

**VOL. 49 ISSUE 6 JUNE 1991
ON SALE MAY 23**

(Next Issue on sale JUNE 27)

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

ART EDITOR: Steve Hunt

NEWS & FEATURES: Elaine Richards G4LFM

TECHNICAL ARTIST/PHOTOGRAPHER: Rob Mackie

EDITORIAL

Eneco House, The Quay,

Poole, Dorset BH15 1PP.

TEL: (0202) 678558

FAX: (0202) 666244

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. 1991.

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 \$40 per year by PW Publishing Ltd., Eneco House, The Quay, Poole Dorset BH15 1PP. Second class postage paid at Middlesex, NJ. Postmaster: send address changes to C & C Mailers International, 40 Foxhall, Middlesex, NJ 08846.

contents

10

Watching a Shuttle Launch

Roger Hall G4TNT

19

DXing the Satellites in the US

George Wood

23

An Experimental VHF Receiver Part 1

Ray Howgego

27

Fifty Countries on the 144MHz Band Part 1

P.E.W. Allely GW3KJW

31

Continuing Along the Right Lines Part 2

George Dobbs G3RJV

35

Educational Software for Basic Electronics Part 6

J.T. Beaumont G3NGD

37

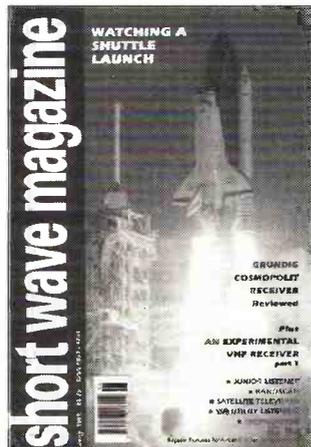
Grundig Cosmopolit Receiver Reviewed

Mike Richards G4WNC

REGULARS

Cover: Our cover this month shows the Space Shuttle *Discovery* blasting off from the John F. Kennedy Space Centre at 7.47am EDT on 6 October 1990 carrying a crew of five and the *Ulysses* solar explorer. Roger Hall G4TNT describes what it 's like to watch a Shuttle launch from the Kennedy Space Center.

Photo courtesy of NASA.



- | | | | |
|----|------------------------|----|-----------------------|
| 51 | Airband | 67 | LW Maritime Beacons |
| 46 | Amateur Bands Round-up | 6 | News |
| 42 | Bandscan - Australia | 24 | PCB Service |
| 68 | Book Service | 38 | Propagation |
| 56 | Decode | 55 | RadioLine |
| 47 | DXTV Round-up | 4 | Rallies |
| 2 | Editorial | 45 | Satellite TV News |
| 34 | First Aid | 52 | Scanning |
| 4 | Grassroots | 2 | Services |
| 60 | Info in Orbit | 41 | SSB Utility Listening |
| 5 | Junior Listener | 15 | SWM Subscribers' Club |
| 2 | Letters | 71 | Trading Post |
| 63 | Long Medium & Short | | |

...GOOD LISTENING

editorial

SWM SERVICES

Subscriptions

Subscriptions are available at £19 per annum to UK addresses £21 in Europe and £22 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 £32 (UK) and £37 (overseas).

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 £4.50 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.

I have had several phone calls and letters regarding my Editorial in last month's SWM, all agreeing with my comments. However, I have, as yet, had no official comments from either the RSGB or the DTI. When - or if - I do, I will keep you all informed.



Dick Caswell



On this month's Junior Listener page is a picture of an eight-years old Brownie making a simple radio. Peg also took a photo of another Brownie, nine-years old Joanne Diddles from Reading, who had completed her set and was listening intently to the whistles and howls it was making - you cannot get good reception on such a set inside the NEC halls. As I said in a previous editorial, this is the right sort of age to get them interested.

It has been suggested that *Short Wave Magazine* should organise a Listening Convention to be held, over a long weekend,

somewhere in the UK. The convention would cover all aspects of listening from Broadcast to Satellites, Facsimile to Weather. It would be a residential event with accommodation being available on-site. This makes for an event at which those attending, including the lecturers, can derive the maximum benefit from the weekend.

If you are interested in either attending or participating please write to me and you will be put on the list to be contacted if and when the idea gets off the ground. Your views on what shape you would like the Convention to take would also be appreciated.

letters

Dear Sir

Having been a Class B licence holder for one year now, I was intending to go for the Novice Class A licence. However, after reading your editorial in the May SWM, I think that on principal I should decline from this course of action.

As I was an s.w.l. for 15 years before I got round to taking the RAE I feel that I have more experience than some full Class A licencees. Certainly from what I have heard on h.f., passing the Morse test does not necessarily make a better station operator! I am not going to knock the Morse code, there is no doubt that c.w. is the most efficient communications mode. I can read Morse up to about 6 w.p.m. and find that useful for copying beacons, etc., but I would never use it on the air though as I find it tedious. I think I suffer from Morse code dyslexia, if there is such a thing.

The c.w. mode suits some people, not others. I don't see why people who don't want to use Morse should be discriminated against by making it a requirement for the Class A licence. I am not really bitter about this. I am quite happy staying as a Class B - there is plenty to do on v.h.f. I couldn't resist replying to your editorial with a few comments though.

**Simon G7GUO
Bucks**

Dear Sir

May I say how pleased I am to hear that you are arranging a regular column in SWM on the subject of pirate radio stations.

Having come across several of these stations in the past, I feel that many pirate operators are often the real 'radio amateurs' in the sense that they have to build all their equipment and considering the modest power output of their transmitters they certainly seem to reach a wide audience across Europe.

I do hope the new column on this subject is well supported by readers of SWM and that the DTI do not try to suppress the items sent into the new column.

I am also sure that you, as Editor, will ensure that the column will not be an outlet for the promotion of such pirate stations, but one for the benefit of all s.w.l.s.

**I K Harling
Eastbourne**

letters

Dear Sir

First of all, thank you very much for publishing my letter concerning pirate radio in the October '90 *SWM*. I would also like to thank you for deciding to have a regular column on these stations.

Even though the price of *SWM* has just risen, it is still well worth the money, there is no other magazine that covers the range of topics concerned with radio and TV, or even comes close.

I think that your 'Junior Listener' column is an excellent idea, even though I am outside this age group (I'm 21), I find it very interesting and I'm learning things even though I have been in the hobby since I was 14.

I have a request for you. How about a having a pen-pal section open to everyone, so that we can all join in. I would be grateful to hear from anyone who is a DXer and is interested in radio in general, anyone from 15-80 and beyond!

Darren Taplin.

4 Porters Wood, Petteridge, Benchley, Kent TN12 7LR.

Dear Sir

I am now 62 years of age and, having had arthritis for years, I have now suffered my first 'heart bang' which has brought me back to my first love - short wave radio and also CB.

I love the 'Junior Listener' column, do tell all the moaners that, at my age I have forgotten all I ever knew (which was not a lot anyway) and it is nice to start right down as the bottom again. I am not ashamed to admit that I read this column with interest, and I am glad that someone is interested in the youngsters. I had a young lad on CB the other night, complaining that none of the older breakers would speak to him and that he did love to hear our tales of old times. To me, this attitude will not do, not all the youngsters are foul-mouthed yobs.

Love the magazine and I am glad to be reliving my life again in the radio world.

**Kevin P Hamer
Beccles**

Dear Sir

As a regular reader of *SWM* I like the new format - very good indeed and as a s.w.l. for years more than I like to remember I have just become interested in UK contests, such as the Postcode Award and JOTA Award. This is not a grouse but a plea. Some operators give their call sign as though it's a race and some as though they don't want anyone to understand them. I am not suggesting that all call signs should be read in the phoenetic alphabet, but more slowly and clearly, gentlemen, please. I would like to mention the nets on 40m, i.e. RSARS, RNARS, RAIBC, etc., who always welcome s.w.l.s with a greeting. It is much appreciated.

As an s.w.l., I would like to comment on QSLing to overseas operators. Although to date I only have 25 QSL cards, every one has been acquired by either the operator giving his box number or his address over the air. I always include two IRCs and I have 100% success rate.

Does any reader agree with me that it is far more exciting doing it this way than using a bureau. I understand that this is expensive, but the thrill of seeing them arrive through the letter-box is great.

It would be interesting to hear the views of other s.w.l.s

**Harold Wood
Manchester**

Dear Sir

For Christmas last year, I bought my girl friend a Citizen hand-held colour television, 'gimmicky' but nice, as gifts go. What's really starting to niggle me is its dual v.h.f./u.h.f. system.

The u.h.f. is for UK reception and is, for the most part, very good, Crystal Palace (Ch. 23), Bilsdale (Ch. 29) and Hannington (Ch. 42) are not uncommon.

But what about the v.h.f.? Is that any use at all? The tuning dial reading is Channels 1 to 12 with a 'C' at Channels 5/6. Is this a 405 or 625 system and can it be used for DXing from Europe?

By the way, before anyone rushes out to buy one, they use so much battery power that to watch *Gone with the Wind* will cost you over a fiver!

**C.A. Bowen
Nottingham**

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.

grassroots

rallies

May 26: The 15th Annual East Suffolk Wireless Revival has moved to a new venue - the Maidenhall Sports Centre, Ipswich. The main attractions this year will be, Bring & Buy, RSGB Book Stand, Car Boot Sale, the usual traders, special interest groups and lots more. Admission is £1 including plenty of car parking. **Syd Mason G0JMY. Tel: (0473) 748515.**

May 26: The Maidstone YMCA ARS are holding their biennial rally at the YMCA Sports Centre, Maidstone. As usual the rally will feature Trade and Special Interest Groups stands, refreshments and ample free parking. **Alan Judge G0NCW. Maidstone 750709.**

May 26: Plymouth Radio & Electronics Fair will be held at Plymstock School. **Sandy Pimlott G8IDE. Tel: (0752) 363607.**

June 2: The Northampton Radio Club are holding their car boot sale at the rear of the Red Lion public house, which is on the A45, 400m from Junction 16 for the M1. There will be parking for over 500 cars. The entrance fee will be 50p per car or 25p per person. If you are selling, the fee is £6.50 in advance or £9 on the day. There will be a licensed bar open from 12 noon, there's food all day long as well as a Bring & Buy stand. Any bookings to **Paul G0HWC. Tel: (0327) 41267.**

***June 9:** The RNARS Rally will be held at HMS Mercury, near Petersfield. Gates open between 1000 and 1700. In addition to the dozens of Trade stands and the RNARS tent, there will be a Bring and Buy, a flea market offering tables for hire by the hour, a car boot sale, a large arts & crafts exhibition, radio-controlled power boats, cars and trains to mention but a few of the attractions. **Cliff Harper. Tel: (0703) 557469.**

***June 9:** Elvaston Castle Radio Rally will be held at Elvaston Castle Country Park, Derby. **Peter Neal (0332) 700265.**

June 9: The Norfolk RAYNET rally and car boot sale will be held at Barford, Norfolk. Car boots pitches £5, trade stands, refreshments, etc. Talk-in on S22 by G4GLI. **Pat Bates G0IYD. Tel: (0692) 404593** evenings only.

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. June 18 - Training & Preparation for the Next RSGB QRP Field Day. Paul Truitt G4WQD. 071-938 2561.

Bedford & District ARC: Tuesdays, 7.30pm. Allen's Club, Hurst Grove, Bedford. May 28, June 11, 18 & 25 - Social, June 4 - Talk by John Allen G4PDP. Glenn G0GBI. (0234) 266443.

Braintree & DARS: 1st & 3rd Mondays, 8pm. Community Centre, Victoria Street, Braintree. M J Andrews. (0376) 27431.

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. June 18 - Top Band DF Hunt, 7pm. Geoffrey Milne. 081-462 2689.

Bromsgrove ARS: 2nd & 4th Tuesdays, 8pm. Aston Fields Working Men's Club, Stoke Road, Astonfields, Bromsgrove. May 28 - Night on the Air. J. Yarnall G1JLQ. (0527) 503024.

Bromsgrove & District ARC: 2nd Fridays. Avoncroft Museum of Buildings & Arts Centre, Bromsgrove. Trevor Harper. Bromsgrove 33173.

Chelmsford ARS: 1st Tuesdays, 7.30pm. Marconi College, Arbour Lane, Chelmsford. June 4 - Constructor's Competition. Roy Martyr. Chelmsford 353221 ext 3815.

Coulsdon ATS: 2nd Mondays, 7.45pm. St Swithun's Church Hall, Grovelands Road, Purley. June 10 - 500kHz and Below by Tom Mansfield G3ESH. Andy Briers G0KZT. 081-668 7004.

Coventry ARS: Fridays, 8pm. Baden Powell House, 121 St Nicholas St, Radford, Coventry. May 24 - Night on the Air & Morse Tuition, 31st - Outdoor DF with Andy G6ULX, June 7 - Radio Communications in Sierra Leone by Simon G0GWA, 14th - Canal Trip, 21st - Outdoor Operation Evening at Burton Dassett Country Park. Neil. Coventry 523629.

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. May 29 - The Joys of QRP Operation by Alan Lake G4DVW, June 5 - Junk Sale. Richard Buckby. Ambergate 852475.

Dorking & District RS: 2nd & 4th Tuesdays, 7.45pm. Friends Meeting House, South Sreet, Dorking. May 28 - RF Measurements, Basic Techniques by John Greenwell G3AEZ, June 11 - Informal at The St Ashtead at Leg of Mutton & Cauliflower, 15th - 2.30-4.30 RSGB Video, 25th - VHF NFD Planning Meeting. John Greenwell G3AEZ. (0306) 77236.

Edgware & DRS: Watling Community Centre, 145 Orange Hill Road, Burnt Oak. May 23 - Constructors Contest & NFD Briefing, June 1-2 - NFD, 27th - VHF FD Briefing. Hank Kay G0FAB. Tel: (081-205 1023).

Hambleton ARS: Mondays, 7.30pm. Room A5, Northallerton Grammar School. Nick Whelan G7COC. Northallerton 780476.

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.

Horndean & DARC: 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. June 6 - Space Exploration Hubble Telescope. S.W. Swain. (0705) 472846.

Keighley ARS: Thursdays, 8pm. The Cricket Club, Ingrow, Nr Keighley. May 30 - Amateur Radio on a Shoe String by Rev. G. Dobbs,

June 6 & 20 - Natter Night, 13th - Foxhunt, 27th - Questions & Answers. Kathy Bradford. (0274) 496222.

Lothians RS: 2nd & 4th Wednesdays, 7.30pm. The Orwell Lodge Hotel, Polwarth Terrace, Edinburgh. May 22 - DF Hunt, June 12 - AGM. P.J. Dick G4MDTH, QTHR.

Maidenhead & DARC: 1st & 3rd Thursdays, 7.30pm. The Red Cross Hall, The Crescent, Maidenhead. June 18 - Preparations for VHF NFD. Neil G8XYN. Tel: (0628) 25952.

Mansfield ARS: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. June 6 - VHF Activity/Construction Night. Mary G0NZA. (0623) 755288.

Midland ARS: 3rd Tuesdays, 7.30pm. Headquarters Unit 22, 60 Regent Place, Birmingham B1 3NJ. June 18 - Treasure Hunt. John Crane G0LAI. 021-742 8712 (evenings).

Mid-Sussex ARS: Thursdays, 7.45pm. Marle Place Further Education Centre, Leylands Road, Burgess Hill. May 23 - Project Analysis, June 6 & 20 - Informal, 8th - Bring & Buy Bazaar at Newick Village Hall, 13th - Windmills Evenig at Jack & Jull Car Park, 27th - Astronomy by Eric Zucker. John Fuller G0010.

Mid-Warwickshire ARS: 2nd & 4th Tuesdays, 8pm. St John Ambulance HQ, 61 Emscote Road, Warwick. May 28 - Homebrew, Bring Along Your Project, June 11 - 144MHz DF Foxhunt 7pm, 25th - Satellite TV by Alan G0CRB & Steve G1FIP. Kenilworth 513073.

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. May 29 - Final HF NFD briefing, June 5 - 'Real Radio' evening, 12th - Informal, 19th - Experiments with Op-Amps by Mike Harris G3YIA. Jack Simpson G3NJQ. (0603) 747992.

North Bristol ARC: 3rd Fridays. S.H.E. 7, Braemar Crescent, Northville, Bristol. June 1 - CW National Field Day, 14th - Bullseye Contest vs South Bristol ARC at NBARC. Chris G0LQJ. (0454) 616267.

North Devon RC: 1st Wednesdays, 7.30pm. SWEB Main Depot, Barnstaple. J.A. Kelly G4JAK. Tel: (0271) 23525.

North Ferriby United ARS Sundays, 8pm. North Ferriby United Football Club Social Room, Church Road, North Ferriby. May 24 - RSGB Video with Frank G3YCC, 31st - RSGB Matters by Norman G3NJP, June 7 - Topic of the Day by Ken G4VKK, 14th - HF Happenings by Ken G4JIO, 21st - Night on the Air. F.W. Lee G3YCC. (0482) 650410.

Preston ARS: Alternate Thursdays. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood. Eric Eastwood G1WCO. (0772) 686708.

Rhyl & District ARC: June 3 - Film Night, 17th - Vehicle Suppression. Edward Shipton G4WDSJ. (0745) 336939.

Salisbury R&ES: Tuesdays. Grosvenor House, Churchfield Road, Salisbury. Bery Newman G2FJX, QTHR.

South Bristol ARC: Wednesdays. Whitechurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitechurch. May 22 - Talking Brick by Len G4RZY, 29th - Contest & Logging Teach-in by Ken G4XCB, June 5 - QRP Workshops by Alan G4TSS, 12th - Exhibition of Calligraphy by Jean G0AWX, 14th - 'Bulleys' Contest at NBARC with Eric G2FXQ, 19th - Just a Chat, 26th - Briefing for the Longleat Rally. Len Baker. Whitechurch 832222.

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

Southdown ARS: 1st Mondays, 7.30pm. Chasely Home for Disabled Ex-Servicemen, Southcliff, Bolsover Road, Eastbourne. Wednesdays & Fridays, 7.30pm. Hailsham Leisure Centre, Vicarage Road, Hailsham. June 3 - Using a Spectrum Analyser by G8HGM.

Southgate ARC: 2nd & 4th Thursdays. Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. May 23 - Normal Club Meeting. Brian Shelton G0MEE. 081-360 2453.

Stourbridge & DARS: 1st & 3rd Mondays. Robin Wood's Community Centre, Scotts Road, Stourbridge. June 3 - On Air & Natter Night, 20th - Treasure Hunt. Dennis Body G0HTJ, QTHR.

Sutton & Cheam RS: 3rd Thursdays, 7.30. Downs Lawn Tennis Club, Holland Ave, Cheam. 1st Mondays in the Downs Bar. John Puttock G0BWW, QTHR.

Thornbury & DARC: 1st & 3rd Wednesdays, 7.30pm. United Reform Church, Chapel Street, Thornbury. June 5 - Fox Hunt by John G6RAZ, 19th - HF Activity/Natter Night.

Three Counties RC: Alternate Wednesdays, 7.30pm. The Railway Hotel, Liphook, Hants. June 5 - The Changing Pattern of Pubs & Breweries in the 3 Counties by D.M. Sturley, 19th - Telecoms through the Channel Tunnel by an ABR Representative. Dave G4VKC.

Todmorden & DARS: 1st & 3rd Mondays, 8pm. The Queen Hotel, Todmorden. Mrs E Tyler. (0422) 882038.

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. June 1-2 - National Field Day Contest, 21st - Junk Sale. Walt G3HTX. (0803) 526762.

Trowbridge & DARC: 8pm. TA Club, Trowbridge. June 5 - 144MHz DF Foxhunt, map 173. Start Bythesea Road, Trowbridge 1830 and after at TA Club for refreshments, 19th - Planning for Special Event Stations. Ian Carter G0GRI. (0380) 830383.

West Kent ARS: 3rd Fridays, 8pm. The School Annex, Albion Road, Tunbridge Wells, Kent. June 1-2 - Club h.f. Field Day at Kiplins Cross, 7th - Informal Meeting, 21st - Video Evening. John Taylor G3OHV. (0892) 664960.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. May 31 - Safeguarding Electrostatic Sensitive Devices by Jim Todd G4XLM, June 14 - Linear Amplifiers by John Stockley G8MNY. Chris Frost. 081-397 0427.

Wirral ARS: 1st & 3rd Wednesdays, 7.45pm. Ivy Farm, Arrowe Park Road, Birkenhead, Wirral.

Yeovil ARC: Thursdays, 7.30pm & Fridays, 7.30pm. The Preston Centre, Monk's Dale, Yeovil. May 23 - The Two Driven Element Beam by G3MYM, 13th - A Novice's Top Band Rig by G3PCJ, 20th - Help with your r.f. problems by G3AIK. David Bailey G0NMM, QTHR.

junior listener



Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

Young Amateur of the Year Award

The Radiocommunications Agency has just announced its sponsorship of the Young Amateur of the Year Award aimed at young amateur radio enthusiasts. The award's presented for the most outstanding achievement in amateur radio during the period 1 August 1990 to 31 July 1991.

The sort of areas that the award covers are:

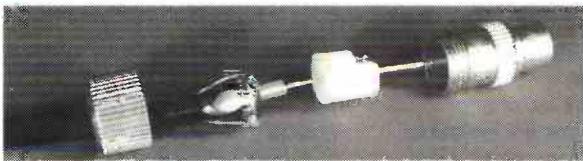
- 1) Amateur radio constructional projects.
- 2) Operating interests and skills including teamwork and club contests.
- 3) Introducing other youngsters to the hobby.
- 4) Using the hobby for the community, e.g. RAYNET, St Johns Ambulance or helping the disabled and housebound.
- 5) Amateur radio as part of a school project.

This isn't a comprehensive list, but should give you a general idea.

Last year the award was presented to **David Martin** from Glasgow. As well as being a co-founder and treasurer of YAGIS (Young Amateur's Group In Scotland), David had run a special event station for Jamboree on the air. In addition to all this, he was an active member of RAYNET (Radio Amateur Emergency Network). The award was presented at the RSGB's HF Convention in Daventry, where David received £250.00, a certificate and several other prizes.

If you're interested in having a go at this award, further details can be obtained from; The Secretary, RSGB, Lambda House, Cranbourne Road, Potters Bar, Hertfordshire, EN6 3JE. If you'd rather phone, the number is 071-215 2171.

Connections



To follow up last month's feature on plugs and their uses, I thought I'd give some details on how to connect-up a few of these plugs. I'll start with the most common coaxial type - the Belling Lee.

There are a few general tips that you may find useful. One of the secrets of making sound connections is accurate measurement at the preparation stage. Also, instead of trying to measure with a ruler it's much easier to mark the measurements on card and lay the cable on the card to check the measurement.

Another important point is the way the insulation is stripped. It's vital that the insulation is stripped without nicking the conductor. There are a number of insulation strippers on the market to help with this, but it's possible to use just a pen knife. The main disadvantage with using a knife is that there's a much greater risk of nicking the conductor. This creates a weak point that shortens the life of the lead. There is, however, a very simple way to avoid this, yet still provide a clean cut. The trick is to only cut part way through the insulation with the knife. The remaining insulation is then separated by carefully bending the cable to and fro. For this technique to work it's best to avoid using really sharp knives such as the Stanley type. These cut rather too well and it's very difficult to restrict the cut to only part of the insulation. You'll need to experiment a bit to perfect the technique but, once mastered, it's very useful for all types of cable. **But please, please, be careful!!!**

The first stage is to strip 25mm of the outer insulation followed by 15mm of the inner. Now the cap and collet clamp can be slid onto the cable and the tip of the inner tinned. Before final assembly you need to comb out the braided screen, fold this back over the collet clamp and trim off the surplus. It's also a good idea to squeeze the clamp so that it gently grips the outer insulation. Final assembly is simply a case of screwing the cap firmly on to the body and applying a spot of solder to the tip.

Next month - the BNC type.

2SL Update

Following my recent feature on QSLs, I've received several interesting comments from broadcasting stations. The first comes from **Richard Buckley** who's an engineer with BBC Radio Nottingham. He's generally on the receiving end of QSLs, so has a slightly different viewpoint. Richard points out that replying to QSLs is a very time consuming affair that's not actually part of their job. It's only through good will and a desire to please listeners that any QSLs get returned. It's obviously important that you remember this when asking for QSLs and make them as helpful as possible. The second letter follows a similar line and comes from **Tony King** at Radio New Zealand International. Tony's responsible for all Radio New Zealand's QSLs and handles something in the region of a thousand QSLs a month! Tony echoes the comments made by Richard and points out that the QSL must contain some programme detail that proves the listener really heard the station. The reason for this is to avoid giving QSLs to those who just pick stations out from a frequency list. Tony also likes very much to see postage and either a good sized envelope or an address label included.

As you can see the main message from both Richard and Tony is that the listener needs to make QSLing as simple as possible for the broadcaster. The most important points are:

- 1) Always send a large s.a.e. or address label, with adequate postage.
- 2) Include brief details of the programme you heard.

These simple measures will give you the best possible chance of receiving your QSL. My thanks to Tony and Richard for their help.

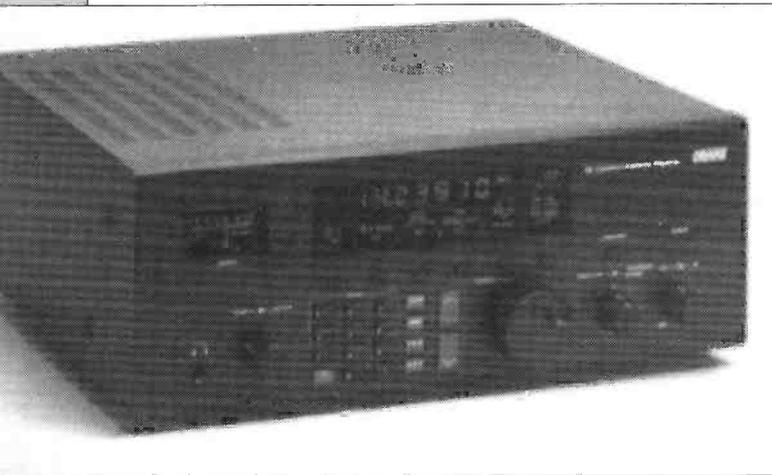
Starting Young

While at the recent RSGB Convention at the NEC, Peggy, Brown Owl to the 4th Verwood Brownie Pack and the wife of our Editor, spotted some Brownies on the Girl Guide stand making simple transistorised radios under the eagle eye of another Brown Owl, Jennifer Jackson G8VWV. Out came her camera and she managed to catch eight-years old **Anne Sanders** from Oakley concentrating hard on getting everything in the right place. This is the right age to get them interested - they will remember the first sounds from their own set for the rest of their life.



New Receiver

Whilst at the Dayton 1991 Hamvention in Ohio, Elaine attended the launch of a new receiver from Drake. It will be available in the UK sometime during the summer of 1991, so keep your eyes on the adverts in *Short Wave Magazine* to see who will be stocking the receiver.



It is a microprocessor-controlled, phase locked loop synthesised, all mode, world band receiver with continuous coverage capability from 100kHz through 30MHz. The front panel provides key pad entry of virtually all functions and the controls are large and legible. The high Q electronically switched i.f. filter provides five commonly used bandwidth choices. Filter bandwidths are automatically selected by mode and any bandwidth setting may be over-riden at the touch of a button.

The back-lit l.c.d. front panel provides simple visual feedback of the current status of the receiver. The large, seven-digit frequency display allows tuning resolution to 10Hz accuracy. Audible 'beep' tones activate during certain key strokes.

It has multiple scan functions for scanning by carrier, time or seek modes of frequency or selected memories. There are 100 channel memories storing frequency, mode, bandwidth, a.g.c. setting, r.f. setting, antenna selection, notch on/off, noise blanker and syncro switch position. Also there are dual-operating, digitally controlled v.f.o.s that may be set to any frequency.

There is an RS232C serial interface for the remote control of the receiver functions and Drake are working on a suitable program at the moment.

The new R8 receiver has a built-in, multi-voltage power supply for operation in most parts of the world on almost any mains supply. The actual specification of the radio is excellent and it certainly seems to be a receiver worth looking out for.

Elaine was surprised to see so much for the short wave listener at the Hamvention as she had expected it to be all amateur radio. There were many booths just devoted to receivers and all the major companies were represented, with their most up-to-date receivers on display. There was a vast array of second-hand receivers for sale in the Flea Market, too! Elaine was particularly pleased to be able to get the news on a new product some months before it reaches the UK, as well as to have a chance to play with the receiver on the Drake stand.

If you think you would be interested in joining us on a trip to the 1992 Dayton Hamvention, send an s.a.e. to: **Dayton 1992, PW Publishing Ltd., Enefco House, The Quay, Poole, Dorset BH15 1PP** for more details.

Writers Wanted

Radio hobbyists who like to write and writers who are radio hobbyists are being sought by Tiare Publications, Lake Geneva, Wisconsin, USA.

Tiare published books for the radio communications hobbyist and is interested in developing new titles in all areas of amateur radio, short wave listening, communications and scanner monitoring, frequency lists, secret transmissions, antennas, military, CB, TV and so on.

Readers who have ideas for books in any of these categories are encouraged to contact Tiare with their proposals, outlines or manuscripts (partial or complete).

Writers looking for suggestions are invited to obtain a copy of the Tiare 'want list' which is available for a self addressed envelope and 2 IRCs from: **Tiare Publications, PO Box 493, Lake Geneva, Wisconsin 53147, USA.**

Jupiter VT-125

Waters & Stanton have announced that they will shortly have stocks of the new Yupiteru VT-125 MkII airband receiver. Unlike the earlier model, which was not suitable for use in Europe, this model will have the correct 25kHz steps and also includes the extended aeronautical phone band and navigational beacons.

Frequency coverage is 108-142MHz a.m. in programmable steps of 25, 50 or 100kHz. There are 30 memory channels plus, priority, manual up/down, 20 steps per second scan rate, bypass, beep off, etc. Size is 57.2 x 127.5 x 35.5mm making it ideal for pocket use. Included in the package are a flexible antenna, nicads, 12V d.c. lead, earpiece, and carry strap. The price will be £169 including VAT.

Attractions for those who have older receivers will be the small size, high sensitivity and excellent audio quality. Couple this with the reputation of Yupiteru for reliability and construction and you have the formula for a winner in the airband market.

Audio Connectors

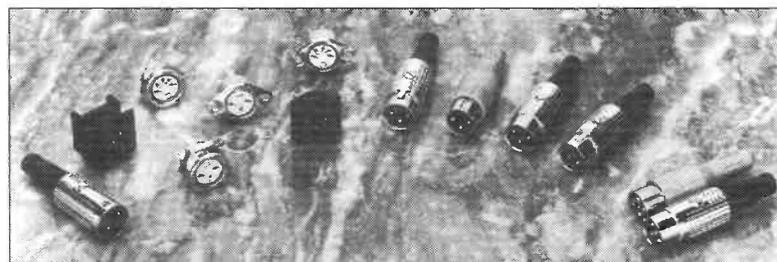
A robust range of fully screened Deltron connectors is now available from STC Electronic Services. Designed for use in most audio applications and instrumentation, the range is comprehensive covering standard line plugs and sockets, lockable line plugs, chassis sockets, professional sockets that can be panel mounted with a hexagonal nut, standard p.c.b. sockets and professional p.c.b. sockets.

The connectors feature an operational voltage of 100V d.c. or a.c. peak, a test voltage

of 1000V d.c., a current rating of 4A and insulation resistance of $10^{11}\Omega$ minimum at 100V d.c. with an overall contact resistance of 10m Ω maximum.

Offered in either non-reflective electronically conductive matt black or bright nickel finishes, the devices come complete incorporating cable grip and strain relief in 3, 4, 5, 6, 7 and 8-way as well as 4-way switched and 5-way dice.

The Connector Group, STC Electronic Services, Edinburgh Way, Harlow, Essex CM20 2DF. Tel: (0279) 626777.



BBC World TV

BBC World Service Television went on the air for the first time on Monday 19 April 1991, almost 60 years after the BBC began overseas broadcasting by radio. The new satellite TV subscription channel is initially available across Europe from Finland to the Algarve and Bergen to the Bosphorus.

Schedules include specially produced global news, weather and business reports together with a varied selection across the full range of BBC1 and BBC2 output, from *Newsnight* and *Panorama* to *Blue Peter*. The first week featured drama such as *Kinsey* and *Sleepers*, documentaries like *40 Minutes* and *Children of God* and comedy including *Bread* and *Joint Account*.

Regular programmes from BBC English, the language-teaching arm of the BBC World Service, will help viewers who are not native speakers to improve their knowledge of English. Most of the channel's daily output will carry teletext subtitles to help those learning the language.

In Europe, BBC World Service Television is being carried on Intelsat VI, serving nearly a million households via cable networks, SMATV or direct-to-home using a dish and decoder. It replaces the existing European satellite service, BBC TV Europe.

ERRATA

'Starting Out', SWM February & March '91.

Unfortunately the following errors occurred in these parts of the series.

February '91. The active sections of the trap dipole depicted in **Fig.5** should be F1 = High frequency dipole; F2 = Medium frequency dipole; F3 = Low frequency dipole.

March '91. Fig.1b and Fig.1c were transposed.

A section of text was lost on page 45. Under the heading 'Great Circle Route' the text should read: "The direct path is therefore referred to as a Great Circle Route. Specially prepared Great Circle maps are available, which are centred on a particular location, e.g. London. Anyone unfamiliar ..."

news



Low Electronics Wins Award

Amateur radio specialists, Low Electronics Ltd, have won the prestigious award for one of its short wave receivers. The award for 'Best Receiver of the Year' was given by the internationally respected publication *World Radio TV Handbook*. The award was given for the HF-225 receiver.

The HF-225 was developed about 12 months ago with the help of a DTI grant. Low Electronics are currently planning extensions to their model range and are confident that they will meet with similar success when the new models come onto the market.

Affordable Power Protection

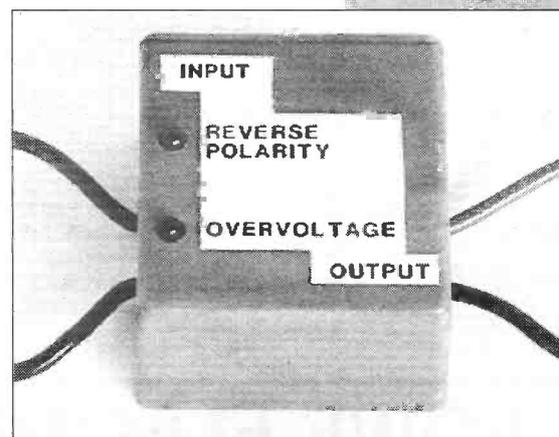
The RP2 will protect valuable 12V operated equipment from over-voltage and reverse polarity damage.

The RFP2 is an 'intelligent' relay that will completely isolate the equipment if the supply voltage should exceed 16V, or if the supply polarity is reversed. A pair of light emitting diodes give instant indication of the problem.

Conventional 'crow-bar' diode protection against reverse power connections is designed to blow the supply fuse in such an event, but becomes completely useless should the equipment in question still have a metal-to-metal contact to the vehicle chassis. Reverse polarity in this situation will often vaporise power plugs or p.c.b. track. Fusing of the negative supply cable is one solution, but should that blow, its absence when correct polarity is restored will not be obvious

and can cause erratic or unsafe performance in some types of equipment.

The RP2 power protector costs £3.00 each, more details from: **Stewart Harding, Communication Development Specialists Ltd., PO Box 83, Basingstoke, Hants RG25 2PX. Tel: (0256) 83528.**



When you are ready to graduate to real listening Look to Lowe



The NRD-535. JRC do it again.

JRC have triumphed again with the introduction of their new NRD-535. Latest in the line of NRD receivers, the NRD-535 represents a true step forward in features, performance, and facilities for the dedicated listening enthusiast.

Apart from looking quite stunning in appearance, the NRD-535 is equally impressive in use. The smooth tuning is the first thing you notice and JRC have developed a direct digital synthesiser (DDS) system which tunes in 1Hz steps. This means that you simply cannot tell that you are tuning a synthesised radio except for the fact that the accuracy and stability are of laboratory standard. Whatever the frequency readout says, you can believe; and what's more the readout itself is absolutely brilliant in its clarity. There is of course the front panel keypad for swift frequency setting, so you can browse around with the tuning knob or go direct to frequency if you wish.

All mode reception covers AM, USB, LSB, CW, FM, RTTY, and even FAX, and there are IF filter bandwidths to suit the modes. Using the same range of accessory filters as the NRD-525 means that if you want to trade-up you can keep your existing filters and transfer them to your new 535.

When it comes to winking out the weak stations from the noise, the NRD-535 excels. Pass band shift is provided so that you can slide the IF filter around the signal so as to eliminate the adjacent interference, whilst a totally new notch system gives tunable rejection with a 40dB notch depth, 10dB better than even the legendary NRD-525. Both of these features are included in the standard spec. but if you want to have full control over IF bandwidth, a Bandwidth Control board is available as an option.

For the keen broadcast DX-er, JRC offer an optional plug-in ECSS board which has to be used to be appreciated. The ability to "lock-on" to an incoming AM signal and then pick off either sideband makes the NRD-535 the only choice for the serious listener.

The serious listener will also be impressed by the 200 memory channels, each of which stores frequency, mode, bandwidth, attenuator setting, and AGC setting (that's what I call comprehensive). The memories can be scanned of course and there are also comprehensive frequency sweep facilities under complete user control.

When it comes to user control, the NRD-535 is almost unique, because there are no less than 16 different functions which can be programmed from the front panel by the user, to "tailor" the receiver to suit their own particular needs. These cover everything from tuning rates to the precise BFO offset on CW, so everyone can have the receiver of his choice.

For the advanced user, the NRD-535 is fitted with computer control facilities, and an RS-232C interface is provided as a standard feature. The user manual contains comprehensive details on the 28 different receiver operations which can be computer controlled. You will need a computer or dumb terminal of course, but given a modicum of computer literacy, there is almost nothing which cannot be done by remote computer control.

All in all the NRD-535 is a truly excellent advance on the 525, and is worthy of carrying the JRC banner forward into the future. When you see that the price is the same as that of the NRD-525, you can only marvel at what JRC have done. See it soon.

NRD-535 HF Receiver **£1115 inc. VAT**
 CMF-78 ECSS option **£202 inc. VAT**
 CMH-530 RTTY option **£104 inc. VAT**

FREE

Send four first class stamps to cover the postage and we will send you, by return of post, 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.

LOWE ELECTRONICS LIMITED

Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone 0629 580800 (4 lines) Fax 580020

When it comes to scanners Look to Lowe

The new WIN-108 The finest handheld airband receiver in the world

The new WIN-108 is the latest version of this world beating air band radio, which has been acknowledged all over the world as the best hand held VHF radio available.

Now covering 108 to 143MHz, and with all UK and European channels covered in the now standard 25kHz spacing giving 1400 channels for your use, the WIN-108 will give you total listening satisfaction, at home or out on the airfield.

Everything you need is provided by the WIN-108; 20 memory channels, memory scanning, frequency searching between your chosen limits, a priority channel which you can programme to any frequency in the airband, direct frequency entry from a simple keypad, up/down tuning, and so on and so on.

Best of all, the WIN-108 comes from a respected manufacturer and is backed by the best service in the business from Lowe Electronics.

Airband radios are getting quite complex, and many people are confused by the increasing numbers of apparently similar radios on the market. To help you choose, here is a check list of absolutely essential features you must have in an airband radio. If the radio you are going to buy has any of these features missing. DON'T BUY IT, because you will be disappointed.

THE QUESTIONS

1) Does it have frequency coverage from at least 108MHz to 137MHz for all new channels?

(The WIN-108 covers from 108 to 143MHz.)

2) Does it have channel spacing of 25kHz?

This is crucial, because all important frequencies are now using 25kHz channels. The old standard of 50kHz is totally useless. (The WIN-108 has 25kHz channels.)

3) Can you use ordinary pencils if you want to?

Having re-chargeable batteries is all very well, but it doesn't help you at an air show when they run flat. You can always get a set of Duracells from somewhere. (The WIN-108 uses easy to obtain batteries.)

4) Can you search for new signals between user-programmed limits?

If you have to search the entire Nav and Coms band all the time, it wastes valuable searching time when signals can be lost. (The WIN-108 has programmable search limits.)

So – four simple questions which you MUST ASK. For full details on the WIN-108 and all the other radios from our exciting range, simply ask for our airband information pack, which includes a free copy of our ever popular "Airband Guide".

Happy listening. (It will be with a WIN-108.)



WIN-108 £179 inc. VAT
Available from good dealers everywhere.

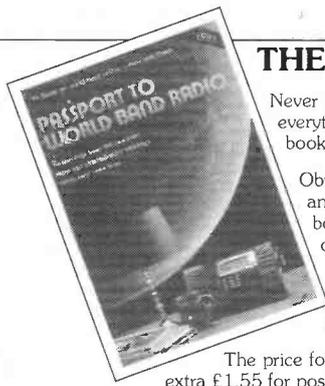
THE LISTENERS' BOOK OF THE YEAR 1991 - £12.95

Never has a title been so well chosen as the "Passport to World Band Radio". This is the one book which seems to contain everything you need to know about listening to the amazingly diverse world of radio broadcasting. Let's just run through what this book contains:

Obviously it has a complete listing of all short wave broadcasters, not simply in order of frequency, but also listing by language and country of origin., AND also the timing of broadcasts. Almost two hundred pages of such information would make the book worthwhile on it's own, but you also have detailed reviews and comment from an acknowledged and respected authority on such matters covering no less than forty radio receivers ranging from the sublime to the gor-blimey. To add to all this, you also get over a hundred pages of general news, views and information.

The "Passport" is an absolutely indispensable companion to the short wave listener and the price is so reasonable for so much information. Get one soon before they are out of print.

The price for this constant companion? Slightly less than that for a pedigree dog. It's £12.95 for callers, or we can send it to you for an extra £1.55 for postage and packing.



*BOURNEMOUTH 0202 577760. *BRISTOL 0272 771770. CAMBRIDGE 0223 311230. *DARLINGTON 0325 486121.
*GLASGOW 041-945 2626. LONDON (EASTCOTE) 081-429 3256. LONDON (Heathrow) 0753 45255.
S. WALES (BARRY) 0446 721304. *Closed all day Monday.

shortwave magazine

June 1991 £1.75 ISSN 0037 - 4261



WATCHING A SHUTTLE LAUNCH



**GRUNDIG
COSMOPOLIT
RECEIVER
Reviewed**

**Plus
AN EXPERIMENTAL
VHF RECEIVER
part 1**

- ★ JUNIOR LISTENER
- ★ BANDSCAN
- ★ SATELLITE TELEVISION
- ★ SSB UTILITY LISTENING
- ★ PROPAGATION

Plus
Regular Features for Airband, Broadcast & Scanning

NEVADA™

Extra Wideband Scanning Power New Models With Even More Facilities!

NEW HP200 Handheld Scanner

Following the outstanding success of its predecessor the HP100 this new model boasts improved performance

- * Extra wideband coverage:- 500KHz – 600MHz, 805MHz – 1300MHz
- * 1,000 channel memory
- * Receives AM – FM – Wideband FM
- * Search steps selectable from 5KHz to 995KHz
- * Keypad or rotary tune controls
- * Switchable 10dB attenuator

Each set is supplied with:-

- * Full set of high power NiCad rechargeable batteries
- * UK spec. charger
- * Three antennas – VHF, UHF, short wave telescopic
- * Carrying case, belt clip, shoulder strap
- * Dc cable for car cigar adaptor supply
- * Earpiece for private listening.....£269

NEW Nevada MS1000 Mobile/Base Scanner

An exciting new scanner with all the specifications of the HP200 above plus:-

- * Switchable audio squelch
- * Tape recorder output socket
- * Automatic tape recorder switching circuit switches tape recorder on when a signal is present
- * All metal case for improved EMC compatibility.....£279



Available From Authorised Dealers Throughout The UK.

Nevada Communications, 189 London Road, North End, Portsmouth. PO2 9AE

Send in £2 now for our LATEST CATALOGUE with full details of our complete product range (includes a £2 voucher).

Watching a Shuttle Launch

Few of us can afford to visit Florida just to see a Shuttle launch and being there on holiday at the right time is usually a matter of luck.

Roger Hall G4TNT has managed to strike lucky twice!

Just before taking my first holiday in Florida, I read about a Shuttle launch scheduled for two days before I was due to arrive. Naturally I was disappointed at the thought of missing it, but there wasn't much I could do. However, luck was on my side! Bad weather delayed the launch and for the first few days of my holiday I spent hours watching the television for

news of the revised launch time.

Eventually it was announced that the launch was going ahead and I set off for the Kennedy Space Center about two hours before lift-off. I allowed an hour for travelling and another hour for looking around. However, things did not go as planned and the drive took far longer than expected. Everyone in Florida seemed to be

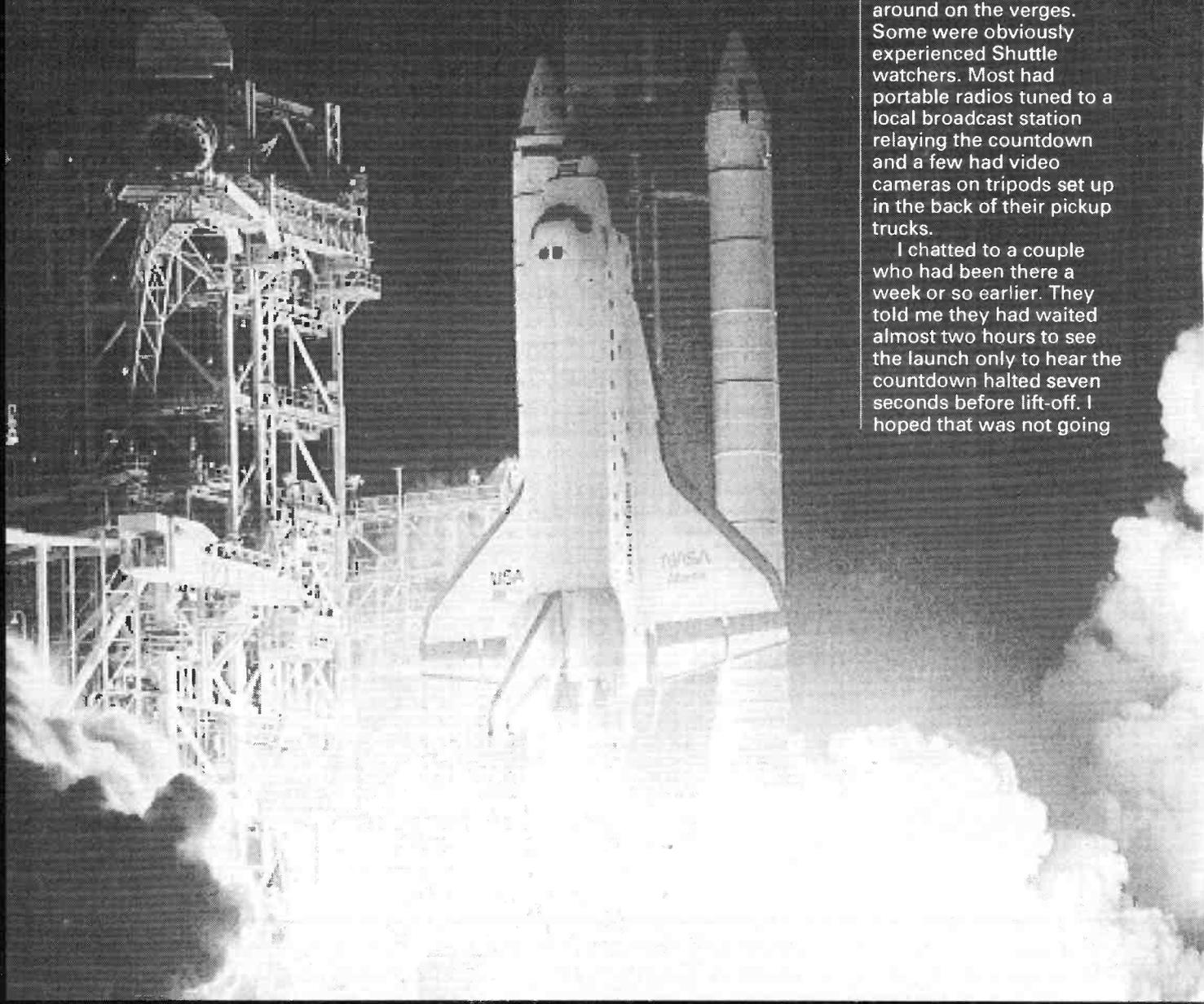
going to watch the launch! The last few miles of freeway approaching the Center was full of stationary cars - not stuck in a traffic jam, but parked! The local Sheriff was cruising up and down one lane doing his best to keep it open but he made no attempt to move cars in the other lanes. Imagine that happening on the M1!

Determined to get to the Space Center, I drove

along behind the Sheriff's car until we reached the gates. Then came my second surprise, the gates were closed and a security guard waved me away saying that the Center is always closed on the day of a launch. That's why everyone had parked in the road!

Eventually I found a parking space on a slip road down to another freeway and went back to join the crowds standing around on the verges. Some were obviously experienced Shuttle watchers. Most had portable radios tuned to a local broadcast station relaying the countdown and a few had video cameras on tripods set up in the back of their pickup trucks.

I chatted to a couple who had been there a week or so earlier. They told me they had waited almost two hours to see the launch only to hear the countdown halted seven seconds before lift-off. I hoped that was not going



The crew of STS-38 beside *Atlantis* on Runway 33 of KSC's Shuttle Landing Facility.

Photo: NASA



to happen again. The local radio said that, although there was a good chance that the launch would go ahead, there was a possibility that it would have to be postponed because of the low cloudbase. The weather is an all-important factor in Shuttle launches. It has to be good in both the launch site and the emergency landing area in Florida as well as the usual landing site at the Edwards Air Force Base in California.

As the countdown entered the final minute I tuned my 2-metre handheld to the local repeater relaying the audio live from the Control Room and pointed my video camera in the same direction as everyone else. I had no idea where the launch pad was or what I would see. Eventually the countdown reached Five, then Four-Three-Two-One-Zero with the disembodied voice pronouncing the long-awaited words 'we have ignition'.

At that moment there was a low rumbling sound and the ground vibrated under my feet. A few seconds later a tiny match-sized object appeared over the trees, closely followed by a very large flame. It travelled rapidly upwards before vanishing into the clouds. That was it - hours of driving and standing around just to see the Shuttle for a few seconds from about ten miles away. Still - I had seen a launch.

I went to Florida again last November and was pleased to find that another launch was scheduled for when I would be there. This time I decided to do things differently. Before I left England I contacted the Press Office for Press Accreditation - the key to

actually getting inside the Center.

Again I had to watch the television news to find out when the launch would take place as this mission, STS-38, had also been delayed by low cloud. Eventually the weather cleared up and a new lift-off time was announced so I made my way to the Center. This time I allowed plenty of time for travelling and arrived at the gate about an hour before lift-off. They gave me a badge, car pass and a list of do's and don'ts - no alcoholic beverages, no detours and so on - and then I was allowed inside. I drove some seven or eight miles to the Press Centre and parked beside an enormous grandstand that would not have been out of place at a First Division football ground. Immediately in front of the grandstand was a large lawn that ran down to a small lake. In the middle of the lawn was a large electronic display showing the current countdown status.

Oasis of Light

I gazed across the lake and saw *Atlantis* standing

beside its gantry. At last, a relatively close-up view of a Shuttle. It was a most impressive sight. As the sun set and the light faded, the floodlights were switched on and the scene became almost magical. The launch-pad was transformed into an oasis of light in the gathering gloom with the lake a pool of twinkling reflections.

I dragged myself away and went to explore the Press Centre. What a professional set-up it is. Each seat in the grandstand is equipped with a power point and telephone socket. Several journalists were already typing away on their laptop computers and squirting the copy down the 'phone lines to their editors.

Inside the main Press Centre, a futuristic, silver, dome-shaped building, there were more journalists with lap-tops and modems. The whole scene was one of quiet activity. The walls were covered with shelves full of literature on every aspect of the Space Program. I picked up information on the evolution of the space suit, amateurs in space, Shuttle communications and

much, much more. I completely filled my large shoulder bag and would have taken more if I had been able to carry it.

There was even a photoroom where a very friendly lady told me that I could have all the pictures of this mission that I wanted if I would just write my name and address in the book. Even though STS-38 was being undertaken for the Department of Defense and the details of the flight and payload were classified, there was still a wealth of information available.

With one ear on the count-down coming over the public address system, I wandered around and chatted to several press personnel about the flight. There was a general feeling that the payload was a spy satellite to observe Iraq, but no-one would confirm this. They were, however, more than happy to tell me all about *Atlantis*, the newest of NASA's orbiters.

Ordered from Rockwell International under a 1979 contract, it was delivered to the Kennedy Space Center in April 1985. *Atlantis* is named after a

two-masted ketch, operated for the Woods Hole Oceanographic Institute from 1930 to 1966. The original *Atlantis* sailed more than half a million miles on ocean research.

STS-38, its seventh mission, had originally been scheduled for July 1990. This flight was postponed following the detection of a liquid hydrogen leak during the countdown of a previous mission, STS-35. Three tests were carried out on *Atlantis*, confirming the existence of a leak that could not be repaired on the pad.

The Shuttle was taken back to the Orbiter Processing Facility for repairs, being rolled back out onto Pad 39A on October 12. Twelve days later further tests showed that the repairs had been successful and preparations for the launch were moved forward.

Mission STS-38 carried a crew of five, three of whom had never been in space before. As this was a national security mission, details of the tasks to be carried out by the mission specialists were not available.

As the countdown entered the final few minutes I went outside and joined the people standing on the lake shore. It was now dark but *Atlantis* was still clearly visible under the lights.



STS-38 Pilot Frank Culbertson Jr. adjusts his flight suit helmet.

Photo: NASA

Ignition

We were all intently listening to the countdown when, just as the voice from the speaker above the grandstand said 'Zero', there was an incredible roar from the base of the Shuttle and I could only just hear the voice say 'We have ignition'.

I really can't do justice to the scene as the Shuttle rose from its launch pad. The noise caused several of my internal organs to vibrate and almost crossed my threshold of pain. The size and brilliance of the flame blanked out the viewfinder on my video camera and the smoke belching from the two solid rocket boosters (SRBs) seemed to fill the sky. It was the most

impressive man-made sight I have ever seen.

A Shuttle orbiter is mated to two SRBs and an external propellant tank. Launched into space like a conventional rocket, it returns to earth as an unpowered glider.

Jettisoned

Following lift off from the pad, the boosters burn for about two minutes, each one providing three million pounds of thrust. They are then jettisoned and recovered for use on later flights. The three main engines burn for about six more minutes after SRB separation after which the external tank is jettisoned, disintegrating on re-entry into the atmosphere. I stood and watched the tiny

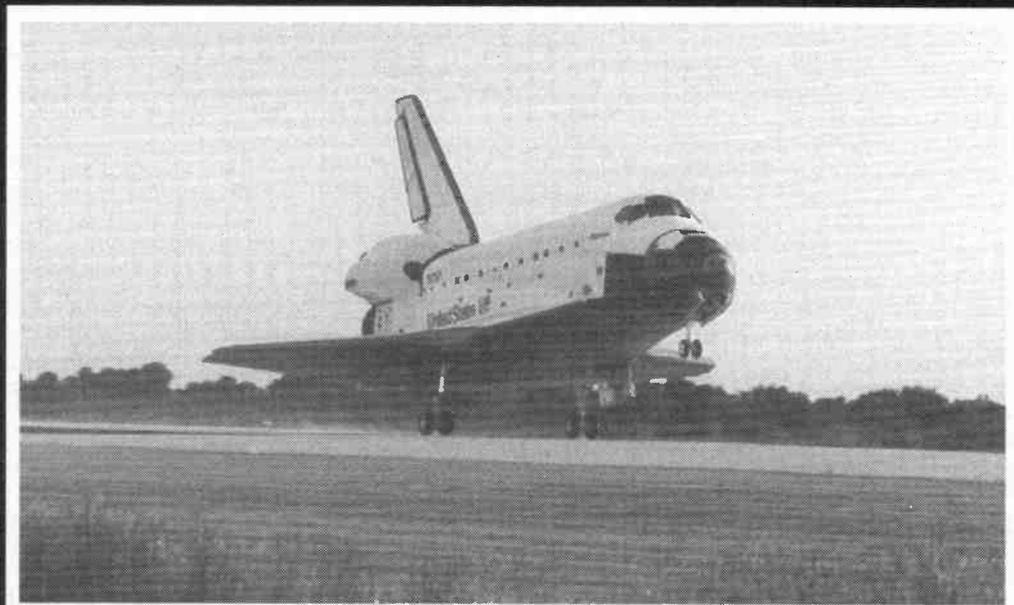
Shuttle with its enormous ball of fire, climb into the sky. The public address system was still counting seconds and reporting on the progress of the Shuttle. Every few seconds the Shuttle's altitude and distance was given, seemingly increasing at a phenomenal rate. In a very short time *Atlantis* was several miles up and some hundred miles downrange.

