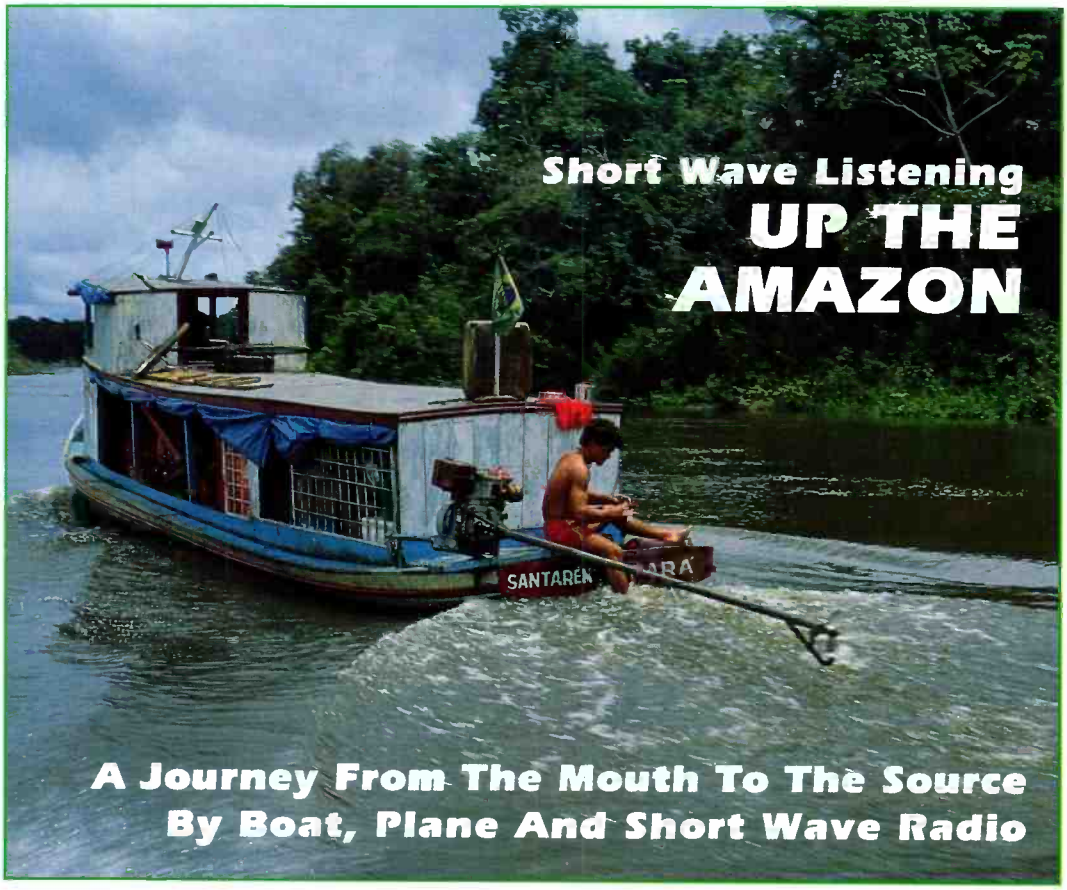
short wave magazine

May 1991 £1.75 ISSN 0037 - 4261

REVIEWED THIS MONTH
NEVADA MS1000 SCANNER



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short wave magazine

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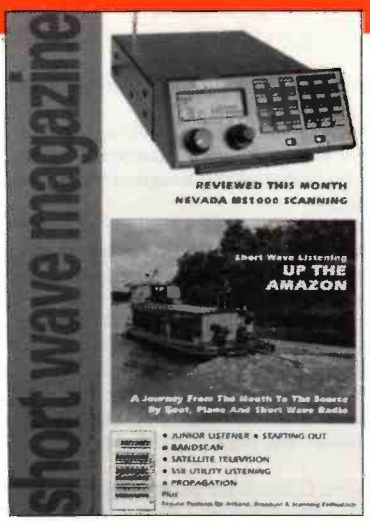
REGULARS



Cover Mike Richards G4WNC tests the new Nevada MS-1000 scanner. Twenty years ago Dick Moon voyaged up the Amazon. On page 20 he looks at the s.w. radio stations along the length of that river. Our cover picture shows a typical scene on the Amazon from the collection of Susan. I. Cunningham ABIPP.

...GOOD LISTENING

editorial

Dick Gaden

It has now been officially confirmed that Morse is not a requirement for the granting of a Class B Novice Licence As you will see from the letter below, written by David Jackson G4HYY, Chairman, Training & Educational Advisory Group of the RSGB, the video is misleading - although as far as I understand there are no plans to correct the sound track - the Society are relying on statements in the Novice Handbook to put the record straight!

However, an *Information Sheet* about to be released reveals the arrangements for existing holders of Amateur Radio Licences to be granted a Novice Licence. Obviously if you hold an Amateur Radio Licence (A) you have already passed a Morse Test to a higher standard than that demanded for an Amateur Radio (Novice) Licence (A) and you already have access to the frequencies allocated to the Class A Novices. What is very disturbing, though, is the ruling that for a full Class B licence holder to obtain a Class A Novice Licence requires that not only must they pass the 5-word per minute Morse test but that they **must have held a Class B Licence for 12 months before they can be granted a Novice Licence.** On top of that, an otherwise experienced and technically competent amateur will also have to pay an extra licence fee for the privilege of being insulted with a Novice callsign!

The reason given for this gross insult to Class Bs is that, as the RAE has no section covering practical operating, a Class B must prove his operating skills over a year before he can be granted a Class A Novice Licence!

What a load of rubbish!

If this is necessary, why can someone who has just passed the RAE take the 12w.p.m. Morse Test and immediately be granted a full Class A Licence? A Class B Licence holder is just as technically competent as a Class A - the only difference is the 12w.p.m. Morse Test. Is this another case of the RSGB trying to impose their ideas by the back door?

On a personal note, I do not object to the use of the 12w.p.m. Morse Test to gain access to the h.f. bands. In fact, I firmly believe that unless you have to work to gain a privilege then that privilege is not really worth having. A properly graded licensing structure, such as is current in the States, would be a very good thing for this country's amateurs and would not be that difficult to implement. If Class Bs must have 12 months operating experience before they can get a Novice Licence **then a potential Class A should have to do the same before being granted a full Class A Licence.**

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.

letters

Dear Dick

As promised at the Blackpool Rally. I am writing to clarify the position regarding the Novice Licence Training Scheme and c.w.

I must confess to being somewhat surprised by the comments in your Editorial in the March issue of *Short Wave Magazine*.

It is unfortunate that no distinction was made in the RSGB video, between the requirements for the Novice Class A Licence and those for the Novice Class B Licence. The omission was not intentional and I am sure that responsible members of the amateur radio press such as yourself will ensure that the necessary clarification is made.

Novice Licence instructors will, in co-operation and consultation with the Training and Education Advisory Group, determine that students have **succesfully completed** an approved training course. This course includes a c.w. experience which involves students in being made aware of c.w. in general. There are two short sessions during which students will listen to some slow c.w. Students will NOT be required to learn c.w. or to achieve any sort of 'pass' in c.w.

It is a 'condition of the RA that candidates:' (for the C&G Novice Radio Amateurs Examination) should have 'succesfully completed the RSGB Novice Licence Training Course' , the format of which has, of course, been approved by the RA. It is a further requirement that applicants for Novice Licences should have 'successfully completed' this course The RALU will require applicants for a Novice Class B Licence to submit, along with a C&G pass slip, the Novice Licence Training Course completion slip.

In addtion, if the application is for a Novice Class A Licence, a c.w. test pass slip will be needed. The contact, albeit very brief, with c.w. during the Training Course may give some students the confidence to tackle c.w. in order to obtain the Class A licence.

D JACKSON G4HYY
CHAIRMAN, RSGB TRAINING AND EDUCATION ADVISORY GROUP.

letters

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

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

Dear Sir

I first took an interest in s.w.l. in the 1930s. Then during the war I was for six years a Wireless Operator in the Royal Signals. Subsequently other pressures prevented me from returning to s.w.l. until 1980 when I temporarily 'retired'. This phase lasted for about a year during which I was listening on a Russian-made Vega *Spidola* costing about £35 with a 1m whip antenna. Even with this simple equipment I pulled in such stations as Radio Grenada, RAE Buenos Aires, Radio Tashkent, Radio Afganistan, etc.

