

MVT7000.....£279

ICR1
£325



ICR72
+ARA60
£699



ICR71
+ARA60
£875



ICR7000
Few only
£1000
inc ARA1500



ICR7100 inc HF or ARA1500 £1120

PRE-OWNED UNITS

FRG9600 x 2each £375
ICR7000HF£750
ICR71£675
LOWE 225 + accessories£425
FRG7700£295
AOR2001£199
MX8000£275

YAESU

FRG8800 HF receiver£585



FRG9600 50-950MHz£499

ALINCO

DJX-1£259

SONY
SW77 only
£349



Phone for latest prices and offers



Prices correct at time of going to press. Please phone for latest quote. Or contact your local agent any time on the following numbers: Terry (Biggleswade, Beds.) 0767 316 431. Stuart (Bromley, Kent) 081-313 9186.

Announcement: Change of Title: Commencing with the JULY issue

The 'BUYERS & SELLERS DIGEST' will be published as :

Radio Amateur Advertiser

Now indicating clearly the content, plus the FREE ADVERTISING SERVICE to the RADIO/ELECTRONIC enthusiast

There cannot be a more economical service than FREE ONE for advertising those surplus items, No obligation to subscribe to the magazine to participate
In this FREE SERVICE

AVAILABLE BY SUBSCRIPTION ONLY. RATES (inc postage) :
12 monthly issues: UK \$12.00 - EUROPE: \$18.00 - REST OF WORLD: \$22.00
For further information 9" x 4" S.A.E. Introductory sample copies available at \$1.00 inc postage (Note may not be current issue)

**BUYING OR SELLING IS EASY WITH
FREE PRIVATE ADS**

Technology Partners, PO Box 6, South Shore, Blackpool FY4 4YG

RADIO AMATEURS EXAM? PASS FIRST TIME!

Before you enrol check the benefits of RRC'S unique Home Tuition Service

RRC has helped thousands of students to success in their examinations with this unique system of postal tuition, one which guides you, step-by-step, to qualify in the shortest possible time. Only The Rapid Results College offers you all these advantages:

- | | |
|--|---|
| <input checked="" type="checkbox"/> A qualified personal tutor | <input checked="" type="checkbox"/> Free advice before you enrol |
| <input checked="" type="checkbox"/> Study material prepared by specialists | <input checked="" type="checkbox"/> Telephone Helpline |
| <input checked="" type="checkbox"/> Completely self-contained courses | <input checked="" type="checkbox"/> Free 'How to Study' Guide |
| <input checked="" type="checkbox"/> Handy pocket-size booklets | <input checked="" type="checkbox"/> Instalment Plan |
| <input checked="" type="checkbox"/> Personal study programme | <input checked="" type="checkbox"/> Free Postage on course material |
| <input checked="" type="checkbox"/> Regular marked tests | <input checked="" type="checkbox"/> Worldwide Airmail Service |
| <input checked="" type="checkbox"/> Courses regularly updated | <input checked="" type="checkbox"/> Extra tuition free if you don't pass first time |
| <input checked="" type="checkbox"/> 48 hour despatch | |

POST COUPON TODAY FOR FREE
RADIO AMATEURS PROSPECTUS

Please send me my prospectus as quickly as possible.

Mr/Mrs/Miss/Ms _____

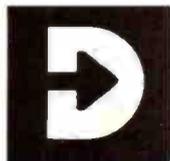
Address _____

Postcode _____



The Rapid Results College

Dept. JV124, Tuition House, London SW19 4DS. FREE ADVICE: 081 947 7272 (9am-5pm)
PROSPECTUS: 081 946 1102 (24 hour Recordcall Service quoting Dept. No. above).



D A T I N G
E L E C T R O N I C S L I M I T E D

Clayton Wood Close
West Park
Leeds LS16 6QE
Tel: 0532 744822
Fax: 0532 742872

**For products you can rely upon
to give amazing results**

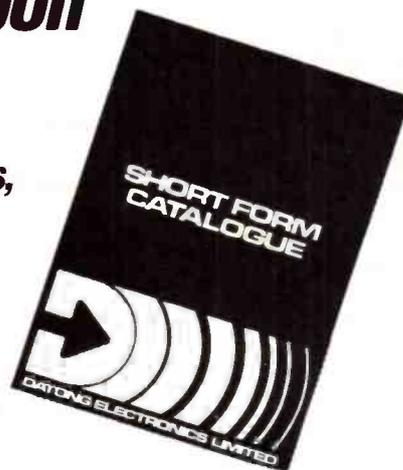
For information on **Active Antennas, RF Amplifiers, Converters, Audio Filters, the Morse Tutor and Speech Processors** send or telephone for a free catalogue and selective data sheets as required.

All our products are designed and made in Britain.

Orders can be despatched within 48 hours subject to availability.



VISA AND ACCESS WELCOME



THE WORLD AT YOUR FINGERTIPS



IC-9000 State-of-the-art communications receiver.

There is no better way to listen to the world than with the ICOM IC-9000, a worldwide communications receiver in a class of its own.

The receiver has continuous all-mode, super wideband coverage of 30kHz to 2GHz, 1000 memory channels and a highly advanced CRT display that shows you a wide variety of important information.

- All mode capability.
- Multi-function CRT display.
- Icom's innovative DDS system.
- Visual signal confirmation by spectrum scope.
- CI-V system for computer control.
- 8 advanced scan functions.

and may be used as a spectrum scope for spotting random signals that pass unnoticed with ordinary receivers. It also allows easy editing of the 1000 memory channels and by connecting an RTTY/Packet terminal, data received can be displayed on the screen.

The list of innovations available to you on the IC-9000 is truly impressive and to appreciate them fully we would suggest a visit to your nearest ICOM dealer.

- IF shift, notch filter and noise blanker.
- Dual clock plus sleep and daily timers.
- Excellent sensitivity & frequency stability in all ranges.
- Wide variety of tuning steps.
- Optional UT-36 voice synthesizer.
- 424(W) x 150(H) x 365(D) mm.



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



ICOM

HF-150

COMMUNICATIONS RECEIVER

t h e

w h o l e

w o r l d

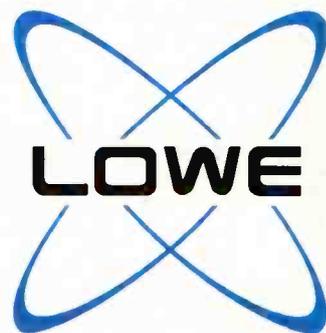
o v e r



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.



LOWE ELECTRONICS LIMITED
(HEAD OFFICE) . CHESTERFIELD ROAD .
MATLOCK . DERBYSHIRE . DE4 5LE .
ENGLAND .
TELEPHONE (0629) 580800 .
FAX (0629) 580020