Dire Warnings

Fortunately, a breeze was blowing the smoke away from the pad. I watched *Atlantis* until it was just a tiny point of light, almost indistinguishable from the stars, before returning to the press building to listen to the Post Launch Briefing. Perhaps I should have read the literature that I had been given at the gate earlier. There were all sorts of warnings about where I would be allowed to go and where I could go only with an escort. Naturally, I had been wandering all over the place. There were dire warnings about the dust from the solid rocket exhaust cloud. It seems that the powdery residue from the SRB exhaust plumes can be deposited as much as five miles downwind of the launch pad and this could include the press site. The residue contains hydrogen chloride which, with the moisture in the air, can form droplets of hydrochloric acid. This can irritate the eyes and respiratory tract or damage the finish of an automobile. The notice said that we would be forewarned if the wind was in the wrong direction and should stay indoors or in our cars if this should happen. Interestingly, as much space in the leaflet was devoted to covering your car or protecting its finish as to what to do if you get acid in your face. Only in America. . . .

Atlantis touches down at Kennedy Space Center after its five-day mission.

Photo: NASA



South Midlands Communications Ltd.

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

RECEIVING O.K.?

IF NOT, WHY NOT CONTACT SMC FOR INFORMATION ON OUR COMPLETE RANGE OF RECEIVERS AND SCANNERS.



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.



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.

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.

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 **ICFSW7600** is a sophisticated portable receiver that combines power and flexibility with one-touch convenience. Freq. range AM 150-29995kHz and FM 76-108MHz.

The **ICFSW1E** is possibly the world's smallest shortwave radio, fully featured with a multiple tuning system and PLL synthesised circuitry for digital precision. AM 0.15-30MHz & FM 76-108MHz.

The ultimate Multiband receiver, the **ICF2001D** combines sophisticated shortwave technology with the ease and versatility of both digital and analogue tuning. Freq. range AM 0.15-30MHz, FM 76-108MHz and AIR 116-136.6MHz.



The **ICFPRO80** is a handheld professional receiver with air band capability and an 8-way tuning system. Frequency coverage 150kHz-108MHz and 115.15kHz to 223MHz with FRQ 80 frequency converter.

The **Air 7** is an all purpose handheld multiband receiver with continuous waveband coverage including air band and utilising a 6-way tuning system AM 150-2194kHz, FM 76-108MHz, Air 108-136MHz and PSB 144-174MHz.



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.



The **NRD525** is a high-class, general coverage receiver with expandability looking to the future. Combining traditional technology unique to JRC with the most advanced digital technology gives superb performance whilst remaining extremely easy to use. The NRD525 covers 90kHz-34MHz and with an optional VHF/UHF converter also covers 34-60, 114-174 and 423-456MHz. Modes of operation CW, SSB (USB/LSB), AM, FM and RTTY with optional demodulator.

The **HP200E MkII** is a 1000 channel, programmable, handheld scanner. AM, FM and FM wide for commercial channels covering 500kHz-600MHz and 805-1300MHz. Supplied complete with NiCad charger, Antennas, DC cable, shoulder strap, outclip, carry case and earpiece.



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



The **AIR HANDY** is a compact thumbwheel controlled handheld receiver. Light in weight and easy to use makes it an ideal introduction to receive. The AIR handy covers 118-136MHz and is AM.

The **AIR HANDY** is a compact thumbwheel controlled handheld receiver. Light in weight and easy to use makes it an ideal introduction to receive. The AIR handy covers 118-136MHz and is AM.



Low receivers are available from Reg Ward & Co Ltd. Some Icom receivers available from most branches.



- Free Finance on selected items, subject to status. Details available on request.
- Up to £100 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 - 5.00pm, Tues-Fri
9am - 4pm Sat

Axminster (0297) 34918
Reg Ward & Co. Ltd.
1 Western Parade,
West Street,
Axminster,
Devon EX13 5NY
9.00am - 5.20pm, Tues-Sat

THE NEW FAMILY

In the last decade AOR has gained a reputation for unique high performance wide band radio receivers world-wide. With the arrival of its new subsidiary AOR (UK) Ltd, UK customers may enjoy a much closer link with the factory. We are pleased to introduce the new family of AOR receivers.

AR3000 Unique top of the range desk top wide band scanning receiver. All mode AM, FM (narrow), FM (wide), USB, LSB, CW. The frequency coverage is 100kHz – 2036MHz with no gaps. Triple and quadruple conversion ensure superior performance. The receiver is supplied with a telescopic aerial, 13.8V DC lead, AC power supply and operating manual.
R.R.P. including VAT £765 (carriage extra).



AR2500 Base/mobile scanning receiver featuring coverage from shortwave to microwaves 500kHz – 1500MHz with no gaps. All mode AM, FM (narrow), FM (wide), and built-in BFO for USB, LSB, CW. An 'Elephant' memory can store 1984 spot frequencies and 16 search groups. The memory is permanent using an EEPROM (but can be overwritten). Computer control is available via the RS232 port on the back panel. The AR2500 is operated from 13.8V DC. Performance and flexibility at an affordable price.
R.R.P. including VAT £419 (carriage extra).

AR2800 Base/mobile scanning receiver. The frequency coverage is 500kHz – 600MHz and 800MHz – 1300MHz. All mode AM, FM (narrow), FM (wide), and built-in BFO for USB, LSB, CW. The AR2800 features 1000 memories for spot frequencies and 10 search banks. Operation of the receiver is fairly easy and is similar to that of the popular AR1000/AR2000. The AR2800 is operated from 13.8V DC and is supplied with an AC adaptor, DC lead, mobile mount and telescopic aerial.
R.R.P. including VAT £395 (carriage extra).



AR2000 Hand-held wide band scanning receiver. Improved specification. The coverage is 500kHz – 1300MHz with no gaps. Modes are AM, FM (narrow) and FM (wide). The AR2000 features 1000 memories for spot frequencies and 10 search banks. The receiver is powered from its supplied internal nicad batteries but these may be removed and dry batteries substituted to allow extended operation in the field. The AR2000 may also be charged and powered from the car cigar lighter socket using the supplied lead. Also supplied as standard are the DA900 wide band aerial, soft case with strap and AC charger.
R.R.P. including VAT £259 (carriage extra).

DA3000 Wide band discone aerial for external mounting. The frequency range is 25MHz – 2000MHz. The 16 elements are made of stainless steel and the supporting mast is aluminium, an additional supporting pole will be required for installation. 'V' bolts and clamps are provided. The aerial is supplied with approximately 15m of coax terminated in a BNC connector ready to plug in and use with any AOR receiver.
R.R.P. including VAT £69 (carriage extra).

(Photograph shown AR1000)

AOR

TM

Trade inquiries welcome

AOR (UK) Ltd.

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

E&OE

SWM SUBSCRIBERS' CLUB

If you have a subscription then you will know all about the *Short Wave Magazine* Subscribers' Club. If you do not have a subscription then doubtless you will be wondering just what this page is all about. Membership of the *SWM* Subscriber's Club is free and automatic for all Subscribers and is our way of saying thank you to all those who have enough faith in their favourite magazine to pay for it 'up front'. Each month there will be Special Offers and occasional competitions with some really useful prizes to be won.



This month we have a special tool kit offer for Short Wave Magazine Subscribers' Club members. This Starter Tool Kit contains a snip cutter, a pair of long-nose pliers, a light-duty flat blade 75mm long screwdriver, a crosspoint No. 1 screwdriver, 75mm long, a desoldering tool and a soldering kit containing a CS iron, stand and a 5m pack of 18s.w.g. solder, presented in a cloth tool-roll. As a member of the *Short Wave Magazine* Subscriber's Club you can obtain your tool-kit for just £20 including post and packing. These kits will be dispatched in the week commencing 1 July 1991 by Recorded Delivery. The closing date for all orders is 12 July 1991. Please mark your orders SWM Subscriber Club June, PW Publishing Ltd. FREEPOST, Enefco House, The Quay, Poole, Dorset BH15 1PP.

COMPETITION

This month you can win one of a selection of torches, from a pen-light to a reading light.

Answer these four simple questions and send your answers, with your Subscriber's Number, to SWM Subscriber's Club Competition, Enefco House, The Quay, Poole, Dorset BH15 1PP.

- 1: What is the symbol for an *npn* transistor in a circuit diagram?
- 2: What does the abbreviation m.o.s.f.e.t. stand for?
- 3: What is the formula for the impedance of a tuned circuit?
- 4: What is the value of a 500pF and 0.45nF capacitor series?

All entries to be submitted, with your Subscriber's Number, by 5 July '91 for UK and 30 August '91 for Overseas Members.

SUBSCRIPTIONS TO SHORT WAVE MAGAZINE

Be sure of your copy every month, beat the price rise and qualify for the Subscribers' Club as well. Special offers and discounts normally available to all members, including those abroad.

Please indicate the type of subscription required:
SHORT WAVE MAGAZINE 1 YEAR

- £19.00 (UK)
- £21.00 (Europe)
- £22.00 (Rest of World)

PRACTICAL WIRELESS 1YEAR

- £19.00(UK)
- £21.00 (Europe)
- £22.00(Rest of World)

SPECIAL JOINT SUBSCRIPTION 1 YEAR ONLY

- £32.00 (UK)
- £35.00 (Europe)
- £37.00 (Rest of World)

Prices current at May 1991

Subscription to commence with issue dated.....

- Please send me a Starter Tool Kit at the special *SWM* Subscribers' Club price of **£20.00 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

Signature.....

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

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

NEVADA LARGEST

FANTASTIC DEALS ON

YUPITERU

We are pleased to announce our appointment as UK distributors for this comprehensive range. Working direct with Yupiteru enables us to reduce prices and introduce new models for the UK! All models have full service back-up - naturally!

VT 125 UK AIRBAND RECEIVER

A new and powerful pocket size air band radio that leaves the competition standing. Covers all the new UK airband frequency allocations.

- Covers 108-142 MHz
- 30 direct entry memories
- Search, scan and keyboard operation
- Search steps 25, 50, 100 kHz
- Very sensitive receiver
- Pass and delay functions
- Supplied with UK charger

£179

MVT 7000 HANDHELD

8-1300 MHz continuous coverage - multi-mode. AM/FM/WFM. 200 channel memory - very sensitive S meter.

£289

NEW!
NOW IN STOCK!

MVT 5000 HANDHELD

This handheld has received many rave reviews. We found it particularly sensitive at 900 MHz. Features include 100 mem. channels coverage (25-550 MHz, 800-1300 MHz). Supplied complete with all accessories and full 1 year guarantee. Price includes express delivery.

£249

MVT 6000

Base/mobile version of the MVT 5000 handheld. Supplied with all accessories. Includes express delivery.

£299

THIS MONTH
FREE WITH PSU 101 BASE STAND/CHARGER WORTH
£29.50

SCANNING ANTENNAS

Nevada WB 1300 discone (25-1300 MHz) Stainless steel top of the range 'N' type connector **£49.95**
CTE Micro Scan (180-1300 MHz). New low cost ground plane **£12.00**
CTE Sky Band (25-1300 MHz). Stainless steel Discone **£24.00**
Nevada Mobile Antenna (50-1300 MHz). Magnetic Mount **£27.90**

DIAMOND D707 ACTIVE ANTENNA

(500 kHz-1500 MHz)
A superb base antenna with 20 dB pre-amp. Approx 3.5 ft fibreglass with mounting kit

£99.00
£69.00

MASTHEAD ANTENNA SWITCH

For Scanning enthusiasts select 2 antennas at the masthead remotely from one cable. Frequency: DC to 1.3 GHz Connectors N Type

£49.95

LOW LOSS JAPANESE COAX

Essential for optimum performance with wideband UHF scanners. We have directly imported this cable which has exceptional low loss and is good for frequencies up to 3 GHz. Loss at 1 GHz for 10 mtrs is 1.3 dB

MODEL 80 (11.1 mm)

£1.40 per MTR

MODEL 50 (8.1 mm)

£0.56 per MTR

ASA DIGITAL AIRBAND RADIO

This new low cost receiver is designed for aviation enthusiasts featuring a digital display for accurate reception and tuning. Coverage 85-108 MHz FM, 118-136 MHz AM, 162-165 MHz weather. 520 kHz-1.6 MHz

£59.95

FAIRMATE

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

FAIRMATE HP200

1,000 CH Scanner exclusive to Nevada dealers!
Freq Range:- 500 kHz-600 MHz
805 MHz-1300 MHz

Models:- AM/FM/WFM
An improved version of the HP100E.

The new HP200 has superior performance and stability.

Accessories included as standard are:-

- VHF Antenna
- UHF Antenna
- Telescopic Antenna
- UK Spec.
- DC charger/adaptor
- Earphone
- Carrying case

£269

NEVADA MS1000

The worlds first 1,000 channel mobile scanning receiver.

Modes:- AM/FM/WFM.
Freq Range:- 500kHz-600 MHz,
805 MHz-1300 MHz

NEW FEATURES

- Switchable Audio Squelch
- Tape Recorder Output Socket
- Auto Signal Operated Tape Recorder Switching
- All metal case for improved EMC compatibility.

All this and more for just **£279**

*Includes Free Discone ANT worth **£24**

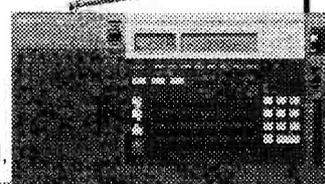
STOCKS - BETTER VALUE

SONY® RADIO S

We stock the complete range of Sony shortwave products - Here is a selection of the popular models.

IFC 2001D

Full coverage shortwave, VHF and airband radio. (150 kHz-136 MHz)
Receives AM, FM, SSB. **£299**



SW 7600

A new pocket shortwave radio covering:-
150kHz-30MHz
AM/SSB
76kHz-108MHz
FM **£149**

ICF SWIE Pocket SW plus VHF radio **£149**

AIR 7 Very sensitive airband H/Held radio **£229**

PRO 80 Short wave/VHF H/Held radio **£299**

AN 1 An external active antenna with built-in pre-amp covers. (150kHz-30MHz) **£49.99**

Call John Gordon our Sony specialist for more details of these or any other models of interest.

ICOM

We are ICOM specialists and carry the complete range in stock including these NEW models:-

IC-R1 The new miniature wideband handheld scanner that covers 150 kHz to 1300 MHz with 100 memories and many features **£399**

This month supplied with free base stand/charger worth **£29.50**

IC-R100 Mobile or base extra wideband scanning receiver covering 500 kHz to 1.8 GHz with 100 memory channels and reception of AM, FM, WFM. **£499**

IC-R72 A new HF communications receiver covering 100 kHz to 30 MHz. Receivers SSB/AM/CW with FM board as optional extra 99 memory channels and 10dB pre-amp fitted as standard **£645**

IC-R7000 ICOMS Most popular communications receiver. Covers 25 MHz to 2 GHz with 99 memories and all mode reception. **£925**

Call Paul our ICOM specialist for details of other ICOM amateur radio products we stock - or for details of the latest models and prices.

AOR SCANNERS

AR 3000 wideband scanner 100 kHz to 2036 MHz with no gaps!
Now available **£765**



BEARCAT 50 XLT

A popular low cost handheld scanner with 10 memories covering 10 bands from 66-512 MHz (with gaps).
Ideal for marine band and UHF. **£99**

The 100 XLT and 200 XLT handhelds feature removeable battery packs for easy charging - and have proved popular because they are simple to operate giving excellent performance and reliability.

SPARE BATTERY PACK **£29.95**



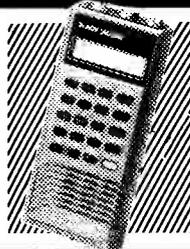
UNIVERSAL SCANNER BASE UNIT PSU101 MkIII

NEW VERSION A mains operated unit which will both charge and power the handheld scanner. Complete with convenient desktop stand for use at home.

Suitable for the following models:-
Fairmate HP100E, 200E, AOR 1000, ICOM 1C-R1, MVT 5000, MVT 7000, Uniden BC 50XL, Uniden BC 55XL, Uniden BC 70XLT, Realistic PRO 38, Uniden 200 XLT, Uniden 100 XLT. **£29.50**

BLACK JAGUAR MkIII

Features include 16 channel memories, selectable AM/FM and the facility to power the set from the mains/car using one of the many accessories now available. Covers civil and military airbands plus lots more!
Frequencies: 28-30, 50-88 MHz, 200-280 MHz, 360-520 MHz **£199**



LOW NOISE PRE-AMP

MODEL M75

For base and handheld scanners.

■ 25-2100 MHz

■ Low noise GaAs FET

■ Selectable filters for improved performance

■ Variable Gain Control **£69.95**

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

MODEL M100

Same spec as M75 but with full RF switching, may be used with transceivers on transmit up to 5 watt o/p power **£79.95**

MODEL M50

A new low cost pre-amp without filters or gain control. Offers low noise GaAs FET at 20 dB fixed gain. **£49.95**

COMMUNICATIONS RECEIVERS

Lowe HF225 (30kHz-30MHz) **£429**

Kenwood R2000 (150kHz-30MHz) 10 memories **£595**

Kenwood R5000 (100kHz-30MHz) 100 memories **£875**

BEARCAT 760 XLT

New Model with 900MHz Coverage.

With 100 memory channels and coverage of the UHF band, the 760 XLT is ideal at home or in the car. Pre-programming of preset bands is possible for fast access. Freq. Coverage 66-68, 136-174, 406-512 MHz **£235**

BEARCAT UBC 175 XLT

(16 CH. Memories) An economical base scanner covering all the popular aircraft, marine and public service bands. Coverage 66-88, 118-174, 406-512 MHz **£169.99**

BEARCAT UBC 200 XLT

HANDHELD Top of the range handheld easy to use and very sensitive. Features 200 memory channels, ideal for civil airband, marine, pmr and 900 MHz. UHF band. Coverage 66-88, 118-174, 406-512, 806-956 MHz **£229**

BOOKS

Short Wave Confidential Freq list **£8.95**
VHF/UHF Frequency Guide **£5.95**
Marine Frequency Guide **£4.95**
VHF/UHF Airband Guide **£3.50**
Comprehensive Airband Guide **£5.99**
Scanners II by P Rouse **£7.95**
Scanners 3rd Edition **£8.95**
Flight Routings Guide 1991 **£4.95**

THE TRADING POST

We have a large selection of used equipment which is constantly changing. Here is a selection - but call to check availability before ordering.

RECEIVERS

Sony 2001, Shortwave, Portable + FM, Choice of 2 **195.00**
Sony Air 7, Airband + FM, C/with case **175.00**
Bearcat DX-1000, Boxed C/with all manuals, VGC **325.00**
Yaesu FRDX400, Immaculate Cond, Reliable **245.00**
Yaesu FRG9600, 60-905MHz, All Mode, Boxed **375.00**
Bearcat 145XL, Base, 16 Mems, Clean Cond, Converter
Panasonic DR-49, S/Wave & FM, As New, Imac. Cond **525.00**

SCANNERS

SX200 Base AM/FM, 16 Mems, Old but reliable **125.00**
Realistic 2021 Base, 200 Mems, Choice of 2 **135.00**
Realistic Pro 2005 Base, V. Fast Scan Rate, VGC **225.00**
AOR 2001 Base, Boxed, AM/FM, 20 Mems **199.50**
Bearcat 145XL, Base, 16 Mems, Clean Cond, Good Buy
Realistic PRO31, H/Held 10 Mems, Boxed **70.00**
Realistic PRO32, H/Held, 200 Mems, With Airband **99.00**
Bearcat 200XLT 200 Mems, C/WE, 900MHz, Boxed **130.00**
Realistic PRO38 H/Held, Avg Cond **169.00**
Yupiteru, MVT6000 Mobile, Clean Cond **70.00**
Regency 850E H/Held, Clean and Boxed, Ideal Starter **199.00**
120.00

We are the largest distributors of scanning receivers in the U.K.

NEVADA COMMUNICATIONS

189 London Road, North End, Portsmouth PO2 9AE

HOTLINE 0705 662145 FAX 0705 690626



FAST MAIL ORDER
All orders received before 4pm despatched same day.



WORLDWIDE
We ship Worldwide



USE YOUR CREDIT CARD for same day despatch

The Radio Discount Specialists!

MAIL ORDER SPECIALISTS!! Tel: 071-637 0353 or 071-637 0590



◀ SONY ICF 2001D

Finest all-round pro-receiver in the business
 H FM/LW/MW/AIR multi-band reception H 32 Station preset memory H Synchronous Detector Circuit H PLL quartz-locked synthesiser circuit H Digital/analogue tuning H 2-way scan tuning (memory, broadcast, define) H 2-position tone control H Direct metre band access H 4-event programmable time H AM attenuator H SSB reception H External Antenna for AM, FM and AIR band H 288 x 159 x 52mm (w/h/d) H 1.7kg. 2001D SYSTEM - ICF-2001D with active antenna AN-1 in one complete package. **£319.95**



▲ ICF SW1E £145.00 ICF SW1S KIT £199.95

ICF SW1E AND CONVENIENT SUPPLIED ACCESSORIES: ACTIVE AERIALS. AUTOMATIC MULTIVOLTAGE MAINS ADAPTOR. HARD CARRYING CASE

THE WORLD'S SMALLEST SHORTWAVE RADIO
 • FM stereo MW/LW/SW PLL synthesised tuner • Dual conversion system • LCD frequency read out • Multiple tuning system • 10 key/scan/memory • 10 memory presets • Cassette size case • Clock/timer facility • Supplied with stereo headphones, compact antenna.

SONY Specialists!!

Tel: 071-637 0353

All major credit cards accepted. Make all cheques & postal orders payable to "ASK Electronics Ltd". All sets fully guaranteed with our excellent service!! "Next day delivery" Upon request.

WE STOCK A FULL RANGE OF PHILIPS - SONY - PANASONIC

and most major brands for short wave professional radio equipment.

ORDER NOW and receive TOMORROW.

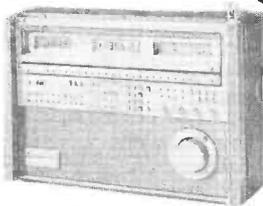


◀ SONY ICF 7600DS

• PLL synthesised multiband digital radio • 4 -way tuning • Direct frequency LCD read out • 10 memory presets • 10 key auto and manual scan • Full continuous waveband coverage 153-29995kHz; FM76 - 108MHz • Single side band and fine tune controls • Tone control • External aerial socket • Record out socket • 12/24 hour LCD clock • 65-minute sleep timer • Supplied with waveband manual, case and wrist strap* **£139.95***

◀ PANASONIC RF-9000

FM 87.5-108MHz LW/MW/SW (1.6110-2.9009MHz) SW (2.9010-30.0000MHz) Frequency Range; LW 150.0-420.0kHz (2000-714.3m) MW 520.0-1610.9kHz (576.9- 186.2m) SW 1.6110-2.9009MHz (186.2 - 103.4m) Precision: Direct Readout to 100Hz for SSB/CW/AM. Direct Readout to 10kHz for FM. **£1800.00**

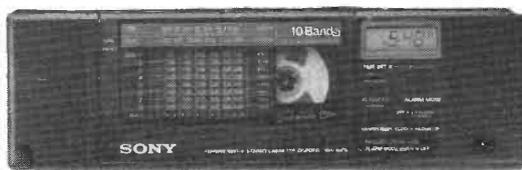


Other Panasonic radios available:

Panasonic RF-B10 **£59.95**
 Panasonic FR-B20L **£69.95**
 Panasonic RF-B40DL **£124.95**
 Panasonic RF-B65 (inc Mainsadaptor) **£169.95**

Other Sony radios available:

Sony ICF SW20 **£64.95**
 Sony ICF PRO 80 **£289.95**
 Sony ICF AIR-7 **£209.95**
 Sony AN 1 (Antenna) **£49.95**



WA8800 SLIM STYLED TRAVELLERS SHORTWAVE MULTIBAND AND STEREO CASSETTE RECORDER

• FM/MW/SW x 8.0

band • Dual conversion circuit (SW) • Auto reverse stereo cassette deck • LCD clock/alarm/timer/ 60 minute sleep timer • Tape counter • Auto shut off • Stereo recording facility • Built-in Stereo speaker • Stereo mic supplied • DC in socket • Black finish* **£199.95***

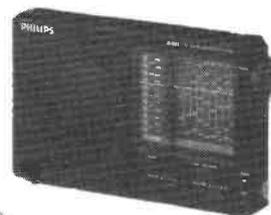
NEW ARRIVAL:- SONY CRF-V21

• FAX/RTTY/Satellite/Weather FAX • Frequency range 9kHz - 29.9999MHz • Sat. 137.62 - 141.12 MHz • Up to 1.691GHz/1.6945GHz using ANP1200 (optional antenna) FM-76MHz - 108MHz P.O.A.



PHILIPS D 1875

• Compact 12-Band Portable Radio • LW/MW/FM/9 short wave • Large tuning control • Tuning LED indicator • Telescopic and ferroceptor aerials • DC supply connection • Earphone connection • Wrist strap • Attractive pouch **£49.95**

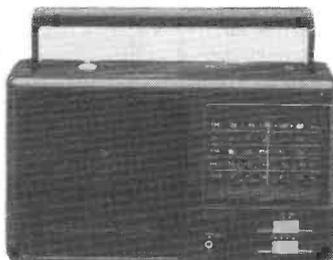


PHILIPS D 2935

• 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



D2935 "Best Seller" £119.95



PHILIPS D 2345

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

ALSO IN STOCK PHILIPS D1836 SAME AS D1875 ONLY £39.95

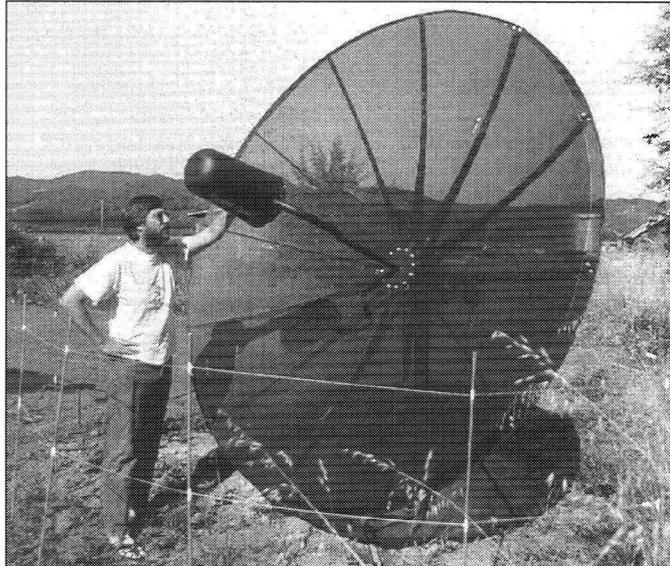
ASK Electronics Limited

WE ALSO STOCK A WIDE RANGE OF MULTI STANDARD TV'S AND VIDEOS

248-250 Tottenham Court Road, London W1P 9AD
 Phone or call in now. Tel: 071-637 0353

DXing Satellites in the USA

There's more television in the United States than anywhere else in the world. Not just conventional, but cable and satellite television as well. But there are also problems, as Radio Sweden's DX Editor George Wood discovered during a recent stay in northern California.



The United States is supposed to be a TV paradise. For example, in San Francisco you can watch at least ten broadcast stations, and just as many are on the air in nearby cities. Besides that, today almost everyone in urban America has access to cable television, which usually provides at least another 20 channels (if you want to pay for them all). In some areas there are 30 or more channels offered on cable systems.

But in this little rural valley two hours north of San Francisco, where my wife and I have been taking a six month sabbatical from Radio Sweden and Swedish Radio, reception of broadcast channels is very poor. The screen flashes dimly in white and grey as a few blurry figures seem to appear. Cable television is just a dream. Here in the countryside the farmhouses are too far apart for anyone to economically run cables.

So, many families here in Potter Valley have bought satellite television antennas and receivers, to tap into the vast offerings available above our heads, in what is sometimes called the 'Clarke

Belt', after the science fiction writer Arthur C. Clarke, who first proposed relaying communications from satellites in geosynchronous orbit. Actually, there is a simpler solution which is used in this valley and similar areas. It's called a 'translator', and it's just a box on the top of the mountain between us and San Francisco. It picks up the signals from a few strong stations, and relays them to us on different channels.

The idea is a good one, and in the nearest small town, Ukiah, such a system is rebroadcasting nine different stations. But the engineer responsible for the system here in Potter Valley is either lacking in ability or ambition. We're supposed to be able to see five stations—the three major networks, ABC, CBS, and NBC, the public broadcaster PBS, and the smaller challenger Fox (owned by Rupert Murdoch, of Sky Television fame).

But even that modest service has proved impossible to deliver. Fox has vanished from our screens, and the PBS signal is so weak our video tape recorder refuses to even acknowledge that there is a

signal there.

This explains why we spent Earth Day last year with our minds in space, installing a satellite system. Now we have an abundance of programs to watch, although there are a few problems.

Our Satellite System

We decided to take the Big Plunge when the electronics retail chain Radio Shack (Tandy in the UK) advertised a satellite system for just \$1000. That may seem a lot if you've been studying the ads for Astra dishes and Amstrad receivers, but it's cheap by American standards - roughly half what such a system usually costs. But there are reasons for that...

The first reason was that installation was not included, and that would cost a further \$500. The woman at Radio Shack said that everyone who had bought one from her had opted to do the installation themselves. That's not surprising here in the country, where's there's a long tradition of fixing and mending equipment on your own.

One reason American

satellite systems are much more expensive than the Astra (or BSB) models is because there are so many satellites. Instead of aiming your antenna permanently at one, you have to be able to track across the entire Clarke Belt. That means a rotor to turn the antenna, and a lot of fancy chips in the receiver to program the names and positions of all the satellites.

That also means installation is critical. The least mistake in adjustment can sabotage the system. One or two satellites may appear, but the rest may be several degrees off, and invisible. But, if other people here could handle the installation, so could we.

Installation

The installation was in three steps, and turned into a little family party. Step 1 was pouring the concrete. I dug a large hole in the ground, and on D Day a local handyman showed up with the cement and mixer. While my brother-in-law and I poured the concrete, the rest of the family barbecued hamburgers in the backyard. The important thing

was to keep the main pole perfectly straight. I'm all thumbs at this sort of thing, but my brother-in-law knew what he was doing, and we succeeded, and let the concrete dry for a few days.

Then it was time for Step 2 - Installation proper. My wife Anki and I worked on it all day, under the hot California sun. It took that long, because dishes here are a lot larger than dishes in Europe, another reason satellite systems are more expensive here than in Britain. Our antenna is 2.75m in diameter. Astra dishes are only 600 to 900mm across, depending on how far north you live.

This is because the satellites here use C-band frequencies around 4GHz, compared to 11-12GHz in Europe. The lower frequencies mean longer wavelengths, and longer wavelengths require larger antennas. The signals are also weaker than found on European satellites such as Astra, Eutelsat, or BSB.

The Radio Shack manual was very good, designed to take you step by step through the entire installation. The parts came in four extremely large and heavy cartons, and two small ones. The manual carefully explained which carton to open for the parts as one went.

There was a lot to do. We finished the installation as the sun was setting, and it was too dark for Step III, finding the satellites. I could hardly sleep, looking forward to actually watching satellite-TV.

Adjustment

I was nervous about Step III. After all that work, would we really get a picture from a satellite? And would we be able to look at all the satellites, when the slightest misalignment might get us some, but not all?

We put a portable TV set and the satellite receiver on a table next to the dish, hooked them up together, and ran a very long extension cable from the house. Then we began to search for our first satellite.

We were delighted when we found that first picture. It was perfectly clear. And I was even happier (and relieved) when we found a second.

The entire operation took several hours, to make sure we had the best possible picture, not just from the satellites over our heads, but also from Spacenet 2, located over the North American East Coast, and Satcom 5 on the other side, which is primarily directed towards Alaska. But it finally worked. Satcom 5 is still a bit weak, but Spacenet 2 isn't bad, and the other satellites provide almost perfect pictures.

What's Available

We receive signals from 19 different TV satellites. (Actually, I think there are a couple of others out there that I've encountered when tuning between the ones that we're supposed to be looking at.) Each of them has 24 channels or transponders in the C-band (3.700-6.500GHz). There are another six satellites using the Ku-band (10.9-17.15GHz). Those satellites have 32 transponders each, but to see them we would need to buy a Ku-band converter.

How many signals can we see? That brings us to the second big problem with this inexpensive Radio Shack system. Altogether there are at least 146 C-band stations with regular programming, plus many irregular transmissions.

But the problem is that the most interesting channels are scrambled. Nowadays, virtually all American satellite receivers include descramblers. You then pay a relatively low monthly bill for the channels you wish to watch (less than it costs to subscribe to cable here) and for that you have free access to those channels.

There are a number of companies offering various channel packages. The most extensive I've seen costs \$29 a month, and offers 22 stations, ranging from the three major networks to two CNN channels, the film channels HBO and Cinemax, the sport channel ESPN, the Weather Channel, and much more. Another company offers a basic package of seven channels for just under \$5 a month, or 11 channels for \$9 monthly. Individually, HBO, Cinemax, and the Disney Channel are available for less than \$9 a month each.

But our problem is that the Radio Shack system comes without a descrambler.

Scrambling

This scrambling of satellite signals is rather new in the United States. It was introduced just a few years ago, after protests from the cable-TV industry. Why would people pay for cable, the industry argued, if they could get the same signals for free, off the satellites?

The system chosen is called Video Cypher II. This allows subscribers to watch programs while excluding non-subscribers. The system works this way: Each channel sends a data stream along with the regular TV picture. Every legal descrambler has a number and the data stream includes the numbers of all subscribers. If you fail to pay your bill one month, your number disappears from the transmission, and your picture goes blank.

The introduction of scrambling led to immediate protests from many of the 2 million satellite dish owners in the United States (today that number is around 3 million). They argued the American principle that anything broadcast over the air ought to be freely available to everyone. They lost, but not without spectacular publicity.

When Home Box Office became the first channel to scramble its signals, the picture was jammed for a few minutes by a hacker in Florida who transmitted a protest message superimposed on the HBO picture.

More and more channels began scrambling. However, the protests have continued, and today there is a lively underground movement of video pirates and hackers who try to crack the codes. *Satellite Watch Newsletter*, as well as news, carries an incredible quantity of advertising for hardware and software for modifying Video Cypher boxes to watch scrambled channels without paying.

Unscrambled

We, on the other hand, would gladly pay, if only we could find a descrambler on the open market. You can't just

walk into a radio store and buy one. Radio Shack doesn't sell them. It turns out that only one company manufactures the things, and it uses its monopoly position to maintain a market shortage and high prices. As far as we can tell, a descrambler would cost us 500 to \$600, if we could find one!

Fortunately, there are many signals available without the descrambler, both major stations and more unusual broadcasters.

Altogether, I have programmed in 40 channels and there are more available to us.

The guide for all this is a weekly magazine called *Satellite TV Week*. This lists the broadcasts from all the satellites, both scrambled and unscrambled, sort of a *World Radio TV Handbook* or *Radio Times* for the satellite viewer.

In addition the magazine lists many interesting transmissions outside the usual channels. Sometimes we describe satellite DXing as the hobby of the future, but that really is no longer the case. Satellite-DXing is now, and there are many interesting transmissions to tune in to, here in N. America.

What do you find when you stray from the regular channels? News departments use the satellites to transmit reports back from reporters in the field, and to transmit programming to local stations. I've come across live, uncut press conferences with President Bush and a live report from a volcano eruption in Hawaii. Sometimes you can see the reporter preparing to go on the air, or watch him or her clowning with the camera crew or journalists back home.

There are also many program "feeds" to various stations. Here in the valley we can't watch the popular science fiction series *Star Trek* directly, since none of the stations on our translator carry the programmes. Instead, with the satellite system, we can tune in directly to Paramount's uplink in Hollywood, which transmits the programme every week to the local stations. We see them a full week before the stations air them!

Is this the future for European television? ■

LOWE DOCKS AT BRISTOL

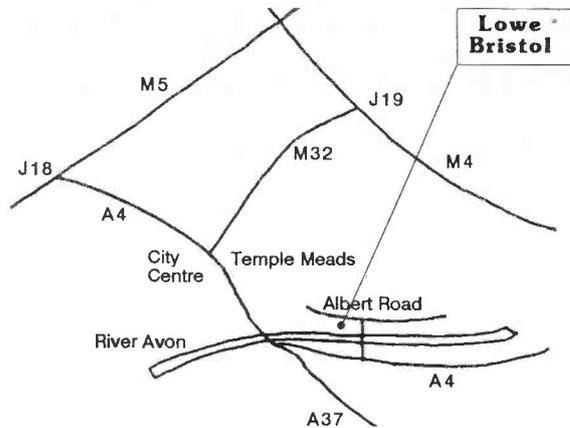
In addition to Heathrow, we have now opened our latest centre in Bristol to serve the South West.

Similar to Heathrow, we are stocking a full range of communications equipment from transceivers, both commercial and amateur, to a large selection of VHF scanners and HF communications receivers.

There are full demonstration facilities in the showroom plus a fully equipped workshop to take care of any first line servicing problems on the spot.

Like all our branches, there is a selection of fully tested and guaranteed second hand equipment for you to choose from.

Our new manager is Tony, G4CYE who looks forward to giving a warm welcome to his visitors.



TS-850S

HOW TO FIND US

The new Lowe Communications Centre at Bristol is just over the Totterdown bridge from the main A4 Bath road in St Philips. From the traffic lights on the A4, go across the bridge and turn immediately left at the T junction. You will see the centre on the left in front of the river. Turn first left and park anywhere in front of it. Parking is free as you would expect at one of our shops. We are just 10 minutes from the end of the M32 motorway and a short walk from Temple Meads station.

LOWE ELECTRONICS LTD

Bristol: Unit 6, Ferry Steps Industrial Estate, Albert Road, St Philips, Bristol BS2 0XW. Tel: 0272 771770
Heathrow: 6 Cherwell Close, Langley Slough, Berks SL3 8XB. Tel: 0753 45255

ICOM IC-R72E

General Coverage Receiver
£663 or £221
 Dep. +9 × £49.11

ARROW RADIO



AR-1000 Mk II

Handheld Scanner
£254 or £85
 Dep. +9 × £18.78

NEW NRD-535

General Coverage Receiver



£1115 Now available

INTEREST FREE

**BONITO - NEW MODEL
 FAX + SLOW SCAN
 NEW SOFTWARE**

AR-3000 SUPERSCANNER



Phone for our best Price

AX700E+SSB



Only from Arrow Radio
£575 (with SSB)
£525 (Normal version)



NEW MVT-7000
 Handheld Scanner
£289



NEW HP-200E
 Handheld Scanner
£269

ARROW RADIO

For a good deal - a fair deal - the best deal



HEAD OFFICE:
 5 The Street, Hatfield Peverel,
 Chelmsford, Essex CM3 2EJ
 Tel: 0245 381626/381673
 Fax: 0245 381436
 Hours: 9-5 (Closed Thursdays)

GLASGOW:
 Unit 17, Six Harmony Row, Govan,
 Glasgow, Scotland G51 3BA
 Tel: 041 445 3060
 Hours: 8.30-5.30 Mon-Fri
 (Closed Saturday)

WIGAN:
 Greensway Arcade,
 Gerrard Street,
 Ashton-in-Makerfield,
 Wigan, Lancs
 Tel: 0942 713405

LEICESTER:
 DAVE FOSTER (Agent)
 Telephone: 0533 608189
 Latest calls
 8.30pm please!

YOUR ORDER CAN BE TELEPHONED WITH CREDIT CARD DETAILS & DESPATCHED IMMEDIATELY!
FREE FINANCE ON MANY MAJOR ITEMS AT RRP.
 (Ask for details of qualifying items - see examples above).

Waters & Stanton

BEST PRICES! FAST MAIL ORDER

0702 206835
or 204965

KENWOOD YAESU ICOM JAYBEAM AZDEN MIZUHO REVEX JUPITER ALINCO

SAGANT ADONIS SONY PANASONIC TONNA DIAMOND PAKRATT AOR ERA

DIAMOND ANTENNA

D505
£69

ACTIVE AERIALS
1.5MHz - 1300MHz

ONE AERIAL DOES IT ALL!

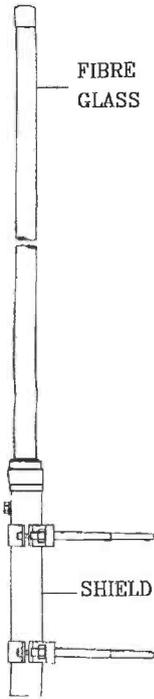
Just think one aerial for all your receivers. Both have built in matching circuits at the base of the antenna to provide high gain performance!

Mobile Aerial D707

This aerial covers everything from long-wave to VHF. It is no larger than a conventional mobile aerial measuring just 29.5" long, fits any standard mobile mount and comes complete with cigar lighter lead and matching box with RF gain control.

Base Station Aerial D505

Beautifully made from fibre glass, this rugged aerial will fulfil all your needs whether it be HF, VHF, or UHF. It comes complete with all the mounting hardware for mounting externally, plus 15 metres of low loss coax cable and a matching AC supply for the power feed via coax.



D707
£99
inc PSU

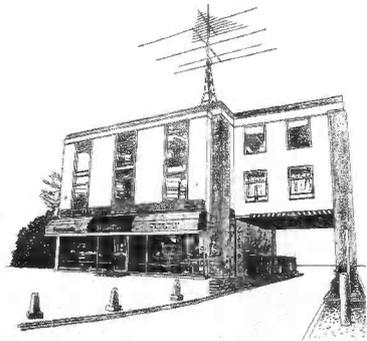
PL259

SHOP WITH CONFIDENCE

From the Specialists

Nobody beats our service! Staffed by enthusiasts who are able to give you honest and authoritative advice. Visit us and benefit from our airconditioned showroom and superb aerial system with demo room. Phone or mail your orders for by-return despatch. Our computerised system will have your goods out to you the same day.

On request we can arrange 24 hour delivery. And every item is fully insured in transit by us plus our normal 12 month warranty.



OTHER RECEIVERS

MVT-5000 25-550MHz + 800-1300MHz Handheld	£249
MVT-6000 25-550MHz + 800-1300MHz Base Unit 240v/12v	£299
AOR-1000 500kHz-60MHz + 805-1300MHz Handheld	£249
HP-200E 500kHz-600MHz + 805-1300MHz Handheld	£269
R2000 Kenwood super short wave receiver	£595
R5000 Kenwood top range super sensitive receiver	£875
FRG8800 Yaesu short wave receiver	£649
ICR71E Icom super top performer	£855
ICR72E Icom's budget short wave receiver. Lovely	£645
HF225 LOWE Not pretty but does it perform! Great	£425
ICF2001D SONY No other portable can touch it!	£275
SW7600D SONY The smallest truly portable SSB/AM	£149

YUPITERU SCANNERS

UK DISTRIBUTORS

The NEW MVT-7000
1MHz-1300MHz

£289

- AM-NBFM-WBFM
- Multiple steps
- Better than 0.5uv
- 200 Memories
- Rotary Dial
- S-meter
- Fast Scan Speed
- Lockout/Priority
- Ni-cads
- Charger/AC PSU
- 12v Lead

The MVT-7000 is the latest from Yupiteru and provides unbroken coverage throughout the spectrum. Each one is carefully tested by us and supplied with a unique power supply that will not only recharge the ni-cads, but also run the set directly from the mains. Its beautifully styled lines and superb engineering make it the best buy for the customer who wants the widest frequently range possible.

The NEW VT-125
AIRBAND MK-II

£179

- 108-142MHz AM
- Better than 0.5uv
- Ultra compact
- 30 Memories
- Super audio
- Ni-cads
- Charger
- 12v DC

This receiver has to be the best ever airband monitor. It has a super scanning mode and the audio quality puts the competition to shame. Highly compact it will fit into the smallest of pockets. It is supplied complete with flexible aerial, ni-cads, cigar lead, and our own dual purpose charger and base power supply! Naturally you will receive our full 12 months parts and labour warranty.



MVT-5000 £249!

The MVT-500 is still available and covers 26-550/800-1300MHz. If you don't mind missing the TV band, this model has to be one of the best ever scanners built. Its sensitivity is still unbeaten and its construction and reliability is legendary.

Retail and Mail Order: 22 Main Road, Hockley, Essex SS5 4QS. Tel: (0702) 206835/204965
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

ALL MAJOR BRANDS STOCKED LARGEST IN SOUTH EAST

An Experimental VHF Receiver

Part 1

This remarkable little circuit provides loudspeaker reception of a.m. and f.m. signals anywhere in the v.h.f. spectrum, yet it uses only one coil, three transistors and one small chip. It makes use of super(sonic)-regeneration, known since the early days of radio, but applied in a way which Ray Howgego believes is original.

Super-regenerative receivers first found favour with experimenters through their simplicity and high sensitivity; early valves were reluctant to operate at v.h.f. but could often be coaxed into super-regeneration. The mode was ideally suited to the battlefield where a single valve could be made to receive and transmit. As a result, the principle was incorporated into a number of WWII radios (the BC 611, the No 19 set and the American UF 1). However, since the war, apart from an occasional emergence in the 50s and 60s and despite an obvious appeal to the beginner, the idea gradually vanished from the textbooks. The reasons for this were the apparently inherent disadvantages of the circuit - a very high noise level between signals (which is, however, silenced when a station is tuned); radiation from the detector which, if coupled directly to the antenna, could cause interference; and the poor selectivity resulting from the use of a single tuned circuit. It was also regarded by

some as temperamental in that similar designs could not be made to duplicate similar performances.

The circuit offered here, while outperforming its earlier rivals, overcomes all of these failings except that of selectivity - the ability to separate signals on closely adjacent frequencies. However, this particular design is intended primarily for the airband and v.h.f. broadcast band where the channel spacing is relatively wide. In fact the poor selectivity turns into a positive asset in that intermittent signals are not easily missed. This simple circuit does, however, possess some extraordinary features: it will de-modulate a.m. and f.m. without switching (although it must be confessed that the audio recovered from the n.b.f.m. is somewhat weaker); it is at least as sensitive as the average 'ghetto-blastor' (although not quite as loud); it possesses automatic volume control (all a.m. and f.m. signals sound equally loud regardless of signal strength);

and it will also lock to the stronger of two interfering signals.

Circuit Description

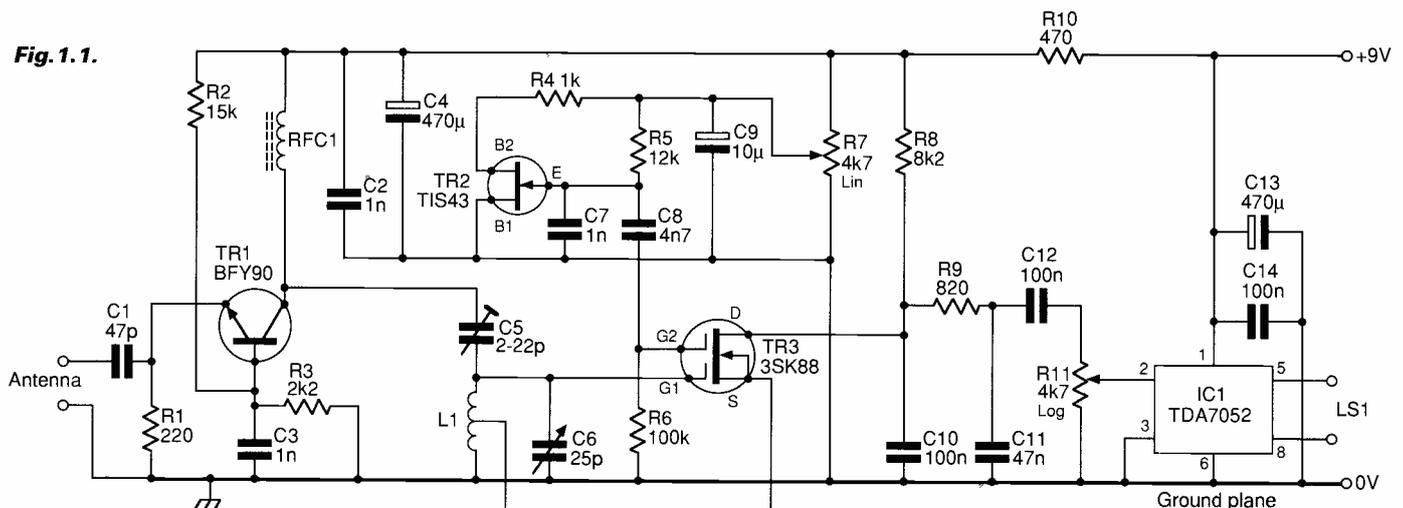
The simplicity of the circuit, **Fig. 1.1**, conceals a bewildering theoretical complexity. A convincing analysis of all aspects of its operation, which I have yet to see, would surely occupy many pages of this magazine. The received signal is amplified by transistor TR1, a grounded-base, wideband amplifier, and then applied, via C5, to gate 1 of a dual-gate m.o.s.f.e.t., TR3. This transistor is configured to operate as a simple v.h.f. oscillator, feedback being obtained by connecting its source to a tap on coil L1. The degree of feedback is a crucial factor and the tapping point on L1 is somewhat critical. The tuned circuit, L1 and C6, determines the frequency of operation which, in the basic design, is tuneable from about 90 to 170MHz. The unijunction transistor, TR2, is connected as a sawtooth wave generator

oscillating at an ultrasonic frequency around 75kHz. The sawtooth waveform appearing at the emitter of TR2 is applied via C8 to gate 2 of TR3 and causes the v.h.f. oscillations generated by TR3 to steadily build up and then suddenly collapse 75 000 times a second. The effect is called 'quenching' (or 'blocking') and TR2 may be called the quench oscillator. Potentiometer R7 controls the amplitude of the sawtooth wave and has a critical effect on the sensitivity of the receiver.

Filter Circuit

The waveform appearing at the drain of TR3 contains three components: the v.h.f. wave generated by TR3; the quenching frequency; and the recovered audio from the received signal. The former two components are removed by the filter circuit containing C10, R9 and C11 and the required audio signal is passed to the chip IC1 which amplifies it to loudspeaker strength. The quench oscillator frequency is

Fig. 1.1.



determined by the size of capacitor C7 and it is this component which has the greatest influence on the final volume level: a low value results in better a.m., while a high value improves f.m. The constructor might try anything between 470pF and 4.7nF but will find that 1nF is a good compromise.

Transistor TR1 gives some gain (limited to about 10dB in the interests of stability) but is included primarily to isolate TR3 from the antenna, preventing radiation and reducing any detrimental

effect that the antenna might have on the working conditions of the detector. The trimmer C5 adjusts the coupling between TR1 and TR3. If too small then insufficient signal is transferred - if too large TR3 might stop oscillating. Apart from this, its precise adjustment is in no way critical. The circuit will operate on any supply between 6 and 12V with little noticeable variation in performance and will consume between 10 and 80mA depending on the volume level. ■

Abbreviations

a.m.	amplitude modulation
f.m.	frequency modulation
h.f.	high frequency
kHz	kilohertz
mA	milliamp
MHz	megahertz
m.o.s.f.e.t.	metal oxide field effect transistor
n.b.f.m.	narrow band frequency modulation
nF	nanofarad
pF	picoFarad
v.h.f.	very high frequency
W	watts
μF	microfarad
Ω	ohms

In Part 2 we will cover the construction of this interesting project. Meanwhile here is the components list so that you can at least collect everything you need together.

YOU WILL NEED

Resistors

Metal film 0.6W 1%

220Ω	1	R1
470Ω	1	R10
820Ω	1	R9
1kΩ	1	R4
2.2kΩ	1	R3
8.2kΩ	1	R8
12kΩ	1	R5
15kΩ	1	R2
100kΩ	1	R6

Potentiometers

4.7kΩ lin.	1	R7 (Maplin FWO18)
4.7kΩ log.	1	R11 (Maplin FW21X)

Capacitors

Ceramic plate 100V

47pF	1	C1
1nF	3	C2, 3, 7
4.7nF	1	C8

Ceramic disc 16V

47nF	1	C11
100nF	3	C10, 12, 14

Electrolytic, Axial lead 16V

470μF	1	C4
-------	---	----

Electrolytic, Radial lead 16V

10μF	1	C9
470μF	1	C13

Miniature film trimmer

2 - 22pF	1	C5 (Maplin WL70M)
----------	---	-------------------

Variable capacitor type C804A

25pF	1	C6 (Maplin FF44X)
------	---	-------------------

Semiconductors

Transistors.

BFY90	1	TR1
TIS43	1	TR2
3SK88	1	TR3

Integrated circuit.

TDA 7052	1	IC1
----------	---	-----

Miscellaneous

Double-sided p.c.b.; FX1115 ferrite bead; wire for L1 and RFC1; p.c.b. pins (6); solder.

SHORT WAVE MAGAZINE PCB SERVICE

Printed circuit boards for SWM constructional projects are now available from the SWM PCB Service. The boards are made in 1.5mm glass-fibre and are fully tinned and drilled. All prices quoted in the table include Post and Packing and VAT for UK orders.

Orders and remittances should be sent to: **PW Publishing Ltd, FREEPOST, Enefco House, The Quay, Poole, Dorset BH15 1PP**, marking your envelope **SWM PCB Service**. Cheques should be crossed and made payable to PW Publishing Ltd.

When ordering please state the Article Title as well as the Board Number. Please print your name and address clearly in block capitals and do not enclose any other correspondence with your order. You may telephone your order using Access or Visa. A telephone answering machine will accept your order outside office hours.

Please allow 28 days for delivery. Only the p.c.b.s listed here are available.

Board	Title of Article	Issue	Price £
SR002	Weather Satellite Reception	Jun 88	3.87
SR003	HF to VHF Converter	Aug 89	5.32
SR004	PRO-2004 Modifications	Oct 89	6.76
SR005	R210 Converter	July/August	7.00
SR006	Medium Wave AM Radio	Nov 90	3.40
SR007	VLF Converter	Dec 90	5.24



Telephone orders: (0202) 665524

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 type="checkbox"/> A qualified personal tutor | <input type="checkbox"/> Free advice before you enrol |
| <input type="checkbox"/> Study material prepared by specialists | <input type="checkbox"/> Telephone Helpline |
| <input type="checkbox"/> Completely self-contained courses | <input type="checkbox"/> Free 'How to Study' Guide |
| <input type="checkbox"/> Handy pocket-sized booklets | <input type="checkbox"/> Instalment Plan |
| <input type="checkbox"/> Personal study programme | <input type="checkbox"/> Free Postage on course material |
| <input type="checkbox"/> Regular marked tests | <input type="checkbox"/> Worldwide Airmail Service |
| <input type="checkbox"/> Courses regularly updated | <input type="checkbox"/> Extra tuition free if you don't pass first time |
| <input 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 _____



RRC The Rapid Results College



Dept. JV109 Tuition House, London SW19 4DS. FREE ADVICE: 081-947 7272 (9am-5pm)
PROSPECTUS: 081-946 1102 (24 hour Recordcall Service quoting Dept. No. above.)

VHF/UHF (25-420 MHz) COMMUNICATIONS DIRECTORIES FOR MILITARY AIRCRAFT

Four Regional Editions for North America
(20,000 frequencies)
\$14.95 ea. plus overseas airmail

New Edition for Europe, North Africa, Middle East
(6,000 frequencies)
\$19.95 plus overseas airmail.