I am now, at the age of 70, thinking of returning to the hobby. I do not have television, which is boring and in any case a passive 'hobby'. I listen to Radio 4 but many of their programmes are repeats. With s.w.l. one is exploring new horizons and there is great pleasure in receiving QSL cards.

I recently purchased a copy of one of your magazines to find out what sets are currently available and I noted that prices range from around £100 to over £1000 with specifications to match. The top end of the market is well beyond my purse and although I could possibly go up to £500, do I really need to? The features I require from a set are sensitivity and selectivity; manual tuning with a good bandspread; a frequency range of approx 1.6 -30MHz; RT and c.w. reception; l.c.d. frequency display and the facility to record transmissions. I am not concerned to have scanning or memory facilties. I am quite happy to search the wavebands manually and even if I cannot capture as many stations as those with electronic aids at least I get the pleasure of doing the job myself. And what would I do with the time I might save by going electronic?

Having set out my requirements and thereby disclosed myself to be a bit of a Luddite may I ask you, or any of your readers, to be kind enough to offer me any advice to help me choose the right equipment.

H G STACEY
BROMLEY
KENT

Dear Sir

I have just read with great interest the article in the February edition concerning the Pye radio.

I am afraid that I cannot agree with all the points made by G2BZQ concerning 'table-top' radios and today's portable transisorised radios is size.

The old type were very much larger, using as a result a larger speaker in a roomy cabinet. This resulted in a much smoother, but boomy, sound. Almost any decent transistorised radio connected to a similar system would produce the same sound.

I do not wish to enter any argument regarding valved and transistorised equipment, each has its own function to perform. Valved radios, by the nature of thermonic emission, generate considerable heat. The emissions of the valves are continually being reduced, are more susceptible to mains interference, hum, and are less efficient on high frequencies than transistors. However, I collect valved radios and still use them, but this is not the reason for my writing in.

I was recently asked to get back into working condition a Pye 1101. This is a slightly earlier model than that described by G2BZQ. Being a universal AC/DC receiver it employed a large 'mains dropper'. The valves are wired in series being UCH42, UF41, UL41, UY41 and a dial lamp. Being in series they must all have the same valve current, i.e. 0.1 amps. The sum of their heater and dial lamp voltages is 133 volts. This means that with a 240 volt mains supply then 107 volts at 0.1 amps must be dissipated. This requires a 1070Ω resistor with at least a capacity of 10 watts. From all this it may be apparent that the 'mains dropper' had blown. On AC/DC systems this was a very common occurence. For a radio of this age it would be almost impossible to obtain a similar or correct replacement.

I decided to use some 'new' technology from valved televisions. They also, to reduce the cost of large and heavy mains transformers, ran the valves is series. To reduce the heat generation and value of h.t. mains dropper they ran the valve heaters on half wave d.c. From alternating current theory it can be shown that the heating effect is approximately 70% of a.c. This means that the voltage to the valves must be increased in proportion. The 133 volts required is now 133/0.7, i.e. 190 volts. The amount to be 'dropped' is now 240-190, i.e. 50 volts. The value of the required resistor is now 500Ω at 5 W. This was more readily obtainable and for good measure I included a thermistor in the heater chain. As a result the radio 'sprang' into life and has been working well ever since.

A MOULDER
RAINHAM , ESSEX

Dear Sir

Filmgoers will recall Citizen Kane at the end of his life mumuring 'Rosebud' which referred to a childhood toboggan. Probably most of us who are getting on in years have a 'Rosebud' of one kind or another. Mine is the rather less euphorious 'Fred Eisemann', which was a small mains m.w./l.w. wireless bought in the early 40s. It cost £3:17s:6d old money, had three or four valves, and was amazingly powerful for its size. Of American origin, it was designed to work off 110 volts, but the mains leads acted as a resistance on our voltage and got very hot in the process, as did the set itself with its large valves. I can smell the hot electric aroma still!

I would give a great deal of money to have the set now, but like all those early radios I had, it has disappeared long since. The reason for writing this letter is that I would be interested to know if any of your readers have had similar favourite radios that they look back on with nostalgia.

Ending on a slightly different matter: a 'Walkman' radio 1938 vintage was made by Marconi. I had one, and it was the size of an average novel, used miniature valves and drove a pair of headphones (mono of course). It whistled a lot but worked well.

MICHAEL CORNELL
MANNINGTREE
ESSEX

grassroots rallies

***April 27/28:** The RSGB will be holding their National Amateur Radio Show at the National Exhibition Centre, Birmingham.

May 12: The Yeovil QRP Convention will be held at the Preston Centre, Monks Dale, Yeovil. Admission is £1.50 and includes a programme. All the usual traders will be there. Refreshments are also available. There will be four lectures during the day.

May 12: Midland ARS Drayton Rally. **Peter G6DRN. Tel: 021-443 1189.**

May 18: The Swindon Radio Rally is to be held at the Oasis Leisure Centre, North Star Avenue, Swindon, leave M4 at Junction 16. Doors open at 10.30am, trade stands, grand Bring & Buy, Repeater Group, etc, ample free parking. Talk-in by RAYNET on S22 from 0500hrs. For details contact **Jim G7GEA on (0793) 611859 or John on (0793) 619014.**

May 19: The Parkanaur Rally will be held at the Silverwood Hotel, Lurgan, Co. Armagh. Doors opens from 12 noon. There will be the usual trade stands, Bring & Buy, bookstand, QSL bureau, etc. Talk-in on S22. The proceeds of this rally go to the Stanley Eakins Memorial Fund. **Jim Lappin GI1YGS. Tel: (0762) 851179.**

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 Lyon 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 with 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, food all day long as well as a Bring & Buy stand. Any bookings to **Paul G0HWC. Tel: (0327) 41267.**

* Short Wave Magazine & Practical Wireless in attendance *

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. May 21 - Home Constructed Equipment. Paul Truitt G4WQO. 071-938 2561.

Bedford & District ARC. Tuesdays, 7.30pm. Allen's Club, Hurst Grove, Bedford. April 29 - Pistol Shooting at Bedford Pistol Club, 30th - Social, May 7 - Operating Night, 14th - Social, 21st - Talk by J.W. Armstrong from AKD. Glenn G0GBI. (0234) 266443.

Braintree & DARS: 1st & 3rd Mondays, 8pm. Community Centre, Victoria Street, Braintree. May 20 - AGM M J Andrews. (0376) 27431.

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. Geoffrey Milne. 081-462 2689.

Bromsgrove ARS: 2nd & 4th Tuesdays, 8pm. Aston Fields Working Men's Club, Stoke Road, Astonfields, Bromsgrove. May 14 - AGM, 28th - 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. May 7 - Archaeology by Mr Patrick Allen. Roy Martyr. Chelmsford 353221 ext 3815.

Coventry ARS: Fridays, 8pm. Baden Powell House, 121 St Nicholas St, Radford, Coventry. April 26 & May 10 - Night on the Air & Morse Tuition, May 3 - Expedition to the Top of the World by Paul G0KPH & Simon G0GWA. Neil. Coventry 523629.

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. May 1 - May Day Junk Sale, 8th - PACSATs by Jonathan G4KLX, 15th - 144MHz direction finding practice at Allestree Park, 22nd - The GDS6CW Expedition by G0FOG & G0IXR. Richard Buckby. Ambergate 852475.

Dorking & District RS: 2nd & 4th Tuesdays, 7.45pm. May 14 - Informal at Falkland Arms, 28th - RF Measurements, Basic Techniques by John Greenwell G3AEZ at Friends Meeting House. John Greenwell G3AEZ. (0306) 77236.

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

Hambleton ARS: Mondays, 7.30pm. Room A5, Northallerton Grammar School. April 29 - RAE Course. 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. May 2 - Air Traffic Control. S.W. Swain. (0705) 472846).

Keighley ARS: Thursdays, 8pm. The Cricket Club, Ingrow, Nr Keighley. March 28 - Using Simple Test Equipment by G4TIV, April 25 - Junk Sale, May 2 & 23rd - Natter Night, 9th - Night on the Air with G0KRS, 16th - Alignment Evening with G3TQA. Kathy Bradford. (0274) 496222.

Lothians RS: 2nd & 4th Wednesdays, 7.30pm. The Orwell Lodge Hotel, Polwarth Terrace, Edinburgh. May 8 - Safety & the Amateur, Construction Competition & DF Tune-Up, 22nd - DF Hunt. P.J. Dick GM4DTH, QTHR.

Maidenhead & DARC. 1st & 3rd Thursdays, 7.30pm. The Red Cross Hall, The Crescent, Maidenhead. May 2 - HF Communications in Africa by John G3VLH, 21st - Preparations for HF NFD. Neil G8XYN. Tel: (0628) 25952.

Mansfield ARS: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. May 2 - AGM. Mary G0NZA. (0623) 755288.

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

Mid-Warwickshire ARS: 2nd & 4th Tuesdays, 8pm. St John Ambulance HQ, 61 Emscote Road, Warwick. May 14 - Antenna Analysis with Glen G8MWR, 28th - Home-brew, Bring Along Your Project. Kenilworth 513073.

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. May 1 - Where Are You? Calculating QRA/QTH/NGR, etc., 8th - First HF NFD Briefing, 15th - GB3NB Repeater AGM, 22nd - Working Es by Jim Bacon G3YLA. Mike Cooke. (0362) 850591.

North Bristol ARC: 3rd Fridays. S.H.E. 7, Braemar Crescent, Northville, Bristol. Chris G0LOJ. (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. April 26 - Surplus Equipment Sale, May 3 - Night on the Air, 10th - The Way Ahead Meeting by Ken G4VKK, 17th - Sky High by Chris G6KIA, 24th - RSGB Video with Frank G3YCC. F W Lee G3YCC. (0482) 650410.

Plymouth RC. Tuesdays. Fredrick STreet Centre. May 7 - Talk by Peter Chadwick G3RZP, 14th - The RSGB by John Forward G3HTA, 21st - Rally Briefing. Sandy Pimlott G8IDE. Tel: (0752) 363607.

Preston ARS: Alternate Thursdays. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood. May 2 - Bolton Mountain Rescue Team. Eric Eastwood G1WCQ. (0772) 686708.

Rhyl & District ARC: May 6 - 6m Lecture, 20th - Model Steam Engines. Edward Shipton GW0DSJ. (0745) 336939.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitchurch. May 1 - Anecdotes by Mike G3OUK, 8th - Computer Activity Evening, 15th - Linear Amplifiers by Peter G3RZP, 22nd - Talking Brick by Len G4RZY. Len Baker. Whitchurch 832222.

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.

Southgate ARC: 2nd & 4th Thursdays. Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. April 25 - Youth Night, May 9 - Early Radar by Stan Woods. Brian Shelton G0MEE. 081-360 2453.

Stourbridge & DARS: 1st & 3rd Mondays. Robin Wood's Community Centre, Scotts Road, Stourbridge. May 13 - On Air & Natter Night, 20th - Electric Motor Design. Dennis Body G0HTJ, QTHR.

Sutton & Cheam RS: 3rd Thursdays, 7.30. Downs Lawn Tennis Club, Holland Ave, Cheam. 1st Mondays in the Downs Bar. May 16 - AGM. John Puttock G0BWV, QTHR.

Thornbury & DARC: 1st & 3rd Wednesdays, 7.30pm. United Reform Church, Chapel Street, Thornbury. May 1 - Power Supplies by Bob G8SPC, 15th - HF Activity/Natter Night.

Three Counties RC: Alternate Wednesdays, 7.30pm. The Railway Hotel, Liphook, Hants. May 8 - High Tech Industrial Locations in the Three Counties by R.E.J. Seymour, 22nd - Construction Night. 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. May 17 - Probation Service. Walt G3HTX. (0803) 526762.

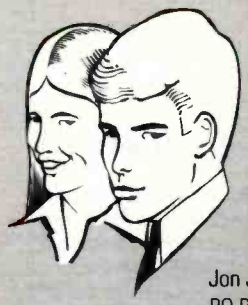
Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St. Andrews Church Hall, Herbert Road, SW19. April 26 - Keys & Keyers by G3ESH, May 10 - Quiz with Coulsdon ATS. Chris Frost. 081-397 0427.

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

Yeovil ARC: Thursdays, 7.30pm & Fridays, 7.30pm. The Recreation Centre, Chilton Grove, Yeovil. April 25 - Natter Night, May 2 - Multiband Antennas by G3MYM, 9 - The RSGB Video, 16th - My Milliwatt Machine by G3MYM, 23rd - The Two-Driven Element Beam by G3MYM. David Bailey G0NMM, QTHR.

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

junior listener



Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

Don't forget that I want to give you a chance to have your say about what you'd like to see in the magazine and on this page in particular. For this I need your letters but, rather than just sending your views, why not include details of your station. If you can manage a photo as well I will do my best to include it. The address to send your letters to is at the top of this column.

Amateur Radio Video

Those who'd like to know more about amateur radio will be pleased to hear that a new video has just been released. The video is called *Amateur Radio for Beginners* and has been distributed to most amateur radio clubs. I've just received a copy myself and can report that it's a very professional production that covers the subject well. The presenter is **Jim Bacon** (the Anglia Weather Man), who's also a licensed amateur with the callsign **G3YLA**. As the tape was sponsored and produced by **Yorkshire Television**, the quality is excellent. The manufacture of the video tapes has been sponsored by **Icom (UK)** - one of the major importers of amateur radio gear.

The video covers the whole sphere of amateur radio from the simplest of modes right through to satellite communications. It also features many young amateurs, some with radio stations at school!

If you'd like to see a copy of the video, try the local amateur radio club - they should be able to arrange a viewing. An alternative would be to contact your teacher and see if he or she can arrange to borrow a copy from a local club. If you'd like your own copy, you need to send a donation of £10.00 minimum to the RSGB Project YEAR fund. The address for this or other amateur radio enquiries is: Radio Society of Great Britain, Lambda House, Cranbourne Road, Potters Bar, Herts EN6 3JE.

Antenna Contest Results

I had a very good response to the active antenna competition in the March issue. Deciding the winners was really difficult as everyone made a very good effort. In the end, the two best reasons for wanting an active antenna came from **Panagiotis Garanis** of Salford and **Paul Weston** of Kettering. Paul wins the AA-4 v.h.f. model while Panagiotis gets the AA-2 h.f. model. Looking through the entries, it seems most of you have parents who don't want wires around the garden! In view of this I'll try to publish a few ideas for small, cheap antennas that you can build yourself. If you've found a compact system that works well, drop me line and I'll see if I can publish it.

Plugs and Sockets

I'm sure many of you have wondered why there are so many different types of plugs and sockets. I hope I can shed a little light on the use of some more common types. Over the next few months, I'll also give details on how to connect-up some of these plugs and sockets.

Let's start with the common **Belling-Lee coaxial plug**. This plug is often just known as a TV plug because this is where it's most commonly used. Almost every television on the market uses this plug for the antenna connection. The attraction is that it's cheap and very easy to connect-up. In spite of its simplicity and cheapness, it's a good, general-purpose plug for receiving and can be reliably used up to u.h.f. - indeed u.h.f. television is where you will most commonly find it. Probably its greatest weakness is that it is not really suitable for frequent insertion and removal.

For a better quality r.f. connector that's good enough for test equipment, the **BNC** is a good choice. Most of the more common versions are made for use with good quality 6.3mm diameter coaxial cables. One of this plug's main advantages is that it offers a constant impedance. This technical term, in effect, means that the plug exactly matches the size of the cable screen and inner core. The result is that the signal loss through the plug is extremely low, right up to 1.300GHz- a GHz (gigahertz) is 1000 MHz. Because of this the BNC plug is ideal for use with scanner antennas.

Like the BNC plug, the **N-type connector** is a constant impedance type so can be used at extremely high frequencies. The main difference between the two is that the N-type can handle higher power signals. This makes it a popular choice for v.h.f. and u.h.f. transmitters.

The next plug I want to look at is the **5-pin DIN plug**. Probably the first thing I ought to explain is the word DIN. This isn't a loud noise, but the initial letters of the German standards institute - like our British Standards Institute (BSI). You'll find the 5-pin DIN plug used for audio connections on many hi-fi units and most portable radios. The main use is for the connection to an external tape recorder. Because this plug is just one part of a German standard, there are standardised ways of connecting the plug. This means that, say, a tape recorder plug for one system will normally work on a different system - obviously very useful.

One odd point to note about this plug is the way the pins are numbered. If you look at the back of the plug the pins number from left to right as 1, 4, 2, 5, 3! Although strange at first, there is a logical reason for this. As the first plug of this type only had three pins, they were numbered simply 1, 2, 3. However, when a 5-pin type was needed, two extra pins were inserted in the gaps - these were numbered 4 and 5. So, you see, the system is logical after all!