VISA, MASTERCHARGE, CARTE BLEU
or send check or money order to:
HAP • P.O.Box 754 • Flemington, NJ 08822 USA
Free catalogue of other titles available.

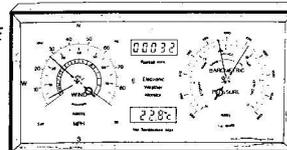
Professional WEATHER MONITORING at low cost

FEATURES (depending on model)

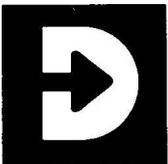
- | | |
|------------------|-----------------------|
| ● WIND DIRECTION | ● OUTSIDE TEMPERATURE |
| ● WIND SPEED | ● MIN-MAX TEMPERATURE |
| ● GUST ALARM | ● RELATIVE HUMIDITY |
| ● GUST SPEED | ● BAROMETRIC PRESSURE |
| ● RAINFALL | ● WOODEN CABINET |
| ● SUNSHINE | ● MAINS & 12-24V DC |

★ ★ All main readings at a glance ★ ★

SEND FOR
COLOUR
BROCHURE
Prices
from only
£159
inc. VAT



R&D ELECTRONICS, UNIT 19, THE ST JOHN WORKSHOPS,
MARGATE, KENT CT9 1TE. TEL: (0843) 221622



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



ROBERTS SHORT WAVE RADIO

R808

Multi-band FM/LW/MW/SW

Digital pre-set stereo battery world radio. Packed with features such as *Tri-colour display for frequency, pre-set channel-time, signal and battery strength *PLUS* lock sleep and stereo indication. The R808 has 5 tune-in methods, 45 pre-sets, dual time display, stand-by and clock alarm, giving tremendous performance and value.

SW 1.711 - 29.999 MHz (18-pre) **£119.00 incl. VAT**
+ £2.50 p&p

**AUDIO
VIDEO
CARE**

Mail Order Dept: 110 London Road, St. Albans, Herts.
Tel. 0727 864162 • Fax 0727 866850
7 Langley Road, Watford, Herts. Tel. 0923 245335

HIGH POWER TRANSMITTER VALVES

Klystrons, Magnetrons, 4CX350A, 4CX1000A, 4CX250B, etc. One million valves in stock. Phone or fax for quote, discounts for large value inquiries. Orders from manufacturers, Govt. Depts., overseas etc., welcome. **WANTED VALVES ESP.** KT66, KT88, PX4, PX25, Klystrons, Magnetrons, Transistors, I.C.s. If possible send written list - we reply same day. Cash waiting.

BILLINGTON VALVES,

Oakdene Industrial Estate, Near Horsham RH13 8AZ. Callers by appointment only.
Tel: (0403) 865105 FAX: (0403) 865106 Telex: 87271. Minimum order £20 + VAT.

☆☆☆ CONTROL SOFTWARE ☆☆☆

PC-MONITOR Professional - A PC control programme for the Yaesu FRG 8800 and FRG 9600 receivers - Freq & mode selection - 1000 memories - Manual or auto scan - Logging facilities£49.50

SCAN - Professional control software for the AOR AR-3000 - 3000 command memories - Dual VFO's with tracking - Bargraph S-meter display - Auto/manual scanning - Plus much more£49.50

CONTROL - Control software for Kenwood receivers and transceivers 1000 memories - Freq/mode selection - Auto/manual memory scan - Selectable tuning steps - Integrated logbook.....£49.50

TERMINAL - The definitive control programme for the AEA PK232mbx. Host mode operation for Packet, RTTY, ASCII, Morse, NAVTEX, TDM and FAX - Split screen with buffer - Auto logging.....£49.50

LOGBOOK - A comprehensive logbook and QSL programme.....£26.50

HF DATABASE - List of 1500 stations (requires PC-File V).....£16.50

The above software requires an IBM PC or Compatible 640K RAM, single floppy or hard disk, RS232 port.
For PC-MONITOR & CONTROL additional interfaces are required. For further details send large SASE to:

B. J. Jenkins 32 Marsh Crescent, High Halstow Kent ME3 8TJ

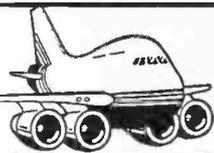
SERVICE MANUALS

Available for most Video Recorders, Colour & Mono Televisions, Cameras, Test Equipment, Amateur Radio, Vintage Valve Wireless, Any Audio, Music Systems, Computers, Kitchen Appliances etc. Equipment from the 1930s to the present and beyond. Over 100,000 models stocked, originals and photostats. FREE catalogue Repair & Data Guides with all orders.

MAURITRON TECHNICAL SERVICES (SWM),

8 Cherry Tree Road, Chinnor, Oxfordshire, OX9 4QY

Tel: (0844) 51694 Fax: (0844) 52554



FLIGHTDECK THE AIRBAND SHOP

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

ALL THE ENTHUSIAST NEEDS

RECEIVERS from Signal, Sony, Win, A.O.R., Icom, Uniden etc.
MODELS from I.M.C., Airjet, Schabak etc. **BOOKS** from T.A.H.S., Ian Allan, Airlife, Osprey, Pooleys, etc. **BINOCULARS/TELESCOPES** from GreenKat, Kowa, etc. **MAGAZINES** from Air Britain, Aviation Letter, L.A.A.S., Scramble, Airliners, etc. **PLUS** Charts, Aerials for mobile and home base, Posters, Postcards, Prints... all this and much more...

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. SWM/3

MARTIN LYNCH

G4HKS

THE AMATEUR RADIO EXCHANGE CENTRE

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

STANDARD

ALINCO

YAESU

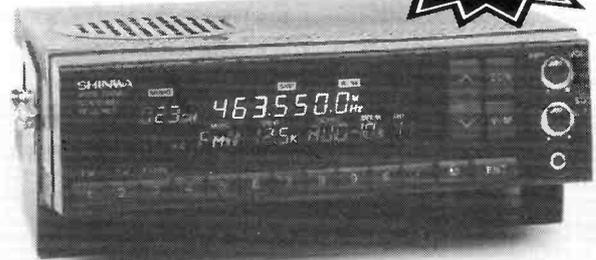
KENWOOD
Authorised Dealer

ICOM

AMSTRAD

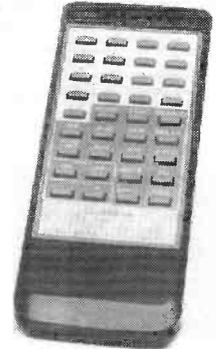
A UNIQUE SCANNER TAKES A MASSIVE LEAP FORWARD

As the appointed U.K. Distributor for **SHINWA SCANNERS**, MARTIN LYNCH is proud to present the SR001.



Take a look at these advanced features:

- ★ Full infrared remote control/programmer
- ★ Continuous tuning 25 to 999.95MHz
- ★ Multi-colour high luminance LCD display
- ★ 200 channels of programmable memory
- ★ Two remote switched antenna inputs
- ★ Multi step channel increments - 5/10/12.5/20/25/50/100kHz
- ★ AM/NBFM+FM wide receiving modes
- ★ Mega-fast scanning - 30ch/sec.
- ★ Multi function scanning modes
- ★ Multi mode squelch options
- ★ Channel lock-out facility
- ★ Internal lithium back-up
- ★ Unique strength meter
- ★ Switchable attenuator
- ★ RS232C port available
- ★ Remote power on/off
- ★ Programmable delay
- ★ 13.8V DC operation
- ★ Priority watch
- ★ Alarm facility
- ★ Mute facility
- ★ Din size - ideal for base or mobile installation
- ★ Built on die-cast chassis to commercial specification
- ★ Dimensions 50(H) x 178(W) x 150(D)
- ★ 12 Months parts and labour guarantee



Mr Chris Lorek, G4HCL recently reviewed the SR001 in HRT and said, "The set is a unique departure from the "normal", it's very smart appearance combined with remote control features I'm sure will appeal to scanner enthusiasts".

Available from MARTIN LYNCH and other appointed dealers, the SR001 is now available from stock. Phone for details.

DEALER ENQUIRIES WELCOME.

Martin Lynch is a Licensed Credit Broker.

Full written details upon request. Typical APR 36.8%

PHONE 081 566 1120



For fast mail order Tel: 081 566 1120 Please add £10.50 for 48 hour delivery. Shop opening hours: Tuesday - Saturday 10 - 6pm

24 hour Sales HOT LINE 0860 339 339 (After hours only).
Fax order line open 24 hours.

Fifty Countries on the 144MHz Band Part 1

I am sometimes asked how I manage to contact some distant station on 144MHz, when to the equirer the band only carries local f.m. traffic. My only answer to this loaded question is that I heard the DX signal,
says P.E.W. Allely GW3KJW.

In this short series I will try to explain, in a relatively simple manner, the means whereby anyone with a decent 144MHz receiver and a reasonably good antenna should be able to hear at least 50 countries on this band, without recourse to the man-made satellites.

There is a fascination in v.h.f. and u.h.f. listening which equals, or even surpasses, the thrill of h.f. listening. The skill, art, luck, call it what you will, has to be more intense, the dedication greater, the knowledge of v.h.f.

propagation is a vital factor and the ability to slowly tune through a seemingly dead band without losing interest, paramount.

I well remember the glow of self satisfaction the first time I contacted a New Zealand amateur on 14MHz, but this did not compare with the thrill of working the Canary Islands on 430MHz some 30 years later. Both initial contacts were personal highlights in my favourite hobby and, of the two, I consider the latter to be the greater achievement due to the frequency used.

Subtle Indications

It is the recognition and the use made of these various v.h.f. propagation conditions that makes all the difference between hearing only the usual banter on your local repeaters and hearing stations well in excess of 1000km. It is these interesting, vital, forms of propagation and their recognition that I will try and explain, together with the sometimes subtle indications

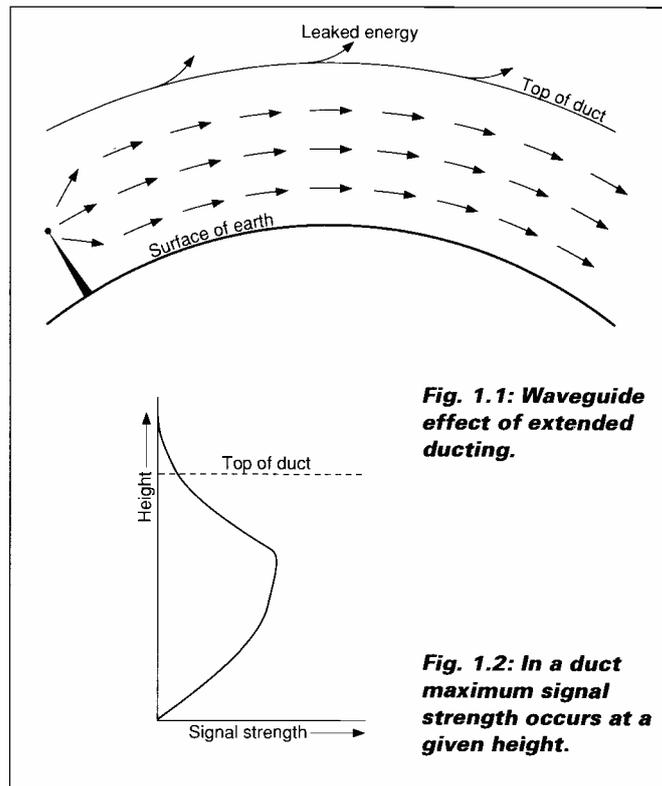


Fig. 1.1: Waveguide effect of extended ducting.

Fig. 1.2: In a duct maximum signal strength occurs at a given height.

that such condition are occurring or are liable to occur.

Now what are these magic means by which such long distance signals can be heard? The most common forms of v.h.f. propagation are tropospheric, auroral, Sporadic-E, meteor scatter and moon-bounce. There are others, but these five are the ones to recognise and use. I can assure you that by making sensible use of the various methods of propagation will convince you that 144MHz and above are frequencies well worth listening to.

Tropospheric Propagation

We are taught, when learning the theory of radio, that v.h.f. radio waves travel in straight lines. If this was completely true, there would be no over

the horizon contacts made and all v.h.f. communication would be limited in distance to line-of-sight. This concept is accepted by commercial and government agencies who take great care to ensure that they command the highest ground available for their stations. Us lesser mortals have to rely on what we have. Fortunately for us, it is more accurate to state that v.h.f. radio waves travel in straight lines **unless** they are forced to do otherwise and it is this bending of the waves that allows signals to follow the curvature of the earth.

The bending takes place in the troposphere, which is that part of the atmosphere in the first 15km adjacent to the earth's surface. It is also the area where the weather is, the high and low pressure areas, the cold and hot layers of air

and the varying amounts of molecules of water vapour drifting about in the atmosphere. It is this bending in the troposphere that gives rise to the term tropospheric propagation or tropo for short. Tropo conditions are present every day of the year, but its intensity varies enormously producing the expression of 'a flat band' to 'a big lift'.

Why does a radio wave bend? Why should the intensity vary and can this condition be predicted or anticipated.

The answers to these questions are open to interpretation, but I have given what I consider to be the generally accepted answers.

A v.h.f. radio wave is generally space-wave propagated, travels in straight lines (see previously) and, if there is no atmosphere, is confined to line-of-sight. Where there is an atmosphere of water vapour, the waves will be deflected and will bend. The space wave propagation at v.h.f. is greatly affected by atmospheric conditions, the presence of gas molecules of water vapour with its high dielectric constant causes the air of the troposphere to have a dielectric constant slightly greater than unity, the density of the air and the distribution of water vapour will vary height, therefore the dielectric constant and refractive index of air is dependent on height and in general will decrease with height. Warm air will support more water vapour than cool air.

It is this variation that gives rise to the phenomena of over the horizon ducting. What has

happened to allow such fine propagation is generally known as ducting.

The ducting is dependent on the amount of water vapour present in the troposphere and the intensity of this vapour at certain heights above the surface of the earth. A change in refractive index with height causes a radio wave travelling in the atmosphere to bend away from the regions of low dielectric constant towards regions of high dielectric constant, see **Fig. 1.1**.

Duct heights vary from almost sea level to hundreds of feet, and for the duct effect to work, the transmitting antenna must be within the duct height. There is, with all ducting, an optimum height for maximum signal strength, but this height is dependent on the atmosphere and, therefore, variable, as shown in **Fig. 1.2**.

Weather Patterns

Should the weather patterns dictate that the air at different height does not fall in the temperature constant with that height, but that there is a cold layer and above that a warm layer and above that again a cold layer, a temperature inversion has occurred, giving rise to the possibility of high level ducting increasing enormously the distance that can be worked. It is by these means that tropo contacts between the UK and Eastern Europe are achieved.

It will be seen that to achieve perfect ducting, the refractive index of the air at a certain height must be constant, and the best chance of this happening is when the surface of the earth is smooth. The only part of the world that is smooth is the surface of the sea, and it is through extended ducting over warm sea water that the record 144MHz contacts have been achieved, distances almost staggering in their immensity - from Hawaii to California achieved almost forty years ago and nearer to home, from the Canary Islands to Iceland. The presence of mountains causes a turbulence in the atmosphere effecting the ducting and makes extended tropo ducting over land that much less

frequent.

At the time of writing, contact between Europe and North America via tropo has not been reported on 144MHz. I believe that such a contact will be made, but not from the obvious shortest distance of the West of Ireland to Newfoundland, but much further south, say from Portugal to the Carolinas, a greater distance but a signal path more likely to have high pressure weather systems and a warm sea, a weather pattern not known in the North Atlantic.

Indicators

What are the indications that tropo ducting is taking place or likely to happen?

I would suggest that a slow careful search of the whole of the 144MHz band would reveal most of the answers. Starting at the bottom end there should be a number of people calling on c.w. There are certain amateurs in the UK and neighbouring countries who seem to have a direct line to a higher authority, and who, at the slightest sniff of good conditions, appear as full of enthusiasm as ever. Tune up a bit higher, plenty of sideband activity with people calling for DX and others calling for 'long DX' whatever that might mean. I would suggest that 144.300 is not the only place to listen, many people will call CQ on other frequencies especially when good conditions prevail. Tune up higher, you should hear f.m. activity above 144.500 and having noted that, start listening to the beacons located between 144.850 and 145.000MHz. It is in this beacon allocation area where

the most accurate assessment of conditions can be formed. Try to find the more distant ones and judge their relative strength. Daily monitoring of those beacons gives an excellent idea of tropo ducting. From my west coast location perched above the Irish Sea, I listen for EA1VHF at La Coruna, HB9HB in Switzerland and DL0PR in Northern Germany. Should any of these manifest itself at a good strength it is reasonable to assume that there is tropo ducting in the direction of that particular beacon. A word of caution though, HB9HB is situated atop an alp many thousand feet high and I have known times when it has been at full strength all day without a sign of expected amateur activity, it has been propagated in a high level duct that was too high for normally sited antennas. The beacons listed in **Table 1.1** are a selection that are most likely to be heard.

Study the Weather

The listening should not stop at 145.0MHz, a tune across the f.m. channels may indicate an increase of activity and the presence of signals not normally heard. The f.m. repeaters are also a very good guide to conditions, normally well sited, these machines are the first to be affected by good propagation as signals normally beyond their range are received and re-transmitted.

How can we anticipate a good tropo opening. This is not an easy question to answer. A study of the weather is the best way to attempt to forecast such an opening. Warm high pressure

areas resulting in calm balmy weather for a few days are always interesting to the radio enthusiast, there is always the chance of tropo ducting taking place. Early morning and late evening seems to be the best times when the temperature is stable and the chances of ducting are good. From my location, I have noted that if a ridge of high pressure appears over the Irish Sea, there is good chance of working into Spain, similarly if high pressure is centred in the North Sea I can work around it into Scandinavia and Germany. If the high pressure is in the South East, I may work into Switzerland and Austria. Conversely, if the high pressure is centred above me, I find that this gives rise to intense signals from stations up to 200km but very little from further afield.

Tropo ducting can take place during any day of the year, but extended ducting seems to be most likely to happen in the British Isles during the early autumn. ■

Abbreviations

c.w.	continuous wave (Morse)
DX	'long distance'
Es	Sporadic E
f.m.	frequency modulation
h.f.	high frequency
km	kilometres
MHz	megahertz
CQ	General call
v.h.f.	very high frequency
u.h.f.	ultra high frequency

Table 1.1: Short Beacon list to be used as guide.

Freq (MHz)	Callsign	Location	Indicator
144.840	PI7PRO	N. Holland	tropo/aurora
144.865	HB9HB	Switzerland	tropo
144.867	EA1VHF	N. Spain	tropo
144.895	FX-THF	C. France	tropo
144.910	DL0PR	N. Germany	tropo/aurora
144.915	GB3CTC	Cornwall	tropo
144.920	EI2WRB	S. Ireland	tropo
144.925	GB3VHF	Kent	tropo/aurora
144.955	FX4VHF	S. France	tropo
144.965	GB3LER	Shetlands	aurora
144.975	GB3ANG	NE. Scotland	tropo/aurora

RAYCOM

COMMUNICATIONS SYSTEMS LIMITED

Telephone 021-544-6767

RAYCOM AMATEUR RADIO CENTRE ONE STOP SHOPPING FOR ALL YOUR COMMUNICATIONS NEEDS

International House
963 Wolverhampton Road
Oldbury
West Midlands B69 4RJ

Sales Hotline 021-552 0073

Fax: 021-544 7124

Late night line: 0836 771500 Before 9pm please!
Shop hours Mon-Sat 9am-5.30pm

INTRODUCING RAYCOM SPEEDMAIL

The fastest mail order system in the country. Raycom have always had a very quick response to customer needs and our new SPEEDMAIL service will ensure you get the fastest delivery possible. Our one step shopping policy now takes another step forward in customer care. Simply write to Raycom Speedmail (address above) or phone our sales hotline to place your order. You can quote your credit card number for immediate despatch for NEXT DAY DELIVERY. (Cheques are also welcome but do take a few days to clear).

KENWOOD

TS950SD	£2995
TS950S	£2295
TS940S	£1995
TS850S	£1325
TS440S	£1160
TS140S	£860
TS680S	£995
TS711E	£915
TS790E	£1525
TM241E	£295
TM702E	£445
TM731E	£675
TH27E	£254
TH77E	£395
R2000	£599
R5000	£895
HF225	£429

ICOM

IC781	£4595
IC785	£2550
IC751A	£1535
IC735	£1000
IC725	£1015
IC725	£779
IC25E	£279
IC25ET	£299
IC275E	£1090
ICW2E NEW	£395
IC24ET	£385
IC3220E	£510
IC970E	£POA
ICR9000	£POA
ICR7000	£950
ICR72	£659
ICR100	£510
ICR1	£399

ASK ABOUT OUR RI MODIFICATION.

YAESU

FT1000	£POA
FT990	£1849
FT747GX	£569
FT757GX2	£969
FT767GX	£1599
FT26 NEW	£245
FT811	£POA
FT470	£POA
FT290R2	£429
FT690R2	£429
FT5200 NEW	£639
FT736R INC 6M	£1359
FT650	£1079
FT8800	£649
FT9600 FROM	£499

ASK ABOUT OUR FRS 9600 UPGRADES.

NEW FOR OLD

We are always on the look out for good second hand equipment. If you would like to upgrade to new please give us a call. We have the largest display of used equipment in the Midlands and have a constant stream of customers demanding more! We probably have a customer waiting for your old gear right now! Why not convert your old receiver or handheld or mobile into cash right now? Give us a call and tell us what you have — we need your gear now!

NAVCO AMR1000S

Still the highest spec 2m FM set on the market. Made in the UK, ideal for base, mobile and for packet.



New price now only **£249**

YAESU FRG9600



9600 standard 60-950MHz	£469
9600 MkII 60-950MHz	£499
9600 MkII pack 60-950MHz	£545
9600 MkV 0.2-950MHz	£625
9600 MkV pack 0.2-950MHz	£699
Standard to MkII upgrade	£40
Standard to MkV upgrade	£149
MkII to MkV upgrade	£129

All packs include PSU and ROYAL 1300 disconel

TEK 2000

A new HF mobile! 25W output on 7, 21 and 28MHz with CW, USB, LSB and FM. Compact size for easy mobile installation and a very cost effective entry onto the HF bands.



Only **£299**

HUGE RANGE AT RAYCOM

Obviously we sell much more than we can ever hope to advertise. If you would like our complete brochure pack please send us £1. We can then provide all the information you need to help you choose your new HF rig, VHF/UHF handheld or new receiver. If you need more information or would like to arrange a personal demonstration please feel free to visit our showroom or give us a call.

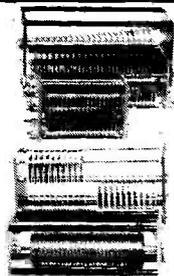


BUY THE BEST — BUY



SOLID BRITISH ENGINEERING

BRITISH WORKMANSHIP AT ITS BEST



CAPACITORS, ROLLER COASTERS AND BALUNS

BUILD YOUR OWN A.T.U. FOR £75.55

CAP-25S	£20.60
CAP-25T	£25.10
R/COAST	£29.85 + £4.50 p&p

BUILD YOUR OWN LOOP — COMPLETE KITS

AMA3 KIT COVERS 10-20m	£308.15 + £10.00 p&p
AMA5 KIT COVERS 30-80m	£398.85 + £15.00 p&p

or individual parts available

AMA-3 10-20m	£339.50 + £15.00 p&p
AMA-5 30-80m	£463.30 + £20.00 p&p

only two aerials needed for continuous coverage from 3.5 to 30MHz

COST OF TWO AERIALS	£716.85 + £30.00 p&p
COST OF TWO KITS ONLY	£621.05 + £25.00 p&p

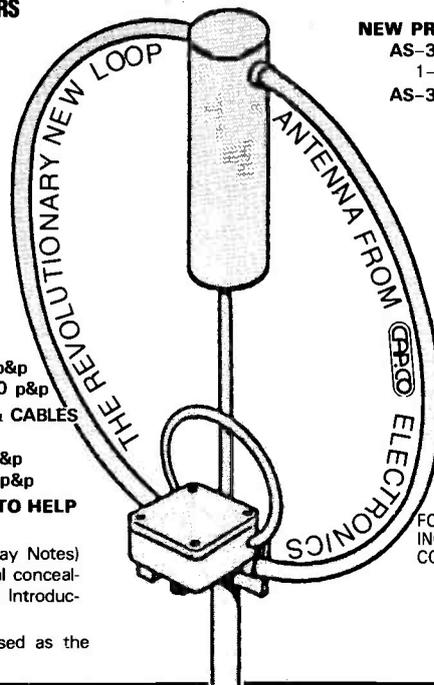
THIS OFFER INCLUDES CONTROL BOX, CLAMPS & CABLES NOW AVAILABLE

AMA-6 COVERS 12-40m	£377.90 + £15.00 p&p
AMA-4 COVERS 80-160m	£541.70 + £30.00 p&p

ANY QUERIES — ASK US — WE WOULD LIKE TO HELP NEW PRODUCT

The "un-named" CB antenna (see PW May Quay Notes) can be mounted outdoors or in the attic for total concealment. No TVI or BCI 25.6-33MHz-200 Watts. Introductory offer price £79.50 + £10 P&P

CAP.CO ELECTRONICS LTD. are now recognised as the leading authorities on LOOP Antennas



SPC-300D



SPC-3000D



'STAY TUNED FOREVER'
With a CAP.CO A.T.U

NEW PRODUCTS

AS-305 AERIAL SWITCHING UNIT
1-160MHz, 3000 Watts PEP £72.50 + £5.00 p&p

AS-305R AERIAL SWITCHING UNIT
Remote version of above £82.50 + £5.00 p&p
See PW April for review.

SPC-100 A.T.U.

This small budget priced A.T.U. designed with low power operator and short wave listener in mind L&C Match covering an impedance range of 6:1 Max power 300 Watts PEP £85.80 + £5.00 p&p

RECEIVING ONLY MAGNETIC LOOP ANTENNA
Incorporating Transmitting Loop Technology, these Set-Top units give reception that must be heard to be believed.

RMA-1 COVERS 1.5-7.0MHz (INC. AMPLIFIER)
£85.80 + £5.00 p&p

RMA-2 COVERS 7.00-30MHz
£49.40 + £5.00 p&p

(See JUNE ISSUE of Short Wave Magazine for review)

FOR MORE INFORMATION ON ANY OF OUR PRODUCTS INCLUDING HIGH POWER A.T.U.'s, LOOP ANTENNAS FOR COMMERCIAL USE SEND SAE TO:

CAP.CO ELECTRONICS LTD
UNIT 28, PENLEY INDUSTRIAL ESTATE
PENLEY, WREXHAM, CLWYD LL13 0LQ
TEL: 0948 74717
FAX: 0948 74728

ICS

ICS Electronics Ltd

Data and Facsimile over Radio

FAX-1: Radio Facsimile Decoder

Allows any suitable computer printer to be used to output weather maps, press photos and amateur radio transmissions. Fully automatic operation, with built in timer for unattended use. Thousands already in use by amateurs, professional meteorologists and schools. Requires a good quality HF SSB receiver.

FAX-1: £299.95. Post and packing, £6.00

MET-2: Meteosat Receive System for IBM-PC Computers

Works with any IBM-PC compatible computer, though best results are obtained with 286 processor machines with VGA. Everything you need to receive the Meteosat weather satellite with incredible clarity. Antenna, receiver, software, leads etc. are all included. Automatic reception, animation, colouring save to disk and laser printer output. 600 x 800 x 64 grey levels in extended VGA mode. A professional quality system at amateur prices! Send for free colour brochure.

MET-2: £699.95 inc. VAT. Post, packing £10.00

All prices include VAT at 17.5%. Free catalogue on request.

ICS-FAX: HF Facsimile Receive System for IBM-PC Computers

Operates with any IBM-PC compatible computer to give superb grey scale images from any HF SSB receiver. System is complete and includes software and demodulator hardware. This connects between the computer's serial port and the extension loudspeaker output of the radio.

640 x 480 x 16 grey levels with VGA equipped computers, and with a host of easy to use features. Data sheet on request.

ICS-FAX: £99.95 inc. VAT. Post, packing £3.00

PK-232 MBX Data Controller

Receive and transmit all common HF data modes: AmTOR, RTTY, Packet, Fax, Navtex, ASCII, CW. Requires an SSB receiver/transceiver and a computer or VDU.

PK-232 MBX: £319.95. Post and Packing £6.00



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

spacetech 21 WEST WOOLS, PORTLAND, DORSET DT5 2EA UK
Space Science Resources TEL 0305 822753 FAX 0305 860483

ARCHIMEDES OWNERS NOW HAVE THE MOST SPECTACULAR ANIMATED VIEW OF SPACE

WITH:

Orrey

ONLY £95.00

PLUS...

The award winning view of the Earth from Space! **

THE WEATHER SATELLITE STATION

**Educational Technology

Award winners 1989/90
1990/91

Write or phone for details of our extensive range of:

RECEIVERS
DECODERS
ANTENNAS
BOOKS
SLIDES
POSTERS
PRINTS
ETC
ETC...



Camden BOOKS



GREAT SHORTWAVE RADIO BOOK REPRINTS

Here at "Camden" we pride ourselves on not only offering great value books, but also being able to comment knowledgeably on their contents. Truth to tell, this doesn't happen with our Shortwave Radio books, because we cannot find the time to read them and learn up about the subject, but we do know that they are GREAT!

We make this statement with absolute certainty because they are all reprinted by a lunatic called Tom Lindsay who is (a) a genius at selecting the right book to reprint and (b) is a committed Shortwave Radio man.

All his reprints date from the golden, valved, years of Radio - mainly from the 1930s, but one from 1911 and some from the 40s. They vary in format, but all are high quality, very reasonably priced, paperbacks and as a reader of "Short Wave Magazine" we KNOW you will find them unique and very, very interesting.

For full Details of Lindsay's range of radio and other books, plus loads of other titles, mainly on model engineering, engineering and transportation subjects, send a large SAE (38p stamp for UK or 4 International Reply Coupons for overseas airmail) for a copy of our NEW 44 page Booklist - you won't be disappointed.

SEND (NO STAMP REQUIRED IN UK) TO:

CAMDEN MINIATURE STEAM SERVICES
FREEPOST, 13 HIGH STREET, Rode, Bath BA3 6UB

Tel: (0373) 830151

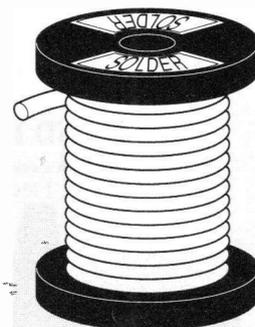
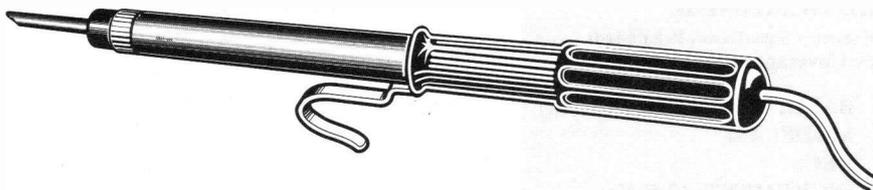


(CALLERS WELCOME BY PRIOR APPOINTMENT)



Continuing Along the Right Lines - Part 2

How to solder may not be exciting but it is important, says George Dobbs G3RJV. Further projects in this series will require the use of soldering, which is the standard technique for joining components in electronic circuits.



It's not possible to get very far as a radio constructor without mastering the simple technique of soldering. Soldering is very simple, but over many years of helping beginners in radio construction to get their projects to work, 99% of the problems have been due to poor soldering. In radio construction, if you don't get soldering right - you are in for trouble.

The basic materials are simple:

A small 'pencil-type' soldering iron rated between 15 and 25W with a small bit (2 - 5mm diameter).

Good quality resin cored solder: this solder contains its own flux and usually is of 60/40 alloy and 22 or 24s.w.g.

A soldering sponge or a damp cloth to wipe the bit.

A soldering iron stand: buy one to match the make of iron or make one to hold the iron safely when not in use.

Three Simple Rules

1: The soldering iron is not for melting the solder, it is for heating the joint, which melts the solder.

2: Solder will not flow on dirty or greasy surfaces, it requires clean metal surfaces.

3: Solder is not glue, it does not stick the joint together. The joint must be physically secured before the solder is applied.

What to Do

The procedure is simple.

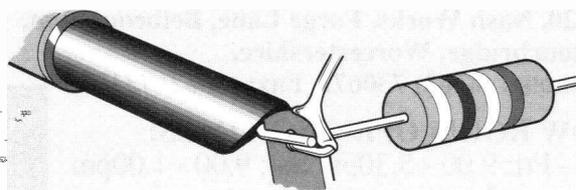
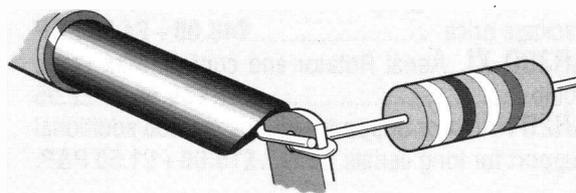
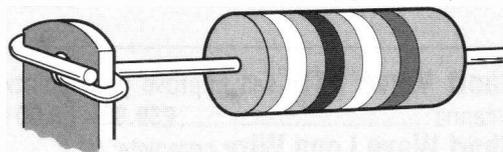
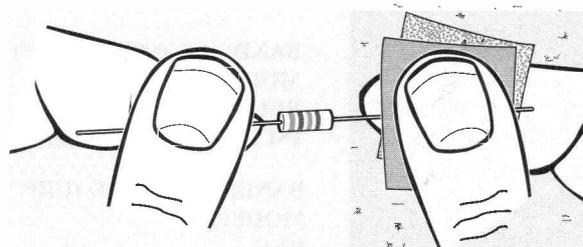
Begin with a clean soldering iron bit. The bits are usually copper coated with a thin protective layer of iron to prevent erosion. Do not clean the bit with emery paper or a file. Heat the bit and 'tin' it. That is wipe it clean on a damp sponge or cloth and melt solder onto the bit until the surface is smeared all over with bright solder. Excess can be wiped off with the sponge. Keep the bit clean and tinned.

Clean the surfaces to be joined. They must be clear of dirt and grease. Use emery paper or the edge of a knife (my favourite way) to expose clean bright metal at the point to be soldered.

If soldering to a tag, wrap the wire end around the tag to make a secure physical contact. There should be no need to hold to two items to be soldered together when soldering (it is not a three handed job!). They must be securely joined before soldering begins.

Heat up the joint by firmly pressing the bit onto both component parts at once. It usually takes about two seconds.

Keeping the iron pressed firmly on the joint apply the solder to the joint **not to the soldering iron tip**. The joint must melt the solder, only this ensures that the surfaces are hot



IF YOU ARE THINKING OF BUYING A NEW SCANNER...

MAKE SURE YOU RING US FIRST FOR THE BEST DEAL

FAIRMATE HP200£?

AOR1000£?

JUPITER£?

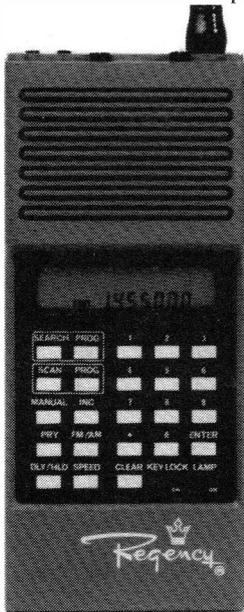
BEARCAT£?

Part Exchange Welcome...Part Exchange Welcome...Part Exchange Welcome...Part Exchange Welcome

REGENCY HX2000

HAND HELD SCANNER

20 Programmable channels + full search + Scan (Factory Refurbished)
Frequency Coverage:



BAND: 118-136MHz (Aircraft)
MODE: AM
REC.
INCREMENT: 12.5kHz

BAND: 138-174MHz (VHF High)
MODE: FM
REC.
INCREMENT: 5kHz

BAND: 406-490MHz (UHF)
MODE: FM
REC.
INCREMENT: 12.5kHz

BAND: 490-512MHz (UHF "T")
MODE: FM
REC.
INCREMENT: 12.5kHz

£99.95 + £3 P&P Limited stocks avail.

Short Wave ATU will improve your shortwave antenna£39.95 + £3.00 P&P

Short Wave Long Wire complete£10.95 + £3.00 P&P

OR

ATU and Long Wire Normal Price £50.90

Package price:£48.00 + £4.50 P&P

AR300 XL Aerial Rotator and control. Max Load: 100lb£39.95 + £2.95

AR201 Rotator Support Bearings provide additional support for long aerials.£15.00 + £1.50 P&P.

S.R.P. TRADING

Manufacturers and distributors of communications equipment
Unit 20, Nash Works, Forge Lane, Belbroughton,
Nr Stourbridge, Worcestershire.

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

SHOW ROOM OPENING TIMES:

Mon - Fri: 9.00 - 5.30pm Sat: 9.00 - 1.00pm

Callers welcome.

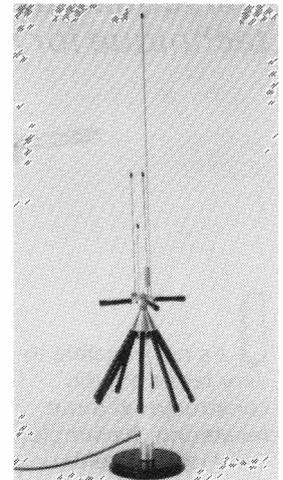
Trade enquiries welcome. Contact Stuart or Graham

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!

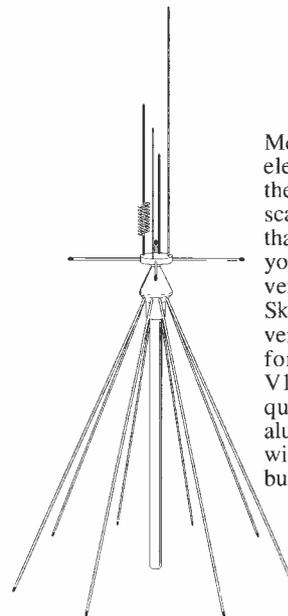
£49.00 + £3.00 p&p.



SKY SCAN DX-DISCONE 25 to 1300MHz

Most discones only have horizontal elements and this is the reason that they are not ideal for use with a scanner. Most of the transmissions that you are likely to receive on your scanner are transmitted from vertically polarised 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.

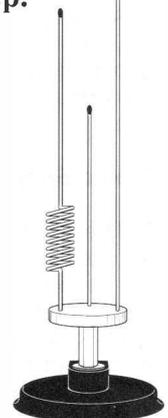
£49.95 + £3.00 p&p.



SKY SCAN MAGMOUNT Mk II

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.



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

Cheque P/O
 Visa/Access No.
 Expiry Date
 Signature:

SANGEAN ATS 803A

(Direct Key-in World Receiver with Quartz Alarm Clock Timer)



SPECIFICATIONS & FEATURES

★ 150-29.999 continuous tuning with no gaps. Phase locked loop-double conversion Superheterodyne ★ Full Shortwave/AM/SSB 150-29999kHz No Gaps! + FM 87.5 - 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 5 memories. ★ Direct press-button Access to all 12 Shortwave broadcast bands. ★ Two power sources - battery or AC mains adaptor. ★ General coverage of all a.m. bands in LW/MW/SW (Dedicated Broadcast Band Coverage on all versions) Plus of course the f.m. 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 r.f. GAIN control to prevent overloading when listening close to other strong stations or if there is interference. ★ New improved wide/narrow filter (62.7kHz) ★ b.f.o. control (Beat Frequency Oscillator) enables reception of SSB/USB/LSB (single side band) and c.w. (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: 29.2cm x 16.0cm (11.5in x 6.3in x 2.36in)

OUTPUT: 1200mW (10% THD)

WEIGHT: 1.7kg (3.75lbs) Without batteries.

Wide/Narrow Filter Switch.

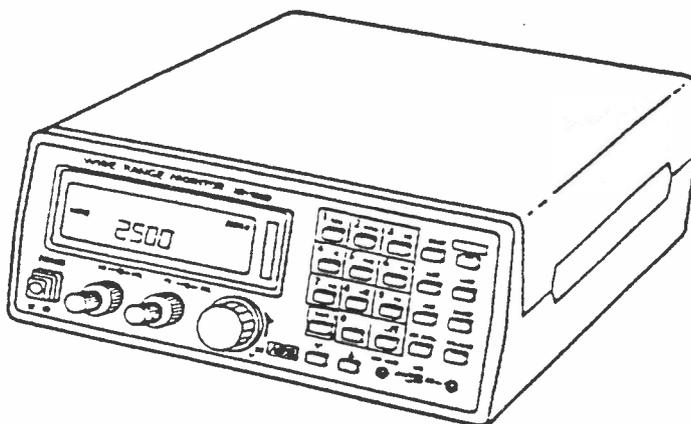
TRADE ENQUIRIES WELCOME.

£99.95 + £5 check, test and P&P.

★ NEW ★ NEW ★ NEW ★ NEW ★

The AOR AR-2500

- ★ 2016 Channels. 100kHz to 1500MHz.
- ★ AM, FM, WFM & BFO for SSB, CW.
- ★ 64 Scan Banks.
- ★ 16 Search Banks.
- ★ RS232 Port Built in. **£419.00**
- ★ Continuous Coverage.



The AR2515 was an AR2002 fitted with a "Whizzo" microprocessor, this same software has now been incorporated into the NEW AR2500 but at a considerably reduced price. The AR2500 boasts nearly 2000 memory channels (1984 to be exact) in 62 banks of 32 plus 12 search banks, modes of a.m., n.f.m. & b.f.o. along with increment steps of 5, 12.5 & 25kHz. Frequency coverage is from 100kHz to 1500MHz, an added feature is a BFO for the reception of s.s.b. signals.

CALL IN FOR A DEMONSTRATION. WE ARE JUST 5 MINUTES FROM JUNCTION 4 ON THE M5.



The AOR AR-1000

The AR-1000 comes complete with the following equipment:

- ★ Set of 600mA/H NiCad batteries.
 - ★ 240V Mains Charger.
 - ★ DC power cord with cigar lighter plus soft carrying case.
 - ★ Belt clip.
 - ★ Carrying strap.
 - ★ Earpiece.
 - ★ High performance DA900 flexible gain antenna.
- Frequency Range: 500kHz-600MHz.
805MHz-1300MHz.

£249.00

VT125 AIRBAND RECEIVER

A small but sensitive airband radio that is set to take off in the UK!

- ★ Covers 108-142MHz.
- ★ 30 Memory Channels.
- ★ Priority Monitoring.
- ★ Pass and Delay Functions.
- ★ Supplied with UK Charger.

£179.00



NEW MVT 7000 HANDHELD

8-1300MHz continuous coverage - multi-mode. AM/FM/WFM. 200 Channel memory - very sensitive. S meter. **£289.00**

S.R.P. TRADING *Manufacturers and distributors of communications equipment*

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

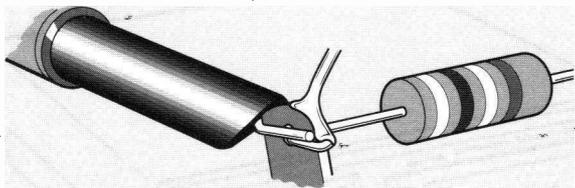
Telephone: (0562) 730672 Fax: (0562) 731002

SHOW ROOM OPENING TIMES: Mon - Fri: 9.00 - 5.30pm. Sat: 9.00 - 1.00pm. Callers welcome.

enough for the solder to flow.

The solder will flow freely along both parts of the joint. Apply enough solder to cover the immediate area around the joint. It should flow easily over the heated area. When this has happened, withdraw the iron. Wait until the joint cools and the solder solidifies before handling or putting strain on the joint.

Check the joint. A smooth and bright layer of solder should coat the small area around the junction of the two parts to be joined. A bad joint usually shows up clearly as a dull and lumpy 'blob' of solder.



Practice a few joints, if soldering is a new skill, before embarking on

building a circuit. Soldering is much easier to do than explain and only requires a little practice and experience.

Tools for Radio Construction

The radio constructor does not require an extensive workshop. During my time as a constructor, I have worked in student bedsits, small flats, the kitchen of a conventional house and a large vicarage with enough space to lose the children - somewhat of an advantage. Amateur radio construction can be done by anyone virtually anywhere. For some years, I did all my construction on

a large wooden teatray, bought at a jumble sale, which I packed away at the

end of every construction session. My soldering iron was mounted in a homemade stand which rested on a Marley floor tile.

A few handtools are required. These days I have a large toolbox beneath my bench, but the number of tools I use from this box is quite limited. The basic tools probably already exist in the household toolbox or can be bought from one of the d.i.y. chain stores.

My most used tool kit would be:

A small pair of good quality pointed nose pliers

A small pair of good quality wire cutters (side cutters)

Medium and small flat blade screw drivers

Medium and small cross-headed (Philips) screwdrivers

A small knife (throw-away modelling knives are ideal)

A small adjustable spanne: a set of BA and Metric spanners is better but more expensive.

The pointed pliers are for manipulating wires and components. The cutters

are for cutting wires and shortening leads on components. The screwdrivers and spanners are for mounting circuit boards. Do not tighten nuts with the pointed pliers as they are expensive and easy to damage.

This modest list has enough tools to begin radio construction. Other, more specialist, tools may be added as the projects undertaken become more sophisticated. They are the tools I use most often for building circuits and the simple mounting of equipment. The constructor may also require some other tools to cut, drill and fashion circuit boards and cases, but these will be discussed as the series goes along. ■

Next time George will start putting your soldering skills to work.

Abbreviations

d.i.y.	do it yourself
mm	millimetre
s.w.g.	standard wire gauge
W	watts

First Aid

I am after a superhet tuner that receivers up to about 500MHz. Eddystone used to make one, was it valve or transistor, I don't know, but what was its number and where can I buy one from?
K.J. Faulkner, 56 Cloverley, Brooklands, Sale, Cheshire M33 3QL.

Last year I was given a Murphy A130 valve receiver which was in working order, but the cabinet was in a shocking state. So I decided to renovate the cabinet. After removing the wireless from the cabinet, I set about the renovation. It was all put back correctly and was working fine on all bands. I went to use the wireless after about six months and all I can get out of the wireless is a very high-pitched squeel sound. Where do I start to rectify the fault. Could anybody also tell me when the A130 was made.
Robert Evans, 3 Bethesda Place, Ebbw Vale, Gwent NP3 6BW.

For many years I have owned a short wave radio which I believe to be an Eddystone. This is where I hope you may be able to help me by identifying the model from a few details of the set. It weighs approximately 15lb, is 11in wide, 6in high and 7in deep. There are three controls, on/off volume, tuning and waveband change. The bands from top to bottom are 18-6MHz, 6-1.95MHz, 1500-540kHz and 380-150kHz. On the base of the set is what appears to be a licence plate referring to 'A7-S' and a serial No M20357. At the front and top is a position where the makers name/model plate should be.
M.J.Ousely, 3 Little Heath Cottages, Potten End, Berkhamsted, Herts HP4 2RT.

A few years ago, I purchased a frequency display for my FRG-7 radio from Timestep Electronics and now it has gone faulty. Could anyone tell me where I could perhaps obtain a new one or the parts to repair my old one since it is the display that has gone. The number is 6LT06. I would really appreciate any help since it did improve my FRG-7 and I would be only too willing to buy another if available.
J. Fletcher, 66 Deightonby Street, Thurnscoe, Nr Rotherham, Yorks S63 0JA.

Does anyone have any information on a Admate 100 dot matrix printer - Manufacturer, importer, supplier, circuit or owners manual?
A.J. Harding, 10 Oakfields Close, Stevenage, Herts SG2 8NQ.

Educational Software for Basic Electronics - Part 6

J.T. Beaumont G3NGD now moves onto resistors, Ohm's Law and resonant circuits.

Ohm's Law is one of the most basic principles in electronics, once understood it makes building on that knowledge much easier. This program is a 'self-learning tutor'. When the program is RUN, the student has the option to follow the tutor or to perform Ohm's Law calculations.

The tutor explains what resistance is and relates voltage, resistance and current to the definition of Ohms Law. This is carried out by drawing graphs and an example is shown in Fig. 6.1. The student is also shown how to transpose the formula $V = I \times R$ using the triangle method.

Colour Codes & Resistors

The first part of this program explains how to read resistor colour codes. This is followed by routines to calculate the resistance value of four and five band resistors in the colour codes are entered. Also, the maximum and minimum value of resistance is calculated and printed on the screen.

Another option explains how to calculate total effective resistance, when resistors are connected wither in series or parallel. There are two formulae used in the examples, **reciprocal** method and also **product over sum**. The final option allows students to input an infinite number of values of resistance that are to be connected in parallel, and the answer is displayed on the screen.

Resonant Tuned Circuits

Although the programs in this series are written for basic electronic courses, this program in particular is also suitable for the CGLI Radio

Short Wave Magazine, June 1991

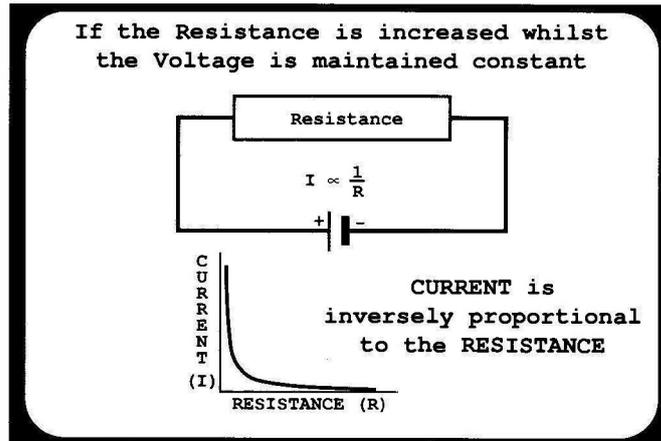


Fig. 6.1.

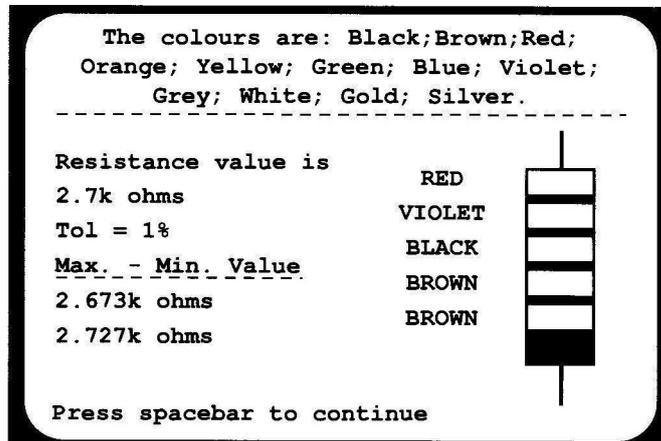


Fig. 6.2.

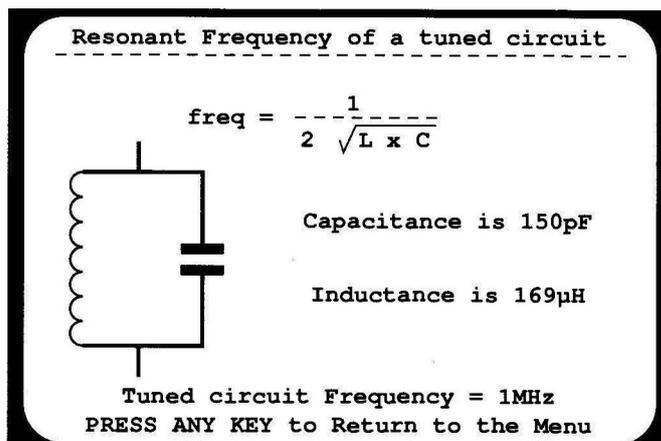


Fig. 6.3.

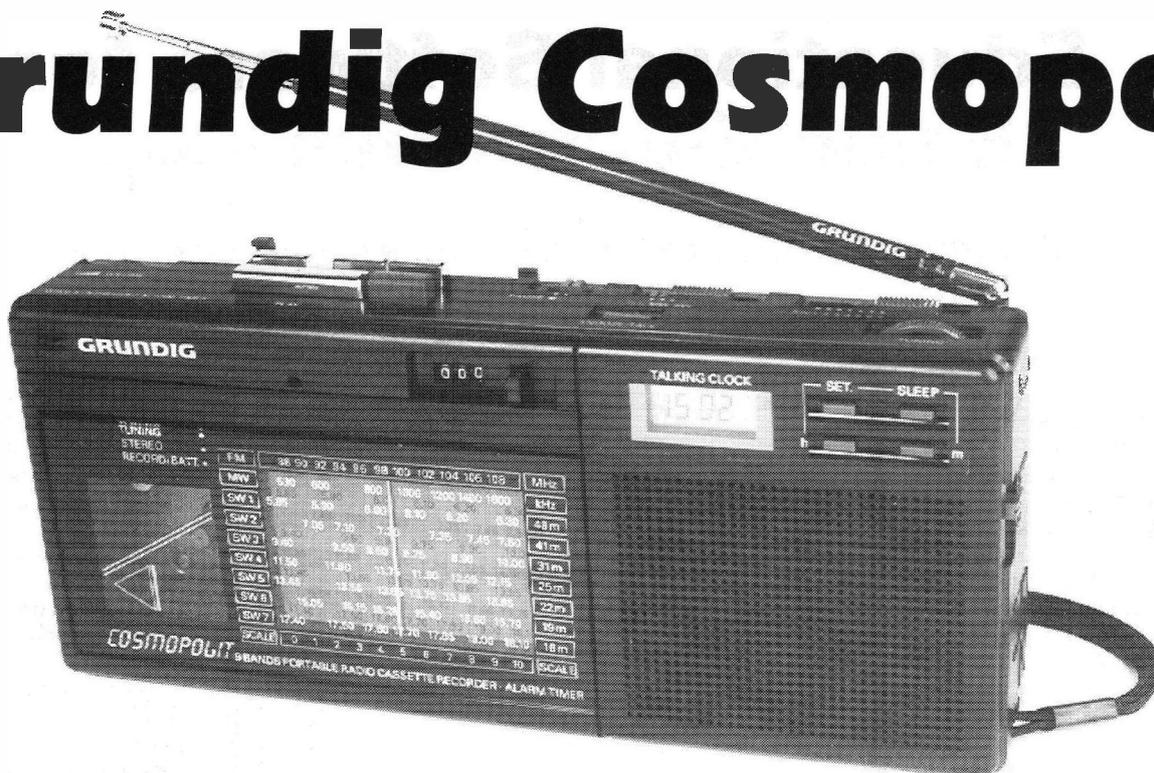
Amateur's Course 765 and the CGLI Electronics Servicing Course 224 Part II.

When the program is RUN, six options are listed on the screen:

- 1: Calculate the capacitance required to make a resonant tuned circuit, given the inductance and the resonant frequency.
- 2: Calculate the inductance required to make a resonant tuned circuit, given the capacitance on the resonant frequency.
- 3: Calculate the resonant frequency of a tuned circuit given the capacitance and the inductance.
- 4: Winding a single layer coil of required inductance.
- 5: Designing a resonant tuned circuit.
- 6: To EXIT the program.

To obtain the programs described in Part 6, send a 5.25in disk and mailer, together with two 1st Class stamps to the Editorial Offices. We will copy the relevant programs onto your disk and return it. Later on this year, a set of disks will be available containing all the programs described in this series. Please note that we are only able to provide programs for the BBC B computer. Alternatively, we can supply a copy of the printout if you send an s.a.e.

Grundig Cosmopolit



The Cosmopolit is a very compact receiver featuring coverage of the long, medium and v.h.f./f.m bands plus seven short wave broadcast bands. However, it stands out from many others by the inclusion of a stereo cassette recorder. This has been achieved without the size penalty normally associated with radio cassette recorders.

Clear Instructions

The instruction booklet followed the normal Grundig format with a separate section for each of the nine languages. In this case the English section was allotted ten pages. These instructions were very clearly written and used a fold-out diagram on the front page to help identify the controls.