The last two plugs this month are the **3.5mm jack** and the **phono plug**. The 3.5mm jack plug was developed from its big brother the 6.3mm or 1/4in jack. This provides a two-wire connection with the signal normally connected to the tip and ground to the sleeve. The most common use is for connecting an external speaker to your receiver.

The simple phono plug looks very similar to an r.f. coaxial plug - but is totally unsuitable for r.f. use. Like the 5-pin DIN plug, it's normally used for low-level audio signals, particularly on Japanese hi-fi equipment.

That's all on connectors for this month, but if there are any other types you want to know about, drop me line.

Left to right: N-type, 5-pin DIN, BNC, Belling-Lee coaxial and 3.5mm jack.

Scanner Contest

This month I'm giving away three autographed copies of *Scanners* by Peter Rouse. This excellent book is a must for all scanning enthusiasts, so It's well worth winning. To enter you need to be aged between 6 and 16 and answer the following questions:

In electronic circuit diagrams what symbols are used for the following components?

1: Resistor. 2: Capacitor.
3: Inductor. 4: Diode.
5: Battery.

Please make sure you send your entries to me by May 22. Remember to include your name, address and age - good luck.

news

Changes at BARTG

The British Amateur Radio Teledata Group (BARTG) have announced that John Barber G4SKA has taken up the post of Chairman. John is a well-known RTTY contester and has been on the BARTG Committee as Contests Manager for several years. They are also pleased to welcome Ted Batts G8LWY back onto the Committee after an absence of several years. Ted will bring his considerable packet expertise to the Committee. He was one of the first packet operators and currently runs GB3KP and is editor of the RSGB's *Connect International*.

Frequency Changes

Radio New Zealand are changing their frequency schedule from 1800UTC on May 12.

1800-2200	13.785MHz
2200-0730	17.770MHz
0730-1210	9.700MHz

Radio New Zealand International, Broadcasting House, Bowen Street, PO Box 2092, Wellington, New Zealand.

The NRD535

The NRD535 is the latest receiver to come from the JVC stable. Bernie, from ARE Communications, kindly sent me all the information on the preliminary draft specification for the set.

The frequency range is 100kHz to 30MHz with the recption modes being RTTY, c.w., s.s.b. (u.s.b., l.s.b.), a.m., f.m. and FAX. It has 200 memory channels (as has the NRD525), but the tuning steps are 1, 10 and 100Hz - ideal for fine tuning.

There are three i.f. stages, 70.455MHz, 455 and 97kHz. Its sensitivity ranges from 6 to 24dBμ, with the image rejection at 70dB or better.

For more details on the NRD535 h.f. receiver, contact: **ARE Communications, 6 Royal Parade, Hanger Lane, Ealing, London W5A 1ET. Tel: 081-997 4476.**

DXTV News

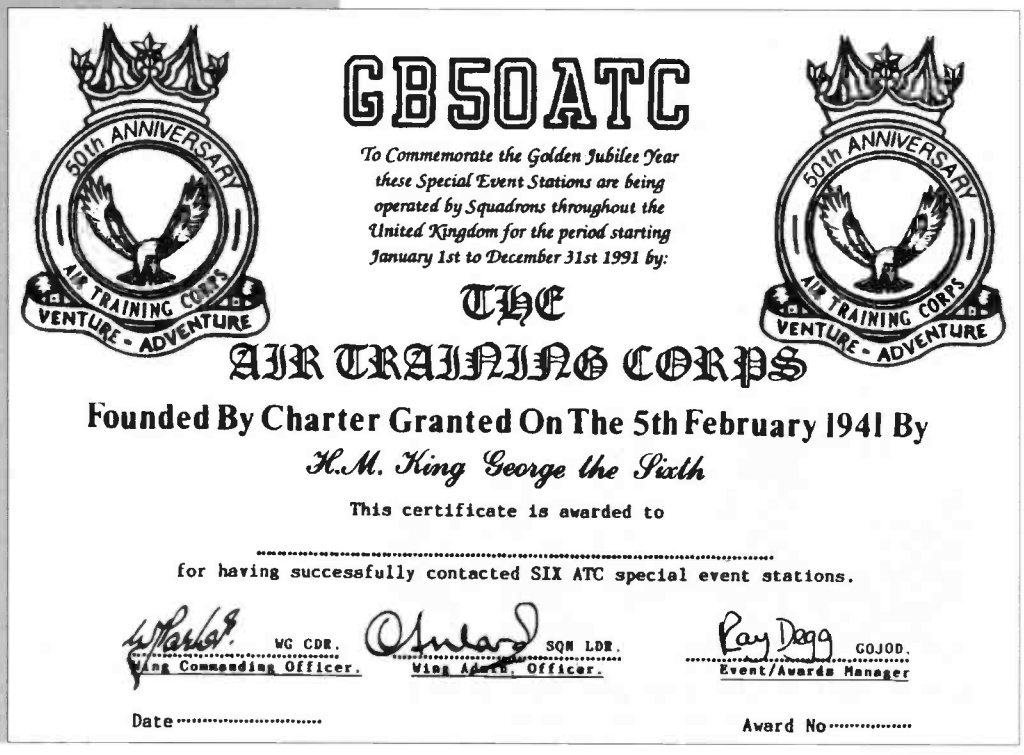
The ORF Austrian TV have now commenced stereo sound transmissions in the Vienna region using the 2-subcarrier system as favoured by West Germany.This system allows for stereo sound, 2-channel mono or dual language mono capabilities and it is intended that the whole country will be covered by mid-1992. The Belgium BRT-TV2 are currently transmitting NICAM stereo only over Egem Ch.E46 and Schoten Ch.E62 - Brussels Ch.E25 is the next to be converted for June and followed closely by Oostvleteran. When the test card indicates stereo sound, the BRT Radio 3 stereo programme is used.

Both Kenya and Uganda are planning improvements to their broadcasting services, Kenya is to install five new regional radio transmitters to improve reception 'in the sticks' whilst Uganda is to increase the power of their main Kampala transmitter in the capital from 50 to 100kW. Television programming is also being extended.

The Irish TV3 commercial channel hopes to go on-air at some time during 1991 though not the full service until late 92/early 93. Though the government had initially sought microwave distribution only (MMDS), TV3 have now gained access to u.h.f., which will mean a wide viewing audience and a more assured commercial viability. Meantime New Zealand's TV3, which has been suffering difficulties, has now been restructured and hopes to improve its programme performance and viewing figures. The channel nearly closed down when faced with aggressive competition from the other established New Zealand broadcasting networks.

The Czechoslovakian OK3 network is to be privatised and several international groups are interested in bidding for the network to gain a foothold into the Eastern European broadcasting field. There's a new (and first) private TV network operating in Santiago, Chile. The main Ch.A9 station opened last Autumn under the 'RED Televisa Megavision SA' name and comprises a network of 21 transmitters, purchased from the second chain of the state broadcaster 'Televison Nacional de Chile'.

Roger Bunney



GB50ATC Award

This award has been established to commemorate the Golden Jubilee Year of the Air Training Corps.

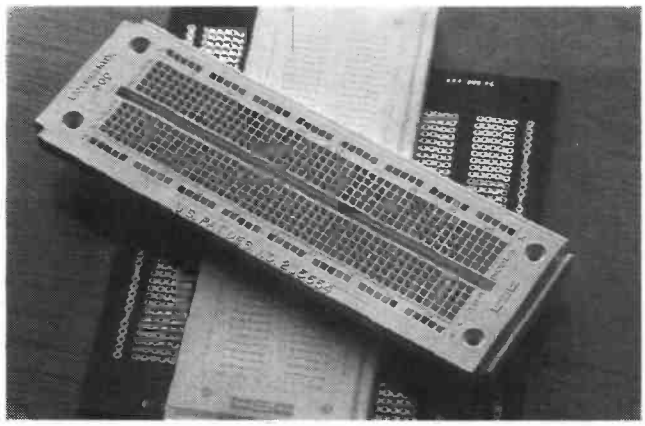
To qualify for the GB50ATC award you need to supply a certified log extract of working, or hearing for s.w.l.s, six ATC stations.

The following details must be given for each QSO being submitted: date, time, frequency, ATC Squadron number and/or location.