One big bonus for the newcomer was the inclusion of a short wave reception guide. This 43-page booklet provided a very comprehensive introduction to short wave listening. The guide was multi-lingual and organised with two languages per page. Although this may sound complicated it was, in practice, easy to use. The scope of the guide was very wide and covered the whole process from studio through to the receiver. There was also a very thorough section

dealing with QSLing and the SINPO reporting code. For the constructors among you, there was even a full design (including coil winding data) for an antenna tuning unit.

Getting Going

Power for the Cosmopolit was supplied by three AA cells, mounted in a conventional battery compartment on the rear panel. It was also possible to run the set from an external power source by using the 5.5mm coaxial power socket. The external power requirement was 6V d.c. that can be supplied by the optional NR30-75 mains power unit.

Power for the clock and timer functions was supplied by a separate 3V lithium unit that had its own battery compartment.

For private listening, a standard 3.5mm stereo jack was provided along with a pair of miniature headphones. The headphones supplied were the type without a headband that are designed to rest just in the ear. Although these were very compact, other types could easily be used thanks to the standard jack and the 80mW audio output capability.

The cassette section could be used for live recordings via the built-in microphone.

Alternatively, an external microphone could be connected via a 3.5mm mono jack.

The antenna system employed an internal ferrite rod for medium wave reception and a 705mm telescopic antenna for all the other bands. As the Cosmopolit is intended as a traveller's radio there was no provision for the connection of an external antenna.

Neat Layout

Grundig have created a very neat layout with the Cosmopolit, especially when you consider that they have combined a nine-band radio with a cassette recorder and timer. Much of the space saving is achieved by incorporating the tuning dial in the door of the cassette compartment. This was so neatly done that, when I first saw the Cosmopolit, I didn't realise it had a cassette deck! Tuning was carried out with an edge knob on the top panel. This moved a pointer over the analogue dial. Band selection was by two slide switches on the top panel - one to select v.h.f, medium or short wave, the other to select one of the seven short wave bands. To help with the tuning operation, there were two

i.e.d.s mounted next to the tuning dial. One of these lit up when a stereo signal was received, whilst the other provided a simple tuning indicator. This showed maximum brightness when the tuning was spot-on.

Once a station had been tuned-in you could use the tone switch to select the normal, rather bright, sound or a bass-rich alternative. Although the internal speaker was a mono system, the Cosmopolit included a stereo decoder and amplifier. This meant that full stereo reception was possible when using headphones. You could also switch the stereo decoder between mono and stereo - very useful for weak signals.

The cassette section included all the standard functions and these were accessed by a set of push-buttons on the top panel. The versatility of the tape unit was fully exploited with options to record from radio, internal mic or external microphone. The tape input circuitry featured automatic level control so there were no adjustments required. To help with the later replay of recordings a mechanical tape counter was also included.

As if all this wasn't enough, the Cosmopolit included a clock and timer

Receiver

Grundig have built up a formidable reputation in quality portable receivers. The Cosmopolit reviewed here by Mike Richards is the latest release.

functions. The most obvious use of the timer is for an alarm call. This could be a conventional buzzer or you could awake to a tape or radio. The buzzer was, in fact, a repeating pair of beeps that started quietly and gradually increased in volume and then changed to pairs of four beeps. If not cancelled, the beeps stop, only to start again about four minutes later. This was very effective!

To help at the other end of the day the Cosmopolit had a snooze control that automatically switched the radio or tape off after an hour. The timer could also be used more constructively to record programmes when you're away.

In Use

As the Cosmopolit was clearly designed with the traveller in mind I took it with me during a weekend away from home. The first point that I found extremely helpful was the excellent carrying case. This was a soft case that was well proportioned, making the radio a very easy fit. The reason I mention this is that I often find that manufacturer supplied cases are a tight fit. This makes it difficult to get the unit in and out. The Grundig case was clearly designed just for protection as there was no attempt to make the controls accessible while the unit was in its case. There was even a small pouch on the outside to take the supplied stereo earphones.

When assessing a short wave radio one of the important elements is the ease of tuning. If this is too coarse it becomes very difficult to tune

on the busy short wave bands. Conversely, too fine and the dial movement is frustratingly slow. The dial system used in the Cosmopolit struck a good balance between these opposing demands.

Without an external antenna socket it was very difficult to make any meaningful sensitivity tests. But, the tests I did carry out indicated that the performance was well up to that expected for a receiver of this type. The selectivity also proved more than adequate for general purpose use. I thought the audio quality was rather bright, but this is only to be expected from the tiny 45mm speaker. A certain degree of compensation could be provided by using the tone switch. This helped remove the harsh edge and gave a useful bass boost.

I tried the cassette unit for both off air and microphone recordings. The results were very good indeed and the automatic level control coped well with live recordings. I even tried it out with some of my daughter's nursery rhymes!

The only point I have yet to mention is the talking clock. This was activated by a single button on the top panel. When pressed a synthesised (female) voice announced the current time. By pressing the button twice the alarm time was given. Most of the time this feature was little more than a gimmick, but at night it was extremely useful. It overcame all the problems of trying to read the time through bleary eyes. Although the voice was obviously synthesised, the intelligibility was perfectly adequate. ■



Specifications

Receiver

Frequency Range	87.5 - 108MHz 515 - 1630kHz 5.85 - 6.3MHz 7.05 - 7.5MHz 9.4 - 10.0MHz 11.5 - 12.2MHz 13.45 - 13.95MHz 15.05 - 15.7MHz 17.4 - 18.1MHz
-----------------	--

Output Power	400mW via internal speaker 2 x 80mW via headphone socket
--------------	---

Cassette

Tape Speed	4.76 cm/sec
Frequency Response	100Hz - 10kHz

Signal/noise	>40dB (weighted)
Wow & Flutter	±0.4%

Power Supply	3 x AA cells plus 3V lithium
---------------------	------------------------------

Summary

The Cosmopolit is a very well thought out, compact receiver that, I'm sure will have great appeal to the traveller. However, its comprehensive range of features make it equally at home in everyday use.

The Cosmopolit can be obtained from any Grundig dealer, but the review model was loaned by Grundig UK. The current retail price of the Cosmopolit as reviewed is £102.12.

propagation

by Ron Ham

Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

One of the prime objects of this column is to show what happens to the normal paths of terrestrial radio signals when the atmosphere is disturbed. I will start this time with the 28MHz beacon reports that I received, with usual thanks, from **Chris van den Berg** (The Hague), **Gordon Foote** (Abingdon), **Henry Hatfield** (Sevenoaks), **Fred Pallant G3RNM** (Storrington), **Ted Owen** (Maldon), **Ted Waring** (Bristol) and **Ern Warwick** (Plymouth). When I combined the logs to produce the monthly chart of their efforts, **Fig. 1**, I noticed wide gaps on March 13 and 25 and realised that something big had occurred to deaden the band on those days.

"Nothing but solar noise - no beacons - not even any QRM!", "No sigs!" and "nothing heard" were the comments about the 25th from Fred Pallant, Ted Owen and Ern Warwick respectively. "Big upset on the h.f. bands with some very strange propagation at times," wrote **John Woodcock** (Basingstoke). He added, "A big sunspot I believe, some parts have seen the northern lights". As letters arrived from other readers, it soon became obvious that the sun was to blame and that it had been active, and at times very active, almost throughout the month.

Solar

With his specialised equipment, **Patrick Moore** (Selsey) made drawings of the sunspot location that he observed at 1500 on March 13, **Fig. 2**, and 0905 on the 27th, **Fig. 3**. I think that those around central meridian in **Fig. 2**, were responsible for the event on the 13th and as the group in **Fig. 3**, would have been near c.m. on the 25th, it was the most likely cause of that almost total blackout.

Ron Livesey (Edinburgh), with his 2.5in refractor and 4in projection screen, identified 4 active areas on the sun's disc on days 1, 14 and 25; 5 on the 21st, 23rd and 30th; 6 on the 11th, 17th and 24th and 9 (**Fig. 4**) at 0815 on the 22nd. Ted Waring, with his projection apparatus counted 10 sunspots on the 1st, 47 on the 13th and 36 on the 23rd.

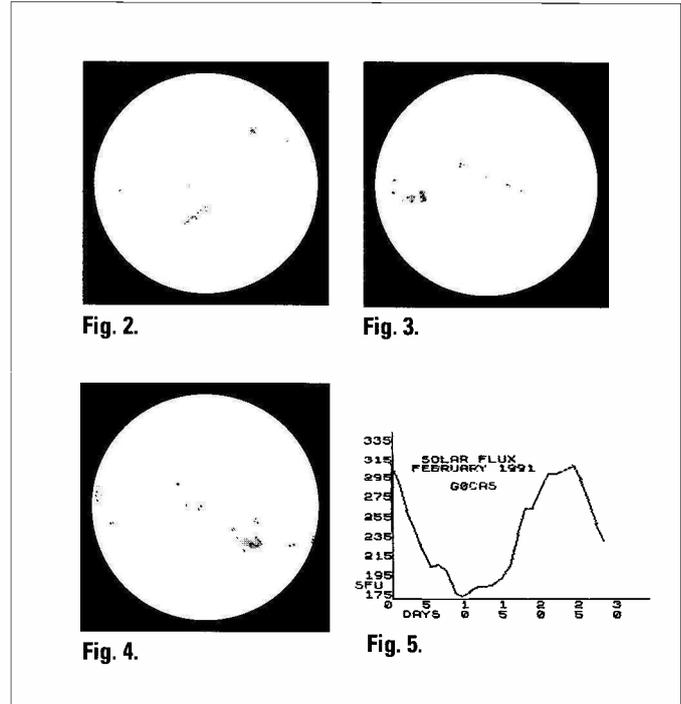
Henry Hatfield, using his spectrohelioscope found 1 sunspot group, 14 filaments, 7 quiescent prominences and a small flare within a very active area at 1430 on the 8th; 4grps, 14fs and 7qps at 0956 on the 18th; despite being hampered by cloud he saw that one group had a "huge spot and about 7 smaller ones" at 1115 on the 22nd; 2grps, 8fs, 9qps, a short life sub-flare and a medium flare at 1136 on the 25th; 4grps, 13fs and 5qps at 1200 on the 29th and 4grps, 12 filaments and 6qps at 1153 on the 30th. Henry also recored individual bursts of solar radio noise, at 136MHz, on the

4th, 7th, 12th, 16th, 17th, 20th, 25th, 26th and 29th.

A rise in the general noise level on the 20th developed into a continuous noise storm, which lasted until the 25th. His 1297MHz telescope recorded bursts on days 4, 12, 16, 24 and 25 and a higher than normal general noise level on the 20th. It is worth looking back at the daily solar flux graph for February, **Fig. 5**, kindly supplied by **Neil Clarke G0CAS** (Ferrybridge) who points out that month began with the daily highest, this cycle, of 314 units and, after a fall to 175 units on the 10th, it climbed back up to 311 units on the 24th and approached March at the 233 s.f.u. level.

Auroral

Ron Livesey is the auroral coordinator for the British Astronomical Association and he received 38 reports about the big aurora over night on March 24/25 and the lesser event on 25/26. The former event was seen from Kirkwall down to Chichester and Fergal in Eire to Cambridge. "Dave Gavine and Neil Bone reported the late evening aurora at Chichester to rise up to 45 degrees above the horizon while John Rogers at Cambridge reported coronal conditions to the zenith", wrote Ron. He added that, "all auroral colours were reported." For instance, John Rogers saw a 'starburst' of colour at 2127, Alex Murray (Staxigoe, near Wick) saw a 'waterfall'



effect of colour at about the same time while James Martin (Peel, IoM) reported yellow rays running westwards and eastwards through the auroral forms. Colin Steele (St. Andrews) noted 'bright coronal activity' at various times between 2133 and 0117 and Ron saw alternate green and

red rays forming a corona. "High red structures was a common feature", said Ron.

In addition to these two events, he received reports of 'active aurora' from North Dakota on the 4th, 5th, 8th, 9th, 19th, 23rd and 31st and 'rays' from the same area on the 13th and 17th.

The auroral effect on terrestrial radio signals was observed by Tony Hopwood between 2100 and 2200 on the 6th, 7th and 25th and by Doug Smillie on the 6th, 24th, 26th and 30th. **Ern Warwick** (Plymouth) heard weak auroral warnings coming from the German beacon DK0WCY on 10.144MHz around 1800 on the 6th, at 0930 and 2000+ on the 13th, from 0930-1100 and 1700-2000 on the 24th, 1600-1930 on the 25th and 1800-1910 on the 27th. Doug Smillie noted fade-outs on 7MHz on the 4th and 13th. Ern Warwick reported a fade-out on 28MHz at midday on the 12th, 'echos' on the signals from the USA beacon WA4DJS on the 11th and 23rd and fast-fading on the African beacons ZS5VHF and Z21ANB on the 16th. He also reports a high level of background noise on 28MHz on the 24th.

Tropospheric

The day to day variations in atmospheric pressure for the period February 26 to March 25 can be seen in my television column elsewhere in this issue. On the 14th, **George Garden**, staying in Laurencekirk, found Band II conditions "much better than normal", especially when he heard Radio Tay at good strength from the transmitter at Perth and a foreign station, "loud at times", above 104MHz.

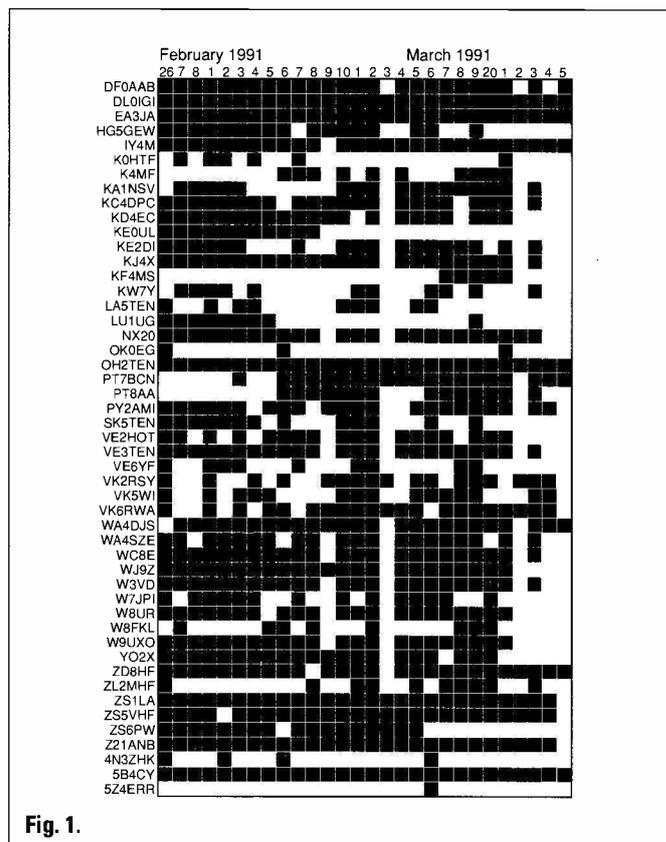
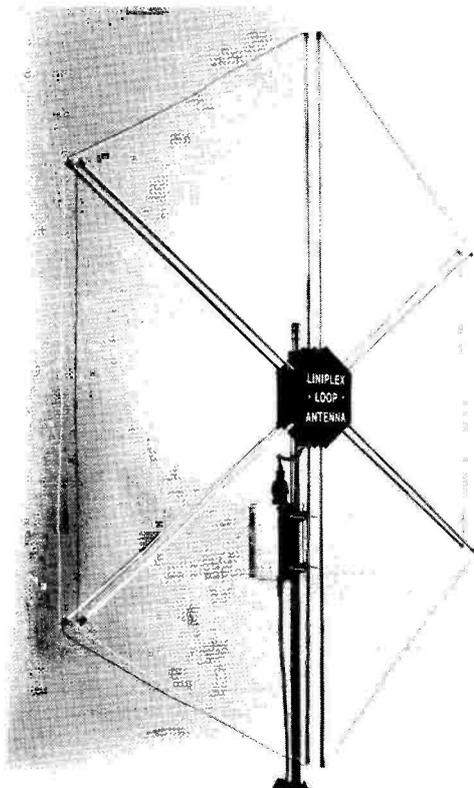


Fig. 1.

LINIPLEX

Loop Antenna



50kHz – 30MHz

- ★ Only 1 metre wide
- ★ Classic loop characteristics
- ★ Figure of eight directivity
- ★ Deep broadside nulls
- ★ Effective at ground level
- ★ Sensitive only to magnetic field
- ★ Rejects power line interference
- ★ Weatherproof and lightweight
- ★ Current driven push-pull amplifier
- ★ Patent pending

PHASE TRACK LTD., 16 Britten Road, Reading, RG2 0AU, England
Tel: 0734 752666



THE KITS WITH ALL THE BITS!

Guaranteed complete to the last nut!

COMPACT 80m CW QRP Tx/Rx

DTR3 Kit – £87.50 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

- ★ 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 milliwatting ★ Low insertion loss 0.2dB
- TUA1 Kit – complete with case & meter £18.00

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 fascia
- Kit complete with case – £69.50

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

Send SAE for brochure or call Alan G4DVW on 0602 382509

LAKE ELECTRONICS

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

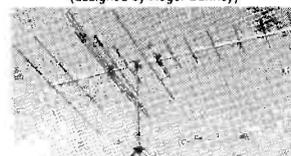


AERIAL TECHNIQUES

SPECIAL PRODUCTS FOR TV-DXING

New 7" Screen Multi-System B&W TV

Band 1/2/3 High Gain TV-DXing Aerial
(designed by Roger Bunney)



Full VHF/UHF coverage for System B/G/I/L, UK, Europe & France. 12v & Mains operation. £119.00 inclusive of Vat

Carriage & Insurance £5.50
AR300XL Aerial Rotor, Control Unit & additional Alignment Bearing.

Covers Band 1, (47-70MHz) at 4dB gain, Band 2 (75-100MHz) at 3.5dB gain, Band 3 (175-230MHz) at 9.5dB gain.

£59.95 inclusive of Vat.
Carriage & Insurance £6.50
VHF to UHF Upconverter, Model 3638



Vertical load carrying 45kg, takes 2" main mast, 1 1/2" stub mast. £44.95 inclusive of Vat. Additional Alignment Bearing £18.60 inclusive of Vat. P&P £3.50

Converts input band of 40-230MHz to equivalent bandwidth at UHF, ideal for TV-DXing with a domestic TV. £49.95 inclusive of Vat, post & packing

Aerial Techniques, the company that knows the TV-DXing hobby. We stock a large range of equipment for all types of aerial installation, all detailed in our 29 page Catalogue at 75p, why not send for your copy today. We also have available Multi-standard TV's and Video recorders for all systems, PAL, SECAM & NTSC. Most makes of Satellite equipment carried, together with decoders for Canal Plus, RAI UNO, RAI DUE, Filmnet & RTL-V. PAL/D2-MAC Satellite receivers now in stock, also SECAM to Pal Transcoders (SAE details).



ACCESS, VISA & AMERICAN EXPRESS
Mail & Telephone orders welcome
(24hr service)

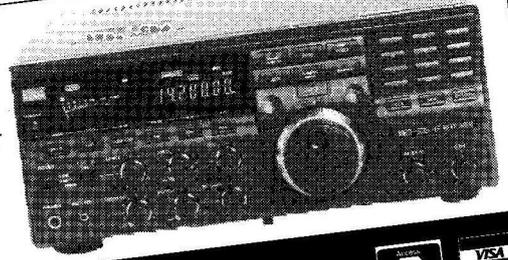


11, KENT ROAD, PARKSTONE, POOLE, DORSET BH12 2EH
Tel: 0202 738232 Fax: 0202 716951

A.R.E. COMMUNICATIONS

Opening Hours:
Monday-Friday 8.30-6.00pm
Saturday 9.00-3.00pm
NEW Reserved car parking at rear of
showroom.
ALL EASY TERMS ARE BASED ON AN
APR OF 34.4%

ONCE AGAIN A.R.E. HAVE BEEN ONE OF THE FIRST TO OFFER DELIVERY OF THIS SUPERB NEW RECEIVER. TO DESCRIBE ALL OF THE FEATURES AND SPECIFICATION WOULD NEED ALL OF THIS PAGE - BUT JUST ONE POINT WORTH NOTING - WE ARE £120 CHEAPER THAN THE LIST PRICE - SO CALL US NOW AND RESERVE YOURS FROM THE NEXT SHIPMENT.



6 Royal Parade, Hangar Lane, Ealing, London W5A 1ET, England. Tel: 081-997 4476. Fax: 081-991 2565

SPECIAL NOTICE TO READERS

Although the Proprietors and staff of *Short Wave Magazine* take all reasonable precautions to protect the interests of readers by ensuring as far as practicable that advertisements in *Short Wave Magazine* are bona fide, 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 late delivery, or for faults in manufacture. Legal remedies are available in respect of these circumstances, and readers who have complaints should address them to the advertiser or should consult a local Trading Standards Office, a Citizen's Advice Bureau, or their own solicitor.

VISA

Loutronics



Micro House, 11 Hercules Road, Hillingdon, Uxbridge, Middlesex UB10 9LS
Tel: (0895) 55399 (Sales) (0895) 72307 (Enquiries)

SUMMER SPECIALS

ITEM 1 Panasonic 360K Drive £39.95	ITEM 8 20MB Kyocera 3.5" MFM Hard Drive £99.00	ITEM 16 AT IDE controller Inc. FDC/RS232/LPT £45.00
ITEM 2 Teac 1.2 Meg Drive £69.95	ITEM 9 Kyocera 40 Meg IDE AT Hard Drive £195.00	ITEM 17 XT IDE Controller £49.95
ITEM 3 Sony 1.44/720 3.5" Drive £59.95	ITEM 10 XT Full Size Case (Excluding P.S.U.) £39.95	ITEM 18 SVGA 14" Colour Monitor 1024 x 768 Ex-Demo £195.00
ITEM 4 Sony 720K 3.5" Drive £59.95	ITEM 11 Baby XT/AT Case (Including 180 watt P.S.U.) £99.99	ITEM 19 Optima SVGA card 16 bit 1024 x 768 x 16 cols, 800 x 600 x 256 cols £138.00
ITEM 5 20 Meg 3.5" MFM Hard Drive £99.00	ITEM 12 AT/XT Enhanced Keyboard 'Clicky Keys' £49.95	ITEM 20 Mono TTL 14" Monitor Ex-Demo £59.95
ITEM 6 5 1/4" H/Height Drive Case External Connectors £8.95	ITEM 13 & 14 Ex-Equip. P.S.U. XT 135 watt £39.95 AT 195 watt £49.95 3 Months Warranty	ITEM 21 14" Mono VGA Monitor 640 x 480 res. Ex-Demo £69.95
ITEM 7 Astec P.S.U. (Back in Stock) +12V @ 1.5A, 12V @ 0.4A, +5V @ 3.75A £9.95	ITEM 15 AT IDE Controller Inc FDC £34.00	ITEM 22 PC Serial Mouse (3 button) £29.95

NOTE: All Drives are
BARE UNITS

ALL EX-DEMO MONITORS 3 MONTHS WARRANTY.
Prices do not include carriage, but do include VAT at 17.5%
Please telephone before placing your order, stock changing.

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 AOR 2002, REGENCY MX8000, ICOM ICR7000, YAESU FRG 9600. Complete with full software for any computer. **£153.25**

WIDEBAND ANTENNAS

Premium quality British antennas & accessories from REVCO. "REVCONC" VHF/UHF Discone (guaranteed free from exaggerated advertising claims!) SO239 connector: £37.75 N-type 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: 108-380MHz: **£80.72** Top quality cable and connectors also available.

WIDEBAND PREAMPS

PA3 series 20MHz - 1GHz; min. 13dB gain fitted with HPF to reduce breakthrough problems. PA3 Masthead with special mains PSU, PL/SO connectors: **£51.04** PA3/N, as above with N connectors: **£54.61** "Back-of-set" models: PA31/B (BNC connectors): **£36.27** PA31S (SO239): **£36.27** PA31/N (N conns): **£39.83** Mains adaptors for "back-of-set" models: **£8.68**

MOBILE ANTENNAS

REVCO super Mag-mount + 5/8 for 2m: **£35.71** Mag-mount +4.5dB 70cm: **£35.71** Body-mount 1/2" or 3/8" hole (state which) + 5/8 for 2m: **£20.38** 3/8" hole body mount + 70cm collinear (4.5dB): **£20.38** 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: **£35.71** All with 4m feeder. Plugs on request. REVCO unbeatable glass mounts, with tuned matching units for peak efficiency: 2m or 70cm: standard model **£40.82** deluxe model: **£52.06**

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

ALL PRICES INCLUDE UK CARRIAGE AND VAT.



GAREX ELECTRONICS

STATION YARD, SOUTH BRENT, SOUTH DEVON TQ10 9AL
Phone: (0364) 72770 Fax: (0364) 72007

VISA

ssb utility listening

Peter Rouse GU1DKD
Barcroft, Rohais de Bas, St Andrews, Guernsey, C.I.

This month I am looking at what may well be the world's smallest, full coverage, s.s.b. receiver, more scanners with h.f. and s.s.b. and the quirky British marine m.f. band channelising system.

First that receiver. Whilst at the North London Show I thought someone was pulling my leg when they said that ARE Communications had managed to fit a b.f.o. board inside the tiny Icom IC-R1 scanner. However, it's true! The IC-R1 covers 100kHz to 1300MHz and with some miraculous surgery ARE have fitted the board. It is selected with a special sequence of keypresses using the existing buttons. The modified scanner will only be available from them and will be sold at the normal retail price. ARE also fit a b.f.o. as standard to every Icom IC-R100 mobile/base scanner they sell.

Still with new developments, yet more scanners now have b.f.o. available as an extra. RGW Electronics are supplying a b.f.o. board for the AR1000 and HP100E scanners which both tune down into the h.f. bands. The new AR2500, which I mentioned last month, is now available from Sigma Euro-Comm of Birmingham. This h.f. receiver-cum-v.h.f./u.h.f. scanner already has a b.f.o. fitted.

However, I must urge some caution about the use of these receivers on the h.f. bands. It must be remembered that these scanners are essentially v.h.f./u.h.f. receivers with the h.f. side added as a bonus. Experience so far has shown that these receivers suffer from one or more of three drawbacks: First, they usually have difficulty coping with strong signals and are prone to overload, especially when connected to a long wire antenna. Secondly, their i.f. filters are not really suited to narrowband s.s.b. reception and finally their small size can make them difficult to use for casual tuning around the bands - there really is no substitute for a nice big tuning knob. I will balance those comments by saying that an antenna tuning unit may reduce the overload effects. The bands used for utility stations tend not to be as crowded as the amateur bands, so the filter bandwidth may not be too much of a problem.

UK MF Marine Channels

Now a look at the UK m.f. marine alphabetical channelising system. The details are rarely published and often cause confusion, even to experienced listeners.

Most marine bands are channelised to an internationally agreed standard and the system always relies on an even channel spacing and common relationship between the frequencies used by the shore and ship stations. However, in

Britain, on the band between 1.6 and 3.0MHz there is a system in use where spacings and pairings are purely random. It can, therefore, be somewhat confusing when you hear a coastal station telling a ship to go to channel 'India', or something similar. It should also be noted that where a particular channel letter is shown against a coastal station then that station is the only one that uses that channel. In other words, these are not common channels for use in any area around our coasts.

North Geomagnetic Pole Expedition

By the time you read this a British team should be ski-ing its way on an expedition to the North Geomagnetic Pole. The three-man team of Ray Shaw, David Hempleman-Adams and Peter Praine will be carrying radio equipment for their three to four week journey. It will be interesting to see if any readers can discover the frequencies they use. I have never seen any published frequencies for operations up there in

the Arctic regions.

In contrast, a number of frequencies have been logged on expeditions to Antarctica, with McMurdo Centre and Christchurch in New Zealand being active at times. Flight support aircraft have also worked Punta Arenas in Chile and the US navy bases in Antarctica are known to work regularly on 8.997MHz. Frequencies to check:

Christchurch on 8.997 & 13.251MHz
McMurdo Centre on 5.726, 6.835, 8.997 & 11.255MHz.

Punta Arenas on 4.669, 6.649 & 10.024MHz.

Your Letters

I have come to the conclusion that most of the readers of this column are armchair spies! My mailbag consists mostly of military listings. **Graham T.** reports that several new USAF frequencies appeared during the Gulf crisis as the existing channels became overcrowded. Graham says that Frankfurt started using 12.175, 17.480 and 18.590MHz and Torrejon (Spain) were working 6.716, 6.588, 7.713 and 8.496MHz. Some aircrews were being told to listen on 12.175MHz where a Volmet had been established for Frankfurt and Ramstein although Graham says he was never able to hear the station himself. Graham also reports that Ramstein started using 7.100MHz for communications with crews and of course this is an amateur allocation. That of course matters little to the military who often use frequencies in all sorts of bands, including the broadcast ones. Graham uses a Sony ICF-2001D with G5RV and Howes a.t.u. and his interest is mostly in aviation. His choice of receiver is common amongst air band enthusiasts as the set also covers the v.h.f. air band.

Mr E. Walden-Vincent of Great Yarmouth queries the frequencies given in the April issue for SAR operations at Beccles and rightly points out that the helicopter station is actually 25km away from Great Yarmouth. The frequencies shown were in fact common for Beccles and the heliport at Great Yarmouth itself (North Denes). Meanwhile, on March 20, Mr M. Woodington, who lives near Bath, heard on 2.182MHz a search for a man lost overboard from the weather ship Cumulus. Mallen Head co-ordinated the search and Mr Woodington would like to know what the outcome was as he broke-off from monitoring. Anybody know?

Keep those logs and letters coming and let me know your first name as well as your surname - friendly and informal - when you write.

UK Marine MF Channelised System

Coast station	Channel	Shore (MHz)	Ship (MHz)
Shetland (controlled by Wick)	Alpha	2.7510	2.0060
	Bravo	2.8406	2.2770
	Charlie	3.5380	3.3350
	Delta		3.3280
Wick	Echo	2.7050	2.5240
	Foxtrot	1.8270	2.5480
	Golf	2.6040	2.0130
	Hotel	2.6250	2.3810
Stonehaven	India	1.8560	2.5550
	Juliet	1.7150	2.5520
	Kilo	1.9460	2.5660
	Lima	2.7790	2.1460
	Mike	3.6170	3.2490
Cullercoats	November	1.8380	2.5270
	Oscar	2.8280	1.9530
	Papa	3.7500	2.5590
Humber	Quebec	1.9250	2.5690
	Romeo	2.6840	2.1110
	Sierra	2.8100	2.5620
North Foreland	Tango	2.6980	2.0160
Niton	Uniform	2.6280	2.0090
Land's End	Whisky	2.7820	2.0020
	X-Ray	3.6100	2.1200
Portpatrick	Yankee	1.8830	2.1040
Hebrides	Zulu	1.8660	2.5340

Note that channel 'Victor' is no longer assigned.

From 1 July 1991 there is to be a massive shake-up in the international marine bands on h.f. Many operators are already puzzled by the changes and there is likely to be absolute chaos until everyone gets used to the new system. I will go into more detail next month with examples of the new channelising.

Abbreviations

b.f.o.	beat frequency oscillator
h.f.	high frequency
i.f.	intermediate frequency
kHz	kilohertz
km	kilometres
m.f.	medium frequency
MHz	megahertz
s.s.b.	single sideband
u.h.f.	ultra high frequency
v.h.f.	very high frequency

AUSTRALIA
Greg Baker

June means the beginning of winter in this part of the world, daylight saving time is just a memory and the long evenings mean plenty of time for tuning around.

ABC SW Transmitters

I said last time that there was no chance of UK listeners hearing the Australian Broadcasting Corporation (ABC) s.w. transmissions out of the Northern Territory. I stand corrected! **J J Parry G4AKX** has written telling me that he and others have heard these transmissions at around 2.3MHz. He also queries my use of the terminology "forward scatter" for an antenna system designed for local broadcast reception only. I provided that information after talking to a technical type in ABC Brisbane. Anyway, I have chased it up with the ABC Manager in Alice Springs, Rae Allen. He tells me that h.f. shower propagation would have been a better description. He says that the signal is directed vertically upwards and returns from the ionosphere in a doughnut shaped area of radius about 250km around the transmitters. As for reception reports, he says that though DX propagation is not intended, they receive reports from many countries including USA, Canada, Belgium, the Netherlands, and of course, the UK.

Television Frequency Changes

I reported last that I'd be losing local v.h.f. TV signals as Channels 4 (94-101MHz) and 5A (137-144MHz) closed down. Well, it has finally happened and I thought I'd avoid the outlay on a new u.h.f. set, antenna and masthead amplifier by going for a bit of altitude with the existing antenna, rotating it through 90° and tipping it over to vertical polarisation to drag in the two Canberra v.h.f. services on Channels 3 (85-92MHz) and 7 (181-188MHz). It worked, just, but only for ABC transmissions on Channel 3 and even those produced snow and about a million ghosts. It seems that I was really pushing my

luck trying for 180MHz on an antenna designed for Channels 4 (94-101MHz) and 5A (137-144MHz).

Even so, it's only a temporary measure as Stage 2 of the programme to move TV stations is underway. By 1993 a further 33 TV stations will be moved from this band, including ABC Channel 3 in Canberra. Sometimes I think there is someone out there plotting to make me spend money.

Grand Prix

Adelaide again hosted the Formula One Grand Prix at the end of 1990. Communications of course were an essential component. A special event, f.m. radio broadcast station was set up for the days of the race and frequencies were allocated for two way communications between vehicles, pit crews, teams and the control points.

The special event f.m. station was set up under legislative provisions for these sorts of limited duration events. As is usual in these circumstances the f.m. frequency was allocated in the segment 87.5 - 88MHz tacked onto the bottom end of the f.m. broadcast band. Power was a few watts only to allow reception within the area of the race itself.

Teams were allocated channels from the normal Land Mobile Radio Service frequencies in the band 403-520MHz. Though there are few spare channels in this region, the fact that the event took place over a weekend meant that some channel sharing with normal users was possible.

Similar arrangements were made at the so-called Gold Coast Grand Prix held earlier this year and at the Eastern Creek Motor Cycle Grand Prix in early April. This latter event included too a special event television station broadcasting race action throughout the area of the course.

Electromagnetic Interference

The issues of electromagnetic interference and electromagnetic compatibility are reaching a head here. The DoTC has been working on these issues for some time and had intended issuing a discussion paper for public edification and comment. Time has become a problem though. With the European Community standards on e.m.i. and e.m.c. due to come into effect in January 1992, it has become critical that Australian exporters of electronic equipment gear-up to compliance. There is a bigger worry though. With the European market closed to manufacturers of non-complying equipment, DoTC is worried that Australia may become a dumping ground for this equipment.

The upshot is that DoTC

feels there is no time for the wider public discussion of the issues and will issue a draft set of proposed mandatory standards by June at the latest. These mandatory standards will then be promulgated as statutory rules by late September - early October 1991 with an effective date of 1st January 1992 to coincide with that of the EEC.

WARC-92

Given the importance of radio communications to Australia, DoTC is making preparations for WARC-92 to be held in Spain in February next year. Recently DoTC Communications Policy and Planning Division released a paper which examines the key issues to be raised at WARC-92 and how Australian delegates will respond.

Among other things, the paper examines the issues of the 1-3GHz band, high definition television in the 12.7-23GHz band, space use of the band above 20GHz and spectrum below 1GHz for low orbiting satellites.

Of particular interest to those of us who spend time wandering across the h.f. band, are the additional h.f. spectrum allocations proposed by the WARC General in 1979. Because of the size of the country, many of Australia's organisations and outback people rely on the h.f. bands for long distance communication.

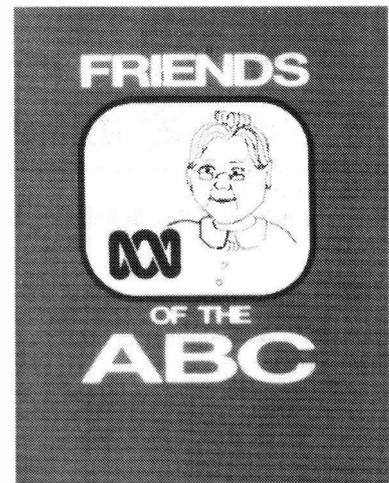
Any WARC permitted increase in the size of the h.f. spectrum allocated to broadcasting - which seems likely even with more efficient use and planning of the existing allocation - will have a major impact.

Radio Australia

New schedules to Europe from Radio Australia were published in May. For free copies write to Radio Australia, GPO Box 428G, Melbourne, Victoria 3001, Australia.

Aussat

The sale of Aussat has been in the news again here. Kim Beazley the Minister for Transport and Communications is keen to see pay television on Aussat to make it a more attractive proposition for commercial buyers. He's hit a snag though. Sports loving members of Federal cabinet are worried that sports coverage now freely available on ABC, Special Broadcasting Services (SBS) and commercial television could go to pay television channels. Cabinet time was taken up discussing the issue particularly in light of the fact that test cricket can only be seen on Sky TV in the UK. Mr Beazley has agreed to look afresh at the proposition but it looks like pay television won't be up and running here at least before the end of 1992.



Australian Radio DX Clubs

Southern Cross DX Club, GPO Box 1487, Adelaide, South Australia 5001, Australia publishes broadcast, utility, medium wave and amateur information on a monthly basis for members. Enquiries are welcome.

Australian Radio DX Club (ARDXC) also welcomes enquiries to Membership Secretary Les Harvey at 258 Dandenong Drive, Rowville, Victoria 3178, Australia. Enquirers need to enclose \$A2 for local replies which I would translate to about 5 IRCs for overseas replies. ARDXC also publishes a monthly newsletter running to about 28 A4 pages. Columns include 'Shortwave Trail', 'Shortwave Station News', 'Shortwave DX Report' and 'DX-Press'.

I will include the contact details for the third club, DX Australia, in News From Down Under in September 1991.

Receiver problems

I've owned my Kenwood R-2000 for about seven years now. It's been a wonderful companion but a few months ago the tuning circuit developed two annoying little problems. One is that it will only tune upwards whichever way I turn the tuning knob. The other is that it is rather temperamental about whether it changes frequency or not. Fortunately when it does oblige with a frequency change it moves roughly in the correct order of magnitude depending on whether I have selected slow, medium or fast as the tuning speed. The band up/down works too which is just as well. When after sensitive knob twisting the frequency overshoots my target, I can at least go back and try again.

Anyway, it's driving me crazy and though I sometimes feel like taking it with a hammer, I'm about to unscrew the cabinet, drag out a few tools and check out the service manual. As a result, next time I hope to have a few s.w. frequencies for SWM readers to try listening to.

News and comments are welcome. In particular I am interested in any s.w.i. information on Australian stations heard by SWM readers so that I can chase up more details and interesting snippets from this end. My address is PO Box 208, Braidwood, NSW 2622, Australia. For personal replies please send 2 IRCs.



BEAT BILLY BURGLAR

One small unit about the size of a 2m mobile transceiver plugs into any wall socket and protects your whole home • Use it when you're in too • Allows you freedom of movement, watch TV etc • No installation • No extra sensors • No wiring • Truly portable • Adjustable sensitivity • Not triggered by pets/draughts • 12 months warranty • Optional 10 year warranty • Optional exterior sounder/strobe light • Has to be seen to be believed! **ONLY £191.50**

ALSO

Very impressive new 'Personal Attack Alarm' • Loudest in the U.K. • Smaller than a cigarette pack • Rip cord • Pocket clip • Even protects your handbag, luggage etc. • Doubles as a door-alarm • Very impressive • Definitely the best we've seen. **ONLY £22.99**

AND

New 180° through the door viewer • Check callers from head to foot (not just head and shoulders) before opening door • Looks normal but very much more revealing. **ONLY £21.99**

OUR GUARANTEE

You must be completely satisfied or we will refund you the full purchase price - by cheque, by return of post, anytime up to fourteen days from when you receive it. Could anything be fairer than that?

Add £2 per order for post, packing and insurance

Please allow 21 days for delivery, or SAE for details to

R C HONE LTD (Room 4)

PO Box 98, NORTHWICH, Cheshire, CW9 5SZ

SIGMA EURO-COMM

Importers of Communication Equipment
Manufacturers of Antenna's & Accessories
AMATEUR - SCANNERS - ANTENNAE - CB

★ NEW NEW NEW ★

AR2500



- ▶ 2016 Channels. 1MHz to 1500 MHz.
- ▶ AM, FM, WFM & BFO for SSB, CW.
- ▶ 64 Scan Banks.
- ▶ 16 Search Banks.
- ▶ RS232 Port Built in.
- ▶ Continuous Coverage



AR1000

Now available from
.5MHz-600MHz.
805-1300MHz.
1000 memory channels
all mode operation.

£249.00
+ p & p



BLACK JAGUAR

BJ200 MKIII

26-30/50-88/115-178
200-280/360-520 MHz

£189.99
+ p & p

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.

£59.95 + p & p



SIGMA SE700

70-700 MHz Receive
Transmit 70-500 MHz
Max Power on transmit
500 watts impedance
50 ohms.

£24.99 + p & p

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

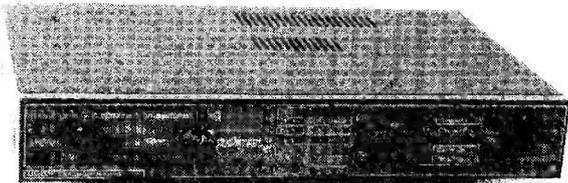
TRADE ENQUIRIES WELCOME

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

Receiving Weather Satellite Images?

With six systems to choose from, we have the system to run on your Amiga, Archimedes, BBC or PC compatible computer.



AMIGASAT 2.0 The system for the Amiga computer. This system has many, many features to delight the Amiga owner, too many to list but there is a demo disk available for just £5 inc.

DIGISAT for PC owners this package offers some superb features including unlimited animation, print-dump, 800 x 600 VGA images, auto-downloading of images, temperature readout, and lots more.

GRAPHSTORE a 1/2-Meg video framestore/graphics processor unit for use with the BBC/Master micros. With the accompanying software package it enables BBC owners to enjoy the highest resolution images (512 x 512 x 128 greyscales). Includes zoom, scroll, print-dump, and animation.

Which ever software/interface option you choose, they are all compatible with our standard range of receiving hardware - for full details, and prices write or call for our 1991 catalogue.

martelec communication systems

8 Kimber's Lane, Farnham, Surrey GU9 9PT

Tel/Fax: (0252) 737620

SALES (DEVON)

Communications Specialist
STIDSON
SOUTH BRENT
DEVON TQ10 9JT



SCANNERS - If we don't have it, we'll get it.
ACCESSORIES - Aerials, mounts etc. In fact everything you will ever need.
MAIL ORDER - Use your credit card for same day despatch.
WORKSHOP - Facilities on premises.
CB RADIOS - Most brands in stock.
PART EXCHANGE - Try us.
WE MAIL TO YOU AT OUR COST.

Contact Richard on Tel: (0364)
73891 Fax: (0364) 72907

Open 7 days a week. Mon-Weds till 9pm.
Sundays 2pm - 5pm.

All personal callers please telephone first to avoid disappointment.

VISA

MASTERCARD

BLACK JAGUAR SONY ALINCO REVCO DIAMOND

BEARCAT YUPITERU AOR FAIRMAT NEVADA

LEADER
FOR
THE
SHORT
WAVE
REVOLUTION



AX700E

AT LAST - a scanner from Standard! For longer than I care to remember people have been asking why Standard do not make a scanner - well now they do. I now have "English speaking" leaflets available which an s.a.e. will bring you post haste. You can see from the photograph that the AX700E has maintained Standard's reputation for innovation. The strange looking liquid crystal display not only shows the frequency, mode and so on, it is also a panadapter! For those of you who are new to scanning I had better explain what that is. The vertical line on the left hand side of the display is to show signal strength and the horizontal line along the bottom is the frequency range. This range can be set to 100, 250 or 1000kHz. The frequency displayed at the top is the frequency at the centre of the line. In other words, if the displayed frequency is 145.50MHz and the width of the display is set to 1000kHz, then the left hand side would be 145.00MHz and the right hand side would be 146.00MHz. Now comes the magic. Every time a signal comes up within that frequency range (i.e. 145-146MHz) it will show up as a spike on the display. The height will show the signal strength and the position will indicate the frequency. By simply turning the tuning knob a cursor can be slid along to line up with the new signal and its exact frequency will be displayed at the top of the screen! To receive the new signal, just press a button and that signal becomes the one that is heard and the display will shift to place it in the middle of the screen. The width of the spikes is governed by the setting of the step size (10, 12.5, 20 or 25kHz) so you can see that it is possible to monitor the activity on up to 100 channels simultaneously. If, for instance, you are looking for a specific signal but you only know the band that it is in and not the spot frequency, just set up the appropriate band edges and then sit back and watch the display. Any signals that then appear can be instantly spotted and tuned to in seconds. That's what a panadapter can do for you!

As for the rest of the scanner, it covers 50 to 904.995MHz with AM and FM (wide & narrow), it is powered by 13.8V dc and it measures just 180mm Wx180mm Dx75mm D. Come into the shop and see for yourself. You can even play with our new active antenna which should be ideal for use with this set. Norman G4THJ

£575 inc P.S.U.

AR-2002



Without doubt the world's best known VHF/UHF monitor receiver. In use at many Government listening stations as well as thousands of homes, the AR-2002 covers 25 to 550 MHz and 800 to 1300 MHz without any gaps in the tuning range. With all mode reception, and extremely high performance, the AR-2002 satisfies every listening need, and it is equally at home as a base station, portable or mobile receiver. Full VHF and UHF airband coverage makes this the top choice for the dedicated listener.

£487.00

This is a small selection of our range of scanners

AR-1000 Series II

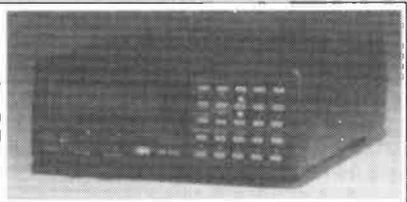


The latest from AOR. A handheld version of the AR-2002, offering coverage from 500kHz to 600MHz, 1000 memory channels and all mode operation. All the improvements at no extra cost.

£254.41

AR-950

At last a base station/mobile version of the popular AR-900UK, with all the features and better performance. Frequency ranges 60-88, 108-136, 137-174, 220-280, 300-380, 406-470, and 830-950 MHz. AM or FM available on any frequency. 100 memories. Everything in fact that you need in a scanner, and from the best maker in the world.



£249.00

400 EDGWARE ROAD, LONDON W2
071-723 5521 Tlx 298765

OPENING TIMES: 9.30am-5.30pm Mon-Fri. 10am-4.30pm Sat.

Normally 24hr despatch but please allow 7 days for delivery



EXTENDED RANGE OF RECEIVERS AVAILABLE

AMDAT IS NOW STOCKING THE COMPLETE RANGE OF AOR SCANNERS AND RECEIVERS. COME AND TRY THEM OUT AT OUR BRISTOL SHOP. THE LATEST MTV 7000 SCANNER IS ALSO NOW AVAILABLE. SEND A LARGE SAE FOR DETAILS OF ALL OUR PRODUCTS.

RECEIVERS AND SCANNERS:

- IC R1 POCKET RECEIVER/SCANNER
- IC R100 MOBILE WIDEBAND RECEIVER
- AOR 1000 HANDHELD SCANNER

- IC 72 GENERAL COVERAGE RECEIVER
- IC 7000 MULTIMODE RECEIVER
- HF 225 GENERAL COVERAGE RECEIVER

A wide range of mobile and base station antennas, ATUs, power supplies and other accessories available from stock. Full range of Sky Scan products now available.

PACKET TNCs AND DATA TERMINAL UNITS

TINY 2 VHF PACKET.....£ 129	TNC320 VHF & HF PACKET.....£ 179
PK88 VHF/HF PACKET.....£ 139	KPC2 VHF/HF PACKET.....£ 169
KPC4 DUAL VHF PACKET.....£ 247	KAM MULTIMODE.....£ 291
DRSI PACKET PC CARD.....from £139.00	AMT3 AMTOR/RTTY.....£ 179

A large selection of books and magazines always in stock.

JUNGHANS RUGBY MSF CLOCKS

WE STOCK A WIDE RANGE OF JUNGHANS MSF CLOCKS INCLUDING

BLACK OR WHITE DIGITAL WITH ALARM.....£43.50	RADIO CONTROLLED WRIST WATCH.....from £149.00
ANALOGUE MANTEL CLOCK.....£65.00	WALL CLOCKS.....from £69

Just some of our many products are listed above. Send an SAE to receive our latest catalogue.

AMDAT

4 NORTHVILLE ROAD, NORTHVILLE
BRISTOL BS7 0RG (0272) 699352

CREDIT AVAILABLE

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

With the attention of the world's media now on the plight of the Kurdish refugees on Iraq's borders, there have been considerably fewer satellite news feeds directly from mobile SNG units in the field. For a time, several news units were seen live-linking out of Tirana, Albania following the outbreak of civil unrest, notably an EBU feed on ECS II F2 10°E 11.18GHz vertical in early March. Later in the month was the liner fire (11th) disaster and a few days later the tanker fire/oil slick carried on live feeds by the RAI outside broadcast units over 10°E again. Identifications from 'RAI ROMA' and 'ITA - DB - 10' were seen during this coverage at 11.12GHz on 10°E and over the 'VisEurope' news circuits on 13°E (Eutelsat II F1 12.521GHz hor). Live programming on March 11 from the liner fire were on 10°E 11.05GHz during the day and evening.

For those despairing at the inclined orbital antics of ECS I F1, which has been carrying EBU news exchanges - viewable if the bird is on-station, which due to the wide orbital swings is infrequent - despair no more. The ECS I F5 has arrived at its new slot - 21.5°E - and from March 15 has taken over from the itinerant I F1. Checking, I found that video feeds were present though with the usual EBU sound in syncs (you hear no sound and the picture jumps about in relation to the transmitted sound, the digital information of which is carried in line syncs).

Grand Prix

Bob French GOBMF (Rugby), both a motoring and satellite enthusiast, found with great excitement on March 8/9 the VisEurope transponder on 13°E Telecom band carrying the live Formula 1 GP practice sessions from Arizona. Bob was keeping his fingers crossed for the Brazilian GP, I bet they use the PanAmSat 45°W bird for signal transfer, now, of course, known as PAS 1. Bob has also found the Gorizont 14°W satellite with the single Luch transponder at 11.52GHz - which at several times daily passes the VISNEWS Moscow - London news feeds.

Jean-Louis Dubler from Montreux, Switzerland says at year's end the French Telecom IC will be replaced with the new Telecom II craft which will carry 11 transponders of higher power than the present series.

I spent a pleasant day at the 1991 Cable and Satellite show at Olympia early April looking with envy at equipment it would be nice to own if I had the bank balance to match! I even found an imported real satellite DXers receiver and I hope to detail more on this later since it sells relatively cheaply. One amusing sticker was seen in profusion, being issued free of charge by

Swift Publications, 17 Pittsfield, Cricklade, Swindon, Wilts SN6 6AN. Intended for window fixing, it shouted 'Satellite Installers do it with their Parabolics!', ring (0793) 750620 to find how to get one. If you write, I suggest you include a couple of 1st class stamps.

The main news this month was that following the successful (if delayed) launch of Astra 1B, broadcast signals commenced Monday April 15 with 'The Movie Channel', Tele 5, Premiere and ARD-1, the former two scrambled, followed with a further two Scandinavian Scansat channels, again scrambled and in D2MAC. Sky Sport followed some days later and 2wo promotional channels have also been running with Astra videos, roller caption detailing transponders etc.

In an effort to increase viewing figures and move stock, Amstrad dropped the retail price of their 48 channel receiver packages to £199, remarkable value considering the technology being purchased.

April 15 also saw the launch of the so-called BBC World TV Service, a compilation of BBC1, BBC2 plus a different news setup. This spelt an end for the BBC TV Europe and Enterprise Channel though viewers to the former service merely received the new programme over the same downlink. The service will expand onto other satellites with a view to a world coverage in the future though with a greater news content.

The Galavision downlink on Eutelsat II F1 is being dropped due to cost. The channel has been hit hard with the new Spanish independent channels including Canal Plus Espagne, and Gala have decided to continue feeding her European audience from just PAS-1 at 45 West (which it currently uses to feed London Teletop for the Eutelsat uplink). The 13°E service will discontinue end September and Gala are busy promoting the 45°W feed to aspiring viewers

RAISAT

MTV, the satellite-carried all-music pop channel is now carried on a 24-hour basis around Leningrad. The BBC Subscription TV service 'TV Select' has now been delayed until early 1992. RAISAT, the Italian language service carried over Olympus 19°W has increased its programme day from the initial 4 hours to over 12 hours daily. It provides a compilation of the best from the 3 RAI terrestrial channels and the exclusive transmission rights of the Pope's Mass each Sunday. The channel reckons to go to D2MAC by early '92 if receiving equipment is commonly available and to screen the Barcelona Olympics using HDTV. RAI hopes to eventually offer the channel on a subscription basis.



This perfect shot shows the Saudi TV identification slide, taken in C band (4GHz) on a Paracclipse 3.7m dish in the UK via ARABSAT 19° East (Ian Waller from Lincoln Satellite).

The troubled AUSSAT telecommunications craft will be sold, free of debt (currently \$515 million Aus), and with the 2nd telecoms licence fee included in the sale. Its likely that a PAY-TV service will emerge from the future AUSSAT once in private ownership and with agreement from the government - though the Federal Cabinet remain unconvinced of the merits of PAY-TV at this time.

All-day News

Singapore will allow 'agreed' companies and organisations to install satellite receiving equipment though with a licence fee of \$740 local, as from 1 May 1991. This results from the Gulf War when many financial institutions sought news material urgently. Hotels and private dwellings remain barred from TVRO installation. Currently, Singapore has 3 local channels and with a further 3 from Malaysia, another 3 local channels could be on-air within the year.

The Japanese broadcaster NHK is preparing a 24-hour news channel modelled on CNN - NHK's will be called GNN (Global News Network) and hopes to be on-air late '93/early '94,

comprising input from various broadcasters around the world.

NHK has discovered that despite her tightly contoured BS footprints from her own satellites, NHK programming is being received in Taiwan, Korea and the Philippines. NHK has reacted by limiting programme transmissions which in turn has resulted complaints to her various overseas offices. Meanwhile, in the Pacific the US satellite firm COMSAT has constructed a satellite monitoring station at Oahu on Hawaii.

PTV-4

The station using many large dishes will check on Intelsat and other birds during their launch, positioning and eventual service slot operations. To the west in Manila, Philippines Palapa-II is to be used to relay the PTV-4 network to the many thousands of islands that comprise the country. New receiving centres are to be established taking the downlink from Palapa for onwards terrestrial microwave linking to nearby transmitters. The French have recently given a grant to upgrade the network and PTV-4 hope to be on-air 24 hours a day by Autumn '92.



A news feed carried over 10°E during the recent civil unrest in Albania at 11.18GHz vertical.

amateur bands round-up

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

The columnar antenna system tends to vary from time to time, from such things as a triband beam right through to invisible wire arrangements. Over the past weekend we have been carrying yet another rearrangement. Most of us go through similar exercises at regular intervals if only because gales often bring an antenna down.

Do take care when indulging in 'antenna parties'; do pre-plan as far as possible, and do have all the required tools available. Double-check at all stages. Above all do try and be aware of, and avoid, possible dangers. The easiest way to achieve all of this is to decide who is to be gaffer, and obey him at all times unless at some safe moment in the procedure he calls a halt for discussion. All chiefs and no indians is a good way - of filling hospital beds!

Gloom?

Why this gloom you may ask? Yesterday, up went a nice new three-element TB3 beam. Once it was up and s.w.r. measurements made, it was obvious that the Inspection Department had goofed somewhere! So... down it'll have to come again.

The long spell of good conditions came to a pretty abrupt halt thanks to the events towards the back-end of March; but at the time of writing things are, more or less, back to normal.

Daniel Peake (Burnage, Manchester) uses his AR88D and 30m end fed wire to listen to s.s.b. stations on our bands. On 28MHz there were CE2AK, CN8ST, DU1KT, PZ1DY, OH7XE/PJ4U, OH0RJ, WP4GMJ, J6LSB, TA5C, YN1MF, WA1THY/HZ, 7X2DB, 4K2/UV3CC, OH3HMA/P/KH2, KC6A0H/P6, KD3UB/TF, AP5HQ, HK3MAE, ZD8DX, AP5HS, OD5SK, KM4RX, YC2BX, OX3KM, VP5JM, VU2DL, C53GH, VK4GEF, EA9LZ, 9H0DX, ZP50Y, P40V, and FR5DX. Goint to 24MHz, VK8HN, OH0BHU, ZP5JCY, 9D5UN, JA3REK, PJ6/KV4AD, FM5WD, 9X5NH, D44BC, PJ8AD, CG1UYX (Canadian Special Event Station), VK2FWW, 6Y51C, VK6AZL, AP2JZB, FG5BG, OD5FY; 21MHz came up with Z22JE, CN8CH, A4MOA, 9Y4SF, VK5PGT, YV5CMY, OD5ARR, JA8JCJ, 7SM7RTF (wonder what that one was?), WP4AZT, JH1EB, and TK7A. Down on 14MHz PI4KGL, VK6VP, VE4GV/P/6Y5, TK5EL, V85SS/MM, VQ9CQ (Chagos), and 4X6PZ. On the remaining bands just the usual Gs on Top Band, and assorted W6/7, VE6/7.

John Scott (Glasgow G44) sent, in addition to his list a fax picture, received from ON7BW on 14MHz. The R2000A, a.t.u. and twenty metres of wire added up to quite a potent station, John having logged on 14MHz, UZ1AWT, CN8ST, RA3QK, RZ6LYL,

KK9A, W2RQ, CR5BWW, and 9L1US, while 21MHz stumped up with 4N4EX, KH6WU, VE3GTK, HK3KCP, EA8BWL, JE3TXA, KY1H, K1ST, KC1F, K59K, 6D2X, 5Z4FD, 7X2DG and VU2TTC. When the 18MHz band was tried, VP9HE was heard before attention was switched to 28MHz to run to earth 4S7EF, 4X4MS, JA1SGX, VU2WAP.

P. Cain, now, from Newcastle-ontyne. 14MHz took a pasting as AP25AR, A35KB, A41JY, A61AC, A71BK, A92FN, BV40B, BY1QH, C21JM, C6ACN, D68JM, FG5BG, FH5EH, F00IGS, HH2CL, H44AP, J37XC, J88BW, KA3HMS/V73, KH6XM, KL7RA, NP2CV, OA4QV, OX3KM, OY2VO, ST0DX, SU1FN, S83H, TF5BV, TG9TSS, T12SBW, TR8AHO, TU2UI, TZ6APS, VK9NS, VP2MO, VQ9HW, VP8CFM(S. Orkney), VP9KD, V31SW, XE1AMS, XF0C, XQ0X, ZD8DX, ZL9DX (Auckland Is), ZL9YL, 3B8FU, 3X1AU, 4S7EF, 5T5HH, 5U7NU, 5Z4FM, 7Q7LA, 9K2SH, 9M8ST, 9Q5BG. As for 21MHz A41KR, BV4AS, BY1QH, BY5RY, CM2SA, DX1DBT, D44BS, ET2A, FG5FH, FM5BX, F00IGS, HC1EA, HI8LUZ, HS1BV, J79MD, KL7D, P29NMD, PZ1CZ, ST0DX, SO1A, TF3IM, TL8JL, TR8JWH, VE8CB, VK9NS, VP5DM, VP8QP, VQ9CQ, VU2GI, ZD7VC, ZD8Z, ZL9DX, Z21HD, 3C1EA, 5W1JM, 9L1US, 9N1MM, and 9X5SW were entered in the Big Black Book. 18MHz produced A92BE, BV2FA, DU1KK, C05DD, F00IGS, HF0POL(S. Shetland), JA2VPO, OD5QX, P29DY, TU4DH, VE7EPK, VK7GK, VK70W, VP8CFV, ZP5CF, ZP6HR, XE1VIC, 4S7EA, 4S7NB, 9J2HS and 9Y4FP. Finally, 24MHz and AP2JZB, C06GG, DU1BDK, DU1KK, F00IGS, HF0POL, HL1UA, NP4TN, OD5QX, PJ8AD, V73BN, WP4BDI, YB0WR, ZP5JCY, 7Q7MS, and 8P6CC to complete a good month's work.

Contests

G. Bramwell (Swinton, Gtr Manchester) asks if we could include details of upcoming contests, as he finds he usually stumbles over them somewhere near the end! Fair enough, and we can set down some ground rules. If you read K1AR's Contest Calendar in *CQ Magazine* each month you find that never a week goes by without a contest of some sort. An ear bent to the RSGB *News Bulletin* on 3.650, 7.0475 or v.h.f. (144.250 and 145.525MHz), or in remote areas a local repeater) on Sunday mornings will usually net you some news of the main contests. So - perhaps some ground rules would be more useful. Firstly the Big Ones. This category includes among others the ARRL DX, the CQ WW, WAE, the CQWW WPX and so forth. They tend to cluster on weekends around the equinoxes in March (say, mid February to April-end) and September, and the multi-operator categories operate the full 48 Hours of the given weekend, while single operators are required to take rest

periods in some defined arrangement. Hence, if you listen on the band around midnight GMT and hear all the world suddenly burst into frantic activity, you know you have a contest! Now, in a world-wide contest the general aim is to work lots of stations, but also lots of countries (or prefixes which come almost to the same thing). Instead of the equinox period, the low-band ones (e.g. CQ WW 160, or ARRL 160) tend to cluster round the period when there is maximum darkness time in the northern hemisphere.

Stimulate Activity

In the smaller contests the aim is to stimulate activity in a given group, so we might imagine a 'Mid-Wales Contest' where the rules require mid-Wales stations to work the world, while the rest of the world scores points only for working mid-Wales stations. With these lesser affairs no firm rules can be given, but usually they run for 24 hours in a given weekend, often having a start time chosen for the benefit of the local group. Obviously the smaller contests shade from the very basic up to something near the world-wide category, like the Bermuda Contest.

Now we must turn to reader Bramwell's loggings, and he is one of the few to cover 1.8MHz right through to 28MHz. Starting then with Top Band we find a gaggle of Gs, GW, EI, and Y44TK. On 3.5MHz again the EUs, but in addition W1FC, NR1R, W1KSZ, KA4PUW, W1GFH, KM1H, K2FV, TA2/LA6WEA, VK1AK, PY4BGH, PY2IAV, and A92BE were noted. 7MHz shows no N. America, but RA9GFL, UL8LYA, UH1E/RA3QK, EA8BUT, HK3PLB, EA8AP, TU4DQ, PY2CX, CM8EP, YV5NCK, HJ3RLX, ZP9CL, PY8ZGP, OD5ZZ, 4Z4RB, YC2LX, HC4L, HJ3QYL, and ZL2APW. Signals were logged on 14MHz from most parts of N. America, and European Russia; Asian Russia was represented UF6FU, UL7ACI, RB8M and along the DX line we find EA8BVT, YV5ENI, ZC4AB, J39C0, 4S7EF, PW8JP, CN8GI, PY3BPA, 9L3GB, CP5NU, 7Z1AB, CE7ZK, EA8BPX, LU8EM, J73TW, 6W6JX, JAs 3X1SG, OX3LX, ZS8MI, J73PB, LU8DFU, JR6AE, TU2JL, V31SW, 5B4ZZ, JY3ZH, TG9CXM, PY5BI, CX7BL, HK4LYR, and 4Z6I. Turning to 21MHz, there are WD4ESX, W1CWU, VE3YJ, VE3CRO, W1RR, N8MOA, VE2PEP, W1BDL, K1ZM, N2EMS, WA2DCI, W2DQV, K4RWN, VE3RM, AA4NL, K2IM, WB2BGT, KA3WRF, K2AHW, NA3AT, W3TR, K2JMY, KA40N PY2BFE, VP9ID, T26DH, PY2AN, HK3PXJ, KP4RL, ZV4B, KP4BZ, 4M8X, P40V, JH1BEL, EA8BTA, YB8NA, LU1NT, PY2BLX, PJ9X, CP1FF, 5K1R, ZW5B, LU3DOV, 4X4MS, HK3KZP, YV5MRR, VP9MM and VU2TTC. On 24MHz, W1-2-3-4-5 were all logged plus 9L1US. Finally, on 28MHz we find again the East Coast Ws, South Americans, TA5C and 5B4ES. To save

space we have deleted all the Europeans and Russians on the higher bands - sorry!

Next **Brian Lucas**, on behalf of the Apprentice Training School lads. Among other activities they are being taught to make, use and evaluate antennas, to get a 'feel' for conditions, and to understand the differences between two different receivers. With some 21 pages of logs to look at, I have, inevitably, had to prune hard; but let it be said the log covers all the bands between 3.5 and 144MHz. One that puzzled them was TW1C, heard on March 31 at 0743Z. Certainly a special call issued for the contest that weekend, and of French origin. The more unusual calls noted during the month included VK2AMB/M, A92BE, C56/G4LLI, 9H1E, T77C, 5B4SC, a YL operator, SV1EF, 9Y4UNO, RT5UN, SV1JG, UG6LQ, VA1YK at the Canada Games, GU2FRO, PT7BZ, ZS6AIS, 9K2DZ, 8P6CC, ZL2AOC, 3A/W9JLY, VP9MP, VP9ZF, KS3B, ZL40S, VE7JAK, KZ1A, 9M2QQ, V07FG, LA1N, VA1U, AA6Z, 4X4SD, 4X6LD, VA6SF, V21AS, KC4USV, ZC4DG, SV1A0Z, SV2ZAD, 8P9FP, KD8V, KW8T, W09S, W1DW, D44BS, A61AD, 8J8WUS, 4N4CX, 8J8WUS, YS100, C35CGX, and of course the usual crop of smaller fry, JAs and so on. Thus they cover all the 'continents' - N America, S. America, Asia, Africa, Antarctica, Europe, recognised by radio amateurs.

A. Marriott (Bath) has now got a trap dipole and a.t.u. to play with, resulting in more attention being paid to 21MHz - mainly in the evenings with the odd morning session thrown in. All are c.w. On 7MHz, TA2D, KE2S, W9TKV, on 14MHz, 9H1NB and WTSQT in Wyoming; on 21MHz, UA9DM, UA0ZEA (Kamchatka), VE5XM, VE6BIR, VE7AOE, CG6AUV, EA8GS, 7X2CR, CX5RV, N6FL, KD6GC, W6JNX, N7HUS, W7CE, and W7MDK.

Vince Cutajar (Malta) specialises in the WARC bands; he collected on 18MHz P40MR, TY2LS, VK7GK, RH1E/RC2AR, KB0NL (N. Dakota), C05DD, OD5QX, 4S7EA, ZS6AIS/7P8, VP8CFV, SV0HV/9, 9Y4KB, HK0NZII (San Andres), and EX1FF. 24MHz yielded P40MR again, A61AD, HF0POL (S. Shetland), YQ3R, OA4ML, 9L1RW, 8P9FC, EA8SH, HK5JPS, V29A, 5N0HBK, 9Y4KB, 8P6CC, 9J2HS, WA6MMX/KH2, FG5BG, 7Z1IS, VU2RX, HL11UA, A35EM, SV1ADG, V63AO (Micronesia), ZS9S, VP8CFV, EJ3GZ, and CU3AA.

Finale

We still have some letters for mention, but space closes in so they will be held for next time. The deadlines for your letters, aimed as usual to the address at the top, will be June 14, July 12 and August 9 to arrive. Please try not to be late, as the work then presses if I am to meet my deadline to produce the copy. Thanks!

dxtv round-up

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

This month I am giving pride of place to the slow scan television enthusiasts who, for a long time, have been at the other end of this column. In no way is their interest of less importance on the television DXers scene but I simply cannot give more space, or keep the subject alive, with only occasional reports. However, lately there seems to be an upturn and this time I have interesting logs and details of equipment being used from **R.G. Elliot** (Deptford), **Ian Felton** (Chorley), **John Scott** (Glasgow) and **H. Winter** (Bristol).

Each of these readers have looked for signals in the 14MHz band and for the first time, John Scott has been exploring and found activity around 21.337MHz.

On March 16 and 17, R.G. Elliot with his Realistic DX300 receiver, loft antenna, Sinclair Spectrum+ computer and G1FTU software received slow scan pictures between 14.217 and 14.239MHz from stations in Austria (OE2SXL) **Fig. 1**, Bulgaria, Denmark, Germany (DL9AQ) **Fig. 2**, Italy, Spain, Sweden, Switzerland, parts of the USSR and Yugoslavia; plus an amusing unidentified drawing **Fig. 3**, of what looks like one of Disney's seven dwarfs. Those of you unfamiliar with the techniques of slow scan should keep in mind that each picture frame takes several seconds to build up and a drawing like **Fig. 3**, would be in context with the good humour of a series of scans that make up a complete QSO.

Ian Felton is equipped for the mode with an Icom R70 receiver fed by a long wire antenna, BBC computer with

Technical Software's RX4 program and a Star LC10 printer. Ian tuned around 14.230MHz at 1745 on March 23 and logged a variety of captions from EA1ACC **Fig. 4** and EA2JO **Fig. 5**, in Spain. Ian also saw 'OKEY VIDEO 100%', 'PSE K K K' and what looks like 'QTH SALDAKAO R8 on 19 BIZKAIA'. I say 'what looks like' because sometimes a pulse of interference from electrical or r.f. sources can briefly corrupt the scanning process.

During a weekend contest on April 6 and 7, H. Winter, using a Yaesu FRG-7700 receiver fed by a long wire antenna and decoding those audio tones with a Drae SSTV terminal, copied pictures between 14.226 and 14.238MHz from stations in Czechoslovakia, Germany, Poland, Spain, Sweden and the USSR. John Scott's log for the month prior to April 2 added England, France (F6DZP) **Fig. 6**, Luxembourg and Portugal in addition to the countries previously mentioned. Among the ident and calling captions received by John were those from Germany (DJ7NW) **Fig. 7** and Sweden (SM5EEP) **Fig. 8**.

For what it's worth and I don't suppose there are two cases of interference alike; some years ago I used a Kenwood R2000 communications receiver and a 48K Spectrum computer to familiarise myself with the workings of SSTV. The set up worked fine apart from a high level of noise from the computer which often spoils the reception of weaker signals. However, by trial and error, I reduced this noise by more than half, to a tolerable level, by screening the receiver's antenna feed, with coaxial cable, inside the room from the window.

entry point of the long-wire to the set and by installing the Spectrum and an Alphacom printer some 3m away from the receiver.

Band I

Now to the domestic TV world and in India, **Lt. Col. Rana Roy** (Meerut) identified pictures from Bangkok's 'Ch.3' and Burmese TV while 'F2' and/or 'TEP' (trans-equatorial propagation) openings were influencing Band I signals, almost daily, from January 9 to 31 and on February 1, 2, 4, 6-8, 10, 15, 17, 18, 20-23 and 26. From the fluctuating and fading pictures and often distorted sound Rana picked out adverts, animated and cinemascope films, announcers, news readers and test-cards. At 2210 on January 25 he saw 'CNN' news from Bangkok TV, on Ch. E3 (55.25MHz), being translated in Thai. The following paragraph is a typical entry from his detailed log:

"26 Feb 0830 - E2 - F2 pic from from UNID S.E. Asian TV till 0900. At 1815 on E2 saw strong TEP from UNID S.E. Asian source till 2230. At 2305 a 525 line station from an UNID western source on A2. Sound distorted and very faint. Sound like American English at times. Probably news. Pics faded away at 2345".

When Rana receives rolling frame 525-line pictures on Ch. A2 (55.25MHz vision & 59.75MHz sound) as he also did at 1620 on January 9, he corrects it with his vertical hold control. One of the unidentified test-cards that Rana received from South-East Asia can be seen, beginning to break-up, in **Fig. 9**.

Back here in the UK, it has been 'quality' not 'quantity' of DX as it was

put to me by **Simon Hamer** (New Radnor) who identified pictures from Dubai on Ch. E2 (48.25MHz) during an 'F2' opening on April 7.

"The last week of March was about the best week I've had for quite a while", wrote **Russ Burke** (Northampton) having logged pictures from Italy (RAI-UNO), the Norwegian regional (Norge Bagi), Spain (TVE1) and the USSR. The latter being their news programme with the logo 'BPEMR'. **David Glenday** (Arbroath) saw unidentifiable 'F2' pictures on Chs. E2 and R1 (49.75MHz) at 0940 on the 3rd and possibly again on Ch. E2 at 0830 on the 11th. This all shows that the ionosphere was disturbed because again on the 14th, **John Woodcock** (Basingstoke) heard two Middle East sound channels in Band I and saw some r.f. patterning during the first week in April.

Tropospheric

The slightly rounded atmospheric pressure readings for the period February 26 to March 25, **Fig. 13**, taken at noon and midnight each day from my own barograph. While at Laurencekirk on the 13th and 14th, **George Garden** (Edinburgh) enjoyed a clear 'starry sky', with not a cloud in sight and during over the two days, especially around 2345 on the 13th, he received a rather grainy but strong, black and white, picture from the Black Hill transmitter of the Scottish IBA. "With these cloudless conditions, particularly at night, I've often found the reception conditions good and that night it was very good," said George.

The falling high pressure which



Fig. 1: Austria.

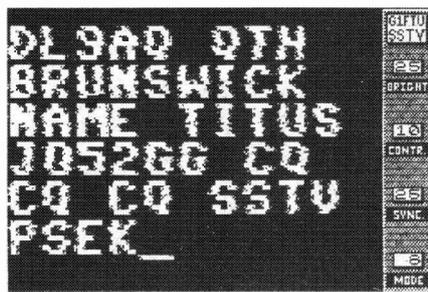


Fig. 2: Germany.

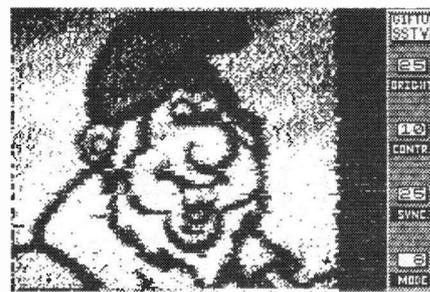


Fig. 3

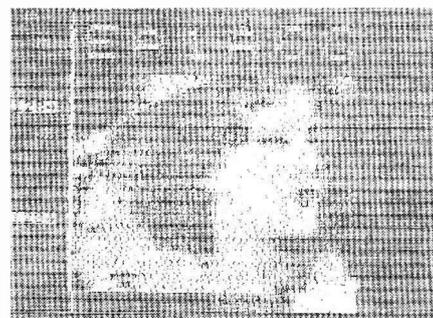


Fig. 4: EA1ACC.



Fig. 5: EA2JO.



Fig. 6: France.

began on the 25th was no doubt a contributing factor to the tropospheric opening on the 27th when Simon Hamer received pictures in Band III from Norway (NRK) on Chs. E5 (175.25MHz), 8 (196.25MHz) and 11 (217.25MHz) and Sweden (SVT1) on Ch. E9 (203.25MHz) and SVT2, in the u.h.f. band, on Chs. E30 (541.25MHz) and 48 (667.25MHz).

Les Jenkins (Godalming) told me on April 3 that he is currently receiving u.h.f. signals from the French networks ANT2, FR3 and TF1 in good colour on a permanent basis with his Salora receiver. Les is one of our real u.h.f. enthusiasts and has installed an interesting rotatable antenna system, Fig.10. This comprises a Triax wide-band grid array for DXTV and a 12-element loop Yagi for the 934MHz Citizens Band where he uses the callsign GB-37.

While tropospheric openings were taking place in India on January 7, 26, and 28 and February 8, 9, 21 and 28, Rana Roy often received strong clear pictures, in Band III, from Agra (Ch. E9), Amritsa (E7), Bahawalpur (Pakistan TV) (E10), Bhatinda (E12) Fig.11, Delhi (E5), Jalandhar (E9), Kanpur (E5), Kasauli (E6), Lahore (E5) Fig.12, Mussorie (E10) and Rawalpindi (E8). Several times he saw stations sharing the same channel. Like Delhi and Lahore on Ch. E5 and Bahawalpur and Mussorie on Ch. E10, 'overlapping' each other. Rana's logs are always full of interesting details and the following entry for February 9 was no exception:

"09 Feb 0645 - E5 Colour bars from Kanpur with caption "Doodarshan Kendra Relay Kanpur Welcomes You"

along with the date and day on top. E7 Several Indian stations fighting for predominance. E9 Agra and Jalandhar, E12 Bhatinda. Programmes started at 0700 till 0845. At 1730 on E5 Lahore TV signal strength 3 - E6 Kasauli, E9 Jalandhar and signal strength 5 - E12 Bhatinda signal strength 4. Lahore had news in Urdu while Indian station had 'Ads' followed by a movie on the National Network. News on Lahore finished at 1740 followed by cartoons. Cartoons finished at 1758 followed by 'Ads' and then Gulf News at 1800. This was followed by a discussion on Blood donation and Blood Banks at 1810. Punjabi songs at 1830. Programme on

growing trees at 1900. News in English at 1930. Pic fading at 1945. Tropo from E9 Jalandhar, E12 Bhatinda, E6 Kasauli continued while Lahore faded away completely at 2100."

Tropospheric conditions were such in January that Rana was able to watch Breakfast TV from Jalandhar on the 7th and Bhatinda on the 26th and 28th.

I am sure that we can all visualise Rana tuning carefully through Band III watching the signals ebb and flow and immediately stopping at a mere glimpse of a rare ident, logo or test-card and, if possible, record it on a photograph for us all to see.

Weather

"Our weather is unusually cool for March. It is still snowing in Kashmir, Himachal Pradesh and hills of Uttar Pradesh. I think March will remain cool," wrote Rana on the 11th. For your records, I recorded 4.14in of rain during March with the heaviest falls of 0.70 and 0.75in on the 7th and 19th respectively. The relative humidity at 1745 on the 6th reached 85% and there were frosts, with overnight temperatures down to 29°F, in my area of the South Downs in West Sussex on the 24th and 30th.

Ron needs your DXTV reports and logs to enable him to compile this column. Why not join in the fun and get more out of your hobby by sending him a regular monthly report together with some photographs of what you have managed to receive.

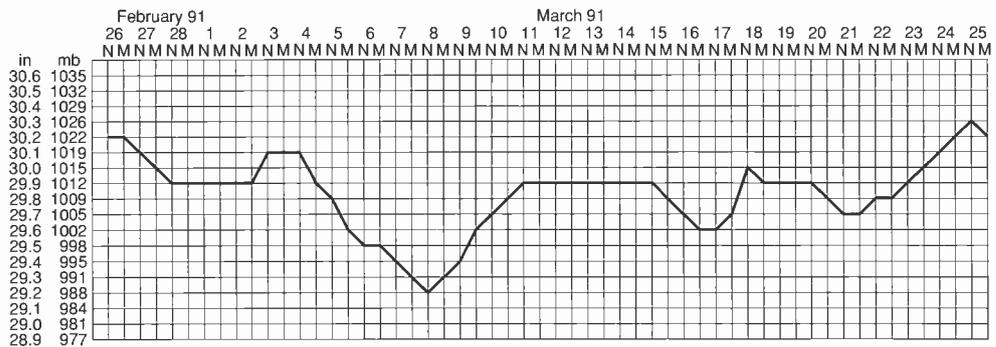


Fig. 13: Atmospheric pressure readings for the period covered by this month's column taken from Ron's own barograph at Storrington.

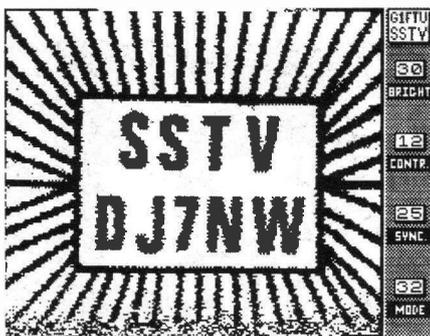


Fig. 7: Germany.

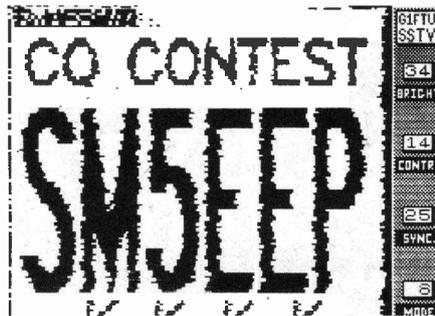


Fig. 8: Sweden.

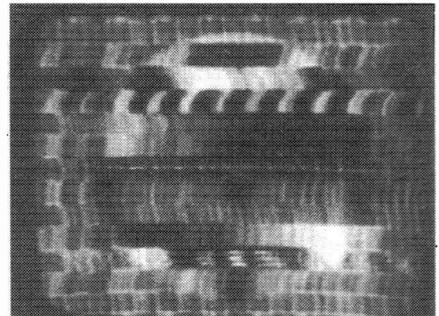


Fig. 9: SE Asia.

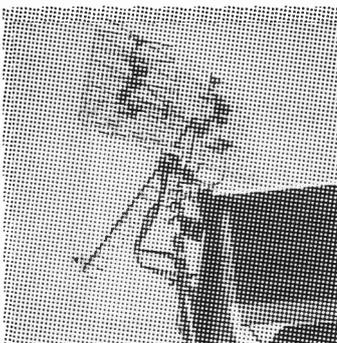


Fig. 10



Fig. 11: Bhatinda.



Fig. 12: Lahore.

dressler

COMMUNICATIONS LTD.



MON-FRI 9.0-5.30
SAT 9.30-4.30

DRESSLER ACTIVE ANTENNAS

NEW MODEL NOW ARA60

ACTIVE ANTENNA 50kHz - 60MHz WITH LIMITED PERFORMANCE UP TO 100MHz

Professional electronic circuitry with very wide dynamic range. Meets professional demands both in electronics and mechanical ruggedness. 1.2m long glass fibre tube. Circuit is built into the base of the tube. Ideal for commercial and swl receiving systems. Both antennas come complete with 7 metres of cable, interface, power supply and brackets. £159

ARA 1500

50MHz - 1500MHz

Frequency	Gain
50-1000	11.5dB
100-1500	11.0dB

£159.00

'N' Connection

Now fully tuneable interface. Intercept point + 21dBm Typical.



191 FRANCIS ROAD

LEYTON • E10 6NQ • LONDON

TELEX 8953609 LEXTON G

Phone 081-558 0854 081-556 1415

Fax 081-558 1298

24hr Hotline ansaphone

081-558 0854

Or contact your local agent any time on the following number: Terry (Biggleswade, Beds.) 0767 316 431.

YAESU



YAESU
FRG
8800

FRG 8800 HF RECEIVER
£585.00

VHF CONVERTER £100.00



YAESU
FRG9600
50 - 950 MHz
£500.00

KENWOOD

R5000 HF Receiver only £799
R5000 + ARA 60 £899
RZ1 Mobile scanner 500kHz - 905MHz £459

ICOM

R71 General Coverage
Receiver £855



FIRST CLASS SHORT WAVE RECEIVER.
BUY THIS FOR £855 AND RECEIVE AN
ARA 60 FREE. WORTH £159.

ALSO R7000 complete with ARA 1500 £999.

ICR 9000 150kHz - 2000MHz inc. ARA 60+

ARA 1500 and delivery £3995

SPECIAL FOR MAY

ICOM R72 RECEIVER inc. FM board, carry
handle & Securicor delivery U.K. mainland.
£639.00

ICOM cont'd

FROM US TO YOU:



Buy an R100 complete with Ni-Cad pack & charger at £399 and receive FREE all of the following extras BP90 empty battery case, HP4 headphones, LC57 soft case, LC59 soft case for BP90, CP12 Cigarette Lighter cable. Also available.

R100 at £499

Complete with AC adapter + FREE delivery U.K.



STANDARD



STANDARD
AX700
PANADAPTOR DeLuxe
£545.00

SPECIAL PRICE

NRD 525 Receiver

£975 inc. ARA 30 Active Antenna

SONY ICF 2001D £285

SONY ICF SW7600 (see above) £149

ICOM R1 (see above) £399

ICOM R100 £499

AOR 1000 500kHz - 1300MHz £269

AOR 2515 £575

AOR 3000 £695

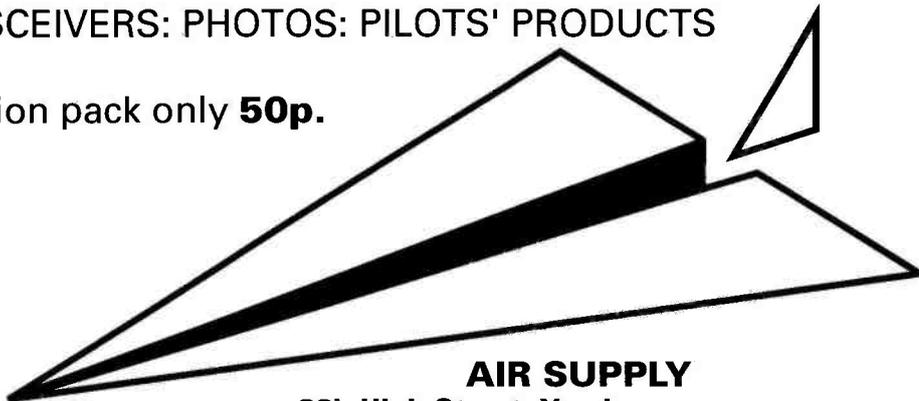


AVIATION ENTHUSIASTS AVIATORS - LISTENERS

AIR TRAFFIC CONTROLLERS - on hand to help 'Guide' you towards an interesting & rewarding pastime.

AIR BAND RADIOS-SCANNERS etc. Over 20 to choose from: AERIALS & ACCESSORIES: MAPS - BOOKS: CHARTS: CAA PUBLICATIONS: POSTCARDS: MODELS: TIE PINS & BADGES: AIRBAND TRANSCEIVERS: PHOTOS: PILOTS' PRODUCTS

Information pack only **50p.**



AIR SUPPLY

83b High Street, Yeadon,
Leeds LS19 7TA. TEL: 0532-509581

Opening times: 10.00am - 1.00pm and 2.00pm - 5.30pm

Shop just two minutes from Leeds Bradford Airport. (Closed Wednesday & Sunday).



SITUATED AT SOUTHERN END OF M23 — EASY ACCESS TO M25 AND SOUTH LONDON

RECEIVERS	
Lowe HF225	£429
Icom ICR71	£875
Icom ICR72	£689
Kenwood R2000	£599
Kenwood VC10 V.H.F. Converter	£165
Yaesu FRG8800	£649
Yaesu FRV8800 V.H.F. Converter	£102
Kenwood R5000	£895

HF TRANSCEIVERS	
Kenwood TS950S	£2995
Kenwood TS940S	£1995
Kenwood TS850S	£1325
Kenwood TS140s	£880
Kenwood TS680s	£995
Yaesu FT990	£1849
Yaesu FT77GX	£1599
Yaesu FT747GX	£659
Icom IC765	£2550
Icom IC751A	£1535
Icom IC735	£1000
Icom IC725	£779
Icom IC726	£1015

2M TRANSCEIVERS	
Kenwood TH27E	£254
Kenwood TH25E	£238
Kenwood TH205E	£178
Kenwood TH215E	£178
Kenwood TR751E	£610
Kenwood TM241E	£295
Yaesu FT411 + FNB10	£260
Yaesu FT290R11	£429
Yaesu FT26 + FNB25 + NC28C	£245
Yaesu FT212RH	£325
Icom IC2GE	£269
Icom IC229E	£299
Icom IC275E Inc PSU	£1090
Icom IC2SE	£279
Icom IC2SET	£299

70CMS TRANSCEIVERS	
Kenwood TM441E	£325
Kenwood TH46E	£275
Kenwood TH47E	£275
Yaesu FT790RII	£499
Yaesu FT811 + FNB10	£274
Yaesu FT712RH	£359
Icom IC4GE	£289
Icom IC4SE	£304
Icom IC448E	£349

DUAL BAND TRANSCEIVERS	
Kenwood TM731E	£675
Kenwood TM531E	£415
Yaesu FT470R + FNB10	£424
Yaesu FT736R	£1359
Icom IC322OE	£510
Icom IC2400E	£649
Icom IC2500E	£689
Icom IC24E	£385
Standard C528	£387

SCANNING RECEIVERS	
Icom ICR7000	£1012
Yaesu FRG9600M	£520
Kenwood RZ1	£475
AOR AR2002	£498
AOR AR3000	£779
Signal R535 Airband	£254
Icom IC R100	£510

ANTENNA TUNER UNITS	
FRT7700	£60
FC757AT	£357
AT230	£213
AT250	£374
ICAT150	£335
MFJ941D	£119
MFJ949C	£173

COAXIAL SWITCHES		P&P	
SA450 2way SO239	£19.91	1.50	
SA450N 2way N	£27.58	1.50	
Drac 3way SO239	£22.26	1.50	
Drac 3way N	£28.79	1.50	
REVEX S20 SO239	£27.53	1.50	
MFJ-1701 6way SO239	£39.18	1.50	

HAND HELD RECEIVERS		P&P	
ICOM1CR1	£998.00	2.00	
R537S Airband	£71.00	2.00	
Win 108 Airband	£179.00	2.00	
AOR AR1000	£254.00	2.00	
Yupiteru VT125 UK Airband	£179.00	2.00	

NEW PRODUCTS
MICROCRAFT'S NEW CODE SCANNER
Copies Morse, Baudot and ASC II code 32 Character Display
£185.00

AR-1000 Handheld Scanner

- ★ 1000 Channels
- ★ 500Kcs - 600MHz continuous
- ★ 805 - 1300MHz continuous
- ★ AM, FM (narrow & wide)
- ★ Complete with NiCads and mains charger

£254

GOODS NORMALLY DESPATCHED WITHIN 24HRS - PRICES CORRECT AT TIME OF GOING TO PRESS - E&OE
MAIL ORDER & RETAIL

ANTENNA BITS		P&P	
PB1 1:1 Balun 2kW P.E.P	£17.95	£2.00	
LC160 160 Mtr Wire Antenna Shortener (Pairs)	£22.95	£2.00	
LC80 80 Mtr Wire Antenna Shortener (Pairs)	£23.95	£2.00	
T15 21MHz Traps 1kW (Pairs)	£37.90	£2.00	
T20 14MHz Traps 1kW (Pairs)	£37.90	£2.00	
T40 7MHz Traps 1kW (Pairs)	£39.90	£2.00	
T80 3.5MHz Traps 1kW (Pairs)	£39.90	£2.00	
16SWG Hard Drawn Copper Wire (50 Mtrs)	£12.95	£2.50	
Small Ceramic Egg Insulators (each)	£0.65	£0.30	
Large Ceramic Egg Insulators (each)	£0.85	£0.40	
300Ω Slotted Ribbon Cable (per mtr)	£0.58	£0.10	
450Ω Slotted Ribbon Cable (per mtr)	£0.50	£0.10	

PALOMAR PRODUCTS	
R-X Noise Bridge for antenna checks up to 100MHz	£59.95
Receiver Preamp - 1.8 to 54MHz. Up to 20dB gain	£119.95
Transceiver Preamp - R.F. Switched - up to 20dB gain	£149.95
Super Snooper - vertical indoor antenna for SWL	£39.95
Loop antenna - Directional indoor antenna 8 loop ranges phone for details	
Tuner Tuner - ATU adjustment without transmitting	£99.95
SWR & Power meter - LED display SWR without adjustment	
20W 200W 2000W PEP	£129.95
2W 20W 200W 2000W PEP expanded display	£189.95
VLF converter - 10 - 500kHz converter	£79.95
Baluns 350W PEP 1.7 - 30MHz 1:1, 1.5, 2:1, 3:1, 4:1, 5:1, 6:1, 7.5:1, 9:1, 12:1, 16:1	£23.95 each
Baluns - up to 6kW PEP phone for details	

BREDHURST ELECTRONICS LTD HIGH ST, HANDCROSS, W. SUSSEX. RH17 6BW (0444) 400786
Open Mon-Fri 9am-5pm except Wed 9am-12.30pm. Sat 10am-4pm

KW COMMUNICATIONS LTD

CHATHAM ROAD, SANDLING, MAIDSTONE ME14 3AY
Tel: 0622-692773, 762274 Fax: 0622-764614 Tlx: 965834

<p>AR900K £235.00</p>  <p>6 band hand held scanning RX</p>	<p>R2000 £595.00</p>  <p>General Coverage HF Receiver</p>	<p>AR1000 £249.00</p>  <p>Scanning RX 8-1300MHz</p>	<p>R1 £399.00</p>  <p>Hand portable Receiver</p>
<p>R100 £499.00</p>  <p>Wideband RX</p>	<p>R5000 £875.00</p>  <p>General Coverage HF Receiver</p>	<p>FRG8800 £649.00</p>  <p>General Coverage HF Receiver</p>	
<p>FRG9600(M) £499.00</p>  <p>60-900MHz</p>	<p>HF225 £425.00</p>  <p>General Coverage HF Receiver</p>	<p>R535 £249.00</p>  <p>Airband VHF & UHF</p>	

If you don't see it please ask - we have over 1000 items in stock. We are located just off the Eastern side of the A229 between Junction 3, M2 and Junction 6, M20. Follow the signs to SANDLING.

NB. Prices may change due to VAT increase.



Instant credit available
Mail/Telephone order by cheque or Credit Card (E&OE)



OPEN TUES.-SAT. 9.30-5.30
(CLOSED MONDAYS)

STOCK ITEMS USUALLY
DESPATCHED WITHIN 24 HRS.

DELIVERY/INSURANCE PRICES
MAINLAND ONLY

Godfrey Manning G4GLM
SWM Editorial Office, Enefco House, The Quay, Poole, Dorset BH15 1PP.

Help! Desperately seeking Dymo-type embossed labelling tape. Any make, any width would do BUT must be grey or clear/colourless. What's this got to do with aircraft? In my Museum we're putting together a mock-up airliner cockpit. The panels are in battleship grey and I need to re-label some for my purposes. Any other colour just won't do! Either write to the address at the end of this column, or 'phone me in the Museum on a weekday evening on 081-958 5113. State width and price please.

Question Time

Isolde Klein (Munich) enjoyed her flight to Heathrow in a Boeing 727 of Lufthansa. For some reason, she's worried about bird-strikes. At cruising levels there's no problem since only 1% of bird-strikes occur above 2500ft altitude (according to the CAA *General Aviation Safety Sense 10: Bird Avoidance* leaflet). When large flocks of birds accumulate, airports like Heathrow send out a vehicle equipped with loudspeakers that emit bird distress calls. This scares them away! Have you noticed that aircraft land and take off with the landing lamps on even in bright sunlight? This again is a bird-scaring measure.

Hardware

Here's an interesting variation on an old idea from **Robin Abrol** (Tyrella). Robin's a student pilot and flies a PA-28 Cherokee. He's also been experimenting with a Fairmate HP-200E receiver that does not resolve s.s.b. even though it has h.f. coverage. Robin also has a simple old h.f. receiver with conventional dial tuning (no synthesiser). If this is operated in close physical proximity to the HP-200E and tuned carefully to about the same frequency, the HP-200E can be made to resolve s.s.b.

I suspect that some v.f.o. radiation from the old receiver is getting in to the HP-200E at just the right frequency to mix with the wanted signal and in effect re-insert the carrier, rather in the manner that a b.f.o. does. Of course, a b.f.o. works over a narrow frequency range as it is mixed with the i.f. signal. Robin's receiver needs to be kept in tune with the HP-200E which is suggestive of carrier re-insertion with the original r.f. signal.

Follow-Ups

Vulcans first. My description of civil-owned examples in March prompted a letter from **Norman Skinner** (Southend-on-Sea). Norman is chairman of the Vulcan Memorial Flight Supporters Club, which I must immediately say is not to be confused with the RAF's



D-ABMA (23153) Boeing 737-230 of Lufthansa seen at Heathrow.
Christine Mlynck

Vulcan Display Flight. British Air Ferries had XL426 G-VJET in for inspection earlier this year and were pleasantly surprised at the good condition of the aircraft. However, it is still clear that considerable funds, upwards of £0.5M will be needed just to pay the maintenance bills to get the aircraft ready for flight. The next obstacle will be CAA certification and finally a crew, with multi-engine ratings, will need to be trained. I'm sure that all readers will join me in wishing this project well.

If the RAF's XH558 remains flying then we have the prospect of a formation of Vulcans for the first time in many years! Unfortunately, just like the RAF's aircraft, support for XL426 will depend on that last refuge of the destitute that's becoming a sign of our times: industrial sponsorship. With the recession deepening, the total size of the sponsorship 'cake' is limited. Let me put my opinion here. If two aircraft (one of which isn't flyable yet) compete for slices of the same 'cake' and both achieve only 90% of the amount needed for airworthiness, that will leave NO Vulcans in our skies and that would be after great expense. Wouldn't it be better to ensure that at least one remains airworthy by diverting all funds to maintain the example that is already able to fly? I leave readers to consider their own conclusions, but I bet my postbag will be a little bigger this month!

Concordes and Heathrow

In April, Paul Hilton (Thatcham) was puzzled that Concordes prefer 09R/27L at Heathrow - sorry I muddled up the runway numbers in the previous edition. The answer was given to me by Concorde captain **John Hutchinson**, known for his appearance in airshow documentaries on TV last year. Concorde passengers pay a premium to buy a fast flight. The preferred runway cuts down taxiing time to Terminal 4, which is acknowledged as part of the 'fast flight' service. The Heathrow controllers have a good understanding of this requirement and

do their best to offer the preferred runway to Concorde arrivals whenever possible.

Historical Section

A kind reader, whose name I can't unfortunately decipher, has sent radio-navigation charts of the UK as at 1/9/1947. In February Chris Hasman (Leicester) declared his interest in this subject dating back to 1955. I managed to find some details around a decade after this, and now we have information from a decade before. We still haven't hit the target! I shall send the documents on to Chris with pleasure but first I'll describe them to you all. That's easy: one airway connects the 'Range' beacon at Prestwick ('PR', 225kHz) to that at Bovingdon ('BO', 302kHz) on a track of 160° and at a distance of 311nm. The airway continues north to Stornoway. A second airway leaves Burtonwood (near the north-east corner of Wales) and heads for Bovingdon, too. Lastly, routes out of Bovingdon go direct to either Paris or Brussels.

CONTINUED ON PAGE 55

Abbreviations

AIC	Aeronautical Information Circular
b.f.o.	beat frequency oscillator
CAA	Civil Aviation Authority
d.m.e.	distance measuring equipment
ft	feet
GASIL	General Aviation Safety Information Leaflet
h.f.	high frequency
i.f.	intermediate frequency
kHz	kilohertz
MHz	megahertz
nav.	navigation, navigational
n.d.b.	non-directional beacon
nm	nautical miles
NOTAM	NOTice to AirMen
r.f.	radio frequency
R/T	radio telephony
s.s.b.	single sideband
v.f.o.	variable frequency oscillator
v.o.r.	very high frequency omni-directional radio range

Useful Information

Air speed indicator: An aneroid instrument of flight. Compares pressure surrounding the aircraft (sensed through static vents) with pressure generated by the headlong rush of the aircraft through the air (sensed by a pitot tube). Calibrated to show speed when close to the ground. In the thin air at altitude, doesn't read speed directly but rather shows the effect of the air rushing past the aircraft. Answers questions like: "If the flaps are lowered now, is the effect of airflow so great that they would be torn off?"

Machmeter: An aneroid instrument of flight. Very similar to the air speed indicator except that it contains an additional mechanism that alters the reading according to altitude. The end result is an estimation of the speed of the aircraft relative to local speed of sound, i.e. the Mach number.

Altimeter: An aneroid instrument of flight. Responds to the atmospheric pressure surrounding an aircraft, which is sensed through static vents. Pressure decreases with height, enabling the altimeter to indicate height relative to some datum (such as aerodrome elevation or sea level).

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

You may remember that I mentioned the subject of continental interference to u.h.f. police 'personal radio' schemes in the September '90 column. I now understand that several forces have started using new channels just below their existing allocation in the band 450-451MHz. This should help to alleviate interference problems in some of the worst affected regions and provide welcome additional channels in congested urban areas.

One of the conclusions resulting from the inquiry into the police handling of the Trafalgar Square Poll Tax demonstration was that there were inadequacies in the communications system in use at the time. The limited number of channels available resulted in a delay in the passing of urgent messages, clearly an undesirable position to be in when situations are rapidly changing. Since the beginning of the Trafalgar Square inquiry a new communication system has been commissioned, which it is hoped will help to maintain control during any similar incidents which could occur in the future.

I have also been told that the London Fire Service has been allocated ten channels for local communications at incidents. I would anticipate that these will be in one of the u.h.f. Home Office allocations, but further details are not known at this stage.

BBC Communications

I received an interesting letter from reader **Adrian Lane** following my mention of the BBC tests on 47.645MHz in the April column. He was the Outside Broadcast Communications Engineer who set up the tests after a transmit antenna had to be repaired because of storm damage. In his letter he says that the test message was a recording of his voice digitally stored on a Maplin digital speech record and playback unit and that the antenna was in fact pointing west not north as originally described. He also said that the mention in *SWM* has at last made him 'anonymously famous' so perhaps this name check will help him travel a little way further along the road to stardom!

AR3000 Computer Control

Many readers have written to me since I discussed the AR3000 RS232 control port in the March '91 *SWM*. I must admit that I am now more confused than ever about the way in which the port operates. I was going to include some additional information in this month's column but have decided to wait until a few of the readers currently developing software have managed to obtain consistent results. One of the problems seems to be the way in which

the receiver continually sends signal strength readings to the computer without them being specifically requested. The variations in handshaking and timings encountered with different AR3000s and the many different types of IBM compatible serial communications cards have also caused problems but it is hoped that these will eventually be resolved.

A couple of readers are also working on Psion Organiser software and hope to have some form of automatic search and store program together with a memory manager utility working soon. The difficulty in this case is the way in which the Psion comms link operates. This has a built-in character buffer which is not easily controlled by the software. The end result is that the program has to wait until the buffer has filled with signal strength readings before the program can move on to load the next frequency. This slows the externally controlled search rate down to only one channel every few seconds, which is nowhere near the speed the receiver is capable of.

If you don't feel like developing your own software then the following information may be of interest to you. A new program called 'SCAN' which has been specifically written for use with the AR3000 and an IBM compatible computer is now available. The main features of the program are 3000 commented memory channels, Dual tracking v.f.o.s, Memory scan or programmable band scan, Single frequency activity logging, ITU band-plan display and finally a listeners logbook utility.

The facility which I like the most is the programmable band scan. This allows a range of frequencies to be quickly scanned in step sizes of the user's choice. Scanning stops when a signal is found and it is possible to transfer an active channel into memory using a single key press. A step adjustment is also provided so that the receiver always tunes on recognised channel frequencies even though the step size may have been changed by the user whilst scanning was in progress.

I would have liked the program to have had some form of automatic logging facility and memory management utility which would have permitted uploading and downloading of the AR3000's memory banks, I understand however that the author is currently looking into these features. The memory manager is proving particularly difficult to develop because of inconsistencies between AR3000s. Even so the existing program is still the best I have so far seen for this particular receiver and at the current price of £49.50 it is also one of the cheapest.

If you would like further information on this package or a whole range of

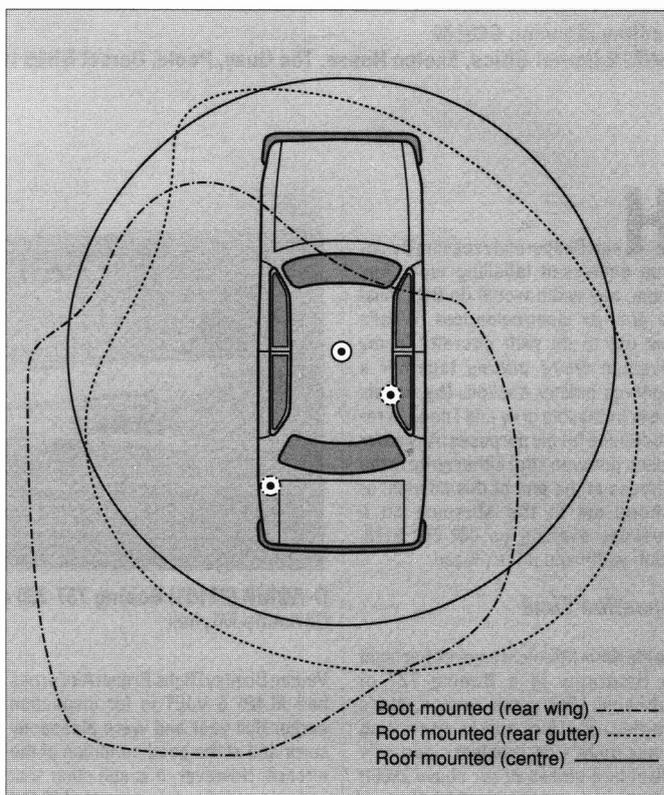


Fig. 1: The effect of antenna position on the polar diagram of a mobile antenna.

other scanning related programmes then send an s.a.e. to the distributor, **Barrie Jenkins**, 32, Marsh Crescent, High Halstow, Kent ME3 8TJ.

Mobile Scanning

With the warmer weather and longer daylight hours now with us I thought that it would be a good idea to look at the subject of fitting a scanning receiver in to a car. This may seem a fairly simple task but judging from the letters I have received on the subject and from personal experience it would seem that all kinds of difficulties can occur.

Perhaps the most important aspect to be considered before starting any work is where to mount the scanner. This is not easy as most modern cars tend to make use of every available inch of space for various pockets, coin holders, cassette trays etc. This makes installation without major surgery difficult, but you may be lucky.

The ideal position would be with the display at eye level and the controls within easy reach. This may be possible if the car has a wide dash panel, the scanner can then be mounted on top of the dash with very little extra work required. However beware of long periods of direct sunlight shining through the windscreen onto the scanner as this can seriously distort plastics housings, overheat internal circuitry and permanently damage liquid crystal displays.

The next best position is in or under the dash. Again modern cars tend to use a lot of plastics mouldings in their construction so it may be difficult to find a secure mounting point. One tip here is to cut out a suitably sized piece of aluminium sheet and fit it behind the panel. Any mounting screws are then

fitted through both the plate and the panel, distributing the weight more evenly and preventing the panel from cracking.

Mounting a scanner actually inside the dash panel gives the neatest looking installation but usually requires a lot of additional work. If you don't want to adversely effect the resale value of your car or if you have a leased vehicle then take a second look at the dashboard fittings. Many of these are removable in order to make room for options on other models. For example a banking panel may be fitted under the car radio, this could have a cassette holder or handy box fitted in another model. A quick visit to your local dealer's spares department may provide a tailor made mount at minimal cost, and if you want to sell the car all you have to do is refit the original panel.

If none of the options mentioned so far have been possible then why not consider fitting a console over the transmission tunnel. Once again many car manufacturers fit these on their more up-market models so a visit to your dealer may prove fruitful. Alternatively, large car accessory shops stock several 'universal' fitting consoles so try and pick one that suits your scanner.

Some thought should also be given to security. With the increasing number of thefts from motor vehicles, particularly in cities, it is a very good idea to fit an alarm to the car. At the very least you should keep the scanner out of sight when you park, or better still, take it with you. Fitting the scanner on a 'slide mount' can speed up this process. The mount consists of a two parts, one half is attached to the car, the other half to the receiver. All the power, antenna and speaker connections are automatically made

SSE**HIGH QUALITY ACCESSORIES**

THE CHARGER & SCANNER SPECIALISTS

FOR SCANNING MONITOR RECEIVERS**JIMPSU-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 FAIR MATE HP-100E/200E/1000AB. AOR-1000. YUPITERU MVT-5000/7000/125.

REALISTIC PRO-38. ICOM-R1. UNIDEN UBC50XL. BC55XLT. UBC70XLT. 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. **PRICE £29.50.**

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.**

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

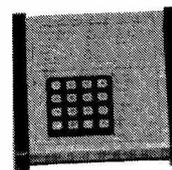


**NEW
PSU-101 MK IV**

DEWSBURY ELECTRONICS

SUPA-TUTA

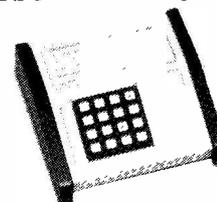
To teach you morse
--- Quickly



£69.95

SUPA-TUTA PLUS

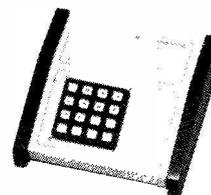
To teach you morse with keyer



£84.95

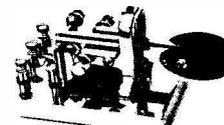
SUPA-KEYA

The most friendly
keyer around



£99.95

VIBROPLEX



Original Deluxe Iambic Deluxe
£96.88 **£90.89**

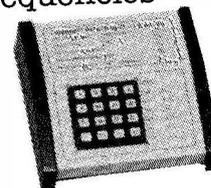
SUPA-TUNA

Makes selecting frequencies
easier

£67.50

VAT included on all items
at 17.5%

Post & Packing £2.50



DEWSBURY ELECTRONICS

Stockists of DLAWA - VIBROPLEX - ICOM -
YAESU - KENWOOD - JRC - WAVECOM

**DEWSBURY ELECTRONICS, 176 LOWER
HIGH STREET, STOURBRIDGE,
WEST MIDLANDS DY8 1TG**

Tel: (0384) 390063/371228

Fax: (0384) 371228



Instant finance available subject to status.
Written details on request.

WORLD WIDE AERONAUTICAL HF RADIO HANDBOOK

★★★ **£6.95** ★★★

(Post free UK. P&P = £1.50 rest of the World.)

Contains 128 pages, including maps, of world-wide HF radio stations and their frequencies.

Has information for both civil,
and military aviation.

Send your order to:

DPR Marketing & Sales,

Dept SW, 37 Heath Road, Twickenham,
Middlesex TW1 4AW United Kingdom

Telephone: 081-891 3169

(answerphone outside office hours)

For same day dispatch, (Tuesday-Saturday only) why not
use our fax to order your copy(s) of this book.

Fax: 081-891 2960 (6am - midnight GMT)

We accept all major credit cards, including Switch,
cheques (overseas customers must make their payments
via a UK bank, in sterling), and postal orders.

STEPHENS-JAMES LTD.

47 WARRINGTON ROAD, LEIGH, LANCS. WN7 3EA

Telephone (0942) 676790

Turn at the Greyhound Motel on the A580 (East Lancs. Road).