The Award will cost you £1.22 (including P&P), which should be sent to:

Ray Degg G0JOD, 42 Hawthorn Road, Cherry Willingham, Lincoln LN3 4JR.

news



Lifetime Guaranteed Breadboards

Global Specialties' comprehensive range of breadboards carries a lifetime guarantee. If they fail to meet your requirements, they are replaced without question. All of the solderless interconnecting systems are claimed to make designing, developing and testing electronic circuits faster, easier, less expensive and therefore more enjoyable, by reducing the work involved in transferring circuits from drawings to final designs.

Further help is provided by 'Scratchboard', a workpad that allows designs to be quickly sketched for permanent record, while 'Matchboard' is a pre-drilled p.c.b. for producing a finished circuit.

While stocks last, Global are supplying free "Scratchboards' and 'Matchboards' with all orders for their Experimentor 300 Breadboard.

A full range of breadboards is readily available and offers: no solder spill, dry joints or burns, quick cost effective development and testing, component lead sizes from 20 to 26s.w.g. and standard 22s.w.g. hook-up wire, plug-in 8 to 40-pin d.i.p. packages, including microprocessor, common and bussed tie-points for component leads and power connections.

The Experimentor 300 costs £5.95 excluding VAT. **Global Specialties, Rackery Lane, Llay, Wrexham, Clwyd LL12 0PB. Tel: (0978) 853920.**

Tuned in to Success

John Beaumont G3NGD (author of the series 'Educational Software for Basic Electronics') was taken by surprise recently when his students from last year's Radio Amateurs' Course presented him with a Trophy. This was to celebrate the 100% pass rate achieved by his students at North Trafford College. Many of the radio amateurs were complete beginners, which makes the 100% pass rate, many with credit and distinction, all the more impressive.

John introduced the RAE course at the college in 1977 and, to date, over a thousand people have been successfuyl. The callsign of the college radio station is G4FXP and is active on both h.f. and v.h.f.

The photograph shows, l-r, Catherine Schofield, Jim Barton, John Beaumont and John Laughton.

The students are presently studying for the Morse Test so that they can apply for their A licences.

International Short Wave League

Mrs Evelyn May G1OFC, ISWL HQ, 10 Clyde Crescent, Wharton, Winsford, Cheshire CW7 3LA is the new Hon. Secretary of the International Short Wave League.

She will be pleased to hear from any short wave or broadcast band listeners and licensed amateurs seeking information on the League and their very efficient QSL Bureau.

The League also has a new Hon. Treasurer looking after the books - Peter Rayer ISWL G-13038, 6 Firbank Road, Charminster, Bournemouth, Dorset BH9 1EL.

AMDAT Open Day

AMDAT are holding a special Icom Open Day on Saturday, May 18, at their Bristol shop. The address is 4 Northville Road, Northville, Bristol.

Icom (UK) will be on hand with an extensive display of Icom equipment, so visitors can come along and try out the Icom range of amateur and s.w.l. equipment.

Mammoth Radio Sale

Waters & Stanton will be holding a Mammoth Ham Radio Sale at their Hockley premises on Sunday May 19. This will start at 10am and finish at 4pm. The location is 22 Main Road, Hockley. Being a Sunday there should be no problem in parking. Talk-in will be provided on 144MHz using either the callsign G3OJV or, if issued in time, their new club call G0PEP.

As well as having working displays of the popular gear, they will be showing all those accessories that they never have space to advertise. For those with any goods to sell there will be a Bring & Buy stand. They will also be taking the opportunity to off-load some relics from their service department 'graveyard' that have accrued over the last few years. A great chance to purchase a 'dead body' at silly prices! But - first come, first served. For those that are interested in new equipment, there will be very special discounts to celebrate the new premises. Free refreshments all day and a raffle drawn at 3pm.

Satellite Newsletter

As much as we try, several weeks pass between information being written and the material actually appearing in print in these pages. **David Thorpe** is now producing an A4 format newsletter currently appearing on an approximate fortnightly basis with updated news and transponder sightings.

Available on a subscription basis within the UK (and overseas *pro-rata*), a sample copy is available from **PO Box 112, Crewe, CW2 7DS**, send a cheque or PO for £1.65 made out to *Transponder*.

'Hot' news can appear in the newsletter within days of the happening or short notice of events coming up can be advised to the subscriber before it happens.

When you are ready to graduate to real listening

L@@k 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 winkling 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.)

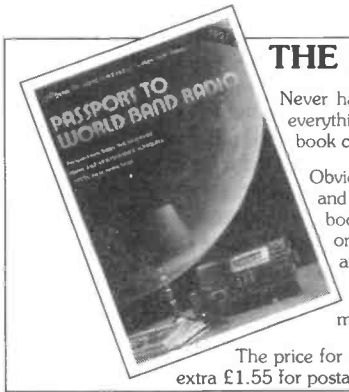
3) Can you use ordinary pencells if you want to?
Having re-chargeable batteries is all very well, but it doesn't help you at an air show when they run flat. You can always get a set of Duracells from somewhere. (The WIN-108 uses easy to obtain batteries.)

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 indispensible 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.

Educational Software for Basic Electronics - Part 5

In this issue, J.T. Beaumont G3NGD deals with a variety of subjects from transformers and capacitors to Lissajous Figures.

A great advantage of using computers in schools and colleges is the ability to give every student a different question. This program makes it possible for the student, or teacher, to make up their own 'transformer calculations' and know that the correct answers can be obtained from the computer. In this way, students cannot copy from one another, provision is made for the 'high fliers' and more time can be spent helping those much slower to learn.

The questions are presented on the screen in a similar manner to that normally drawn on a chalk-board in the classroom.

When the program is RUN a menu of options is listed on the screen as follows:

1: Calculate primary voltage of a transformer

2: Calculate secondary voltage of a transformer

3: Calculate primary turns of a transformer

4: Calculate secondary turns of a transformer.

5: Calculate primary current taken by a transformer.

6: Calculate secondary current taken by a transformer.

7: Calculate primary impedance of a transformer.

8: Calculate secondary impedance of a transformer.

9: Calculate turns radio given input and output impedances of a transformer.

10: Formulae and details required to perform the previous calculations.

11: To EXIT the program.

An example of a typical screen presentation and a listing of the formulae is shown in **Figs. 5.1** and **5.2**.

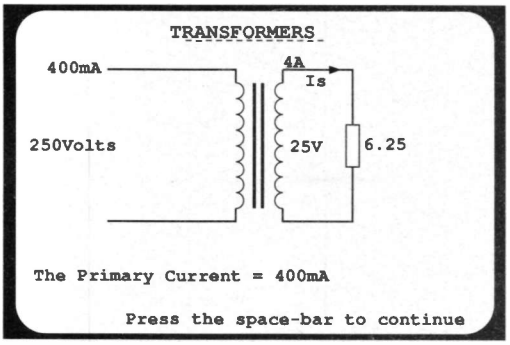


Fig. 5.1

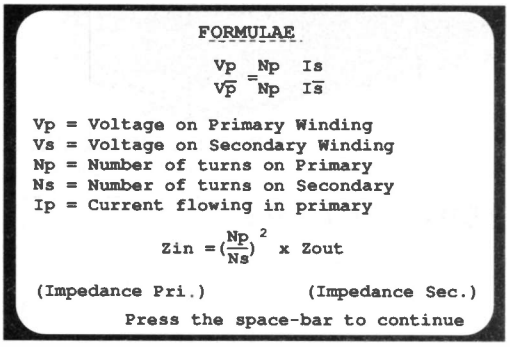


Fig. 5.2

Capacitors

The second program this month is an aid for students when they are working with capacitors in the electronics workshop. The program offers four useful routines:

Five-band Polyester Capacitors

On entering the colours of a colour-coded capacitor, the computer calculates the capacitance in picafarads, the tolerance (%) and the working voltage. Also, a calculation is performed to give the maximum and minimum value that the capacitor could be. The codes are those in common use by companies such as RS Components, etc. (**Fig. 5.3**)

Capacitors in series

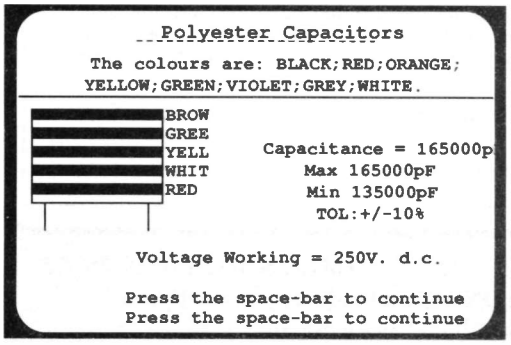
This routine allows a student to quickly find the 'total effective capacitance' of two or more capacitors connected in series.