SHOP HOURS
Mon - Fri 9.30-5.00pm
Sat 9.30-4.30pm

24 HOUR MAIL ORDER SERVICE

ANTENNA RANGE

CUSHCRAFT

A3 3 Element Tribander Beam	£331.00
A4 4 Element Tribander Beam	£408.75
10-3CD 3 Element 10m Monobander	£123.50
15-3CD 3 Element 15m Monobander	£143.00
20-3CD 3 Element 20m Monobander	£244.00
AP8 8 Band Vertical 25ft High	£185.50
AP5 5 Band Vertical 25ft High	£153.26
18 Element 2m Boomer Antenna	£155.94
15 Element 2m Boomer Antenna	£98.70
Ringo Ranger 2m Vertical	£46.57
New R5 5 Band half wave Vertical	£268.84
DW 10, 18, 24MHz Rotary Dipole	£190.00

BUTTERNUT

HF 6VX 6 Band Vertical Antenna	£188.00
HF 2V 80/40 metre Vertical	£143.77
A 1824 HF6V 17/12m Add on kit	£37.64
20MRK HF2V 20m Kit	£34.12

FULL RANGE OF ACCESSORIES FOR THE BUTTERNUT RANGE

HY-GAIN

TH2 Mk3 3 Element Tribander	£254.00
18AVT 5 Band Vertical	£188.00

JAYBEAM

TB3 Mk3 3 Element Tribander	£403.00
TB2 Mk3 2 Element Tribander	£270.25
TB1 Mk3 Rotary Triband Dipole	£136.30
VR3 Mk3 Triband Vertical	£94.00
DB44 & 6m Element Beam	£142.50
4Y/4m 4m 4 Element Beam	£50.00
4Y/6m 6m 4 Element Beam	£66.03
LW5/2m 5 Element 2m	£24.91
LW8/2m 5 Element 2m	£31.96
PBM14/2m Parabeam	£85.00
5XY/2m 5 Element Crossed	£43.50
8XY/2m 8 Element Crossed	£57.00

SCANNING RECEIVERS

WIN 108 Air Band	£178.80
AOR1000 Handheld Receiver	£254.51
AOR900UK	£203.32
Base Station Receiver AR2002	£497.89
NEW HF 225 General Coverage Receiver	£434.24
AOR 300 Base Station	£786.30

KENWOOD RANGE

TS950SD HF Transceiver	£3,268.54
TS950S HF Transceiver	£2,553.32
SP950 Filtered Speaker	£89.45
TS940S HF Transceiver	£2038.37
AT940 Automatic Antenna Tuner	£250.20
SP940 Speaker with Filters	£89.45
TS850 HF Transceiver	£1323.16
AT850 Auto Tuner	£147.73
PS52 Heavy Duty PSU	£235.00
SP31 Speaker	£4.84
DSP100 Digital Processor	£429.13
TS440S HF Transceiver	£1163.57
AT440 Automatic Antenna Tuner	£147.97
PS50 20 Amp Power Supply	£227.33
TS140S HF Transceiver	£880.74
PS430 Power Supply	£177.55
AT250 Automatic Antenna Tuning Unit	£373.96
AT230 Antenna Tuning Unit	£213.20
SP230 Speaker with filters	£68.90
TL922 HF Linear Amplifier	£1527.50
MC50 Base Station Microphone	£47.08
MC60A De Luxe Desk Microphone	£90.13
TR751E 2m Multimode Mobile Transceiver	£612.02
TR851E 70cm multimode Transceiver	£699.00
TM231E 50watt 2m Transceiver	£295.25
TM431E 35watt 70cms Transceiver	£325.93
TM701E 25watt 2m/70cm Transceiver	£458.76
TS680S HF Transceiver + 6 Metres	£1006.41
TH25 2m FM Handheld Transceiver	£249.00
TH205E 2m FM Handheld Transceiver	£178.00
TH215E 2m Handheld FM Transceiver	£178.00
TH405E 70cm Handheld FM Transceiver	£263.00
R5000 General Coverage Receiver	£894.02
VC20 VHF Converter 108-174MHz	£170.85
R2000 General Coverage Receiver	£607.93
VC10 VHF Converter 118-174MHz	£165.46
HS5 De Luxe Headphones	£38.35
TS790E Dual Bander Transceiver	£1527.50
LF30A Low Pass Filter	£32.96
SP50 Mobile Speaker Unit	£20.86
TH75E Handheld Dual Bander	£356.59

Full range of accessories stocked microphones. SWR meter, DC Leads, Antennas etc.

G5RV full size high power	£29.50
G5RV half size high power	£27.00
G5RV full size	£18.90
G5RV half size	£16.35
G5RV 160-10M Antenna	£26.00
Dipole 80-10 kits	£26.00
6m 3 Element Beams	£27.00
50m Enam. Copperwire	£7.10
2m Slim Jim	£10.75
6m 2EI HB9CV Beam	£15.35
D130 Wideband Discone	£80.72

Postage extra at cost. Full range of insulators, clamps: aluminium tubing wall brackets.

MFJ ACCESSORIES RANGE

MFJ 1601 Random Wire Tuner	£45.00
MFJ 1701 6 way Antenna Switch	£39.50
MFJ 949C Versatuner	£171.65
MFJ 941D Versatuner	£127.72
MFJ 901B Versatuner	£66.42
MFJ 300 Watt Dummy Load	£34.23
MFJ RF Noise Bridge	£64.47
MFJ-931 Artificial Ground	£81.26
MFJ-962B 1kW Antenna Tuner	£297.45

ROTATORS

G400RC	£182.90
G6600RC	£240.11
T2 X Heavy Duty Rotator	£407.67
CDE AR40	£172.39
CD 451 1R	£242.15
EMOTATOR 1057SY	£162.45

We are also stockist for Global, Datong, and have a full range of publications by RSGB-ARRL and others. Our secondhand list is updated daily. Please send SAE for this or any information.

JAVIATION

VHF/UHF AIRBAND SPECIALISTS Tel: (0274) 732146

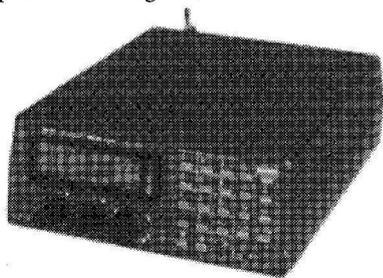
AOR AR-2500

The AR2515 was an AR2002 fitted with a "Whizzo" micro-processor, this same software has now been incorporated into the NEW AR2500 but at a considerably reduced price.

The AR2500 boasts nearly 2,000 memory channels (1,984 to be exact) in 62 banks of 32 plus 12 search banks, modes of AM, NFM & WFM along with increment steps of 5, 12.5 & 25kHz

Frequency coverage is from 1MHz to 1500, an added feature is a BFO for the reception of SSB signals.

The AR2500 can be controlled through the RS232 interface on the rear of the set.



CARRY CASES

Leather carry cases for the AR1000/HP100 and NOW ALSO THE MVT5000. £14.99

FREQUENCY LISTS:

VHF AIRBAND LIST: £3.00

UHF AIRBAND LIST: £3.00

Latest editions updated to May 1991.

For further information please send a large SAE or if you would like a chat please give us a call, it would be nice to speak with you.

Thanks.

Yupiteru MVT-7000

Features:

0.1MHz-1300MHz, 200 memory channels. 10 Search banks. AM, NFM & WFM. Rotary tuning. Attenuator. Contrast Display. Audio Scan & other features.

Supplied with:

- ★ 4 x 1600mAh Nicad batteries
- ★ Telescopic antenna
- ★ Metal belt clip
- ★ Wrist strap

Carlton Works, Carlton Street, BRADFORD, West Yorkshire BD7 1DA

Telephone: (0274) 732146 Facsimile: (0274) 722627

when you slide the receiver into the car. Tandy have one shown in their catalogue and most CB dealers also sell them. One reader has suggested making a similar type of mount by attaching the scanner to the underside of the dash-mounted ash tray. So this may be a cheap alternative if you want to do-it-yourself.

A source of power is likely to be the next requirement. This can usually be obtained from the supply feeding the car radio or the rear of the cigar lighter. Check to see if the supply is switched with the ignition key. If it is, you may need to think about how long the contents of the scanner memories are retained once the power is removed, especially if you don't use the car that often. Always fit a suitable value fuse in the supply lead as this can save a lot of expense if anything does go wrong, especially if you forget to check the polarity of the power connector before you plug it in.

Suitable Antennas

The subject of a suitable mobile antenna is a difficult one. A lot depends on how you feel about your car looking like an overgrown hedgehog. I personally like to keep it as standard looking as possible. The more

inconspicuous you can make it appear the better, nothing seems to attract unwanted attention more than strange looking antennas sprouting from every possible surface.

One solution is to make the antenna detachable, many different types of boot, gutter, window and magnetic mounted antennas are available so the choice is yours. The position the antenna is mounted in can have a marked effect on its performance. For example, mounting the antenna on the rear wing of the car has the effect of screening the antenna from signals arriving from the front of the car. The best location is in the centre of the roof as this gives good coverage in all directions, but a gutter mount is a reasonable compromise.

Antenna Type

The type of antenna depends on the range of frequencies you wish to monitor, if you are just interested in the v.h.f. air or marine bands, for example, a simple $\lambda/4$ or $5\lambda/8$ wavelength whip may be sufficient. However if you want to monitor a wide range of frequencies then one of the wideband mobile antennae available from Tandy, Sandpiper Communications or Raycomm may be a better choice. I

personally favour a roof mounted $5\lambda/8$ over $\lambda/4$ wave u.h.f. collinear design which seems to give good results on most frequencies and has the advantage of being reasonably compact whilst operating well on the v.h.f. m. broadcast band. The antenna can then be used to feed both the scanner and the car radio via a suitable splitter.

Beware

Beware if you intend to use an existing car radio antenna with your scanner as many of these have special matching components built into them which may introduce considerable attenuation outside the intended frequency range.

A good example of this is a standard roof mounted antenna fitted on a very well known make of car. I thought that this would be ideal for use with a scanner, all I had to do was obtain a replacement antenna rod from the dealer, modify it by adding a loading coil part way along its length and then fit it in place of the original rod. This I did only to find that the performance was appalling. I checked the loss in the connecting cable, but this in fact turned out to be considerably better than I had expected. My attention next

turned to the hinged mount at the base of the antenna. This seemed to be very well constructed, with a good coaxial connection through the car body and a sound connection to the antenna rod. A quick check with a multimeter revealed a good electrical connection with no short circuits between the inner and outer of the coaxial cable. I was almost at the point of giving up when I decided to take the hinge assembly apart.

Problem Solved

Once again nothing seemed to account for the poor results, the mount had been filled with some silicone rubber sealant in order to waterproof it and I wondered if this could somehow be causing a problem. I decided to carefully remove it and once I had picked away the first layer I found a miniature loading coil connected in series with the feed to the hinge joint. Once this was shorted out the problem was solved at a stroke. So beware of even simple looking car antennas as they can contain one or two surprises.

Next month I intend to continue with more information relating to mobile scanning and interference suppression, so until then - Good Listening.

airband

CONTINUED FROM PAGE 51

Names such as Northolt, Binbrook, Waddington and Valley are aerodromes that have stood the test of time. Whitchurch and Croydon - well, that's a different matter. And as for the ranges, I imagine that we now call them n.d.b.s. The v.o.r. had yet to appear on the scene.

Frequency & Operational News

Two aerodrome changes are listed in GASIL 3/91 from the CAA Safety Promotion Section. Gloucester/Cheltenham will now be known as Gloucestershire; the n.d.b. on the

aerodrome (398kHz) changes its identification from SVN to GST. There's also a d.m.e. with identity GOS, channel 102Y (select 115.55MHz on the nav set even though there's no v.o.r.). At Turweston, a new air/ground frequency of 122.175MHz has become available. Each new change only gets a mention in one issue of this column, unlike the GASIL which gives reminders over 3 months. Pilots ought to read the NOTAMs which are published more frequently than SWM and hence are more up-to-date.

Another CAA source is AIC 27/1991 where I read that at Heathrow the NE n.d.b. (357kHz) has been withdrawn.

An earlier frequency swap meant that it could have been confused with Woodley if pilots weren't up-to-date. Although on the 23 approach, it wasn't co-located with either marker.

The usage of two h.f. allocations is queried by **Evan Murray** (Auckland, New Zealand). 13.304MHz carries EIAl operations, Kano (Nigeria) air/ground, Kinshasa/Kitona (Zaire) flight information service and Luanda (Angola) air traffic control centre. I'm sure that one of these services will satisfactorily explain your question for you, Evan.

As for 11.330MHz, this is Honolulu and Tokyo air/ground in the NP-3 North

Pacific circuit. There's no magic about finding these out; the most convenient reference is, in my opinion, Tim Christian's *World HF Aeronautical-Mobile R/T Frequency Allocations* which costs £6.99 in the UK from Isoplethics, 157 Mundesley Road, North Walsham, Norfolk NR28 0DD, England. I don't know the overseas price but, having weighed a copy, I would say that £8.34 wouldn't be far off the mark if you are able to send a remittance in sterling.

The next three deadlines (for topical information) are June 14, July 12 and August 9.

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

RADIO LINE

0898 654676

UPDATED EVERY SATURDAY

RADIO LINE

Calls charged at 34p per minute cheap rate,
45p per minute at all other times.

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

Peter de Jong from The Netherlands has written to add his comments to the ongoing Offenbach FAX saga. It seems that even abroad they're troubled with interference on I.f. Peter reports that, after extensive use of audio filtering, the interference still causes a contrast reduction. I've included a sample picture or two so you can see the results. Peter also points out that the satellite images broadcast from Offenbach are in fact different from those re-broadcast from the satellite. Offenbach have also recently updated their Meteosat format to give clearer coastline and supplementary information. If anyone has received a good copy of this new format perhaps you'd be kind enough to send me a copy.

As an alternative source of interesting satellite photos, Peter recommends NAM on 10.865MHz at 2315UTC. This station relays GOES images - but watch-out, you'll have to use manual start as they don't use a synchronising sequence. When conditions are good it's also worth trying the USN Apra Harbour transmissions on 5.257, 10.153, 19.858 and 25.478MHz. For details of schedules you'll need to refer to a FAX guide.

Dr Wood in Ledbury is a little closer to home and asks why some readers seem able to cope with the Offenbach interference whilst others cannot, despite having similar equipment. The reason comes down to the nature of the interference. If you're unfortunate enough to live close to a local source, there is probably little you can do to improve the results.

Robert Graham has written from his home in Javea, Spain. He uses a Sangean ATS-803A receiver fed by a long wire antenna for his utility listening. On the decoding front he has the RX-4 system from Technical Software that he runs on his BBC B computer. Robert asks if there are any UK press agencies that transmit Stock Market and other financial reports on the h.f. bands. I'm afraid I don't know of any. As far as I know the bulk of UK press information is now carried via satellite. However, if any readers do know of a source I'm sure they will drop me a line with the details.

Jean-Marie Chouillet of Wimbledon uses a Sony ICF-2001 receiver with an Amstrad PC-1512 computer for utility monitoring. The software package is PC-SWL distributed by Comar Electronics. Jean-Marie has had great success with RTTY and c.w. but not with FEC or ASCII. The problem with FEC is that there's not a great deal to be found, outside the amateur bands. The main use for this mode is occasions when information needs to be broadcast. An example would be a coast station

traffic list. However, once the message has been sent the channel usually reverts to SITOR. This makes it difficult to find and decode FEC transmissions. Once you've developed the skill to recognise the sound of FEC you may have a little more joy.

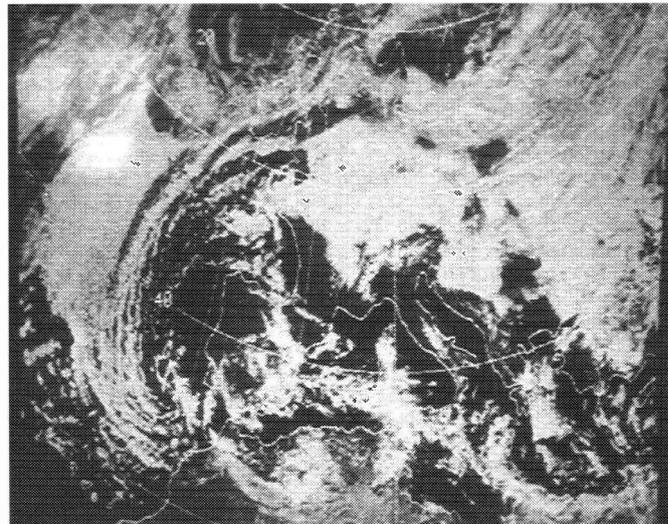
As far as ASCII is concerned, I'd give up looking as it's almost extinct!!

Decoding Update

I thought it was about time I featured some news on the decoding scene, so I've put together a couple of items that may prove of interest.

The first comes from ERA, who have released some enhancements for their popular Microreader. The first of these is an EPROM software revision that brings the software up to Revision 3.2. Incidentally the revision number of your existing software is flashed on the screen at the moment of switch-on, so it's easy to see if you need to upgrade. Fitting the upgrade is very straightforward and is just a case of unplugging the old EPROM and inserting the new.

You do, of course, need to be careful that you keep the EPROM the right way round and follow the anti-static guidance. With the new software installed, you get several improvements designed to make operating easier. The most important of these is the provision for automatic baud rate and polarity detection. This takes much of the guess work out of decoding and should prove particularly valuable for the newcomer. The main other change is the addition of the 100



Meteosat visible, Offenbach 135.2.

baud data rate. This opens up many signals that were previously inaccessible. The latest cost I have for the upgrade is £5.00 for the EPROM only or £10.00 if the Microreader is returned for upgrade. Before sending off for your upgrade, you should check the latest situation with ERA.

Regular readers will no doubt have noticed the problems people have when they attempt to connect the Microreader to a computer or v.d.u. ERA have recognised this problem and produced their own large screen display specifically designed to interface with the Microreader. The new display features a 'Supertwist'

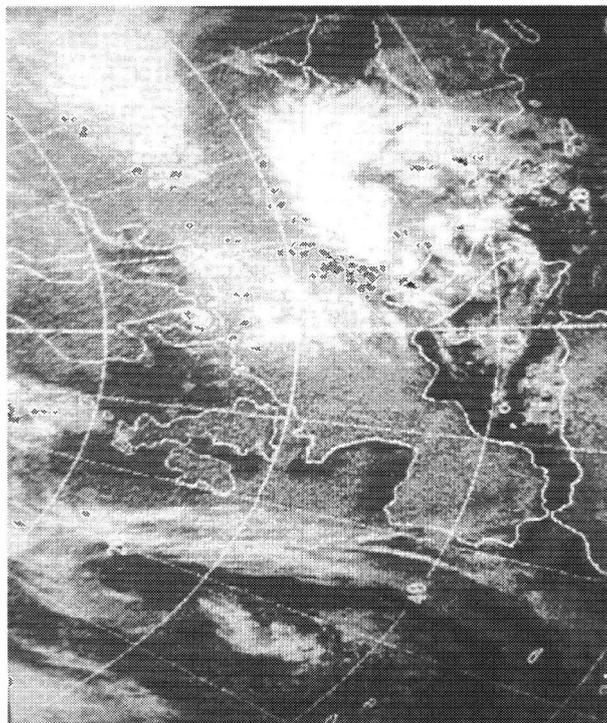
liquid crystal display with four lines of forty characters. This display capacity is further enhanced by the addition of a message store that can handle fifty complete screens of text! Access to this store uses a very simple system based on a single rotary knob on the side panel. Rotating this knob scrolls the screen up or down as required. An additional benefit of this system is that you can scroll through the store whilst still receiving data off-air.

Those who want a print-out are not forgotten, as there is provision for connecting a standard parallel printer to the display unit. Rather than just printing out data as it's received, you can also choose sections of text from the screen store and print just those out. This should save a lot of paper!

As if all this wasn't enough, the display unit processes the received text so that words are not split between lines. It also has the ability to inhibit the printing of excessive repeat characters such as RYs. All in all then the new large screen display is a well thought out unit that will, I'm sure, prove to be very popular. The current price is £185.00 and for more details please contact ERA Ltd, Unit 5, Clarendon Court, Winwick Quay, Warrington WA2 8QP.

Grosvenor Software have been supplying high quality decoding software to the amateur market for many years and have recently upgraded their BMKMULTY multi-mode package. This latest version features FAX, RTTY, ARQ, c.w. and SSTV decoding modes plus a transmit capability on RTTY, ARQ and c.w.. The transmit facility is obviously intended for the licensed amateur.

The package is designed to run on any standard IBM PC compatible computer, so should attract plenty of interest. I've used an early version of this program for about eighteen months now and can confirm that it's very



Meteosat infra-red, Offenbach 135.2.

NEW

FAX and WEATHER SATELLITES

Full resolution charts and greyscale pictures from any SPEC-TRUM computer to a dot matrix printer. Basic system £40 plus interface for FAX £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 March 90 Amateur Radio. 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. TIF 1 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 £9 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

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

ENTERPRISE RADIO APPLICATIONS LTD.



5 Clarendon Court,
Winwick Quay,
Warrington WA2 8QP
Tel: (0925) 573118



All products British made & Guaranteed for 2 years

MKII MICROREADER £154.95

A small self-contained unit that decodes Morse & RTTY without using a computer. Displays text from amateurs. Press Agencies, Shipping, etc. Selectable shifts & auto baud & polarity.

BP34 AUDIO FILTER £99.50

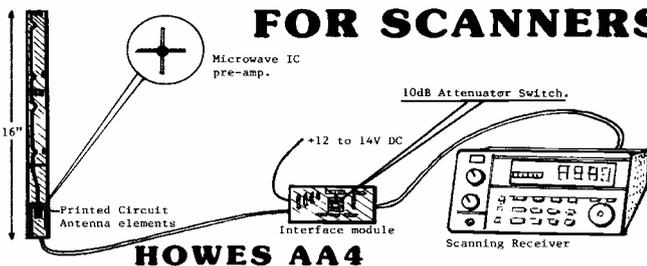
Simply the most powerful active filter you can buy. 34 Orders of filtering removes noise & interfering signals allowing you to hear the weak DX. A must for keen CW OPS, contest groups, etc. Exceptionally flat passband is ideal for data & cleaning up FAX signals.

ALL PRICES INCLUDE VAT & POST/PACKING.
Ring or write for more details personal callers by appointment.



C.M.HOWES COMMUNICATIONS

ACTIVE ANTENNA FOR SCANNERS



The **HOWES AA4** Active Antenna gives full coverage from 25 to 1300MHz. It is designed to be the ideal solution for those requiring a compact, broadband antenna for use with scanning receivers. The AA4 features advanced technology with a low noise microwave IC amplifier.

- ★ Fully broad-band covering 25 to 1300MHz.
- ★ Low noise microwave IC (NF <3dB). Over 15dB gain. IP3 +15dBm.
- ★ Coax powering 12 to 14V DC at less than 20mA.
- ★ 10dB switched attenuator on the receiver interface board.
- ★ 16 inches long, 1.2 inches wide. Easy to build kit or ready built modules.

If your scanner reception could benefit from the addition of a remotely located antenna, or you would like a much neater, more compact alternative to the ugly discone types, then the **HOWES AA4** could be just the job! You can read the review in the November '90 Short Wave Magazine. Excellent performance in a small space!

AA4 Kit: £19.80 Assembled PCB modules: £26.80

AA2 ACTIVE ANTENNA for 150kHz to 30MHz

The **HOWES AA2** is the active antenna to use for general coverage HF reception. Broad-band performance that does not tail off at the higher frequencies. The neat, compact answer for those with limited space, holiday use, mobile operation etc. Two selectable gain settings, local or coax powering (12 to 14V). IP3 +38dBm. Easy to build and much liked by customers!

AA2 Kit: £8.50 Assembled PCB: £12.90

Mail order to: **EYDON, DAVENTRY NORTHANTS NN11 6PT**
Tel: 0327 60178



HF SSB and CW RECEIVERS

Our range of simple, but very effective receivers opens up the world of long distance radio communications for a very modest outlay. Most of the kits listed below are designated for use on various amateur bands. Give us a ring to discuss your requirements for frequencies not shown here

The kits contain the electronics to build the receivers "Hardware packages" contain the mechanical items (case, dial, knobs, sockets etc) to go with the "works" supplied in the basic kit. In addition, all our amateur band receivers have **matching transmitters** to suit the **Novice** and full amateur licence. These can be combined with other kits to form complete transceiver projects.

SSB/CW RECEIVERS	Kit	Assembled PCB
DXR10 3 Band (10,12 & 15M) for DX amateur work	£26.60	£39.90
DcRx54 4 45MHz Aircraft band (rescue etc)	£15.90	£22.70
DcRx20, 40 or 80M Single band amateur receivers.	£15.90	£22.70

DXR10 Hardware package: £14.90 DcRx Hardware package: £16.50

RECEIVER ACCESSORIES		
CBA2 Buffer to enable use of DFDS counter	£5.90	£9.50
CSLA Sharp, dual bandwidth (SSB & CW) filter	£10.50	£17.40
DCS2 "S Meter" kit for above receivers	£9.20	£13.80
DFD5 Digital frequency counter/display	£41.50	£64.50
XM1 Crystal Calibrator, 8 marker frequencies	£16.90	£22.80

CV100 - ADD SHORTWAVE TO YOUR SCANNER!

This kit converts 1 to 40MHz up to 101 to 140MHz so you can tune these frequencies with a normal VHF scanner. No mods to the radio are needed

CV100 kit: £26.50 Assembled PCBs: £37.90

PLEASE ADD £1.20 P&P to your total order value

HOWES KITS are produced by a professional RF design and manufacturing company. They contain a good quality printed circuit board 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

73 from Dave G4KQH, Technical Manager.

THE VINTAGE WIRELESS BOOK LISTING

Published regularly containing 100s of out-of-print, old and collectable wireless, TV and amateur radio books/magazines etc. Send four first class stamps for next issue or £2.25 for next four issues.

WANTED: Pre 1960 Wireless, amateur radio and TV books and magazines.

NEW PUBLICATIONS:

The Government Surplus Wireless Equipment Handbook. Facsimile reprint Gives detailed information and circuit diagrams plus photos for British and American receivers, transmitters and test equipment etc. Large format. Incorporated is a surplus/commercial cross referenced valve and transistor guide. **Price £12.50 including postage.**

The HF Band Frequency List. This extensive volume covers the h.f. spectrum from 2-30MHz and gives details of transmissions outside the amateur bands including details of time schedules, plus comprehensive RTTY details. **Price £7.50 including postage.**

SCOOP PURCHASE: Clandestine Warfare. James Ladd and Keith Melton. This interesting and informative book studies the weapons and equipment employed by the SOE and OSS during WWII. Includes a chapter on radio communications equipment with photos, transmitters etc., with a chapter on collecting military and industrial intelligence, selection, training and sabotage. Large format. Limited number of copies. Brand new. **Published £14.95. Our price £9.95 plus £1.25 p&p.**

CHEVET BOOKS (Dept SW)

157 Dickson Road, BLACKPOOL FY1 2EU. Tel: (0253) 751858.

SAVE £100.00

NEW! PRO 2006: WITH HYPERSCAN

400 Memories AM/FM 25-520, 760-1300MHz, 240VAC/12VDC
£249.95 (LIST PRICE £349.95)

PRO 1000 MkII	£249.95
PRO 2022	RING FOR LATEST PRICE
PRO 2025	RING FOR LATEST PRICE
PRO 34	RING FOR LATEST PRICE

All Scanners Include FREE P&P & insurance in the UK. 12 months warranty

G0CVZ



Link Electronics

(Authorised Tandy Dealer)

228 Lincoln Road, Peterborough PE1 2NE
(0733-345731) SAE for leaflet.

Phone for latest on second-hand bargains

G6YTI



SERVICE INFORMATION

HITACHI

VT-17E Svc Man	VCR	2.25
VT-33E Svc Man	VCR	2.25
VT-7000E Svc Man	Port VCR	1.50
VT-8000E Svc Man	VCR	2.00
VT-TU7E Svc Man	VCR	2.25
VT-TU70E Svc Man	Port VCR	1.50
VT5000E Svc Man	VCR	2.00
Invicta CT7050 Svc Man	C TV	2.50

ITT

CP9210 Svc Man	C TV	1.50
CVC1 Svc Man	C TV	2.00
CVC2 Svc Man	C TV	2.00
CVC5 Svc Man	C TV	1.50
CVC20 Svc Man	CTV	1.75
GMC CB9000 Svc Man	CTV	1.75
GMC CD651 Svc Man	remt/cont	1.75
Golf class Svc Man	mus/cent	0.50
Golf Elect Svc Man	mus/cent	0.50

COURIER

MC01 Svc Data	Car Radio	0.50
Mini 8 MkII Stereo Svc Data	8 Track	0.50
PC51 Svc Data	Car Radio	0.50
Playmate MC01 Svc Data	Car Radio	0.50

SANYO

CTP6130 Svc Man	CTV	1.00
CTP6131 Svc Man	CTV	1.00
CTP6132 Svc Man	CTV	1.00

MURPHY

MC6103 Svc Man	CTV	1.00*
MC6201 Svc Man	CTV	1.00*
MC6241 Svc Man	CTV	1.00
MC6301 Svc Man	CTV	1.00*
MC6332 Svc Man	CTV	1.00*
MC6341 Svc Man	CTV	1.00
MC6402 Svc Man	CTV	1.00*
MC6441 Svc Man	CTV	1.00
MC7240 Svc Man	CTV	1.50
MC7245 suppl.	CTV	1.00
National TC-48G Svc Man	CTV	1.50

PHILIPS

520 series svc info	CTV	3.00*
2021 Svc Man	VCR	3.00
G26C583 Svc Man	CTV	2.50
G26C584 Svc Man	CTV	2.50
G26C586 Svc Man	CTV	2.50
K30 chassis svc info	CTVs	1.50
K30 chassis Svc Man	CTV	2.50
N1500 Svc Man	VCR	4.00
N1502 Svc Man	VCR	4.00
N1512 Svc Man	VCR	4.00
N1515 Svc Man	VCR	4.00

PHILIPS CONT

N1543 Svc Man	VCR	4.00
N1545 Svc Man	VCR	4.00
VR2000 Svc Man	VCR	3.50
VR2005 Svc Man	VCR	3.50
VR2010 Svc Man	VCR	3.50
VR2020 Svc Man	VCR	3.50
VR2073 Svc Man	VCR	3.50
VR2075 Svc Man	VCR	3.50
VR2340 Svc Man	VCR	3.50
VR64200F Svc Man	VCR	3.00
VR6920 Svc Man	VCR	2.50

THORN

850 Series Svc Man	TV	0.50
900 Series Svc Man	TV	0.50
950 Series Svc Man	TV	0.50
950MkII Svc Man	TV	1.00
979 Svc Man	TV	0.50
980 Svc Man	TV	0.50

TECHNICS

SL-BD2 Svc Man	TT/Sys	1.00
SL-BD3 Svc Man	TT/Sys	1.00
SL-BD21 Svc Man	TT	1.00
SL-D4(K) Svc Man	Dir/drv T/T	1.00
SL-D310(K) Svc Man	TT/Sys	1.50
SL-J1 Svc Man	bell drv sys	1.00
SL-J11 Svc Man	T/T	1.00
SL-P1 Svc Man	CD Player	2.00
SL-P2 Svc Man	CD player	2.00
SL-P3 Svc Man	CD Player	2.00
SL-P8 Svc Man	CD Player	2.00
SL-PJ1 Svc Man	CD Player	2.00

Abbreviations:

Svc	Service
Man	Manual
Port.	Portable
CTV	Colour TV
T/T	Teletext
Dir/drv	Direct Drive
Sys	System

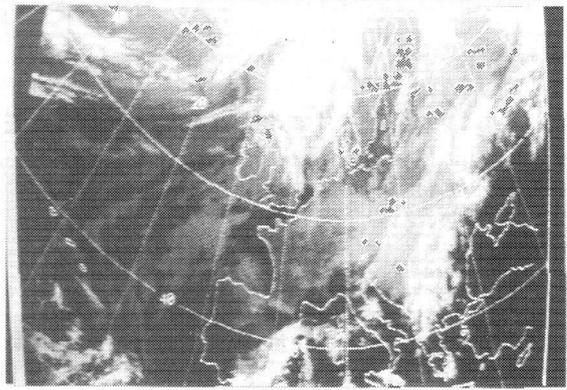
**LOTS MORE SHEETS
ETC. AVAILABLE.
FOR FULL LIST SEND
SAE TO ADDRESS
BELOW.**

Postal Orders and Cheques made payable to:

PW PUBLISHING LTD

PO Box No. 21, Enefco House, The Quay, POOLE, Dorset BH15 1PP

PC HF FAX 5.0



PC HF FAX enables you to receive weather charts, rebroadcast satellite pictures, amateur and press transmissions on your PC Computer.

This new version contains many improvements and enhancements over the earlier popular version.

Displays up to 16 intensity levels with 640 x 800 resolution. IOC Rates 288, 576, 864 and 1152. Line Rates 60, 90, 120, 180 and 240. Start and Stop Tone recognition with automatic unattended capture. Storage/Retrieval and Print from Disk. Image Zoom, Reversal, False Colour. Comprehensive File Management.

PRICE ONLY £99.00 inc. VAT. P&P £3.25

Update from Version 4 to 5 £32.50 P&P £3.25

PC SWL

The PC SWL is a complete package allowing reception of MORSE CODE, RTTY and FEC.

- * RTTY Baudot 45,50,57,75 and 100 Baud.
- * RTTY ASCII 75,110,150 and 300 Baud
- * CIR 476 Codes FEC, SELCAL and NAVTEX.
- * MORSE CODE 1 to 40 WPM.
- * Automatic Calibration and Code Recognition.
- * Unattended Capture and Printing.

PRICE ONLY £99.00 inc. VAT. P&P £3.25

Order PC HF FAX and PC SWL together for
ONLY £178.00 INC VAT, P & P £3.25

PC GOES

The PC GOES is a complete Weather Satellite Program and demodulator system for the IBM PC™ family of computers.

- * Processing of METEOSAT, GOES, NOAA and METEOR images.
- * Supports Hercules, CGA, EGA, VGA with up to 256 colours or grey levels.
- * Orbital Prediction and Realtime Plotting of tracks for up to 10 satellites.
- * Image Zoom, Pan, Reversal and False Colourisation.
- * Slide Show Animation and Export to PCX files.
- * Greyscale Printer output to all popular printers.

PRICE ONLY £199.00 inc. VAT. P&P £3.25

COMAR ELECTRONICS

109 Moor Green Road
Cowes, Isle of Wight PO31 7LF
Tel: 0983 200308



effective. However, the latest additions make the program of particular interest to the utility listener. Rather than try to cram a full review into this column, I'll just pull out a few of the more interesting features - a review may come later.

One particularly good point that's often omitted from amateur programs is the display of transmitted text. This is a feature that's useful for the amateur but not the listener. From the listener's point of view provision for this

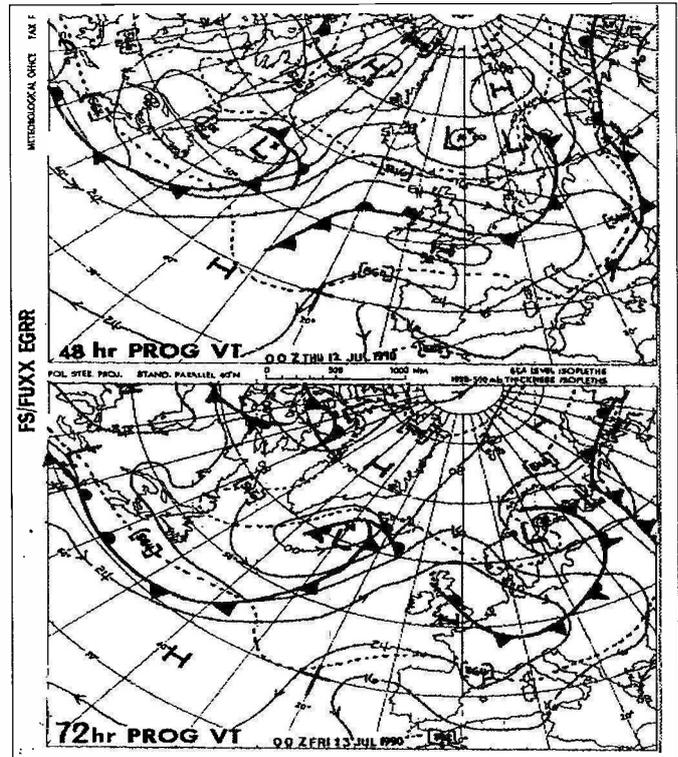
information is just a waste of valuable screen space. The BMKMULTY tackles this problem with a command that allows the transmit display to be reduced to just one line, thus saving most of the screen for received text.

All modes feature the ability to save the received text or image to disk. For the text modes this is a simple log file that stores the text as ASCII characters, thus allowing easy editing later. With FAX and SSTV the complete image is stored to disk.

Frequency List

As usual, here are a selection of loggings that have been sent in by readers. I've used the normal format, i.e. Frequency, Mode, Speed, Shift, Callsign, Time and Notes. If you'd like to contribute to the list, please send your loggings to reach me by the 15th of the month.

- 3.377MHz, FAX, 90, 576, YMA20, 2118UTC, Ankara Meteo
- 6.5295MHz, RTTY, 50, 700, VCCC, 2228UTC, Colombo Air
- 6.972MHz, RTTY, 50, -, YOG59, -, ROMPRESS Bucharest
- 7.658MHz, RTTY, 50, 400, YZD, -, Belgrade News
- 7.801MHz, RTTY, 50, 400, 9BC22, -, IRNA Iranian News
- 7.996MHz, RTTY, 50, 400, YZD9, -, Belgrade News
- 8.1675MHz, FAX, 60, 288, LQB9, 2213UTC, Press Photos
- 9.43MHz, RTTY, 50, 425, ZAT, 0811UTC, AT Tirana
- 9.970MHz, FAX, 120, 576, JMH3, 2103UTC, Tokyo Meteo
- 10.233MHz, RTTY, 75, 70, -, 2250UTC, VoA, link to Tanger
- 11.4757MHz, RTTY, 50, 400, HMF52, -, KCNA Pyongyang
- 11.497MHz, RTTY, 50, 400, SOL349, -, Polish Press
- 12.11MHz, RTTY, 50, 400, YOM21, 1117UTC, Rompress
- 12.82MHz, ARQ-A, 100, 170, UAT, 2306UTC, Moscow Radio
- 13.0935MHz, ARQ-B, 100, 170, OXZ, 0831UTC, Danish ship press
- 13.440MHz, RTTY, 50, 400, YZJ5, -, Tanjug
- 14.490MHz, RTTY, 50, 400, RNK36, 0555UTC, TASS Moscow
- 14.901MHz, RTTY, 50, -, CLN451, 1921UTC, PL Havana, TASS Relay
- 16.0143MHz, ARQ-E3, 100, 400, RFQP, 2135UTC, FF Djibuti
- 16.0668MHz, RTTY, 50, 400, IRO30, 1810UTC, ANSA Financial news
- 16.224MHz, RTTY, 50, 850, 3MA35, -, CNA, Taiwan
- 16.971MHz, FAX, 60, 576, JJC, 0910, Tokyo Radio test chart
- 17.1512MHz, FAX, 120, 576, NMC, 0524UTC, US Coast Guard
- 18.266MHz, RTTY, 50, 400, ZAA6, -, Tirana News
- 19.505MHz, RTTY, 50, 400, RCD36, 0658UTC, PL Moscow
- 19.980MHz, RTTY, 50, 400, 9BC33, -, IRNA Iran
- 20.085MHz, RTTY, 50, 400, ISX20, 1209UTC, ANSA Press review
- 20.826MHz, RTTY, 50, 400, RWZ76, 0558UTC, TASS Moscow
- 20.965MHz, RTTY, 50, 400, RKB50, 0558UTC, TASS Moscow



Sample HF-FAX chart received from Bracknell using BMKMULTY.

Those of you with an interest in SITOR transmissions will find BMKMULTY particularly effective. One of its strong points is that it can synchronise very quickly on text alone. Most traditional routines cannot synchronise until idle characters have been received. This puts a delay in the system that can mean vital information is lost. This feature is further enhanced as the data analysed to obtain synchronisation is subsequently decoded and displayed. In comparison with other systems I have tested, I think this package now has the fastest synchronisation time.

Moving on to the FAX mode, this features full coverage of all the common modes and includes some useful image manipulation controls. These controls enable the image to be moved about the screen quickly. The

only weak point of the FAX decoder was the lack of a greyscale. This means that all images are converted to pure black or white. Whilst this is fine for the reception of charts, photographs, fairly obviously, loose much detail.

The last part of the package I'll cover here is the audio spectrum analyser. This ingenious system provides a graphical display of the signal and is designed to aid accurate tuning. For the listener this is a powerful extra as the spectrum used by a signal often gives vital identification clues.

I'm sure you will agree that the BMKMULTY features a very useful range of features that should appeal to many listeners. For more information look out for the adverts in the magazine or write to Grosvenor Software, 2 Beacon Close, Seaford, East Sussex BN25 2JJ.

Tanjug Schedule

Day Watson of Cleveland recently managed to capture a transmission schedule for this popular station. Knowing that many of you have a strong interest in press broadcasts, I've printed the complete schedule here for your information. You will note that I've included the foreign language broadcasts. This is as a result of popular demand, as many *SWM* readers are multi-lingual and have requested details of foreign language broadcasts.

ENGLISH SERVICE				
Area	Call	Frequency	Time	Power
SE Asia	YZJ2	11.604MHz	0400-1700UTC	25kW
Far East	YZJ5	13.44MHz	0400-1700UTC	25kW
Europe, Africa	YZD7	12.212MHz	0400-1700UTC	10kW
SE Asia	YZD9	7.996MHz	1700-0400UTC	25kW
Far East	YZD7	7.806MHz	1700-0400UTC	25kW
Europe, Africa	40C2	5.24MHz	1700-0400UTC	10kW
Europe, Africa	YZD	7.658MHz	1700-0400UTC	10kW (0900-2200 Sun & Mon)
FRENCH SERVICE				
Area	Call	Frequency	Time	Power
W. Africa	YZJ6	15.705MHz	1100-1400UTC	25kW
Africa	YZJP			
W. Africa	YZD6	7.592MHz	1900UTC -c/d	25kW (1300-2000 Sun & Mon)
SPANISH SERVICE				
Area	Call	Frequency	Time	Power
S. America	YZJ4	19.865MHz	1400-1600UTC	25kW (not Sunday)
ENGLISH REGIONAL SERVICE				
Area	Call	Frequency	Time	Power
SE Asia	YZJ2	11.604MHz	0400-0500UTC	25kW
Far East	YZJ5	13.44MHz	0400-0500UTC	25kW (Sun & Mon only)
E. Africa	YZJ4	20.204MHz	1300-1400UTC	25kW
FRENCH REGIONAL SERVICE				
Area	Call	Frequency	Time	Power
Angola	YZJ	20.204MHz	1200-1300UTC	20kW
SPANISH REGIONAL SERVICE				
Area	Call	Frequency	Time	Power
Argentina	YZJ8	17.610MHz	1800-1900UTC	25kW

Lawrence Harris
5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5QB

During the last few weeks we have had two METEORS and three NOAAs in operation. Several SWM readers including **Bob Warriner** and **Arthur Rhead** noticed problems with software not synchronising on METEOR 2/20, the newest of the Russian weathersats, which lost its phasing bars and grey scale during April. Its pictures otherwise seem to be normal. The main consequence of this change is that software that relies on detecting the bars, a sequence of black and white verticals, will not synchronise, and so it is back to the framestore for a while!

GOES

It's a long time since I have been able to receive any identifiable pictures from GOES but the post recently brought back my microwave pre-amp from **Dave Cawley** of Timestep Weather Systems, whom I persuaded to finish and align it for me. The original components were obtained from the Remote Imaging Group in kit form, but I realised that it needed specialist equipment for assembly and alignment. I got another electronics expert to do the bulk of the assembly and Dave kindly agreed to do the finishing touches with his specialist equipment. I tried it out on METEOSAT first because I knew what sort of noise level I get on those images. The result was a considerable improvement and a virtually noise-free image, so GOES was my next challenge. The dish had to be adjusted to point westwards and almost horizontally. While using a chair and pieces of wood to suitably balance the dish, my neighbour commented "oh very scientific, Lawrence!" The result was that I saw live GOES pictures for the first time in more than two years. Without the pre-amp, the picture was simply not identifiable, other than to recognise the noise as a.p.t. I have analysed the positions all of the GOES satellites as follows: GOES 5 is at -37° GOES 6 is at -33° and GOES 7 is at -17°

Obviously it was none of these! So I obtained a few more Kepler elements and found GOES 2 is at 8° elevation. At ground level my horizon is not very good but the dish and pre-amp produced a fair picture on the computer. So I must now try to get a Yagi which can be mounted just a metre or two up.

Kepler Elements

Anyone wanting the very latest set of Kepler elements should send me an s.a.e. (please - not just a stamp) and I will forward a printout giving a set of all weather satellites together with their current operating frequencies. These sets will now normally be just a few days old, courtesy NASA!

Seasonal Effects

Each year, during spring and autumn, we receive some dramatic views from NOAA 10 particularly during morning passes. The satellite is travelling southbound and the reflection of the sun in the Mediterranean and also the North Sea catches the sensors. I often record this pass in order to look at it later on in case it is especially good. Another feature which I really get a kick out of seeing are the Canadian icebergs! I have mentioned before about METEOR 3/3 having a high orbit and on April 4 I saw the 1600UTC pass over Labrador. The view was incredible - the icebergs could be seen covering Hudson Bay and the Labrador coast. You need a clear westerly horizon to be able to pick up METEOR 3/3 within a couple of degrees of the horizon. Another well-known seasonal change is the ice that forms and melts in the area of the Gulf of Bothnia. In severe winters ice forms throughout the region, particularly around the Gulf of Finland and Lake Ladoga. When this happens you can expect activity from the radar-carrying OKEAN satellite which is able to map the movement of the ice as an aid to shipping. As of late April there is not much ice left in the region. We usually think of the

'overnight' NOAA 9 pass as being in darkness - so it is for most of the year. From mid-April onwards the southbound pass in early morning is in sunlight. You can record it if you wish to have a weather view earlier than the later NOAA 10 pass. Finally, overnight southbound METEOR satellites can be heard operating as they pass over the sun-lit north pole and then switch off when they enter the dark terminator. If you have a satellite plotting program such as Instant Track you can follow the progress of these satellites and see exactly where they are when they switch off.

Gulf of Genoa

During mid April an oil tanker caught fire in the waters around northern Italy and once more all was revealed by METEOSAT! I heard of the fire before knowing exactly where it was so I switched on the equipment and the next C03 frame showed the smoke rising in the Gulf of Genoa. I estimated it to be covering some 48km. Knowing how rapidly smoke can move I set up my animate program zooming in on that area and collected three frames. The results were dramatic, the smoke growing to over 80km wide within an hour or so. A few hours later the ship had sunk and the smoke dissipated quickly.

Letters

Lester Jones writes from the Wirral on Merseyside to say that he tried using the AR2002 scanner for weather satellite reception but without much success. So he purchased the Dartcom receiver which he recently completed constructing. He uses the Technical Software decoder which produces hard copy and sent me a printout which I hope will reproduce here. **James Price** also from Merseyside, was one of a very large number of people requesting Kepler elements and also asking whether I knew of predictions software for the Commodore Amiga computer. I have kept a list of SWM



Fig. 1: Lester Jones provided this printout of the UK area.

readers who have offered to supply programs for specific computers and so hopefully James has been successful.

FAX and APT

Several readers have expressed confusion regarding the difference between weather satellite (a.p.t.) signals and FAX, since the same picture can be sent by both methods! **Robert Fulford** of Exeter asks how decoding equipment can know the start of an a.p.t. picture if there is no start tone? FAX pictures are normally broadcast from terrestrial sources and include both start and finish tones which are recognised by the decoder. Anyone receiving FAX can expect to receive the whole picture, since the source is not moving out of sight! An orbiting satellite transmits its picture continuously, also on a line by line basis, but we can only receive signals while the satellite is above our horizon and so there is no beginning or end to the picture once the satellite is transmitting. Each line contains some form of synchronising marker. The NOAA WXSATS include a short pulse of 1040Hz before channel A data is broadcast and a short pulse of 832Hz before channel B data. There are other signals also included in the telemetry. These tones enable framestores or computers to recognise the picture section wanted and so can display accordingly. When the satellite rises we can synchronise the picture using the required tone and when it has filled the screen the latter will scroll. Finally the satellite drops below the horizon and we lose it into the noise. It is still transmitting of course and continues until it is switched off. Its picture is therefore one long strip running around the planet - hence the term 'automatic picture transmission'.

UoSAT-2

Robert also asks what type of data is available from the UoSAT-2 amateur radio satellite. Much of the data is 'house-keeping' measurements, such as battery voltages and spacecraft temperatures, but there are scientific data including magnetic field information from various sensors. **Brian Metherell** of Ealing is a member

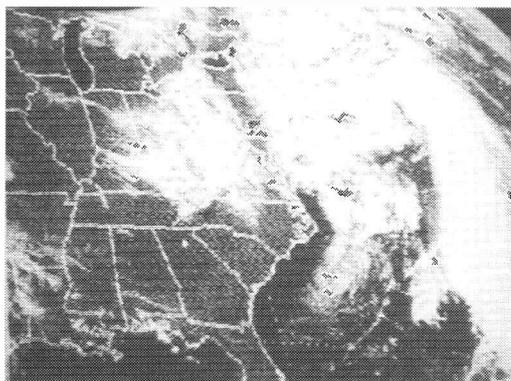


Fig. 2: METEOSAT-4 picture from Peter De Jong.

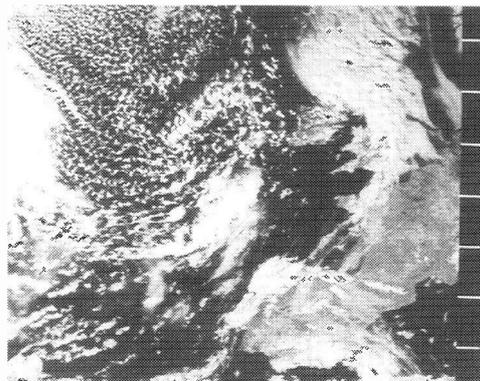


Fig. 3: NOAA picture from Laurence Patton.

of the Remote Imaging Group and has had problems with software designed for a 286 machine not running properly on his Amstrad 2086PC. Brian is hoping for a modification to effectively downgrade the software to run on his Amstrad. Brian points out that it is important to check whether software is compatible with your processor before purchase. A set of disks came from **Dave Rogers** of Swindon who has been testing out the Timestep Weather Systems program PCSAT3 and recorded some METEOSAT images. Looking at them carefully shows that Dave's equipment has a slightly lower noise level than mine. He now uses a 286 computer with 80Mb hard disk because he had problems running PCSAT3 on an Amstrad 1640.

Computers

I found the 1640 quite good in its day - it was the advanced version of the Amstrad PC1512 computer. For the best quality reproduction of satellite imagery it is essential to use a VGA monitor. I first started using VGA last summer and was amazed by the increase in detail that became visible. For anyone considering buying a new computer, I would recommend a 286 machine of which there are various makes, because the 80286 processor (to give it its full description) offers good speed for future satellite software upgrades and ample memory potential.

More Letters

John Belcher is a retired radio and telecomms engineer operating a wideband scanner and discone plus assorted hardware. John proposes to build his own crossed dipoles for both the 137 and 145MHz bands in order to get better reception. It is worth mentioning that an ordinary dipole with reflector might receive stronger signals from UoSAT-2 rather than the more usual left-circularly polarised, crossed dipole because the satellite is believed to be tumbling, according to one antenna manufacturer to whom I have spoken. **D F Thompson G8SBU** of Exmouth and **F Garraway** of Bristol wrote with comments about the ERA Microreader and the Lowe HF-225 receiver. ERA have just produced an additional display unit for the Microreader. F Garraway wonders, as I do, why there is no 'a.g.c. off' switch for his Lowe receiver. In my case it would be helpful for radio astronomy applications. The new HF-325 has one fitted. **David Wright** of Hastings wrote to enquire about using his discone-fed Yaesu FRG-9600 scanner and Amiga 500 computer for weather satellite imaging. He has two sons who are also interested in the project. The April edition gave advice on starting out and for a first attempt at receiving signals I am including another predictions list

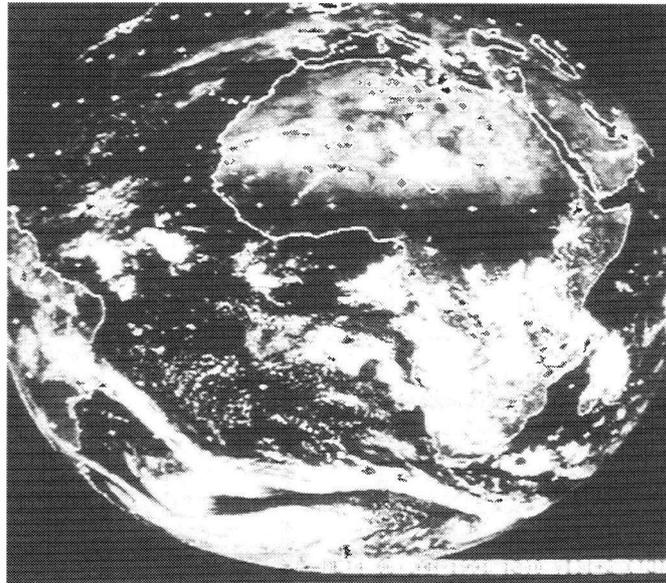


Fig. 4: METEOSAT-4 Whole disk (CTOT) from Laurence Patton.

this month. New 'recruits' should be able to pick up some a.p.t. transmissions using the list. Several readers have developed their own software for various computers and for the Amiga 500 you can contact **Bob Buttery, 55 Northumberland Road, Kettering, Northants, NN15 6LN** and also **Mr Grundy, Bar Farm, 15 Main Road, Drax, Selby, N Yorks, YO8 8PA**. Anyone writing to these kind folk should remember to include an s.a.e.

Letters From Abroad

My postbag shows that there is great interest in this field and the majority of letters request Kepler elements as well as making general enquiries. Several letters come from abroad including South Africa, Brazil, Holland, Spain and Australia. Those writing from 'foreign' lands can send an international reply coupon if they want Kepler elements or other information. Please note that one IRC is worth about 22p, so two are usually needed for a written reply. A group of hams from Barcelona wrote to tell me that they are now taking an interest in receiving WXSAT data and found the *Weather Watching* supplement particularly helpful. **Pauli Numez EA3BLQ** and his friends are active in the v.h.f., u.h.f., and s.h.f. bands and are building the well-known

YU3UMV framestore. **George Hart ZS9H** wrote from Walvis Bay in South Africa and comments on the information in this column sometimes being old. If a new WXSAT starts operation just after the press deadline, then the details of it would slip another four weeks making the worst case about eight weeks. On average such details currently appear about four weeks later. George kindly sent me a disk containing picture files of South Africa but for the moment I can't view them without suitable software.

Paging interference

Most readers of this column will be aware of the interference caused by paging transmitters which shows itself as a periodic burst of noise that often spoils an incoming satellite picture. Most receivers have some susceptibility to these noise bursts and some years ago I contacted the Department of Trade and Industry who take an interest in interference within the radio spectrum. That enquiry did not get very far, but I have had a call from **David Rawlings** who proposes to collect as much evidence as possible on the amount of interference suffered around the country. He can be contacted at 83 Maristow Avenue, Keyham, Plymouth PL2 1LP.

Other Satellites

I receive reports from SWM readers about other satellites heard in the 136MHz band and I have managed to identify these after receiving help from various people. During 1989 I started logging a signal on 136.110MHz and it took a long time to trace it as coming from the Japanese Marine Observations Satellite MOS-1. A glance at the book *Communications Satellites* by Larry Van Horn showed me that up to 12 satellites might possibly be responsible. I contacted Geoffrey Falworth who edits *Satellite News*, a specialist bulletin containing data on satellite payloads and frequencies, amongst other information and he kindly provided me with Kepler element sets for several of the possible satellites, and pointed out that one or two of the suspects had re-entered the atmosphere some years ago! By entering the elements into one of my predictions programs I was then able to identify MOS-1 or MOS-1B as the likely sources. Observation over future days confirmed that both were transmitting. Then for several months I didn't hear it, but they came back on during December and can now be heard daily.

Frequencies

The American NOAA satellites transmit on:
 NOAA 9 and 11 - 137.62MHz
 NOAA 10 - 137.50MHz
 OKEAN 2 - 137.40MHz occasional transmissions
 The Russian METEORS 2/16 to 2/20 and 3/2 or 3/3 use 137.30, 137.40 or 137.85MHz when switched on.

Predictions

For those who have the equipment to tune into the WXSATs but no predictions program I occasionally include a summary here for a selected day. This table lists a.o.s. (acquisition of signal) time UTC (add one hour for BST), the l.o.s. (loss of signal), the maximum elevation and whether to the east or west, and finally whether travelling north or southbound. The date this time is Sunday 26 May.