Variable capacitors

It is sometimes required to estimate the capacitance of a variable capacitor. This is best done using a capacitance meter, but if one of these is not to hand, then this routine will give an approximation. (**Fig. 5.4**)

Conversion of capacitance units

If a student has difficulty in converting picafarads to nanofarads or to microfarads (or any combination of the three) then this program will come to the rescue.



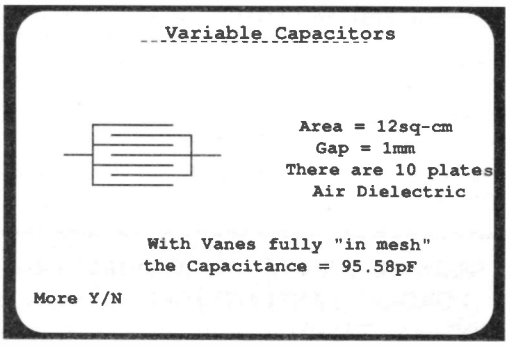


Fig. 5.4

Addition of Odd Harmonics

This program, number 10, is intended as a 'visual aid' plots the resultant waveform when odd harmonics are added to a sinewave of fundamental frequency.

When the program is RUN, the student or teacher can select demonstrations of:

1: Resultant waveform of adding the fundamental and third harmonic waves.

2: Resultant waveform of adding the fundamental plus the third and fifth harmonic waves.

3: Resultant waveform of adding the fundamental plus the third, fifth and seventh harmonic waves.

4: Resultant waveform of adding the fundamental plus the third, fifth, seventh and ninth harmonic waves.

The amplitude of the harmonics have an effect on the resultant waveform. The graphic screen, **Fig. 5.5**, shows three waveforms; the fundamental, the third harmonic and the resultant. It can be seen that when odd harmonics are added to a fundamental wave, the resultant starts to form a square wave.

Lissajous Figures

Program 11 is to be used as a visual aid and is designed to show how an unknown frequency can be measured using Lissajous figures.

The Theory. With a sinewave of known frequency (fx) applied to the X-plates of the cathode-ray oscilloscope and another sinewave of unknown frequency (fy) applied to the Y-plates, then the unknown frequency (fy) may be measured in terms of fx, if fy/fx is a rational number. Under these conditions a stationary trace appears on the screen.

$$fy = (Fx)\frac{\text{loops touching hor. line}}{\text{loops touching vert. line}}$$

In addition to indicating frequency, the figures produced on the screen also indicate the phase relationship between the two signals.

It should be noted that some waveforms take a long time to be drawn. For this reason an interrupt has been included at Line 410. When the waveform appears to be complete pressing the SPACE will stop the program. To increase this time, the 'FOR NEXT LOOP' maximum count number (800) at Line 360 should be increased. ■

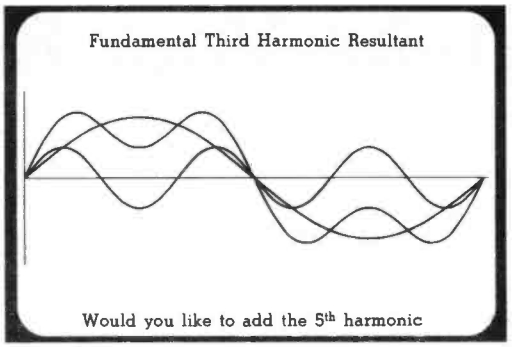


Fig. 5.5

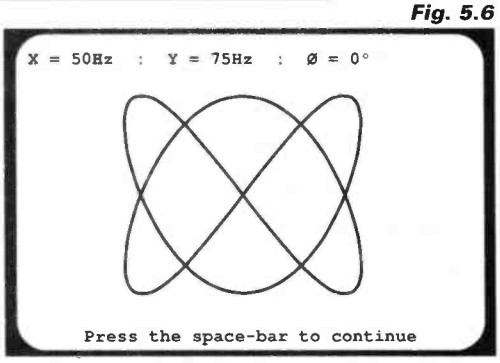


Fig. 5.6

To obtain the programs described in Part 5, 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 computer. Alternatively, we can supply a copy of the printout if you send an s.a.e.

FOR YOUR BOOKSHELF

AN INTRODUCTION TO RADIO WAVE PROPAGATION
by J.G. Lee
published by Bernard Babani (publishing) Ltd
115 pages, 110 x 180mm.
Price £3.95 plus 85p P&P
ISBN 0-85934-238-7
From the SWM Book Service

Radio wave propagation is one of the more important discoveries made in the early 20th century. Although technology lagged behind, early experimenters pursued this newly discovered phenomenon eagerly for, in understanding the physics of propagation, they were discovering more about the workings of the Universe.

Radio wave propagation has its origins in the world of solar physics. The sun's radiation provides the mechanism for the formation of the ionosphere. How the ionosphere is formed and how it provides DX communication is explained. Non-ionospheric propagation , including moonbounce and satellite communications is covered as well.

This book has been written with the average electronic hobbyist in mind. Technical language and maths have been kept to a minimum to present a broad, yet clear, picture of the subject. The amateur, as well as the s.w.l., will find explanations of the propagation phenomena which both experience in the pursuit of their hobbies.

THE RADIO LISTENERS GUIDE 1991
edited by Clive Woodyear
published by PDQ Publishing
56 pages, A5. Price £2.95 plus 85p P&P
ISBN 1-871611-02-4
Available from the *SWM* Book Service

This is the third edition of this essential guide for radio listeners. Simple to use charts and maps show the frequencies of all the radio stations in the UK, showing that there's more to life than just Radio 1. Informative articles deal with a wide variety of topics including RDS, the Sony Radio Awards and In-Car audio.

This book gives you all the frequencies you will ever need when travelling around the UK or staying at home, including all the national, local and community stations. A section gives a brief run-down on foreign stations that can be received in the UK. Altogether a useful book to have with you in the car or when on holiday.

The Guide has been organised so that the various station types are listed separately. So nationally transmitting stations such as BBC Radios 1, 2, 3, 4 or 5 are listed separately from Independent local radio stations and so on. You will also find that, in the case of national BBC stations that also broadcast on the medium wave bands, these frequencies are separate from the station's v.h.f. f.m. entries.

To find a station, you must first decide which broad category it fits, eg., you wish to tune into Radio 4 and you live near Oxford, look under the section marked 'BBC FM Radio in England'. Then look at the map for this section to see which transmitter is nearest and tune into the frequency for that transmitter.

THE DXERS GUIDE TO COMPUTING edition 4.0
by George Wood. Published by Radio Sweden. 59 pages, 150 x 210mm.
Price £3.00 or 8 IRCs from Radio Sweden, S-105 10 Stockholm, Sweden.

The last fifteen years have seen an explosion in the spread of micro-computers. Across North America, Western Europe and the Far East, more and more businesses are relying on small computers at prices that would have been unthinkable just a few years ago.

Radio hobbyists, both short wave listeners and amateur radio operators, have discovered the usefulness of the microcomputer as well.

In *Sweden Calling DXers*, Radio Sweden's weekly electronic media magazine, they have mentioned many applications of computers in the radio listening hobby. But the constantly evolving technology and the development of new applications means the amount of material is enormous. They have put together this booklet, as a guide to what can be done with a small computer in the radio shack.

Make Your Reports Useful

G.P. Stancey G3MCK sends this open letter to a short wave listener, explaining what will help to ensure that he gets QSL cards in return for his reports.

G.P. Stancey BSc G3MCK

Dear Peter

This morning's post delivered your s.w.l. QSL from the bureau. First, let me wish you lots of pleasure in the super hobby of short wave listening and I hope you get many replies to your QSLs. You're getting mine because I want to encourage you in the hobby and this is the reason that I am writing you this letter.

I imagine that you are not too pleased with the response you are getting to your QSLs. Perhaps you think this is due to unreasonableness on the part of the transmitting community, but have you ever considered that the problem may lie with you? I've told you why I am sending you my QSL and you will notice that I have not said anything about your card being of any value to me.

It may be a bit brutal, but many people only react favourably to events that are favourable to them. In other words, if your QSL is of value to them, they will reply. If it is of little value, they won't. How do you think the card which you sent to me looks in that light? You told me I was RST599 at 2000Z on 3.5MHz in Skegness when I was working a station at RST599 in Scunthorpe! Have you told me anything new? Also remember the QSO took place nine months ago, so the news is hardly red-hot. Do you really think I will be motivated to send you a QSL?

You can motivate me to want to send you a QSL by ensuring that your QSL has some value to me. In other words, your QSL should tell me something I don't know, but would like to know - and it should arrive at the right time. Let me give you some examples:

A report that tells me that my signals were heard in an unlikely place at an unlikely time.

A report that compares my signals with other stations, especially stations from my area.

A report that gives details of my signals over a period of time.

If you think carefully, other circumstances will come to mind. I use the word 'report' rather than 'QSL', because you may well find that a detailed letter will elicit a card more easily than just sending a QSL. Remember, your objective is to get cards to pin on your wall. The money you save on not having cards printed could well be spent on sending reports direct rather than via the bureau.

The other weekend, I erected a new antenna that appeared to be less than successful. After a week of few contacts, I took it down in disgust.

If, during the course of that week, I had received your QSL telling me you had heard me fruitlessly calling CQ, that would have been something really useful to me. It might have encouraged me to persevere with that antenna, which might really be a super performer, but was just having an off-week.

The point I am making is that QSLs should be useful or interesting to the recipient and should also be received in a timely manner. This means that you should seriously think about QSLing direct as the bureau takes far too long. This will, of course, increase your costs, but if it improves your QSL return it may actually be cheaper in terms of pence per QSL received. The next point is that if you expect a QSL by return, enclose either an s.a.e. or IRCs, otherwise tell the recipient that you are happy to get his card via the bureau. This may seem one-sided, but life is not fair and if you want to improve your response to QSLs you just have to play the game.

I hope that you have found these comments helpful. Remember the message for improving your QSL return is:

* send something that the recipient will value
* send it in a timely manner
* above all use your common sense

Good luck with your s.w.l.ing

73 es DX

Gerald G3MCK

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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.

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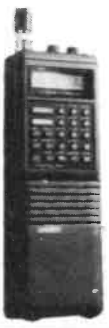
The **ICFPRO80** is a hand held professional receiver with air band capability and an 8-way tuning system. Frequency coverage 150kHz-108MHz and 115.15kHz to 223MHz with FRQ 80 frequency convertor.

The **HP100E MkII** is a 1000 channel, programmable, handheld scanner. AM, FM and FM wide for commercial channels covering 8-600MHz and 830-1300MHz. Supplied complete with NiCad, Antennas, DC cable, shoulder strap, carry case and earpiece.

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 **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 **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 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 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 **VHF HANDY** and **AIR HANDY** are two compact thumbwheel controlled handheld receivers. Light in weight and easy to use makes them an ideal introduction to receive. The AIR handy covers 118-136MHz and is AM. The VHF Handy is FM and covers 141-180MHz.

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.

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

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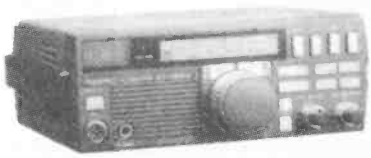

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Model Engineers at Chalk Pits

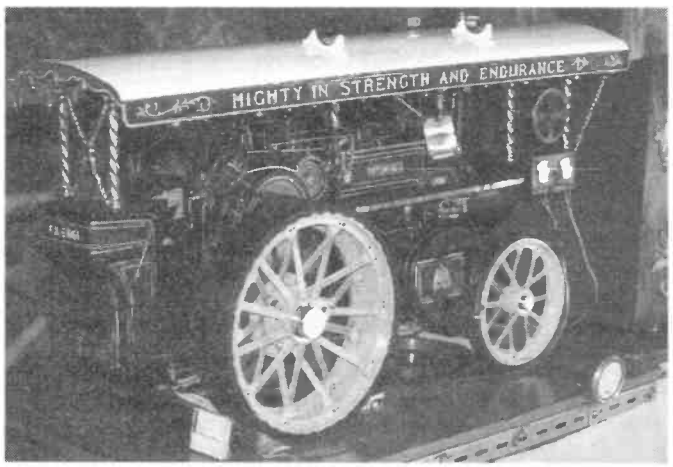
Many readers have other interests besides radio. In this, the first of an occasional series on other hobbies, Ron Ham looks at Model Engineering.

Although I was, until recently, the Hon. Curator of the Vintage Wireless Exhibition at the Amberley Chalk Pits Museum, Sussex, my favourite event of the season is the annual 'Model Engineering and Steam Day', held last year on September 9. Apart from a long standing 'armchair' fascination for the subject, I often meet radio people among the exhibitors and find model engineers using techniques associated with the world of radio-communications.

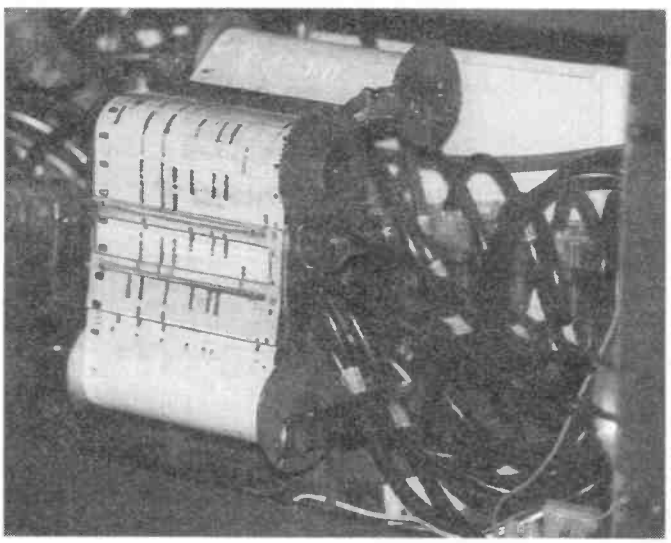
Amateur and the Fair

The 1990 event was no exception and as I talked to exhibitors about the various items - Meccano, scale model radio-controlled boats and miniature steam railway and road locomotives, I met **Doug Roseaman G8FLL** from Chippenham, who normally makes miniature fair-ground shows. This time he was proudly displaying his recent acquisition, a 1920s Fair-set complete with gallopers, park-swings, striker and switch-back. Doug, seen in **Photo. 1** holding his normal work with part of his fair, is looking for more information about it before starting the intricate renovation work.

Doug Roseaman G8FLL with his 1920s fair-set.



Showman's engine by Ernie Balson & Graham Stride.



Eversheds & Vignoles chart mechanism controls the organ.

Frequency Ident

At one end of a temporary pool, set up for the model boat display, I spotted a board, labelled 'MARINE SECTION', with a dozen coloured segments and a number of matching, clip-on clothes pegs. Each peg represented a radio channel, the missing ones showing the channels in use at the time. For easy poolside identification the appropriate coloured peg is clipped to the antenna of each operating transmitter.

The Paper Chart Organ

The sound of organ music attracted me to a beautiful model showman's engine, **Photo. 2**, standing next to a working pipe organ. The complete outfit was built by **Ernie Balson & Graham Stride** from Southampton who explained that the lights and the organ motor were powered by a dynamo at the front, belt-driven from the engine. Then came a big surprise. The air supply to each organ pipe was controlled, like a pianola roll, by the chart mechanism from an Eversheds & Vignoles pen recorder, **Photo. 3**, just like the one I used for many years on my radio telescope. Chatting to Ernie and Graham about the design of this unit I learnt that they actually calculated and cut each individual slot in the paper roll by hand. And I thought that radio constructors were dedicated, hi! ■

Editor's Footnote.

Some of you will know that my relaxation comes from this hobby. All my working life I have been involved with electronics and radio - which have fascinated me since the age of about eight.

However, it is work and I believe that you have to get away from it sometimes - for me this means cutting metal in my workshop or driving my 5in gauge steam loco.

I know that other hobbies with radio connections are pursued by readers, including stamp collecting, photography - even flying and I hope to cover these in future issues.

Dick Ganderton.