Satellite	a.o.s.	l.o.s.	Maxel	Dirac
NOAA 9	0822	0837	31°W	SB
METEOR 3/3	0844	0902	23°W	NB
NOAA 10	0849	0903	39°W	SB
METEOR 3/2	0902	0920	22°E	NB
METEOR 3/2	1050	1110	85°W	NB
NOAA 11	1249	1304	31°E	NB
NOAA 11	1429	445	49°W	NB
METEOR 2/20	1438	1454	21°E	SB
METEOR 2/20	1623	1640	78°W	SB
METEOR 3/3	1623	1642	35°E	SB
NOAA 9	1634	1648	27°E	NB
NOAA 9	1813	1829	58°W	NB
METEOR 3/3	1813	1833	58°W	SB
NOAA 10	835	1850	85°E	NB

PACKET for Spectrum NO TNC.

Yes, packet without a TNC, as shown working at the NEC. Programme on EPROM, and Modem in one unit, ready to run. All you will need to supply are the leads!

Price, complete and ready to run **ONLY £99.50**

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

VISA



CLARK SCAM HEAVY DUTY 40' TELESCOPIC PNEUMATIC MASTS

Retracted 7'8" Head load 40lbs with or without supporting legs + erection kit in bag + handbook £200 - £500

CLARK SCAM HEAVY DUTY 70' TELESCOPIC PNEUMATIC MASTS Retracted 13'5" Head load 90lbs with or without legs + erecting kit + handbook £500 - £800

TEXSCAN CATV SET TOP CONVERTOR Tuner FX range 54MHz - 450MHz output on channel 48 UHF-PAL-Synthesiser controlled - keypad or IR remote controller **brand new & boxed** with circuits & information. Not tested. £20 or two for £30 IR Control £5

RACAL MA4204 ENCRYPTION UNIT (Speech or data security scrambling) for use with HF-VHF or field telephone equipment. Solid state Alloy air sealed case - 12V DC supply - each unit can send or receive - but two must be used one to receive the other for sending both switched to the same number selectable from rotary switches on the front panel 512 operating codes available - **Brand new with book** £150 or two for £275 or four for £500

RACAL MA4230 - MA4231 AUTOMATIC MORSE RECEIVING AND SENDING SYSTEM. MA4230 AUTOMATIC MORSE SENDER - Small solid state unit incorporates a full alphanumeric keyboard for entering messages which can be sent immediately or stored for 30 days. Output is in Morse code 10 to 20 wpm or 8 to 16 times this speed. Internal storage of up to 1000 characters etc., contained in small alloy airtight case with book. **Brand new. MA4231 AUTOMATIC MORSE READER** Self contained - receives Morse code from above unit or radio audio output at up to 160 words per minute, by hand or automatic - stores up to 912 characters - readout on unit - letter by letter - LED display or printer VDU etc., many adjustable speeds ASCII or Baudot. Power 11-30V DC or AC mains by MA4232 power unit with book - MA4230 + MA4231 + battery charger + line adaptor & book. Not tested. Internal battery (NICAD) may need replacing due to storage. **Brand new** £100

AS ABOVE BUT ARABIC NOT ENGLISH But supplied with kit to convert to English - new keyboard cover + proms + book. Line adaptor - **Brand new** £50

MARCONI TF2008 SIGNAL GENERATORS 10kHz TO 510MHz AM/FM or sweep output. Complete with book. Not tested - as they come from the pile - will have small faults - as received MOD hence clearance price. £250 each. Front panel protected with metal cover therefore fair condition. Wooden kit box of leads etc. £25

ARMY TYPE MORSE KEYS Large quantity available. £5 ea

ARMY WHIP AERIALS AND BASE 12' or 16' - NEW £20 - £25

Small selection only listed. Export trade & quantity discounts price is Ex-works. SAE all enquiries. Phone for appointment or for demonstration of any item, availability or price change. VAT and carriage extra.

JOHNS RADIO

Government and manufacturers surplus Electronic items.
Stabilized power units and Telecommunication Equipment

84 Whitehall Road East, Birkenshaw, Bradford BD11 2ER

Tel No: (0274) 684007 Fax No: (0274) 651160

AR1000/HP100E SIDEBAND

Adds USB/LSB/RTTY/CW modes to your scanner. A ready built unit, fully tested, complete with all leads, connectors and instructions. Continuously variable coverage, not tied to 5kHz steps. Battery or mains adapter powered. Easy to operate. Other makes and models possible - write for details £39.95 inc. P&P.

ALSO AVAILABLE:

500kHz-1300MHz continuous MOD kit £15.00
RF Amplifier - Mobile £29.00 Base £35.00
Broadcast Band filter (88-108MHz) £19.00
5 Hour charger £11.99

RGW Electronics 5 Braunston Place, Rugby,
Warwickshire CV22 5JZ

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

long medium & short

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

Although a receiver with a digital frequency display can be set with accuracy and ease to any frequency within its range, there are many receivers in use that do not have this facility. It is customary to use marker signals from a crystal calibrator to set a receiver with analogue scales to a particular frequency, but an inexpensive add-on digital display unit is now available in the UK. For full details contact Cirkit (0992 444111) or Electromail (081-360 8600).

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 5/4/91.

The 1000kW signal from Bechar, Algeria on 153kHz was logged by **Alan Roberts** in Quebec as SINPO 22332 at 0555 on March 9, but the high level of interference from local TV receivers prevented him from hearing any other transatlantic signals during the month.

In Douglas, IoM **Simon Holland** checked the band after dark and was pleased to hear Bechar, Algeria on 153, also Tbilisi, USSR 189 and Minsk, USSR 279. **Eddie McKeown** has been listening late at night in Co.Down. At 0200UTC he rated Donebach as 23112, Allouis 23222, Kaliningrad 32233, Oranienburg 22222, Droitwich 54344, Munich 32233, Oslo 23222, Konstantinow 43343, Junglinster 34333, Tipaza 23222, Topolna 45344 and Minsk as 23211.

An increase in the strength of the signal from Atlantic 252 in Plymouth has been noted by **Robin Clark** during the day, but by 1900 it is swamped by Tipaza. Reporting from Wootton, IoW, **George Millmore** says, "Reception of Atlantic 252 is very poor here in the evenings - apparently they reduce power at 1800, at the precise time Tipaza increases power from 750 to 1500kW". Checks from 1900-2000UTC from March 2-9 by **Patrick McKeever** in Birmingham showed marked variations in the signal from some of the more distant stations.

MW Transatlantic DX

A change in the conditions permitted some of the broadcasts from the Caribbean and S.America to reach our shores. In Grimsby, **Jim Willet** logged R.Globo in Rio, Brazil 1220 as SIO333 at 0020. He heard for the first time XEWA Super Estelar, Mexico on 540 and rated their signal SIO222 at 0450. A reception report has been sent and their QSL is awaited. Later, he logged the Caribbean Beacon, Anguilla on 1610 as SIO333 at 0510. Nine signals from stations near the east coast of Canada and the USA were also heard, the

earliest stemmed from VOCM in St.John's, NF on 590, which rated SIO233 at 2330.

Good reception from the Caribbean area was also noted by **Tim Shirley** in Bristol. Around 0230 he logged three stations in Costa Rica for the first time, R.Rumbos (TICAL) on 530, R.Sta Clara (TISCL) on 550 and R.Fundacion, San Jose (TISBJ) on 570. From the USA he picked up WPTF in Raleigh, NC on 680. Canadian CJFT Fort Erie, ON on 530 and CHLC Hauterive, PQ on 580 were also heard - all are subject to confirmation by QSL. On 16/3 he logged WGT0 Pine Hills, FL on 540 as SIO 343 at 0330. Very good signals were noted on 21/3 from the Caribbean Beacon, Anguilla on 1610 at 0600.

Other MW DX

The sky wave signals from some of the low power stations in Spain have been attracting the attention of UK DXers after dark, see chart. The extensive log compiled by **Philip Rambaut** in Macclesfield included several which run less than 10kW. He also picked up sky wave signals from Vatican Radio, Rome on 525 and 1611kHz - both run just 5kW!

Some of the 2kW BBC relays were also mentioned in the reports: Radio 4 via Newcastle 603 was logged as 44333 at 0745 by Ted Agombar in Norwich and as 22122 at 0031 in Co.Down; BBC Wales via Wrexham 657 as 32222 at 0844 by **Ron Galliers** in N.London; Radio 4 via Redruth 756 as SIO333 at 1150 in Wootton, IoW.

MW Local Radio DX

The broadcasts from ILR Beacon Radio (WABC) via their new outlet in Shrewsbury on 1017kHz were mentioned in only two reports. **Noel**

Long Wave Chart

153	Bechar	Algeria	1000	C*,D,G*,J*
153	Donebach	Germany	500	E*,F,H,J*,K
153	Brasov	Romania	1200	A
162	Allouis	France	2000	A,D*,E*,F,G*,H,K
171	Kaliningrad	USSR	1000	A,D*,E*,F,G*,K
177	Oranienburg	Germany	750	A,C,D*,E*,F,G*,H,K
183	Saarlouis	Germany	2000	D,E,F,G*,H,K
189	Motala	Sweden	300	E*
189	Tbilisi	USSR	500	C*
198	BBC Droitwich	UK	500	A,C,D,E*,F,G*,K
207	Munich	Germany	500	D,E*,F,G*,H,K
207	Azilal	Morocco	800	G*
216	Roumoules	Monaco	1400	E*,F,G*,H,K
216	Oslo	Norway	200	C,E*
225	Konstantinow	Poland	2000	A,C,D*,E*,F,G*,H,J*,K
234	Junglinster	Luxembourg	2000	C,E*,F,G*,H,K
243	Kalundborg	Denmark	300	A,C,E,F,G*,H,K
252	Tipaza	Algeria	1500	D*,E*,F,H
252	Atlantic 252	S.Ireland	500	A,B,C,D*,E*,F,G*,H,K
261	Burg	Germany	200	E*,F,K
261	Moscow	USSR	2000	C,H
270	Topolna	Czechoslovakia	1500	E*,F,G*,H,K
270	Orenburg	USSR	15	J*
279	Minsk	USSR	500	C*,E*,H*

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

DXers:

A: Ted Agombar, Norwich.
B: Robin Clark, Plymouth.
C: Simon Holland, Douglas, I.O.M.
D: Sheila Hughes, Morden.
E: Eddie McKeown, Co.Down.

Carrington rated their signal in Sutton in Ashfield as 44444 at 1052. Their ground wave signal was also logged in Bridgwater by **Darren Beasley**. No doubt WABC will welcome detailed reports from listeners near and far, but do remember to enclose an s.a.e. if you require confirmation of your reception.

Short Wave Reports

Towards the end of March solar activity rose to a much higher level than expected. The intense solar flares disturbed the ionosphere and rendered h.f. reception poor or even non-existent during some days. More disturbances can be expected.

The solar activity prevented the **25MHz (11m)** broadcasts from R.Australia from reaching the UK some mornings, but usually they were clearly received. In Scarborough, **Ken Willis** rated their signal on 25.750 (Eng to Middle East 0900-1055) as SIO354 at 1055. In his latest report from Oman, **Rhoderick Illman** (Thumrait) quoted 55433 at 1054.

Some broadcasters have vacated the 11m band. Those remaining are R.Norway Int, Oslo 25.730 (Norw to S.America 1100-1130, to Middle East, India 1200-1230), rated SIO333 at 1230 by **John Stevens** in Largs; R.Denmark via RNI 25.730 (Da to S.America 1130-1155, to Middle East, India 1230-1255); DW via Julich, Germany 21.740 (Ger to Far East, Pacific 1100-1200, to USA 1200-1356) 35444 at 1345 by Alan Roberts in Quebec; R.Moscow 25.780 (Eng to Africa 0300?-1700) SIO444 at 1555 by **John Coulter** in Winchester and 25233 at 1645 in Quebec; RFI Paris 25.820 (Fr to E.Africa 0700-1500) 34444 at 0915 by **Chris Shorten** in Norwich and 35434 at 1355 in Quebec; HCJB Quito, Ecuador 25.950 (u.s.b.+ p.c.) 44444 at 1130 by **Bill Griffith** in W.London,

Ar	Arabic
Afrik	Afrikaans
Chin	Chinese
Cz	Czechoslovakian
Da	Danish
Eng	English
Fr	French
Ger	German
Gr	Greek
Ha	Hausa
Hung	Hungarian
ic	Icelandic
It	Italian
Jap	Japanese
Norw	Norwegian
Pol	Polish
Port	Portuguese
Russ	Russian
So	Somali
Sp	Spanish
Sw	Swedish
Swa	Swahili
Tur	Turkish
Viet	Vietnamese

SIO254 at 1945 by **Kenneth Buck** in Edinburgh and 45344 at 1850 in Quebec.

Some of the **21MHz (13m)** broadcasts from R.Australia have been reaching the UK. Their transmission to C/S.E.Asia via Darwin 21.525 (Eng 0100-0900) was rated 23322 at 0750 by **Jim Cash** in Swanwick; to Asia via Carnarvon 21.775 (Eng 0100-0958) as 43433 at 0654 by **Kenneth Reece** in Prenton.

The 13m broadcasts to Europe include R.Japan via Moyabi, Gabon 21.575 (Eng 0700-0800), rated 44333 at 0705 by **Sheila Hughes** in Morden; R.Pakistan, Islamabad 21.520 (Eng 1100-1120) 34344 at 1102 in Norwich; R.Romania Int, Bucharest 21.665 (Eng 1300-1400) SIO434 at 1300 by **Phil Townsend** in E.London; UAE R. Dubai 21.605 (Ar, Eng 0615-1640) 33433 at 1635 by **Leo Barr** in Sunderland; WYFR via Okeechobee, FL 21.525 (Eng 2000-2200, also to Africa) SIO344 at 2008 in Edinburgh; HCJB Quito, Ecuador 21.480 (Eng 2130-2200) 34433 at 2145 in Co.Down; also 21.455 (u.s.b.+ p.c.) SIO444 at 1630 by **Bryan Kimber** in Hereford.

Some of the broadcasts to other areas originate from the BBC via Limassol, Cyprus 21.470 (Eng to E.Africa 0430-1615), logged as 45554 at 0635 by **David Edwardson** in Wallsend; R.Prague, Czechoslovakia 21.705 (Eng to Asia, Pacific 0730-0800) 55444 at 0740 in Norwich; DW via Julich, Germany 21.560 (Ger to Asia 0800-1000) 34553 at 0810 by **John Parry** in Northwich; BBC via Kranji, Singapore 21.715 (Eng to Asia 0900-1030) SIO111 at 0955 in Macclesfield; RNE via Noblejas, Spain 21.570 (Sp to C/S.America 1000-1300) 45444 at 1109 in N.London; R.Austria Int. via Moosbrunn 21.490 (Ger, Sp, Eng, Fr to W.Africa, S.Europe 1300-1700) 55555 at 1500 in Bridgwater; BBC via Ascension Island 21.660 (Eng to S.Africa 0700-1745) SIO555 at 1500 by **Noel De Jager** in Cape Town; also SIO232 at 1600 by **John O'Halloran** in Harrogate; VOA via Tangier, Morocco 21.625 (Eng to Africa 1600-?) 54454 at 1600 by **Alan Smith** in Northampton; R.Netherlands via Bonaire, Ned Antilles 21.685 (Eng to C.S.Africa 1830-1925) 44433 at 1918 in Thumrait, Oman.

The **17MHz (16m)** broadcasts from Radio New Zealand Int. to Pacific areas have reached the UK at remarkable strength during some mornings. On 29/3 their signal from Rangataiki, N.Island on 17.770 (Eng 2211-0730) was noted at 0654 as 'just like BBC R4 on f.m.' by **N. Closs** in Ipswich! Later, Radio

long medium & short

Australia's broadcast to S.Asia via Carnarvon on 17.630 (Eng 1430-1800) has often reached the UK. **Cliff Stapleton** (Torquay) quoted SIO343 at 1525.

During the morning VOA via Tangier, Morocco 17.715 (Eng to Africa 0300-0700) was rated 34533 at 0700 in Northwich; Africa No.1, Gabon 17.630 (Eng, Fr to W.Africa 0700-?) 22322 at 0725 in Prenton; R.Sophia, Bulgaria 17.825 (Eng to Europe 0730-0800) SIO222 at 0730 by **Francis Hearne** in Bristol; R.Japan via Yamata 17.765 (Jap to Asia) 34333 at 0800 in Swanwick; also 17.890 (Jap to Oceania) 44333 at 0635 in Northampton; SRI via Schwarzenburg, Switzerland 17.670 (Eng to Australia, Pacific 0830-0900) 42433 at 0841 in Co.Down; R.Beijing, China 17.710 (Eng, Chin to S.Pacific) 42432 at 1055 in Bridgwater; R.Moscow, USSR 17.810 (Eng to Europe 0900-1800) SIO555 at 1200 by **Phil Cooper** in Guernsey; R.Cairo, Egypt 17.595 (Eng to S.Asia 1215-1330) 44444 at 1230 in W.London; R.Sweden, Stockholm 17.740 (Sw, Eng to Asia, Australia 1200-1330) SIO444 at 1242 in Macclesfield.

Later, R.Nederlands via Flevo 17.605 (Eng to Asia 1430-1525) was noted as 53343 at 1430 in Norwich; R.Sweden, Stockholm 17.875 (Eng to USA 1530-1600) SIO555 at 1545 in Scarborough; RCI via Sackville, Canada 17.820 (Eng, Fr to Europe 1500-1600) SIO444 at 1600 by **Cyril Kellam** in Sheffield; R.Pakistan, Islamabad 17.555 (Eng to Middle East 1600-1630), rated as 'good' by **Charles Beanland**,

Gibraltar and SIO333 in Hereford; R.Norway Int, Oslo 17.760 (Eng to USA 1700-1730) 54554 at 1700 by **Ron Damp** in Worthing; R.RSA Johannesburg, S.Africa 17.835 (Eng to W.Africa 1700-1800) 54444 at 1712 by **Denis Boshier** in Dolgellau; Voice of Israel, Jerusalem 17.630 (Eng to Africa 1900-1930) SIO555 at 1912 by **Thomas Barnett** in Slough; RHC Habana, Cuba 17.705 (Eng to Europe, Africa 1900-2100) 34433 at 2030 by **Darran Taplin** in Brenchley; Vatican R, Rome 17.710 (Eng to Africa 2100-2130), logged by **Dick Moon** in George, S.Africa; HCJB Quito, Ecuador 17.790 (Eng to Europe 2130-2200) 35553 at 2132 in Wallsend; R.Cultura, Sao Paulo, Brazil 17.815 (Port to S.America 0900-0300) rated as 'good' at 2200 in Largs; WYFR via Okeechobee, Florida 17.612 (Eng to W.Africa 2100-2300) SIO333 at 2200 in Harrogate; WSHB Cypress Creek, USA 17.555 (Eng, Sp to C/S.America 2200-0000) 43433 at 2355 by **Robin Harvey** in Bourne.

Good reception of R.New Zealand's The 15MHz (19m) broadcasts to Pacific areas has been noted in the UK during some evenings. Their transmission on 15.120* (Eng 1800-2200 Sun-Fri) was rated SIO454 at 1930 by **Simon Hamer** in New Radnor (*13.785 from May 12). Some of R.Australia's broadcasts via Shepparton have also been reaching the UK. Their transmission to S.Pacific

15.240 (Eng 2200-1030) was rated as 'good' at 0012 on Gibraltar and 54333 at 0753 in Plymouth; to C.Pacific 15.160 (Eng, Fr ?-0930?) 23322 at 0914 in Prenton; to C.Pacific 15.320 (Eng 2030-2230?) 34433 at 2215 in Brenchley.

Many broadcasters use the 19m band to reach listeners in Europe. They include R.Sophia, Bulgaria 15.160 (Eng 0730-0800), rated SIO222 at 0730 in Bristol; R.Korea, Seoul 15.575 (Eng 1800-1900, 2030-2130) 53444 at 1819 in Swanwick; R.Afghanistan via USSR 15.440 (Eng 1830-1930, also to USA) SIO444 at 1845 by **Bill Clark** in Rotherham; Voice of Vietnam, Hanoi 15.010 (Eng, Fr, Sp, Ger 1800-2130) SIO433 at 1915 by **Alf Gray** in Birmingham; R.Damascus, Syria 15.095 (Ger, Fr, Eng 1805-2105) SIO555 at 2042 in Edinburgh; RNB Brasilia, Brazil 15.265 (Eng, Ger 1800-?) 43343 at 2044 in Northampton; HCJB Quito, Ecuador 15.270 (Eng, Fr, Ger 1830-2130) 44334 at 2049 in N.London; SIBC Colombo, Sri Lanka 15.120 (Eng 1830-2130) 34444 at 2100 by **John Robertson** in Alnwick; WINB Red Lion, USA 15.185 (Eng 2002-2245) 23222 at 2123 in Co.Down; VOA via Tangier, Morocco 15.205 (Eng 1700-2200; also to N.Africa) SIO333 at 2140 in Guernsey; WWCR Nashville, USA 15.690 (Ar, Chin, Eng, Fr, Ger, Sp 1300-0200) 55555 at 2215 in Norwich; WINB Red Lion, USA 15.145 (Eng, Fr/Gr 2248-2345) SIO454 at 2300 in Scarborough; RAE Buenos Aires, Argentina 15.345 (Ar, Eng, It, Fr, Ger 1800-2300 Mon-Fri; Sp 1800-0000 Sat, Sun) 34344 at 2300 by **A. de Abreu-Teixeira** in Durham.

There are many 19m broadcasts to areas outside Europe. Those noted stemmed from R.Romania Int, Bucharest 15.380 (Eng to Pacific area 0645-0715) 55555 at 0647 in Dolgellau; BBC via Limassol, Cyprus 15.590 (Eng to Middle East 0400-0945) SIO444 at 0700 in Macclesfield; VOA via Kavala, Greece 15.160 (Eng to Middle East 0900-1100) 44434 at 0901 in Sunderland; R.Beijing, China 15.440 (Eng to S.Pacific 0900-1100) SIO444 at 0900 in Hereford; R.Denmark via RNI 15.230 (Dan to Middle East 1630-1655) SIO444 at 1630 in Sheffield; RFI via Issoudun, France 15.570 (Eng to Africa 1700-?) SIO434 at 1700 by **Neil Wheatley** in Lytham St.Annes; R.Sweden via Horby? 15.270 (Fr, Sp, Sw, Eng to Middle East, Africa 1730-1900) 43443 at 1820 in Bridwater; R.Moscow, USSR 15.180 (Afrik to S.Africa 1830-1900) SIO 333 at 1830 in Cape Town; UAE R.Dubai 15.320 (Ar,

Note: Entries marked * logged during darkness. All other entries logged during daylight or dusk.

DXers:

A: Ted Agombar, Norwich.
B: Darren Beasley, Bridgwater.
C: Noel Carrington, Sutton in Ashfield.
D: Ron Galliers, London.
E: Francis Hearne, Bristol.
F: Sheila Hughes, Morden.
G: Eddie McKeown, Co.Down.
H: George Millmore, Wootton, IoW.
I: Bart O'Brien, Co.Wexford.
J: Phil Townsend, London.
K: Paul Weston, Kettering.

Local Chart

558	Spectrum R.	I	7.50	H
585	R.Solway	B	2.00	G
603	Invicta Snd(Coast).	I	0.10	H
603	R.Gloucester	B	0.10	C,H
630	R.Bedfordshire	B	0.20	C,D*,H
630	R.Cornwall	B	2.00	H,I
657	R.Ciwyd	B	2.00	C,G,H,,J
657	R.Cornwall	B	0.50	H,I
666	DevonAir R.	I	0.34	E,F,H,I
729	BBC Essex	B	0.20	A,H,J
738	Hereford/Worcester.	B	0.037	H,J
756	R.Cumbria	B	1.00	G
756	R.Shropshire	B	0.63	C,H,I
765	BBC Essex	B	0.50	A,D,G*,H
774	R.Kent	B	0.70	A,G*,H
774	R.Leeds	B	0.50	C
774	Severn Sound (3CR).	I	0.14	H,I
792	Chiltern R.	I	0.27	C,F*,H,J,K
792	R.Foyle	B	1.00	G
801	R.Devon	B	2.00	G*,H,I
819	Hereford/Worcester.	B	0.037	H,I
828	Chiltern Radio	I	0.20	D*,F*,J
828	R.WM	B	0.20	C,I
828	2CR	I	0.27	A,H,I
837	R.Cumbria	B	1.50	I
837	R.Furness	B	1.00	G*
837	R.Leicester	B	0.45	C,D,H,I,J,K
855	R.Devon	B	1.00	G*,H,I
855	R.Lancashire	B	1.50	G,I
855	R.Norfolk	B	1.50	A,D,H,J
873	R.Norfolk	B	0.30	G*,H,J,K*
936	GWR (Brunel R.)	I	0.18	H
945	R.Trent (GEM-AM)	I	0.20	C,G*,H,I
954	DevonAir R	I	0.32	F,H,I
954	R.Wyvern	I	0.16	E,I
990	Beacon(Nice & Easy)	I	0.09	C
990	R.Aberdeen	B	1.00	G
990	R.Devon	B	1.00	H,I
999	R.Solent	B	1.00	F,H,J
999	R.Trent (GEM-AM)	I	0.25	C
999	Red Rose R.	I	0.80	G,I
1017	WABC (Shrewsbury)	I	?	B,C
1026	Downtown R.	I	1.70	I
1026	R.Cambridgeshire	B	0.50	A,B,C,D*,F,J,K
1026	R.Jersey	B	1.00	B,H,I
1035	R.Kent	B	0.50	B,H,J
1035	R.Sheffield	B	1.00	C
1035	West Sound	I	0.32	G
1107	Moray Firth R.	I	1.50	G
1107	R.Northampton	B	0.50	B,D,H,K
1116	R.Derby	B	1.20	C,G*,I
1116	R.Guernsey	B	0.50	B,H,I
1152	BRMB (Xtra-AM)	I	3.00	B,C,E
1152	LBC (L.Talkback R.)	I	23.50	F*,H
1152	Piccadilly R.	I	1.50	I
1152	Plymouth Sound	I	0.32	I
1152	R.Broadland	I	0.83	G*
1161	GWR (Brunel R.)	I	0.16	H,I
1161	R.Bedfordshire	B	0.10	G*,K
1161	R.Sussex	B	1.00	H
1161	R.Tay	I	1.40	G*
1161	Viking R.(C.Gold)	I	0.35	C
1170	Ocean Sound (SCR)	I	0.12	F,H
1170	Signal R.	I	0.20	C
1170	Swansea Sound	I	0.58	I
1242	Invicta Snd(Coast).	I	0.32	E*,J
1242	Isle of Wight R.	I	0.50	B,E*,G*,H
1251	Saxon R.	I	0.76	J
1260	GWR (Brunel R.)	I	1.60	G*,H,I
1260	Leicester (GEM-AM).	I	0.29	J,K
1260	Marcher Sound	I	0.64	G*,I
1278	Pennine R.(C.Gold).	I	0.43	G*
1305	R.Hallam (C.Gold)	I	0.15	C
1305	Red Dragon (Touch).	I	0.20	G*,H,I
1323	R.Bristol	B	0.63	G*,I
1323	Southern Snd (SCR).	I	0.50	G*,H
1332	Hereward R.	I	0.60	C,G*,K
1332	Wiltshire Sound	B	0.30	B,G*,H,I
1359	Red Dragon (Touch).	I	0.20	E
1359	R.Solent	B	0.85	C,G*,H
1368	R.Lincolnshire	B	2.00	C,G*
1368	R.Sussex	B	0.50	H
1368	Wiltshire Sound	B	0.10	B,G*,H
1413	Sunrise R.	I	0.125	H
1431	Essex R.(Breeze)	I	0.35	A,B,G*,J
1431	Radio 210	I	0.14	B,H
1449	R.Cambridgeshire	B	0.15	B,G*
1458	GLR	B	50.00	H
1458	R.Cumbria	B	0.50	G*,I
1458	R.Devon	B	2.00	I
1458	Radio WM	B	5.00	C,I
1475	C'ty Snd(1st Gold).	I	0.50	B,D,G*,H
1485	R.Merseyside	B	1.20	G,I
1485	R.Oxford	B	0.50	B,H
1485	R.Sussex	B	1.00	H
1503	R.Stoke-on-Trent	B	1.00	B,C,G*,I
1521	R.Mercury	I	0.64	B,D,F*,G*,H
1521	R.Nottingham	B	0.50	C,G*
1530	KCBC Kettering	I	0.025	K
1530	Pennine R.(C.Gold).	I	0.74	C
1530	R.Essex	B	0.15	J
1530	R.Wyvern	I	0.52	B,H,I
1548	Capital R. (Gold)	I	97.50	C,F*,H
1548	R.Bristol	B	5.00	I
1548	R.City (City Talk).	I	4.40	I
1557	Chiltern R.	I	0.76	B,G*
1557	Ocean Sound (SCR)	I	0.50	F,H
1557	R.Lancashire	B	0.25	I
1584	Gatwick	I	?	F*,H,J
1584	Heathrow	I	?	D,F*,J
1584	R.Nottingham	B	1.00	C,G*
1602	R.Kent	B	0.25	G*,H,J

long medium & short

Medium Wave Chart

526	Vatican City	Italy	5	J*	1044	Burg	Germany	250	C*,H*,I*,J*
531	Ain Beida	Algeria	600	I*	1062	Kalundborg	Denmark	250	C*,E*,H*,I*,J*
531	Leipzig	Germany	100	H*,I,J,K*	1071	Brest	France	20	C*,H*,I
531	Oviedo	Spain	10	H*,I	1071	Lille	France	40	J*
531	Beromunster	Switzerland	500	J*	1080	Katowice	Poland	1500	E*,H*,I*,J*
540	BRT-2 Wavre	Belgium	150/50	C*,E,H*,I,J,N	1080	Palma de Mallorca	Spain	5	E*
540	Solt	Hungary	2000	H*,K*	1089	Krasnodar	USSR	300	H*
549	Les Trembles	Algeria	600	J*	1098	Bratislava	Czechoslovakia	750	C*,H*,J*
549	Nordkirchen	Germany	100	E,H*,I,N	1098	Santa Cruz	Palma	10	C*
549	Thurau	Germany	200	J*	1098	Dammam	Saudi Arabia	5	F
558	Espoo	Finland	100	D*,H*,K*	1107	AFN via Munich	Germany	40	C*,D*,H*,I*
558	Cima di Dentro	Switzerland	300	H*,J*	1107	RNE-5 Barcelona	Spain	20	H*
567	Berlin	Germany	100	H*	1125	La Louviere	Belgium	20	H*,I,J*
567	RTE-1 Tullamore	Ireland (S)	500	E,G,I,J*,N	1125	Stara Zagora	Bulgaria	500	H*
576	Schwerin	Germany	250	J*	1125	BBC Llandrindod Wells	UK	1	G
576	Stuttgart	Germany	500	H*,I,J*	1134	Valencia	Spain	10	H*
585	Riyadh	Saudi Arabia	1200	F	1134	Zadar	Yugoslavia	1200	C*,D*,H*,I*,J*,O*
585	FIP Paris	France	8	H*,I,N	1143	AFN via Stuttgart	Germany	10	C*,H*,J*
585	RNE-1 Madrid	Spain	200	C*,H*,I,J*	1143	Century R. Dublin	Ireland (S)	?	G,H*,I*
594	Frankfurt	Germany	400	A,H*,I,J*	1152	Ras Al Khaima	UAE	50	F
603	Lyon	France	300	D*,H*,J*	1161	Stara Zagora	Bulgaria	500	H*
603	BBC-R4 Newcastle	UK	2	A,H*	1161	Strasbourg (F.Int)	France	200	C*,H*,I,J*
612	RTE-2 Athlone	Ireland (S)	100	D,E,G,I*,J*	1179	Solvesborg	Sweden	600	C*,H*,I,J*,L*,M*,O*
621	RTBF-1 Wavre	Belgium	80	H*,I,J*,N	1188	Kuurne	Belgium	5	I,J*
630	Vigra	Norway	100	H*	1188	Szolnok	Hungary	135	H*
630	Timisoara	Romania	400	I*	1197	VOA via Munich	Germany	300	H*,J*
639	Liblice	Czechoslovakia	1500	C*,H*,J*	1197	BBC-R3 Enniskillen	Ireland (N)	1	H*
639	La Coruna	Spain	100	C*,H*,I*,J*	1206	Bordeaux	France	100	C*,H*,J*
648	Palma de Mallorca	Spain	10	J*	1206	Wroclaw	Poland	200	D*
648	BBC Orfordness	UK	500	A,D*,E,H*,I	1224	Vidin	Bulgaria	500	H*,I*
657	Burg	Germany	250	H*,I*	1224	COPE Madrid	Spain	20	C*,J*
657	BBC-R.Wales Wrexham	UK	2	C*	1233	Liege	Belgium	5	J*
666	Bodenseesender	Germany	300/180	C*,H*,J*	1233	Melnik	Czechoslovakia	400	H*,J*
666	R.Vilnius	USSR	500	H*	1242	Marseille	France	150	C*,J*
675	Marseille	France	600	H*,J*	1251	Marcali	Hungary	500	H*
675	Hilversum-3 Lopic	Holland	120	C*,D*,E,H*,I,J*,N	1251	Huisberg	Netherlands	10	E*,H*,J*
675	Al Khaisah	Qatar	100	F	1260	VOA via Rhodes	Greece	500	H*
684	RNE-1 Sevilla	Spain	250	C*,H*,J*	1260	Valencia	Spain	20	H*,J*
684	Beograd	Yugoslavia	2000	H*,I*,O*	1269	Neuminstert	Germany	600	C*,H*,I*,J*
702	Aachen/Flensburg	Germany	5	H*	1278	Strasbourg	France	300	I*,J*
702	Monte Carlo	Monaco	300	J*	1278	RTE-2 Dublin/Cork	Ireland (S)	10	H*,I*
702	Zamora	Spain	5	H*,J*	1287	Litomyse/Liblice	Czechoslovakia	300/200	C*,J
711	Rennes 1	France	300	H*,I,J*,N,O*	1296	BBC Orfordness	UK	500	H*,N
720	BBC via Zakaki	Cyprus	500	A	1305	Marche	Belgium	10/5	J*
720	BBC-R4 Lots Rd London	UK	0.5	I	1305	Rzeszow	Poland	100	H*
729	RTE-1 Cork	Ireland (S)	10	A,D,H*,I,J*	1314	Kvitsoy	Norway	1200	D*,H*,I,J*,O*
729	Oviedo	Spain	50	C*,H*,I*,J*	1323	BBC Ziyi	Cyprus	50	F
738	Paris	France	4	I	1323	R.Moscow via Leipzig	Germany	150	H*
738	RNE-1 Barcelona	Spain	250	H*,I*,J*	1332	Rome	Italy	300	H*,J*
747	Hilversum-2 Flevo	Holland	400	A,C*,E,H*,I,J*,N	1341	BBC-Ulst.Lisnagarvey	Ireland (N)	100	C*,I
756	Brunswick	Germany	800/200	C*,H*,J*	1350	Nancy/Nice	France	100	C*,H*,I*,J*
756	BBC-R4 Redruth	UK	2	I	1359	Berlin	Germany	250/100	H*,J*
765	Sottens	Switzerland	500	H*,I*,J*	1368	Manx Radio, Foxdale	I.O.M.	20	G,H*
774	BBC-R4 Enniskillen	Ireland (N)	1	H*	1377	Lille	France	300	H*,I,J*,N
774	RNE-1 San Sebastian	Spain	60	H*,J*	1386	Kaliningrad	USSR	500	C*,J*
783	Burg	Germany	1000	C*,H*,I*,J*,O*	1395	R.Tirana via Lushnje	Albania	1000	C*,I,J*
783	R.Porto, Miramar	Portugal	100	J*	1404	Brest	France	20	H*,I,J*
792	Limoges	France	300	H*,J*	1413	RCE Zaragoza	Spain	20	C*,H*,J*
792	Sevilla	Spain	20	H*,J*	1422	Heusweiler	Germany	1200/600	C*,H*,I,J*
801	Munich	Germany	420	C*,H*,J*	1422	Riyadh	Saudi Arabia	20	F
810	SER Madrid	Spain	20	J*	1431	Dresden	Germany	250	H*,J*
810	BBC-Scot.Westerglen	UK	100	C*,D*,G,H*,I*,O	1440	Marnach	Luxembourg	1200	C*,H*,I,J*
819	Toulouse	France	50	H*,J*	1449	Bandar Turkamen	Iran	400	F
819	San Sebastian	Spain	5	J*	1449	Squinanzo	Italy	50	J*
828	Hanover	Germany	100/5	H*	1458	Weida	Germany	5	H*
828	Corca Dhuibhne	Ireland (S)	1	H*	1467	TWR Monte Carlo	Monaco	1000/400	C*,E*,H*
837	Nancy	France	200	C*,H*,I*,J*	1476	Wien-Bisamberg	Austria	600	H*,J*
837	R.Popular, Sevilla	Spain	10	J*	1485	AFN	Germany	1	H*
846	Rome	Italy	540	C*,H*,I,J*	1494	Clermont-Ferrand	France	20	J*
855	Berlin	Germany	100	H*,J*,O*	1494	Leningrad	USSR	1000	C*,H*
855	Murcia	Spain	125	J*	1503	Stargard	Poland	300	E*,J*,L*
864	Paris	France	300	C*,I,J*,N,O*	1512	BRT Wolvertem	Belgium	600	E*,I,J*,L
873	AFN via Frankfurt	Germany	150	C*,D*,H*,J*	1521	Kosice	Czechoslovakia	600	J*
873	Zaragoza	Spain	20	J*	1530	Vatican Radio, Rome	Italy	150/450	C*,E*,J*
873	R.Ulster,Enniskillen	UK	1	C*,H*	1539	Mainflingen	Germany	700	C*,H*,J*
882	BBC-Wales Washford	UK	70	B,C*,E,H*,N	1557	Nice	France	300	H*,J*
891	Algiers	Algeria	600/300	E*,H*,J*	1566	Samen	Switzerland	200	C*,H*,J*
891	Hulsberg	Holland	20	H*,I,J*	1575	Burg	Germany	250	H*,J*
900	Milan	Italy	600	C*,H*,J*	1575	Genoa	Italy	50	C*
918	R.Intercont. Madrid	Spain	20	H*,J*	1593	Langenberg	Germany	400/800	C*,H*,I,J*,O*
927	BRT-1 Wolvertem	Belgium	300	C*,H*,I,J*,N,O*	1602	R.Onteniente	Spain	2	C*,H*
936	Bremen	Germany	100	H*,I*,J*,N	1602	Vitoria	Spain	10	J*
945	Toulouse	France	300	C*,H*,I*,J*	1611	Vatican Radio, Rome	Italy	5	H*,J*
954	Dobrochov	Czechoslovakia	400	C*					
954	RCE Madrid	Spain	20	H*,J*					
963	Pori	Finland	600	C*,D*,E*,H*,I, J*,L*,O*					
963	Tir Chonail	Ireland (S)	10	H*					
972	Hamburg	Germany	300	C*,H*,I,J*,O*					
981	Alger	Algeria	600/300	C*,D*,E*,I*,J*					
990	Berlin	Germany	300	H*,J*					
999	R.Popular, Madrid	Spain	20	C*,H*,J*					
1008	Hilversum-5 Flevo	Holland	400	C*,E,H*,I,J*,N					
1017	Wolfsheim	Germany	600	C*,H*,I*,J*					
1026	Graz-Dobl	Austria	100	J*					
1026	Vigo	Spain	3	J*					
1035	Milan	Italy	50	J*					

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

DXers:
 A: Ted Agombar, Norwich.
 B: Noel Carrington, Sutton in Ashfield.
 C: Ron Galliers, N.London.
 D: Simon Holland, Douglas, I.O.M.
 E: Sheila Hughes, Morden.
 F: Rhoderick Illman, Thumrait, Oman.
 G: Tim McCarthy, Telford.
 H: Eddie McKeown, Co.Down.
 I: George Millmore, Wootton I.O.W.
 J: Philip Rambaut, Macclesfield.
 K: Tim Shirley, Bristol.
 L: Chris Shorten, Norwich.
 M: John Stevens, Largs.
 N: Phil Townsend, E.London.
 O: Paul Weston, Kettering.

Eng to N.Africa 0615-2050) SIO434 at 1858 in Slough; Voice of the UAE in Abu Dhabi 15.315 (Arto N.Africa ?-?) SIO434 at 2010 in Torquay; BBC via Ascension Island 15.400 (Eng to Africa 1745-2315) 55444 at 2138 in Norwich; WCSN Scotts Corner, Maine 15.300 (Eng to W.Africa 2200-0000) 54555 at 2339 in Bourne.

Some of the **13MHz (22m)** broadcasts from R.Australia have also been reaching our shores. Their transmission to C.Asia via Darwin 13.605 (Chin, Eng ?-1530) was rated SIO212 at 1245 in Macclesfield; to S.Asia via Carnarvon 13.745 (Eng 1530-2100) as 43433 at 1650 in Worthing; to C.Pacific areas via Shepparton 13.705 (Eng 2100-?) as SIO332 at 2105 in Scarborough.

The broadcasters using this band include Radio For Peace Int, Costa Rica 13.630 (Eng, Ger to ?), rated 32222 at 0830 in Morden; BRT via Wavre, Belgium 13.675 (Eng to Europe 1000-1025) 44444 at 1024 in Sunderland; R.Austria Int, Moosbrunn 13.730 (Ger, Fr, Eng, Sp, Ar to Europe 0400-1655) 55555 at 1455 in Bridgwater; SRI via Sottens, Switzerland 13.685 (Eng, Fr, It, Ger to Middle East 1515-1700) 55544 at 1531 in Brenchley; BBC via Woofferton, UK? 13.660 (Ar to N.Africa 1250-1800) 54454 at 1601 in Swanwick; UAE R.Dubai 13.675 (Ar, Eng to Europe 1500-2055), heard at 1640 in E.London; DW via Julich, Germany 13.790 (Ha to W.Africa 1800-1850) 44354 at 1800 in Northwich; KHBI Saipan, N.Mariana Islands 13.625 (Eng to S.E.Asia 1700-1950) SIO444 at 1850 in Slough; RCI via Sackville, Canada 13.650 (Eng to Africa?) 33433 at 1901 in Bourne; ISBS Reykjavik, Iceland 13.855 (Ic to Europe 1855-1930) 55545 at 1920 in Norwich; R.Austria via Moosbrunn 13.730 (Ger, Fr, Ar, Eng, Sp to S.Africa 1700-2100) SIO555 at 1931 in Cape Town and 55545 in Oman; WHRI South Bend, USA 13.760 (Eng, Sp, Port to Europe 1700-0000) SIO333 at 2000 in Torquay; R.Netherlands via Flevo 13.700 (Eng to W.Africa 2030-2125) SIO344 at 2030 in Lytham St.Annes; WCSN Scotts Corner, Maine 13.770 (Eng to Europe 2000-2200) SIO333 at 2105 in Birmingham; Voice of the UAE in Abu Dhabi 13.605 (Ar to N.Africa 2100-0000) SIO333 at 2300 in Edinburgh.

Some of the **11MHz (25m)** broadcasts to Europe originate from WCSN Scotts Corner, Maine 11.705 (Eng 0800-1000) 34324 at 0924 in Sunderland; KFBS Saipan, N.Mariana Islands 11.650 (Russ 0900-1400, also to N.Asia) SIO222 at 1000 in Macclesfield; RNE via Arganda, Spain 11.920 (Sp 0700-2145, also to Middle East) SIO443 at 1350 in Rotherham; Vatican R, Rome 11.740 (Eng 1445-1500) 54444 at 1458 in Dolgellau; RNE via Noblejas, Spain 12.035 (Sp 1000-2145), noted as 'very good' at 1529 on Gibraltar; R.Finland via Pori 11.755 (Eng 1830-1900) 44444 at 1849 in Bourne; AIR via Aligarh, India 11.620 (Eng 1845-1945) 55544 at 1845 in

long medium & short

Brenchley; R.Damascus, Syria 12.085 (Eng 2005-2105, also to USA) 55555 at 2030 in W.London; R.Sophia, Bulgaria 11.660 (Eng 2130-2200) SIO333 at 2140 in Birmingham.

Those to other areas include R.RSA Johannesburg, S.Africa 11.900 (Eng to Africa 0400-0500), heard in Bristol; Radio Australia via Darwin? 11.800, noted as 'very clear' at 0600 by **Colin Jerney** in Ruislip; KNLS Anchor Point, Alaska 11.715 (Eng to E/N.Asia 0800-0900) 32322 at 0800 in Bridgewater; R.Budapest, Hungary 11.925 (Eng to Asia) 44333 at 0930 in Morden; Voice of the Mediterranean, Malta 11.925 (Eng to N.Africa 1400-1600) SIO434 at 1400 in Hereford; KTWRAgana, Guam 11.650 (Eng to S.Asia 1445-1700) 35433 at 1500 by **Roy Patrick** in Derby; FEBA R. Seychelles 11.820 (Swa, So to E.Africa 1615-1730) 44333 at 1615 in Oman; R.Australia via Carnarvon 12.000 (Viet? to S.Asia) 21221 at 1705 in Swanwick; SRI via Schwarzenburg, Switzerland 11.955 (Eng, Ger, Fr to Africa 1830-2000) SIO555 at 1838 in Slough; Voice of Greece, Athens 11.645 (Gr, Eng to S.Africa 1800-1850) SIO333 at 1840 in Cape Town; R.Ulan Bator, Mongolia 12.050 (Eng, Fr to E.Europe, N.Africa 1940-2045), heard at 2035 in George, S.Africa; Voice of Israel, Jerusalem 11.605 (Eng to USA, W.Europe 2300-2330) SIO444 at 2300 in Bristol; R.Vilnius, Lithuania 11.770 (Eng to USA 2300-2330) 44444 at 2320 in N.London; R.Globo, Rio, Brazil 11.805 (Port to S.America 0900-0400) 24532 at 0025 in Wallsend.

Good reception of the **9MHz (31m)** broadcasts to Europe was noted from HCJB Quito, Ecuador 9.610 (Eng 0700-0830) rated 44434 at 0735 in Norwich; R.Nederlands via Flevo 9.715 (Eng 1130-1225) 43324 at 1131 in Plymouth; Vatican R, Rome 9.645 (It, Sp, Port, Fr, Eng 1230-1400) SIO444 at 1300 in Harrogate; VOIRI

Tehran, Iran 9.022 (Eng 1930-2030) 43433 at 1955 in Northampton; Voice of Vietnam, Hanoi 9.840 (Eng, Russ, Viet, Sp 1700-2100) 44544 at 2045 in Alnwick; R.Tirana, Albania 9.375 (Cz, Pol, Hung, Ger 1700-2100) SIO444 at 1840 in Winchester; R.Cairo, Egypt 9.900 (It, Ger, Fr, Eng 1800-2245) SIO545 at 2200 in Guernsey; RCI via Sackville, Canada 9.760 Eng 2200-2300) SIO444 at 2200 in Rotherham; Voice of Turkey, Ankara 9.445 (Eng, Tur 2200-0355, also to USA) 54444 at 2245 in Worthing.

Also noted were R.Nacional, Venezuela 9.540 (Sp to S.America) 33232 at 0500 in Durham; HCJB Quito, Ecuador 9.745 (Eng, Jap to USA 0030-0700), heard at 0520 in George, S.Africa; R.New Zealand, Wellington 9.700 (Eng to Pacific areas 0730-1210) 22422 at 0750 in Prenton; R.Polonia, Warsaw 9.525 (Eng to Africa 2000-2025) SIO222 at 2005 by **Julian Wood** in Elgin; Voice of Israel, Jerusalem 9.435 (Eng to USA, W.Europe 2130-2200) SIO333 at 2130 in Bristol.

Amongst the many **7MHz (41m)** logs were the Voice of Nigeria, Lagos 7.255 (Eng, Fr, Ha to C/W Africa 0500-2200), heard at 0520 in George, S.Africa; KTBN Salt Lake City, USA 7.510 (Eng to USA) 44333 at 0703 in Northampton; Int. Red Cross, Geneva 7.210 (Eng to Europe 1100-1130, Sun) 25242 at 1115 in Alnwick; R.Korea, Seoul 7.550 (Kor, Ar, Eng to Middle East, Africa 1700-2130) SIO 323 at 1808 in Macclesfield; Voice of Greece, Athens 7.430 (Gr, Eng, Fr, Ger to Europe 1900-1950) SIO444 at 1941 in Winchester; RCI Montreal via Daventry, UK 7.230 (Eng, Fr to W.Europe 2100-2200) SIO544 at 2130 in Guernsey; R.Vilnius, Lithuania 7.400 (Eng to USA 2300-2330) SIO444 in Sheffield.

Continued on the bottom of page 67...

Transatlantic Chart

USA				
540	WGTO	Cypress G'dens, FL	0330	A
680	WPTF	Raleigh, NC	0600,	A
710	WOR	New York, NY	0320	B
1210	WOGL	Philadelphia, PA	0230	B
1510	WKKU	Boston, MA	0015	B
Canada				
530	CJFT	Fort Eire, ON	0430	A
550	CFNB	Fredericton, NB	0130	B
580	CHLC	Hauterive, PQ	0200	A
590	VOCM	St.John's, NF	2330	B
820	CHAM	Hamilton, ON	0100	B
930	CJYQ	St.John's, NF	2350	B
980	CFPL	London, ON	0440	A
1000	CKBW	Bridgewater, NS	0600	A
1220	CKCW	Moncton, NB	0430	B
1570	CKLM	Level, PQ	0115	B
C. America & Caribbean				
530	TICAL	R.Rumbo	Costa Rica	0230 A
540	XEWA	Super-Estelar	Rio Verde, Mexico	0450 B
550	TISCL	R.Sta Clara	Costa Rica	0230 A
570	TISJB	R.Fundacion	San Jose, Costa Rica	0230 A
620	ABBS	St.Johns	Antigua	0300 A
1610		Caribbean Beacon The Valley	Anguilla	0510 A,B
South America				
1220	R.Globo	Rio	Brazil	0020 B

DXers:

A: Tim Shirley, Bristol. B: Jim Willett, Grimsby.

Tropical Chart

2.340	Fuzhou	China	2150	C
2.560	Xinjiang	China	2345	F
3.200	Vos 1, Fuzhou	China	2210	U
3.205	AIR Lucknow	India	1605	U
3.210	R.Mozambique	Mozambique	1825	U
3.215	R.Orange	S.Africa	1850	U
3.220	CPBS 1, Beijing	China	2050	U
3.230	R.Nepal	Kathmandu	1555	Q,U
3.235	AIR Gauhati	India	1540	U
3.240	TWR	Swaziland	1830	U
3.270	SWABC 1, Namibia	S.W.Africa	1835	U
3.315	AIR Bhopal	India	0100	U
3.315	SLBS Freetown	Sierra Leone	2001	F
3.325	FRCN Lagos	Nigeria	1910	O
3.330	R.Kigali	Rwanda	1758	K
3.365	R.Rebelde	Cuba	0600	G,S
3.365	GBC Radio 2	Ghana	2025	F,U,U
3.380	R.Malawi	Malawi	1830	U
3.915	BBC Kranji	Singapore	2035	D,G,J,L,O,U
3.925	AIR Delhi	India	1425	L
3.950	PBS Qinghai Xining	China	2301	F
3.955	BBC Daventry	England	2129	L,N
3.960	RFE/RL Munich	W.Germany	2133	N
3.965	RFI Paris	France	2109	E,G,J,L,N,O
3.970	RFE Munich	W.Germany	2115	O
3.975	BBC Skelton	England	1845	G
3.980	VOA Munich	W.Germany	2115	D,G,J,L,N,O
3.985	R.Beijing, China	via SRI Berne	2115	B,N,O,R
3.985	SRI Berne	Switzerland	1715	D,G,J,L
3.995	DW Cologne (Julich)	W.Germany	2115	G,N,O
4.005	RRI Padang	Indonesia	1550	U
4.040	R.Moskva 2(Vladivost)	USSR	2315	G
4.080	R.Ulan Bator	Mongolia	0015	U
4.485	R.Moskva (Ufa)	USSR	0215	U
4.500	Xinjiang	China	2325	F
4.600	R.Baghdad	Iraq	1713	F
4.635	R.Dushanbe Tadzhih	USSR	0100	H
4.735	Xinjiang	China	2325	F,L
4.740	R.Afghanistan	via USSR	1925	D
4.750	R.Bertour	Cameroon	1940	A
4.760	R.Moscow (Dushanbe)	USSR	2003	L,O
4.765	Brazzaville	Pep.Rep.Congo	1911	A,C,L,O,P
4.765	R.Moscow	via Cuba	0030	G,U
4.770	FRCN Kaduna	Nigeria	1914	G,L,N,O,U
4.775	RRI Jakarta	Indonesia	1650	Q,S
4.775	R.Afghanistan	via USSR	1850	O
4.780	RTD	Djibouti	1840	U
4.785	RTM Bamako	Mali	1836	C,O,Q
4.790	TWR Manzini	Swaziland	1836	O
4.795	R.Douala	Cameroon	1948	O
4.800	LNBS Lesotho	Mauritania	1814	O
4.810	R.Yerevan 2	USSR	2000	C,O
4.815	R.diff TV Burkina	Ouagadougou	2150	C,F
4.820	R.Moskva 4 (Khanty-M)	USSR	2006	G,L,O
4.830	Gaborone	Botswana	1901	O
4.830	R.Tachira	Venezuela	0030	F,G,U
4.832	R.Reloj	Costa Rica	0630	F,G,U
4.835	R.Tezulutan, Coban	Guatemala	0120	U
4.835	RTM Bamako	Mali	1928	F,G,H,N,O
4.845	RTM Kuala Lumpur	Malaysia	1450	S
4.845	ORTM Nouakchott	Mauritania	1915	C,F,G,L,O,S
4.850	R.Yaounde	Cameroon	1946	G,L,N,O
4.860	R.Moscow (Kalinin).	USSR	1800	H
4.865	PBS Lanzhou	China	2309	F
4.865	V of Cinaruco	Colombia	0603	G
4.870	R.Cotonou	Benin	1915	C,G,O,S
4.870	SLBC Colombo	Sri Lanka	0005	U
4.885	Voice of Kenya	Kenya	1744	O
4.895	R.Moscow (Kalinin)	USSR	2239	G,L
4.900	V de la Rev. Conakry	Guinea	2109	O
4.905	R.Nat.N'djamena	Chad	1915	G,J,N,O,P,S
4.910	R.Zambia, Lusaka	Zambia	1845	O,T,U
4.915	R.Ghana, Accra	Ghana	1924	C,F,G,O
4.920	ABC Brisbane	Australia	1945	O
4.930	RRI Surakarta,Java	Indonesia	1505	U
4.930	R.Moscow	USSR	2002	H,O
4.935	Voice of Kenya	Kenya	1918	F,G,H,J,N,O
4.940	R.Kiev 2	USSR	2002	D,G,J,L,O
4.940	R.Moskva 2 (Yakutsk)	USSR	1645	J
4.955	R.Marajoara, Belem	Brazil	0555	F
4.960	R.Baku	USSR	2002	C,O
4.975	R.Timbre, Sao Luiz	Brazil	0015	F
4.975	R.Uganda, Kampala	Uganda	2057	O
4.980	Ecos del Torbes	Venezuela	2330	F,G,H,L,P
4.990	AIR via Madras	India	0000	P
4.990	FRCN Lagos	Nigeria	1919	O
4.990	R.Moscow (Yerevan)	USSR	2244	L
5.000	YVTO Caracas	Venezuela	0048	D,G
5.005	R.Nacional, Bata	Eq.Guinea	2000	N,O
5.015	R.Moskva 2Arkhangelsk	USSR	2247	L
5.020	ORTN Niamey	Niger	0535	F
5.025	R.Parakou	Benin	2108	N
5.025	R.Rebelde, Habana	Cuba	0245	G
5.035	R.Alma Ata	USSR	2250	D,L
5.040	R.Tbilisi 1	USSR	2040	J
5.044	R.Impacto	Costa Rica	0130	U
5.045	R.Cultura do Para	Brazil	2355	F
5.047	R.Togo, Lome	Togo	1920	C,F,G,H,N,O
5.050	SBC Singapore	Singapore	1515	U
5.052	SBC Radio 1	Singapore	2325	M
5.055	Faro del Caribe	Costa Rica	0255	G
5.055	RFO Cayenne(Matoury)	French Guiana	0530	U
5.075	Caracol Bogota	Colombia	0130	U
5.256	RRI Sibolga, Sumatra	Indonesia	1530	U
5.260	R.Alma Ata 2	USSR	2252	D,L

DXers:

A: Thomas Barnett, Slough.
 B: Charles Beanland, Gibraltar.
 C: Darren Beasley, Bridgewater.
 D: Jim Cash, Swanwick.
 E: Bill Clark, Rotherham.
 F: David Edwardson, Wallsend.
 G: Ron Galliers, N.London.
 H: Bill Griffith, W.London.
 I: Robin Harvey, Bourne.
 J: Sheila Hughes, Morden.
 K: Rhoderick Illman, Thurrait, Oman.
 L: Eddie McKeown, Co.Down.
 M: Dick Moon, George, S.Africa.
 N: Bart O'Brien, Co. Wexford.
 O: Fred Pallant, Storrington.

P: Roy Patrick, Derby.
 Q: Tim Shirley, Bristol.
 R: Chris Shorten, Norwich.
 S: Alan Smith, Northampton.
 T: Phil Townsend, E.London.
 U: Jim Willett, Grimsby.

Maritime Beacons

Long Wave Maritime Beacon Listening

Brian Oddy G3FEX

Three Corners, Merryfield Way, Storrington, West Sussex RH20 4NS

After studying the beacon chart in the March '91 *SWM*, Paul Hilton (Newbury) decided to make a quick check of the band. The only beacon signal he heard was BHD from the lighthouse at Berry Head, S.Devon on 318kHz, but it seems likely that this first result will encourage him to search the band again. It is worth mentioning that most of the Maritime Radiobeacons operate slightly lower in frequency than BHD, i.e. between 285 and 312.6kHz.

Ideal Location

The beacon articles have also encouraged George Millmore (Wootton, IOW) to try this aspect of the hobby for the first time. His location must be ideal for receiving the beacons along the south coast and those along the northern coastline of France. Judging by his first log, which includes Point Lynas, Anglesey (PS) 287.3 and Ristna, USSR (RS) on 318.5kHz, it seems to be a good one for receiving beacon signals from more distant places too!

The comments from Kenneth Buck in the March issue prompted Ern Warwick (Plymouth) to take a cursory look around the Maritime Radiobeacon band. He found that each beacon sent its call sign four times followed by a 25 second dash and then its call sign twice. This pattern was immediately repeated by the next beacon in the group. There were five beacons in the group and the full cycle included a quiet period. The total time for each cycle was 6 minutes. He was surprised to find that an accented é (—) is used in the call sign of the Point de Ver lighthouse, N.France. No doubt this causes a good deal of confusion to unwary mariners and DXers alike.

In Slough, Thomas Barnett found that interference from the line timebase of local TV receivers often prevented

him from hearing the beacon signals. He was pleased to receive, for the first time, two of the beacons along the north coast of France - Point de Ver (ER) on 291.9 and Cap D'Alprech (PH) on 310.3kHz. He also picked up the beacon signal NF from the North Foreland lighthouse on 301kHz.

Electrical interference also impairs reception in Edinburgh. To alleviate the problem, Kenneth Buck uses a large loop with an emitter follower stage ahead of either his home-built t.r.f. receiver, which has three r.f. stages, or a Lowe HF-225 and powers them from batteries. He says, "I intend to make a second loop - a screened one this time in the hope of reducing interference from local electrical sources".

In an attempt to improve reception in Bridgwater, Darren Beasley has been experimenting with the m.w. hexagon loop which he built to the design by the late John Ratcliffe in the April '89 *SWM*. He found by adding 1260pF in parallel with the 500pF variable capacitor it would tune from 285 to 330kHz. He says, "The loop now gives me the directional properties that I need to allow me to receive more beacons. I have only been using the loop for about a week and I have already received 32 beacons". Prior to this, Darren used a 15m random wire with a home-built a.t.u. ahead of his receiver.

Impressive List

Despite the high levels of electrical noise in Birmingham, Patrick McKeever compiled an impressive list for the chart. He searched the band between 2000 and 2300UTC during four nights. In Storrington, Fred Pallant used a Trio R2000 receiver with a random wire in the loft to log some of the beacons along the south coast and the shores of northern France.

Keep your Maritime Beacon reports coming in to Brian Oddy. The next LW Maritime Beacons column will appear in the September '91 issue.

Andy Cadier's new quarterly Pirate Radio column will be occupying this page in next month's issue. Don't miss it.

Freq (kHz)	Call-sign	Station	Locations	DXers
287.3	BY	Bressey LH	Shetland Is	E*,H*
287.3	CM	Cromer LH	Norfolk	E*
287.3	CR	Channel LV	??	B
287.3	CV	Cabo Carvoeiro LH	Spain	E*
287.3	GA	Outer Gabbard LV	off Suffolk	E*,J*
287.3	LV	Dudgeon LV	off Norfolk	E*
287.3	PS	Point Lynas	Anglesey	E*,F
289.6	D	Rota	Spain	H*
289.6	FD	Fidra LH	F. of Forth	C
289.6	LP	Loop Head	S.Ireland	B,H*
291.9	EP	St.Catherines Pt.	I.O.W.	B,E*,F,J*,K*
291.9	CR	Pointe de Ver LH	N.France	A,B,K*
291.9	FG	Pointe de Barfleur	N.France	B,E*,G,J*,K*
291.9	KD	Kinnairds Head LH	Aberdeen	C
291.9	KN	Skrova LH	Norway	E*
291.9	NR	N Ronaldsay LH	Orkney Is	I
291.9	OM	Stroma Pt. LH	Caithness	C
291.9	PB	Portland Bill LH	Dorset	B,F
291.9	TI	Cap d'Antifer	France	B,G,K*
292.4	AH	Altacarry Head LH	Antrim	C,E*
292.4	DA	Pladda LH.	Is of Arran	C
292.4	KI	Kiel LH	Germany	H
292.4	MW	Mew Island LH	off Co.Down	C
292.4	OR	Oigh Sgeir LH	off Is Rum	C
292.4	RN	Rinn of Islay	Is of Islay	C,E*
296.5	LA	Lista LH	S.Norway	B,E*,J*
296.5	MA	Cabo Machicharo LH	N Spain	E*
296.5	MY	Cabo Mayor	Spain	E*
296.5	NK	Inchkeith	F. of Forth	C
296.5	NP	Nieuwpoort W.Pier	Belgium	B
296.5	SB	South Bishop LH	Pembrok	B
296.5	TR	Tuskar Rock	S.Ireland	B,E*
298.8	BL	Butt of Lewis	Is of Lewis	C
298.8	LZ	Lizard LH	S.Cornwall	B,K*
298.8	PE	Penlee Pt.	UK	B,K*
298.8	QS	Casquets LH	Channel Is	B,E*,K*
298.8	RD	Roches Douvres LH	Channel Is	B,K*
298.8	SP	Start Point LH	S.Devon	B,K*
301.1	CN	Cregneish	I.O.M.	C,E*
301.1	GE	Skarvoy Egersund	Norway	C
301.1	IB	Bardsey Is LH	N.Wales	B
301.1	NF	North Foreland LH	E.Kent	A,E*,J*
301.1	PY	Point of Ayre LH	I.O.M.	C,E*
301.1	SR	Skerries LH	Anglesey	B,C
301.1	SU	South Rock LV	Co.Down	C,E*
301.1	VS	Grosser Vogelsand	Germany	I
301.1	WK	Wicklow Head Light	Co.Wicklow	B,C,E*
303.4	BM	Brighton Marina	E.Sussex	E*
303.4	FB	Flamborough Hd LH	E.Yorkshire	B,C,E*
303.4	FP	Fife Ness Point	Fife	B,C
303.4	LT	Longstone LH	Berwick	C
303.4	SJ	Souter Light	Sunderland	C
303.4	SL	Spurn LV	off Yorks	I,F
305.7	CB	Corbiere	Jersey C.I	B,E*
305.7	CS	Calais Main LH	N.France	I
305.7	KY	Oksoy LH	Norway	C
308.0	BD	Barra Head LH	Is of Barra	C
308.0	CA	Pointe de Creach	France	B
308.0	GL	Eagle Island LH	W.Ireland	B
308.0	MZ	Mizen Head LH	S.Ireland	B,E*
308.0	RR	Round Island LH	Nr Cornwall	B,C,E*
308.0	TY	Tory Island LH	N.Ireland	C
310.3	AL	Pointe d'Ailly LH	France	B,G
310.3	DU	Dungeness LH	S.Kent	B,G
310.3	GD	Girdle Ness	Aberdeen	C
310.3	PH	Cap d'Alprech	France	A,B,F,I,J*
312.6	GU	Geltungane	Norway	B,C
312.6	MA	Marstein	Norway	C
312.6	NB	Nab Tower LH	off Sussex	B,F
312.6	PT	Souter Pt.	Durham	C
312.6	RB	Cherbourg	France	B,F
312.6	UK	Sunk LV	off Essex	E*,I
312.6	UT	Utsira	Norway	C
312.6	VR	Utvaer	Norway	E*
318.0	BH	Berry Head LH	Devon	D,F
318.5	RS	Ristna	USSR	F
319.0	LEC	Stavanger	Norway	B,C,I,J*
397.2	DHE	Helgoland Lt.	off N.Germany	F

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

DXers:
 A: Thomas Barnett, Slough.
 B: Darren Beasley, Bridgwater.
 C: Kenneth Buck, Edinburg.
 D: Paul Hilton, Newbury.
 E: Patrick McKeever, Birmingham.
 F: George Millmore, Wootton, IOW.
 G: Fred Pallant, Storrington.
 H: Tim Shirley, Bristol.
 I: Alan Smith, Northampton.
 J: Philip Townsend, London.
 K: Ern Warwick, Plymouth.

...Continued from page 66

The broadcasts to Europe in the 6MHz (49m) band include HCJB Quito, Ecuador 6.205 (Eng 0700-0830) rated S10 544 at 0810 in Harrogate; R.Nederlands via Flevo 5.955 (Eng 1130-1225) 43324 at 1131 in Plymouth; RFI via Allouis 6.175 (Fr, Eng 0500-2200) 55545 at 1439 in Norwich; R.Austria via Moosbrunn 5.945 (Ger, Fr, Eng, Sp 1700-2300) S10433 at 1940 in Birmingham; R.Sweden via Karlsborg 6.065 (Eng 2200-2230) S10222 at 2200 in Elgin; R.Yugoslavia, Belgrade 6.100 (Eng 2200-2245) 55555 at 2200 in W.London.

Equipment Used

Ted Agambar, Norwich Grundig Satellit 400 + r w
 Thomas Barnett, Slough Kenwood R2000 + r w
 Leo Bar, Sunderland Steepleton MBR7 + r w in loft
 Charles Beandler, Gibraltar Sangean ATS 803 + a Lu + r w
 Darren Beasley, Bridgwater Philips D2835 - Hex loop or a tu + 10m wire
 Dene Bocher, Douglas Matsui MF 4099 - single loop or r w
 Kenneth Buck, Edinburg Lowe HF225 + r w in loft or loop
 Noel Carrington, Sutton in Ashfield, Saisio SW5000
 Jim Cash, Sarnwick Kenwood R5000 - trap dipole or Sony AN-1
 Bill Clark, Rotherham Sony ICF-SW7600 + built-in whip
 Robin Clark, Plymouth Saisio SW5000 + 16m wire
 N Cross, Ipswich Sangean ATS 803A - 16m wire
 Neil De Linger, Cape Town, S.Africa Philips D2835 - 23m wire
 David Edmondson, Walsford TR0 R600 + inverted V trap dipole
 Ron Gallers, London Philips D2835 - 30m wire
 All Gray, Birmingham Codar CR70 + PR30 - a tu - Ex Army whip
 Phil Cooper, Goswary Sony ICF 7600D5 + r w
 Simon Hamer, New Radnor Lafayette HE30 or Grundig S1400 - loop
 Robin Harvey, Bourne Matsui MR 4099 - s w loop
 Francis Hearne, Bristol Sharp GFA2 cassette radio + r w
 Simon Holland, Douglas, I O M Sangean ATS-803A - built-in whip
 Sheila Hughes, Meriden Sony ICF7600D5 - Hooper Panasonic DR46 - 15m wire
 Rhoderick Illman, Thurrair, Oman Sony ICF 7600D5 + 23m wire
 Colin Jermy, Ruislip Realistic DX260 - built-in whip

Cyrl Kellam, Sheffield Sony ICF 7600D5 + 5m vertical wire
 Bryan Kimber, Hereford Realistic SX190 - vertical dipole or Zenith R7000
 Tim McCarthy, Telford Edystones 7304 + r w
 Patrick McKeever, Birmingham: Murphy CA5 + a tu + loops
 Eddie McKeown, Co Down Talking TMR 7602
 George Millmore, Wootton, IOW Talking TMR 7602 - loop
 Dick Moon, George, S.Africa Icom R 770
 Bert O'Brien, Co Wexford Sony ICF 2001D - hexagon loop or whip
 John O'Halloran, Harrogate, Rascal RA17 + a tu + r w
 Fred Pallant, Storrington Trio R2000 - r w in loft
 John Parry, Northwich Realistic DX-400 + 33m wire
 Roy Patrick, Derby Lowe HF 125 + 44m wire
 John Roberts, Alnwick Lowe HF 225 - short wire or whip
 Tim Shirley, Bristol Icom R 71E or Trio R600 - loop or r w
 Kenneth Reece, Prenton Icom R8000 - delta loop or JVC NRD 525 + r w
 Alan Roberts, Quebec, Canada Lowe HF225 + 11m or 19m dipole or r w
 John Robertson, Alnwick Lowe HF 225 - short wire or whip
 Philip Rumble, Macclesfield Irit Marine Radio R 700M + r w
 Chris Shorten, Norwich Matsui MR 4099 - 16m wire
 Alan Smith, Northampton Matsui MR4099 + a tu - dipole
 Cliff Stapleton, Torquay Trio R1000 - dipole or 25m wire
 John Stevens, Largs Hammarlund HQ 100 or Icom R-70 - loop or r w
 Darren Tadin, Bransley Yaesu FRD 7700 + FR4730
 Phil Townsend, London Lowe SRX-30 or Codar CR 70A + PR40 - a tu + r w
 Paul Weston, Kettering Toshiba RT 8057 - 5 band tuner
 Neil Wheadley, Lytham St Annes Sangean ATS 803 + built-in whip
 Jim Willett, Grimsby RCA 472 - 4m loop or Trio SR 50D5 + a tu - X dipole
 Ken Willis, Scarborough Kenwood R 2000 + r w
 Julian Wood, Eigm Kenwood R2000 + Yaesu FRT 7700 a tu + 5m wire

Station Addresses

BBC Radio Bedfordshire, P.O.Box 476, Hastings Street, Luton LU1 5BA.
 ILR Beacon Radio (WABC), P.O.Box 303, 267 Tattenhall Road, Wolverhampton WV8 0DQ.
 Radio Monte Carlo, Boite Postale 128, Monte Carlo, Monaco.
 Radio Vilnius, Konariskio 49, Vilnius, Lithuania SSR, USSR.
 Radio CKLM, 315 Blvd St-Martin ouest, Laval, Quebec H7M 1Y8, Canada.
 Radio WINS, 888 7th Avenue, New York, NY 10016, USA.

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 85p for one book, £1.50 for two or more books, orders over £30 post and packing free, (overseas readers add £1.50 for one book, £3.00 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.

* A recent addition to our Book Service. O/P = Out of print, O/S = Out of stock.

RADIO

AIR & METEO CODE MANUAL

10th Edition. Joerg Klingenfuss

Detailed descriptions of the World Meteorological Organisation Global Telecommunication System operating FAX and RTTY meteor stations, and its message format with decoding examples. Also detailed description of the Aeronautical Fixed Telecommunication Network amongst others. 289 pages £15.00

HIGH POWER WIRELESS EQUIPMENT

Articles from *Practical Electricity* 1910-11

Edited by Henry Walter Young

A reprint of interesting practical articles from the very early days of radio. 99 pages £6.85

PASSPORT TO WORLD BAND RADIO 1991

This book gives you the information to explore and enjoy the world of broadcast band listening. It includes features on different international radio stations, receiver reviews and advice as well as the hours and languages of broadcast stations by frequency. 398 pages £3.95

RADIOTELETYPE CODE MANUAL

10th Edition. Joerg Klingenfuss

This book gives detailed descriptions of the characteristics of telegraph transmission on short waves, with all commercial modulation types including voice frequency telegraphy and comprehensive information on all RTTY systems and c/w alphabets. 96 pages £8.00

RESCUE

Paul Beaver & Paul Berriff

This book follows the life and conditions of rescue helicopter crews. This is not drama, this is real life and it makes a true impression of the rescuers for the reader. There are transcriptions of air/ground and between crew dialogues, a summary of the main distress and rescue radio frequencies and helicopter base locations. 192 pages £9.99

SCANNERS (Third Edition)

Peter Rouse GU1DKD

A guide for users of scanning receivers, covering hardware, antennas, accessories, frequency allocations and operating procedures. 245 pages £8.95

SCANNERS 2

Peter Rouse GU1DKD

The companion to *Scanners*, this provides even more information on the use of the v.h.f. and u.h.f. communications band and gives constructional details for accessories to improve the performance of scanning equipment. 216 pages £9.95

SHORT WAVE RADIO LISTENERS' HANDBOOK

Arthur Miller

In easy-to-read and non-technical language, the author guides the reader through the mysteries of amateur, broadcast and CB transmissions. 207 pages £7.99

1934 OFFICIAL SHORT WAVE RADIO MANUAL

Edited by Hugo Gernsback

A fascinating reprint from a bygone age with a directory of all the 1934 s.w. receivers, servicing information, constructional projects, circuits and ideas on building vintage radio sets with modern parts. 260 pages £10.15

TELEVISION

A TV-DXERS HANDBOOK (BP176)

R. Bunney

Information on transmission standards, propagation, receivers including multi-standard, colour, satellites, antennas, photography, station identification, interference etc. Revised and updated 1986. 87 pages £5.95

GUIDE TO WORLD-WIDE TELEVISION TEST CARDS

Edition 3. Keith Hamer & Garry Smith

Completely revised and expanded, this is a very handy and useful reference book for the DXTV enthusiast. Over 200 photographs of Test Cards, logos, etc., world wide. 60 pages £4.95

THE ATV COMPENDIUM

Mike Wooding G6IQM

This book is for those interested in amateur television, particularly the home construction aspect. There is not a 70cm section as the author felt this is covered in other books. Other fields, such as 3cm TV, are covered in depth. A must for the practical ATV enthusiast. 104 pages £3.00

SATELLITES

AN INTRODUCTION TO SATELLITE TELEVISION (BP195)

F. A. Wilson

Answers all kinds of questions about satellite television. For the beginner thinking about buying or purchasing a satellite TV system there are details to help you along. For the engineer there are technical details including calculations, formulae and tables. 104 pages £5.95

SATELLITE TELEVISION A layman's guide

Peter Pearson

Pictures from space, that's what satellite television is all about. Orbiting satellites 35000km high receive TV signals from stations on the earth and retransmit them back again. This book explains all you need to know to set up your own satellite TV terminal at home, dish and accessories, cable and tuner. 73 pages £1.00

SATELLITE TELEVISION INSTALLATION GUIDE

2nd Edition. John Breeds

A practical guide to satellite television. Detailed guidelines on installing and aligning dishes based on practical experience. 56 pages £11.95

THE SATELLITE BOOK (A complete guide to satellite TV theory and practice)

John Breeds

This book deals almost exclusively with television broadcast satellites and is a comprehensive collection of chapters on topics, each written by an expert in that field. It appears to be aimed at the professional satellite system installer, for whom it is invaluable, but it will be appreciated by a much wider audience - anyone interested in satellite technology. 280 pages £27.00

THE SATELLITE EXPERIMENTER'S HANDBOOK (USA)

A guide to understanding and using amateur radio, weather and TV broadcast satellites. 207 pages £7.50

WEATHER SATELLITE HANDBOOK 4th edition

Dr Ralph E. Taggart WB8DQT

This book explains all about weather satellites, how they work and how you can receive and decode their signals to provide the fascinating pictures of the world's weather. There are plenty of circuit diagrams and satellite predicting programs. 192 pages £13.50

THEORY

A BEGINNERS GUIDE TO MODERN ELECTRONIC COMPONENTS

(BP295)

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 £9.95

COMMUNICATION (BP89)

Elements of Electronics Book 5

F. A. Wilson

Fundamentals of line, microwave, submarine, satellite, digital multiplex, radio and telegraphy systems are covered, without the more complicated theory or mathematics. 256 pages £2.95

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 deals 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 W7Z01 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 h.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 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

BEGINNERS

AN INTRODUCTION TO RADIO DXING (BP91)

R. A. Penfold

How to find a particular station, country or type of broadcast and to receive it as clearly as possible. 112 pages £1.95

BEGINNER'S GUIDE TO RADIO

9th Edition. Gordon J. King

Radio signals, transmitters, receivers, antennas, components, valves and semiconductors, CB and amateur radio are all dealt with here. 266 pages £8.95

ELECTRONICS SIMPLIFIED - CRYSTAL SET CONSTRUCTION (BP92). F. A. Wilson

Especially written for those who wish to take part in basic radio building. All the sets in the book are old designs updated with modern components. 72 pages £1.75

THE SIMPLE ELECTRONICS CIRCUIT AND COMPONENTS Book One (BP62)

The aim of this book is to provide an in-expensive but comprehensive introduction to modern electronics. 209 pages £3.50

LISTENING GUIDES

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 £6.99

DIAL SEARCH

6th Edition With Updates. 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 1991

T.T. Williams

Identifies the flights of airlines, schedule, charter, cargo and mail, to and from the UK and Cere and overflights between Europe and America. 104 pages £5.25

GUIDE TO BROADCASTING STATIONS

20th Edition 1989/90. Philip Darrington

Frequency and station data, receivers, antennas, Latin American DXing, reporting, computers in radio, etc. 240 pages £10.95

GUIDE TO FACSIMILE STATIONS 10th Edition

Joerg Klingenfuss

This manual is the basic reference book for everyone interested in FAX. Frequency, call sign, name of the station, ITU country/geographical symbol, technical parameters of the emission are all listed. All frequencies have been measured to the nearest 100Hz. 318 pages £14.00

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

9th 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. 502 pages £19.00

HF OCEANIC AIRBAND COMMUNICATIONS

3rd Edition. Bill Laver

HF aircraft channels by frequency and band, main ground radio stations, European R/T networks and North Atlantic control frequencies. 29 pages £3.50

MARINE UK RADIO FREQUENCY GUIDE

Bill Laver

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 G1UOW

A technical guide for all short wave listeners. Covers construction and use of sets for the s.w. l.w. who wants to explore the bands up to 30MHz. 286 pages £12.95

RADIO LISTENER'S GUIDE 1991

Clive Woodyear

This is the third edition of the essential guide of all radio listeners. 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

Revised 1990 - 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. 86 pages £5.95

THE INTERNATIONAL VHF FM GUIDE

7th Edition. Julian Baldwin G3UHK and Kris Partridge G8AUU

The latest edition of this useful book gives concise details of repeaters and beacons worldwide plus coverage maps and further information on UK repeaters. 70 pages £2.85

SHORT WAVE LISTENERS CONFIDENTIAL FREQUENCY LIST

Bill Laver

Covering the services and transmission modes that can be heard on the bands between 1.635 and 29.7MHz. £8.95

WORLD RADIO TV HANDBOOK 1991

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.w.'s bible. 576 pages £17.99

INTERFERENCE

INTERFERENCE HANDBOOK (USA)

William R. Nelson WA6FGG

How to locate and cure it. For radio amateurs, CBers and TV and stereo owners. 253 pages £6.75

RADIO FREQUENCY INTERFERENCE (USA)

What causes r.f.i.? Are all r.f.i. problems difficult, expensive and time-consuming to cure? These questions and many more are answered in this book. 84 pages £4.30

AMATEUR RADIO

ALL ABOUT VHF AMATEUR RADIO (USA)

W. I. Orr W6SAI

VHF/UHF propagation, including moonbounce and satellites, equipment and antennas. 172 pages £7.95.

AMATEUR RADIO CALL BOOK (RSGB)

1991 Edition

Now incorporates a 48-page section of useful information for amateur radio enthusiasts. £6.95

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
Introduces the concept of packet radio to the beginner. Problem areas are discussed and suggestions made for solutions to minimise the problems. Deals with the technical aspects of packet taking the reader through setting up and provides a comprehensive guide to essential reference material. 91 pages £6.95

PRACTICAL IDEAS FOR RADIO AMATEUR

Ian Poole G3YWX
Offers a wealth of hints, tips and general practical advice for all transmitting amateurs and short wave listeners. 128 pages £5.95

RADIO AMATEUR CALLBOOK INTERNATIONAL LISTINGS 1991

69th Edition
The only publication listing licenced radio amateurs throughout the world. Also includes DXCC Countries list, standard time chart, beacon lists and much more. Over 1500 pages £19.50

RADIO AMATEUR CALLBOOK NORTH AMERICAN LISTINGS 1991

69th 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

RADIO AMATEUR'S GUIDE TO RADIO WAVE PROPAGATION

(HF Bands), F. C. Judd G2BCX
The how and why of the mechanism and variations of propagation in the h f bands. 144 pages £8.95

*THE 1991 ARRL HANDBOOK FOR THE RADIO AMATEUR

This is the 86th edition of this very useful hardback reference book. Updated throughout it has several new sections covering oscilloscopes, spectrum analysers, digital frequency synthesis, phase-noise measurement and new constructional projects. 1200 pages £16.95

*THE ARRL OPERATING MANUAL

Another very useful book from the ARRL. Although written for the American radio 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 and 13) is covered in detail. 97 pages £4.95

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. 446 pages £13.50

THE COMPLETE DX ER

Bob Locher W9KNI
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 DX GUIDE (USA)

15th Edition
The guide contains information not easily obtained elsewhere and is intended as an aid and quick reference for all radio amateurs interested in DX. 38 pages £2.95

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 WA1LDU
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 included details of networking and space communications using packet. 278 pages £7.95

MAPS

IARU LOCATOR MAP OF EUROPE

DARC
This multi-coloured, plastics laminated, map of Europe shows the AIRU ("Maidenhead") Locator System. Indispensable for the v h f and u h f DXer. 632 x 872mm £5.25

NORTH ATLANTIC ROUTE CHART

This is a five-colour chart designed for the use of ATC in monitoring transatlantic flights. Supplied folded. 740 x 520mm £4.50

RADIO AMATEUR'S MAP OF NORTH AMERICA (USA)

Shows radio amateur prefix boundaries, continental boundaries and zone boundaries. 760 x 636mm £2.95

RADIO AMATEUR'S PREFIX MAP OF THE WORLD (USA)

Showing prefixes and countries, plus listings by order of country and of prefix. 1014 x 711mm £2.95

RADIO AMATEUR'S WORLD ATLAS (USA)

Seventeen pages of maps, including the world-polar projection. Also includes the table of allocation of international call sign series. £3.50

DATA REFERENCE

DIGITAL IC EQUIVALENTS AND PIN CONNECTIONS (BP140)

A. Michaels
Equivalents and pin connections of a popular selection of European, American and Japanese digital ICs. 256 pages £5.95

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 £9.95

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. 160 pages £9.95

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

CONSTRUCTION

HOW TO DESIGN AND MAKE YOUR OWN PCBs (BP121)

R. A. Penfold
Designing or copying printed circuit board designs from magazines, including photographic methods. 80 pages £2.50

INTRODUCING ORP

Collected articles from PW 1983-1985
An introduction to low-power transmission (ORP). This book includes full constructional details of a variety of designs by Rev. George Dobbs G3RJV for transmitters and transceivers covering Top Band to 14MHz, together with test equipment by Tony Smith G4FAI. 64 pages £1.50

MORE ADVANCED POWER SUPPLY PROJECTS (BP192)

R. A. Penfold
The practical and theoretical aspects of the circuits are covered in some detail. Topics include switched mode power supplies, precision regulators, dual tracking regulators and computer controlled power supplies, etc. 92 pages £2.95

POWER SUPPLY PROJECTS (BP76)

R. A. Penfold
This book gives a number of power supply designs including simple unregulated types, fixed voltage regulated types and variable voltage stabilised designs. 91 pages £2.50

PRACTICAL POWER SUPPLIES

Collected articles from PW 1978-1985
Characteristics of batteries, transformers, rectifiers, fuses and heatsinks, plus designs for a variety of mains driven power supplies, including the P.W. "Marchwood" giving a fully stabilised and protected 12V 30A d.c. 48 pages £1.25

ORP NOTEBOOK

Doug DeMaw W1FB
This book deals with the building and operating of a successful ORP station. Lots of advice is given by the author who has spent years as an ardent ORPer. All the text is easy-to-read and the drawings large and clear. 77 pages £4.95

TEST EQUIPMENT CONSTRUCTION (BP248)

R. A. Penfold
Describes, in detail, how to construct some simple and inexpensive, but extremely useful, pieces of test equipment. 104 pages £2.95

50 (FET) FIELD EFFECT TRANSISTOR PROJECTS (BP39)

F. G. Rays
50 circuits for the s.w.l., radio amateur, experimenter or audio enthusiast using f.e.t.s. 104 pages £2.95

ANTENNAS (AERIALS)

AERIAL PROJECTS (BP105)

Practical designs including active, loop and ferrite antennas plus accessory units. 96 pages £2.50

ALL ABOUT VERTICAL ANTENNAS (USA)

W. I. Orr W6SAI & S. D. Cowan W2LX
Theory, design, construction, operation, the secrets of making vertical work. 191 pages £7.50

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. Carron
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 broadband coverage. Logical step-by-step procedure is followed in this book to help the radio amateur with this task. 192 pages £11.95

BEAM ANTENNA HANDBOOK (USA)

W. I. Orr W6SAI & S. D. Cowan W2LX
Design, construction, adjustment and installation of h f beam antennas. 138 pages £6.75

*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 £5.95

OUT OF THIN AIR

Collected Antenna Articles from PW 1977-1980
Including such favourites as the 2L Special and 2BCX 16-element beams for 2m, and the famous "Slim Jim", designed by Fred Judd G2BCX. Also features systems for Top Band, medium wave/long wave loop designs and a v h f direction finding loop. Plus items on propagation, accessories and antenna design. 80 pages £1.80

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 £6.75

THE ARRL ANTENNA BOOK (USA) 15th 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. £12.95

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 £7.50

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 £7.50

THE RADIO AMATEUR ANTENNA HANDBOOK

William I. Orr W6SAI & Stuart D. Cowan W2LX
Yagi, quad, quagi, I-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 £5.95

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

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

FAULT FINDING

ARE THE VOLTAGES CORRECT?

Reprinted from PW 1982-1983
How to use a multimeter to fault-find on electronic and radio equipment, from simple resistive dividers through circuits using diodes, transistors, i.c.s and valves. 44 pages £1.50

GETTING THE MOST FROM YOUR MULTIMETER (BP239)

R. A. Penfold
This book is primarily aimed at beginners. It covers both analogue and digital multimeters and their respective limitations. All kinds of testing is explained too. No previous knowledge is required or assumed. 102 pages £2.95

MORE ADVANCED USES OF THE MULTIMETER (BP265)

R. A. Penfold
This book is primarily intended as a follow-up to BP239, *Getting the most from your Multimeter*. By using the techniques described in this book you can test and analyse the performance of a range of components with just a multimeter (plus a very few inexpensive components in some cases). The simple add-ons described extend the capabilities of a multimeter to make it even more useful. 85 pages £2.95.

OSCILLOSCOPES, HOW TO USE THEM, HOW THEY WORK 3rd Edition

Ian Hickman
This book describes oscilloscopes ranging from basic to advanced models and the accessories to go with them. £14.95

TRANSISTOR RADIO FAULT FINDING CHART (BP70)

C. E. Miller
Used properly, should enable most common faults to be traced reasonably quickly. Selecting the appropriate fault description at the head of the chart, the reader is led through a sequence of suggested checks until the fault is cleared. 635 x 455mm (approx) £0.95

COMPUTING

AN INTRODUCTION TO COMPUTER COMMUNICATIONS (BP177)

R. A. Penfold
Details of various types of modem and their applications, plus how to interconnect computers, modems and the telephone system. Also networking systems and RTTY. 96 pages £2.95

NEWNES AMATEUR RADIO COMPUTING HANDBOOK

Joe Pritchard G1UOW
Shows how radio amateurs and short wave listeners can 'listen' to signals by reading text on a computer screen. This book also covers the application of computers to radio 'housekeeping' jobs such as log-keeping, QSL cards, satellite predictions and antenna design as well as showing how to control a radio with the computer. 368 pages £14.95

MORSE

INTRODUCING MORSE

Collected Articles from PW 1982-1985
Ways of learning the Morse Code, followed by constructional details of a variety of keys including lambdaic, Triambi, and an Electronic Bug with a 528-bit memory. 48 pages £1.25

THE SECRET OF LEARNING MORSE CODE

Mark Francis
Designed to make you proficient in Morse code in the shortest possible time, this book points out many of the pitfalls that beset the student. 87 pages £4.95

RADIO SHACK

Short Wave Receivers

All of the equipment we sell has been imported by the factory authorised distributors with full warranty back-up and parts service.

Lowe HF-225	High performance compact receiver	£425.00
Kenwood R-2000	10 Memories	£595.00
Kenwood VC-10	VHF converter for R-2000	£161.00
Kenwood R-5000	Top of their range receiver	£875.00
Kenwood VC-20	VHF converter for R-5000	£167.00
Yaesu FRG-8800	Fine performing all mode set	£649.00
Yaesu FRV-8800	VHF converter for above	£100.00
Icom IC-R71E	The old favourite	£855.00
Icom IC-R72E	Icom's latest, small & excellent	£645.00
Icom IC-R9000	The set with everything	£3,995.00
JRC-535	The latest from Japan Radio Company	£1,095.00
Drake RR-3	Second-hand high specification set	£1,595.00

SCANNERS FROM RADIO SHACK

**SUPER BARGAINS IN
REALISTIC SCANNERS!**

PRO-38	10 Channel handy scanner (£99.95)	£79.95
PRO-2022	200 Channel search & scan (239.95)	£205.00
PRO-2024	60 Channel search & scan (£179.95)	£99.95
PRO-34	200 Channel handy search & scan (£249.95)	£199.95
PRO-2006	400 Channel with fabulous performance (£349.95)	£299.95
AR-800E	Hand-held 75-105, 118-174, 406-495 & 830-950MHz	£169.00
AR-900	UK Hand-held with 4 search ranges	£199.00
AR-950	Base/mobile scanner	£249.00
AR-1000	Series II 0.5-600 & 805-1300, 1000 memories	£249.00
AR-2002	25-550 & 800-1300MHz	£487.00
AR-3000	All mode scanner 100kHz-2036MHz	£765.00
Kenwood RZ-1	Wide band coverage	£465.00
Icom IC-R7000	25-2000 high performance receiver/scanner	£895.00
Icom R-1	100kHz-1300MHz 100 memories handy	£389.00
Icom R-100	High performance base/mobile	£485.00
Black Jaguar	AM/FM handy scanner	£199.00
Bearcat UBC-200XLT	200 memories	£229.00
Jupiter MVT-5000	Hand-held 100 memories	£249.00
Jupiter MVT-6000	Base/mobile version	£299.00
Fairmate HP-200E	Wide band 100-600 & 805-1300kHz	£269.00

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. In order to avoid a great deal of time wasting on parts, we now deal with callers by appointment. We are pleased to hear from you and see you. We aim to give you the attention you deserve, so please call us first.

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



ALL VALVES & TRANSISTORS

Call or 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

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. PHOTO COPY HRC 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.****

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 scanner owners.

★ Requires only a PP3 type battery ★

Available as a kit with full instructions and parts or ready built and tested.

★ Return to a neatly compressed tape of all the action ★

Kit - **£9.95** Ready built - **£19.95** both inc. P&P or SAE for details/price list.

Radio Research (SWM), 3 Pasture Close, Whitmore, Staffs ST5 5DQ

INTRODUCING SCANMAG

The first ever scanning magazine on computer disk.

(IBM PC/XT/AT MS-DOS FORMAT ONLY)

1/ Extensive spectrum bandplan. 2/ Exclusive scanning articles. 3/ In-depth frequency hunting information 4/ Shareware frequency logging program. 5/ Latest national Fire Brigade listing. 6/ USAF H.F. Frequency listing. 7/ Plus many scanning hints and tips. SEND £20.00 CASH ONLY with clear return address to Nigel Ballard 28 Maxwell Road Bournemouth Dorset BH9 1DL (NO personal callers). State whether 5.25 or 3.5 inch disk required. All text and frequency files are easy to view, search and print.

INDEX TO ADVERTISERS

AOR (UK)	14	Jenkins, Barry	26
ARE	40	Johns Radio	62
ASK Electronics	18	KW Communications	50
Aerial Techniques	39	Lake Electronics	39
Air Supply	49	Lee Electronics	44
Alyntronics	57	Link Electronics	58
Amdat	44	Loutronics	40
Arrow Radio	21	Lowe Electronics	
Audio Video Care	26 Cover iii, 8, 9, 21	
Ballard, Nigel	70	Martelec	43
Billington Valves	26	Martin Lynch	26
Bredhurst	50	Mauritron Electronics	26
CB Sales Devon	43	Nevada Communications	
Camden Mini Steam	30 Cover ii, 16, 17	
Cap.Co	29	PW Publishing	58
Chevet Books	58	Phase Track	39
Colomor Electronics	70	R & D Electronics	25
Comar	58	RGW Electronics	62
DPR Marketing & Sales	53	Radio Research	70
Datong	25	Radio Shack	70
Dewsbury Electronics	53	Rapid Results College	25
Dressler Communications	49	Raycom	29
ERA	57	Rylands F G	70
Flightdeck	26	SRP Trading	32, 33
Garex	40	Sigma UK	43
Holdings Amateur	30	Solid State Electronics	53
Hone, RC	43	South Midlands	
Howes, CM Communications		Communications	13
.....	34	Spacetech	30
Hunterdon Aero		Stephens James	57
Publishers	25	System Request	58
ICS Electronics	30	Technical Software	57
Icom (UK)	Cover iii	Timestep Electronics	62
J. & P. Electronics	62	Waters & Stanton	22
Javiation	54		

FOR SALE Tandy PRO-2004 scanner, mint condition, boxed with manuals, £180 o.v.n.o. Jon. Tel: (0636) 77944 after 5pm Newark.

WANTED a Toshiba TMP47C40P to repair my Bearcat DX1000 receiver. Alternatively, where can I have the receiver repaired? M. McAuley, 2 Woodlands Road, Dunlaoire, Ireland.

FOR SALE Icom ICR7000 communications receiver with manual, Icom wide-band discone and Butternut antennas complete with low-loss coaxial cable and plus, two-way N type coaxial switch. £695 o.n.o. Tel: (0782) 261870 Stoke-on-Trent.

FOR SALE Yaesu FRG-8800 with 8800VHF, as new condition, £500 o.n.o. JIL SX200N scanner with p.s.u., v.g.c., £135. Koden KS5150 v.h.f. marine band direction finder, complete with antenna, £375. Tel: (0803) 864033.

FOR SALE Yaesu FT-707 transceiver with matching FP-707 p.s.u., FC-707 a.t.u. and FTV-707 transverter complete with leads manuals, etc., £675 o.n.o. Sinclair Spectrum Plus with RTTY, slow scan RX program, also with printer interface, etc., £60. RN Electronics 6m transverter for 144MHz i.f., as new, £115, 6m 3-element beam, £15. Also Yaesu FT-709R 430MHz multi-mode mobile/portable complete with mic, carry case, antenna, manual, boxed, etc., £250 o.n.o. Dave G00FC. Tel: (0604) 37769 day or (0327) 842141 evenings (Northampton).

FOR SALE or **EXCHANGE** Racal RA17 receiver recently re-valved and aligned, rack mounting mod with manual, £150. Exchange for Yaesu v.f.o. FV901DM/902DM or FC901/902 a.t.u. must be good condition. GWO NSR, Bofafon, Brynmor Terrace, Penmaenmawr, Gwynedd LL34 6AN.

FOR SALE Trio TM201A 144MHz transceiver, £140. Sony ICF-7600DS, all accessories including wood presentation box, as new, £100. Tel: (0379) 652043. Diss, Norfolk.

FOR SALE Two Eddystone 880 receivers, £185 each, Tektronics 585 oscilloscope/type 85 plug-in, £130, Solartron CD 1400 oscilloscope, £55, Sanyo VC500 video camera, £30. Tel: (0734) 782236.

FOR SALE Yaesu FRG-7700 receiver, FRT-7700 tuner, PRV-7700, mint condition, first class performance, £350. Sony World Zone CRF230, 23 bands, all ham bands, broadcast bands, l.w., m.w., f.m., very powerful, excellent receiver, £230. Tel: 081-571 5759.

WANTED Yaesu FRV-770 v.h.f. converter, must be in good condition. Tel: (0892 72) 3300 after 5pm (Brenchley).

FOR SALE Lowe HF-225 communications receiver with direct entry keypad, synchronous a.m./f.m. detector and whip antenna with pre-amp, little used as new, complete with box & manual, £400. Tel: (0207) 71029.

FOR SALE Two Marconi R1155 receivers, one with some rack fittings ex-aircraft, £30 the pair, associate T1154 transmitter, £20. Also 88 set AFV complete with l.f. amplifier/power supply in vehicle rack good condition, £25. Tel: (0737) 352391.

Fill in the order form in BLOCK CAPITALS - up to a maximum of 30 words plus 12 words for your address - and send it, together with your payment of £2.30, 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 JRC NRD525 receiver with matching NVA88 speaker, box, manual, etc., all in absolute mint condition, £700 o.n.o. Tel: 061-705 1761.

FOR SALE AOR1000 hand-held scanner 8-1300MHz, excellent condition, NiCad & charger, £190. David. Tel: (0733) 344257 after 7pm (Peterborough).

FOR SALE AOR1000MkII hand-held scanner, mint condition, boxed, all accessories, still under warranty, £200 or straight swap for MVT5000, must be perfect condition. Tel: (022779) 2867 Chesterfield, Kent.

FOR SALE Tatung TMR7602, excellent condition, nearly new short wave radio, frequency 0-30MHz continuous, all mode, £70. Tel: (0742) 464186 Sheffield.

FOR SALE Kenwood R500 receiver 100kHz-30MHz, as new, only needs seeing, priced to sell, £550 o.n.o. Tel: (0943) 864131 West Yorks.

FOR SALE AR1000 scanner, 1000 memories, 8-1300MHz, 2 months old, as new, plus u.h.f./v.h.f. frequency guide, £185. Tel: (0903) 60926 Worthing.

FOR SALE Kenwood R5000 receiver fitted with 6kHz crystal filter and 500Hz c.w. filter, also with matching Kenwood speaker, all as new and boxed, £630. Tel: 051-430 7271.

FOR SALE Black Jaguar MkIII scanner, boxed, as new, £100. Nine new miniature d.p. tuning coils, Blue 3, 4 & 5, four dual-gang capacitors, four a.m./f.m. miniature capacitors, the lot £30. Tel: (0407) 711122 Anglesey.

FOR SALE due to house move AOR2002 scanner, 25-1300MHz, £295. Wideband discone, £25. Matsui MR4099 communications receiver (with p.s.u.), £55. All mint with manuals and crtons. Tel: (0323) 500870 Eastbourne.

FOR SALE Trio R2000 general coverage receiver plus antenna tuning unit, as new, £370. Will deliver Lancs/Yorks. Stephen. Tel: (0484) 541375 Huddersfield.

FOR SALE Sony ICF2001D with NiCads, £100. Sony AIR 7, £100 with NiCads. Sony ICF PR080, £100 with NiCads. C.G. Wyborn. 1 Yevle Close, Queenborough, Kent ME11 5BZ. Tel: 660278.

FOR SALE Fairmate HP100E 8-600MHz, 800-1300MHz, 1000 channel memory, £165. Sony AIR 7, £120. Both excellent condition. Tel: 081-391 2879.

FOR SALE Kenwood R-2000 receiver with v.h.f. converter installed. List price £750 plus, excellent condition with all manuals/packaging, £449. Mr Maurice Small. Tel: (0844) 516694 Chinnor.

FOR SALE NRD-515 receiver and manual. Pocom PFC-100 programmable frequency unit and manual (very sophisticated 100 memory add-on for receiver), speaker. All good condition, £750. Tel: (0326) 290086 Cornwall.

FOR SALE Trio R600 communications receiver, manual and boxed in good condition, £200. Tel: (0704) 543423 Southport.

FOR SALE Realistic PRO2004 scanner, £130. Sony 600DS, £100. Amstrad PC1640ECD 32Mb hard drive, dual 5.25in drives, external 3.5in drive, maths co-processor, software, silly price £750. CBM64 lots of hardware/software offers - going cheap. M. Foreman. Tel: (0533) 353915.

FOR SALE Yaesu FRG-8800HF, v.g.c. without v.h.f. unit, £400. AOR2001 u.h.f. and v.h.f., £250, v.g.c. Raymond. Tel: (0483) 35751.

FOR SALE Kenwood R-5000 receiver with v.h.f. converter, 9 months old, mint condition, boxed with manuals, £695 o.v.n.o. Tel: (0253) 751056 Lancs.

EXCHANGE Epson HX20 (lap-top) computer including in-built cassette recorder, printer, extra memory, plus Modem, manuals, Intext, Ecalc, Card Index, many extras, worth £250/350 for Fairmate AR1000 or similar. Tel: (0543) 250552.

FOR SALE Yaesu FRG-7700 with FRT7700, mint condition, £200. N.A. Harlow, 46 Butt Field View, St. Albans, Herts AL1 2QL. Tel: (0727) 830976.

FOR SALE Yaesu FT-480R, 144MHz transceiver, 10/1W output, boxed, as new, £300. Tel: 081-505 1424.

FOR SALE Trio RS99 receiver near mint condition, £200. Eddystone 680X and 670A receivers, both require attention w.h.y? J.P. Wright. Tel: (0256) 468649.

FOR SALE PRO34 scanner, rechargeable batteries and charger, £85. B150 100W mobile amplifier, £30. Super Big Stick 25-32MHz base antenna, £45. Paul. Edinburgh. Tel: 031-661 4929 Edinburgh.

FOR SALE Realistic PRO2021 a.m./f.m. mobile/base scanner 66-88, 108-136, 138-174 & 380-512MHz, complete with manual, £150. **EXCHANGE** for AOR1000 hand-held with cash adjustment. A. James. Tel: (0239) 614376 Cardigan.

FOR SALE Standard C500 hand-held with speaker/mic and NiCads, transmit & receive 130-170, 340-380 & 400-470MHz, £350. FRG-8800 with v.h.f. and FRT-7700 a.t.u., £450. Sony AIR7, £125. SX200 scanner, £125. Amstrad PC1512 20Mb colour and Epson LX86 printer, £450. Tony Cox. Tel: (0276) 79308.

FOR SALE Selena B210 short wave radio plus l.w., m.w. and v.h.f., excellent condition, as new, little used, £45. Toshiba RT7016 radio cassette stereo recorder with twin speakers and 3 band equalizer, £45. M. Allen. Tel: (0742) 464186 Sheffield.

FOR SALE CR-2021 Uniden communications receiver, a.m./s.s.b./c.w., 150kHz-29.999MHz, f.m. 76-108MHz, l.c.d., memory store, 3 power sources, good condition, £90. Tel: (0273) 415892 Brighton.

FOR SALE FRG-7 plus manual, mint condition, KOKUSA1 filter and stable b.f.o. fitted, £85 carriage extra. Yamaha DX100 boxed with manuals, £85 carriage extra. Seon Smyth, 'De Porres', 67 East Princes Street, Helensburgh G84 7DG. Tel: (0436) 71181.

FOR SALE Kenwood R2000 receiver, boxed, complete with v.h.f. converter and instruction book, £490 o.n.o. Tel: (0705) 382804 Portsmouth.

FOR SALE Kenwood R2000 receiver, excellent condition, boxed with manual, etc., £350 o.v.n.o. Tel: (0792) 401774 Swansea.

FOR SALE Philips FT565 digital tuner, l.w., m.w., f.m. stereo in mint condition, £65. Tel: (0548) 580096 Kingsbridge, Devon (evenings).

WANTED R216 receiver, preferably with p.s.u. for mains, unmodified and in working order, w.h.y? E.F.C. Owen, 28 Chartfield Road, Reigate, Surrey RH2 7JZ.

FOR SALE Yaesu FRG-9600 scanner, boxed, in mint condition, little used, £330 o.n.o. Michael Charnock, 62 Shakespear Avenue, Campsall, Doncaster. Tel: (0302) 702832.

FOR SALE One transformer 400/440V-110/120V 2kVA. One transformer primary volts 380/440 0.3A, secondary volts 5000 0.023A 50-60Hz. S. Howell, 8 Wygate Road, Spalding, Lincs PE11 1NT. Tel: (0775) 761989.

FOR SALE PRO2005 scanning receiver 25-520 & 760-1300MHz, a.m., f.m./w.b.f.m., 240V a.c. or 12V d.c., 400 memories, £225 including delivery. G8VHG, QTHR. Tel: (0482) 809274 Humber-side.

FOR SALE Kenwood TS440S transceiver fitted with internal automatic a.t.u., s.s.b., c.w. filters, voice synthesiser unit. Matching PS50 p.s.u., SP430 speaker original service manual, d.c. power cable, original boxing, £1050 or offers. Paul. Tel: 081-980 1837.

FOR SALE Following vintage books and magazines, *Radio Servicing Simplified* 1947, mint condition; bound volumes *Wireless World* XLV (July-Sept 1939), XLVII (1941), XLVIII (1942), good condition, reasonable offers please. Tel: (0483) 272331 evenings.

FOR SALE PC HF FAX and PC SWL, £140. Barlow Wadley XCR30 MkII, 0-30MHz portable in 30 x 1MHz bands, £59, Diamond mobile TX ant 10/15/20m with all fittings, new and unused, £35, printer hood 130 column, £25. Tel: (0903) 42927 Worthing (evenings) (0903) 205531 ext 376 day.

FOR SALE Eddystone receiver type 1990R/3 25MHz to 500MHz a.m./f.m. wide, narrow, u.s.b./l.s.b., c.w. pluse, 7-band with service manual, £500 w.h.y? Tel: (0767) 680253 Beds.

More on the following page...

VERSATILITY AND SOPHISTICATION

THE ICOM IC-R7100 WIDEBAND RECEIVER



• Continuous coverage from 25 to 3000 MHz

The IC-R7100 allows you to receive signals on VHF or UHF including amateur, air, marine, citizens and utility bands plus FM and TV broadcasts.

• All mode capability

The IC-R7100 includes SSB (USB, LSB), AM (Normal, Wide), FM (Normal, Narrow) and WFM (Wide FM) modes to catch a wide range of signals. Using an optional TV-R7100, you can view TV broadcasts on your CRT monitor and listen to FM broadcasts in stereo.

• 5 basic scans

These search for signals over a wide range and skip undesired frequencies and unmodulated signals.

• Window scan

To select and specify the frequency, memory channel, mode, and more, the IC-R7100 is equipped with a 2-window system, a technological breakthrough. Window scan can select one window and then another alternately on the function display for a programmed duty cycle.

• Dual scan

Combines a basic scan with the window scan function. Each basic scan appears in its window and two can be combined to operate alternately, with over 40 possible combinations; only Icom's high-speed scanning can realise dual scan operation.

• 900 memory channels

A total of 900 memory channels store frequencies, modes and tuning steps. Memory channels are grouped in 9 memory banks for ease of handling and editing.

• 20 scan edge memory channels

The IC-R7100 features an additional 20 scan edge memory channels to store 10 sets of frequencies for programmed scan.

Additional outstanding features

- High sensitivity and reliable frequency stability
- 0.1, 1, 5, 10, 12.5, 20, 25, 100 kHz and 1 MHz tuning steps available.
- Built-in 24-hour system clock with 5 ON/OFF timers.
- Automatic recording so important programmes can be caught when away from receiver.
- Noise blanker circuit for eliminating pulse type noise.
- Effective 20dB attenuator for strong signals.
- Noise squelch and S-meter squelch
- CI-V system for computer control through an optional CT-17.
- Frequency announcement in English with an optional UT-36.
- Large function display with selectable LCD backlighting brightness.
- Easy-to-read S-meter plus FM centre indicators.
- Dial lock function.
- AC and DC power operation.



Mail orders taken by phone. Instant credit & interest free H.P. Interlink despatch on same day whenever possible

Post to: Icom (UK) Ltd, Dept SW, Sea Street, Herne Bay, Kent CT6 8BR
Telephone: 0227 741741 (24hr). Facsimile: 0227 360155

THE HF-225 GENERAL COVERAGE RECEIVER



Your gateway to the world

Whatever you want to hear, wherever you want to hear it, the HF-225 will give you that gateway to the world.

Technically, the HF-225 distinguishes itself by having a low phase noise synthesiser which gives performance not far off that of "professional" receivers costing up to ten times the price. And that's not just advertising talk; it is really true. The receiver actually tunes in steps of 8Hz, which betters most other receivers and gives a smooth "VFO" feel when tuning. As one user has already commented: "If you tuned the HF-225 with your eyes closed, you would believe you had a £5,000 receiver on the table."

The HF-225 has a range of popular low-cost options; like a key pad for direct frequency entry which plugs into a rear panel socket, an active whip aerial, a rechargeable battery pack for portable use and an attractive carrying case which protects the receiver whilst in full operational use. The D-225 detector option is really something special because it gives true synchronous AM detection for dragging sensible programme quality out of a signal affected by selective fading distortion. The same option also gives narrow band (communications) FM.

Every listener these days appreciates a receiver which offers facilities for memorising favourite or regularly used frequencies and the HF-225 offers 30 memory channels for this purpose. Using the memories has been made particularly versatile because the operator can review the contents of the memories while still listening to the frequency he is using. Alternatively, in the "Channel" mode, he can tune through the memory channels using the main tuning knob, listening to each frequency as it appears on the display. Just like having a bank of single channel receivers under your control. Great for checking BBC World Service frequencies in a hurry.

Unlike most HF receivers on the market, the HF-225 comes complete with filters fitted for every mode - 2.2kHz, 4kHz, 7kHz and 10kHz. There is also a 200Hz audio filter for CW and if the D-225 detector is fitted, a 12kHz filter for FM. The correct filter for each mode is automatically selected by the receiver mode switch but further selection can be made by the user from the front panel and the receiver remembers which filter was used. True versatility and all built in - at no extra cost.

At the end of the day, what can the HF-225 offer you as a user? Let me quote Chris Williams who wrote from Massachusetts:

"I received my Lowe HF-225 about a week ago. Since then I have enjoyed many pleasant hours listening to it. As a past owner of receivers such as the Sony ICF-2010 and Grundig Satellit 650 and 500, I must say that none compares to your Lowe HF-225. Without question, for hour after hour listening, nothing compares. I especially like the Genie keypad. Why more receivers do not incorporate such intelligent ergonomics is beyond me."

That just about says it all, but on top of all the praise from users, the HF-225, following its launch, was voted "Receiver of the Year" by World Radio and TV Handbook.

Why don't you find out why the HF-225 opens that gateway to the world.

HF-225 30kHz-30MHz **£429.00**
 K-225 Keypad Controller **£40.36**
 D-225 Synchronous AM/FM Detector .. **£40.36**

AND RECENTLY ANNOUNCED ...

The HF-235 professional monitor receiver. Already in use by monitoring stations and widely accepted as a new mid-price entry into this most demanding market.



LOWE ELECTRONICS LIMITED

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

BARRY (S WALES): Tel 0446 400786 ***BOURNEMOUTH:** Tel 0202 577760 ***BRISTOL:** Tel 0272 771770
CAMBRIDGE: Tel 0223 311230 ***DARLINGTON:** Tel 0325 486121 ***GLASGOW:** Tel 041-945 2626 **LONDON**
(MIDDLESEX): Tel 081-429 3256 **LONDON (HEATHROW):** Tel 0753 45255 ***Closed all day on Mondays**