G8VFH takes G4WNC for a ride behind 'Peggy'. *Photo G4LFM.*

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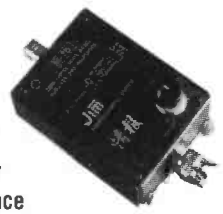

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Modes:- AM – FM – Wide FM
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This handheld has received many rave reviews we found it particularly sensitive at 900 MHz. Features include 100 mem. channels coverage (25-550 MHz, 800 - 1300 MHz) Supplied complete with all accessories and full 1 year guarantee. **£249**
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NEW 1991 CATALOGUE JUST RELEASED SEND IN £2 FOR YOUR COPY (Includes £2 Voucher)

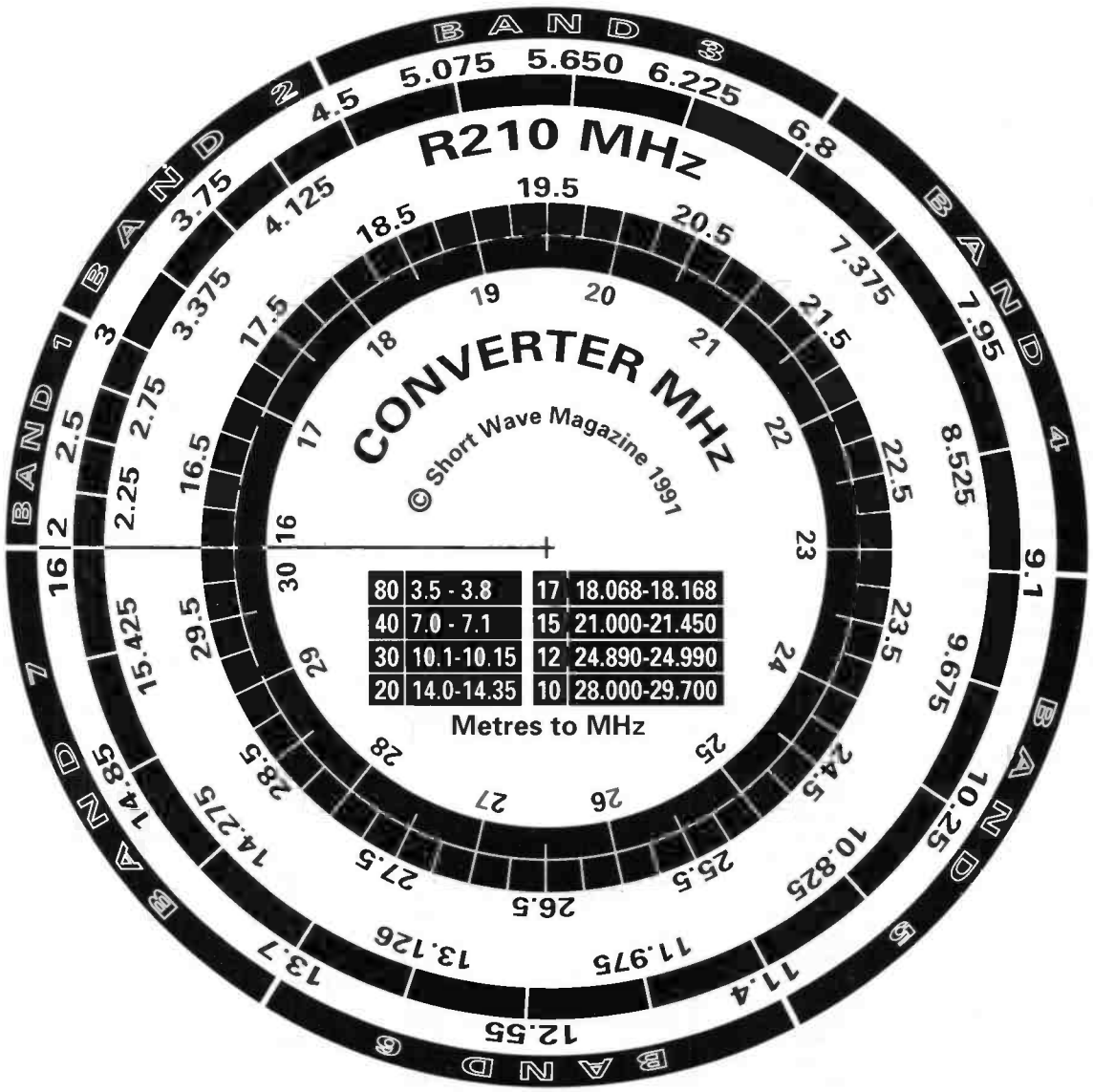
An Aid for the R210 Converter

This device is useful for those readers who are not too familiar with frequencies and wavelengths. Of course, it is by no means a precision device - perhaps a memory jogger is a better description, says John L Alton.

I feel sure that there are quite a few people, like me, who have returned to radio listening in our retirement. In my case, a career spanning some 38 years in the RAF effectively precluded any serious practical radio activity. However, my youthful interest prevailed and I now have an R210 'civilianised' in accordance with Tom Harrison's article (*SWM* Jan 90, etc) and the recent one by Bryan Robertson (*SWM* July 90). In passing, may I pay tribute to both these gentleman for their assistance when I needed guidance. From early attempts to produce a computer program to provide direct readings from the R210 scale with the converter fitted, it soon became apparent that this was not feasible within a scale that could be of convenient size or with figures that could be easily read. The R210 receiver has seven switched wave bands, 1, 1.5, 2.3, 2.3, 2.3, 2.3 & 2.3MHz wide. The total coverage is thus 14MHz (2 to 16MHz). Related to a complete circle of 360°, each 1MHz will subtend an angle of 360 ÷ 14 = 26° to the nearest whole number. In terms of the seven bands, this will give angles of 26, 39, 59, 59, 59, 59 & 59°.

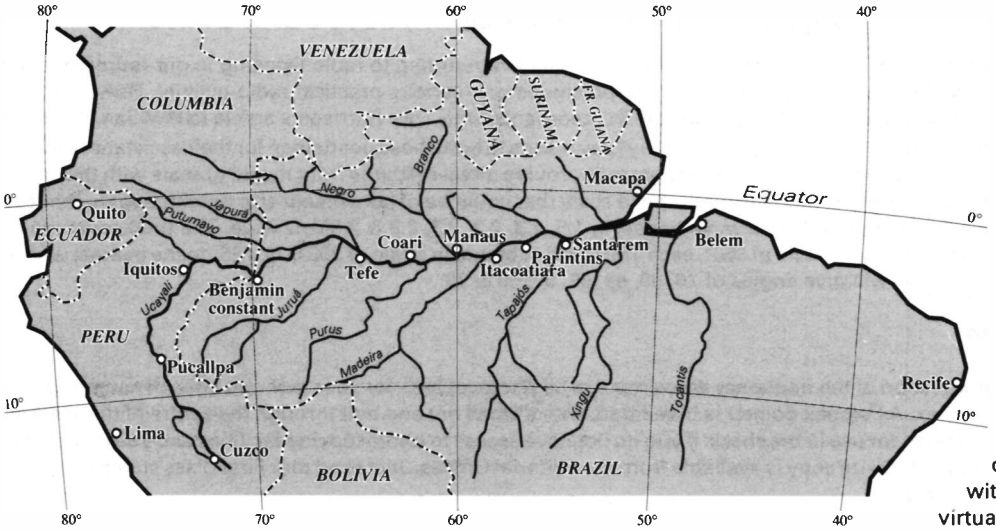
Construction

The full size reproduction of the frequency converter can be photocopied - for your own use only, of course - and mounted between two sheets of Perspex. A Perspex pointer is then fitted, with a small nut and bolt through the centre of the scale as a pivot. You now have a 'ready-reckoner' for use in the shack. If you do not have access to photocopying facilities and you do not want to mutilate your favourite magazine, a full-size copy is available from the Editorial Offices. Just send four First Class stamps, together with your name and address, of course.



Cruising up the Amazon

Recently, Dick Moon came across an article in an old radio magazine mentioning the Amazon River and his mind went back 20 years to a trip he made along this incredible river. He wondered how many of the South American radio stations he has logged are sited along its banks.



My trip started when I boarded a 10 000 ton luxury liner at Belém, the largest town on the river, situated at the outlet on the Atlantic Ocean. Three stations operate from this city, of which Radio Clube do Pará on a frequency of 4.885MHz is the easiest to hear. More difficult are Radio Marajoara on 4.955MHz and Radio Cultura do Pará on 5.045MHz.

About 200km away, on the northern bank, is Macapá, situated right on the Equator. Here, Radio Difusora, with a 10kW output, transmits on 4.915MHz. Reception is difficult as it is usually masked by Radio Anhanguera from Goiânia, 2000km further south.

Casting off from Belém, the ship negotiated the numerous winding channels before emerging into the main river, at times so wide that it was impossible to see the banks. After a few hours, we passed the town of Santarem, settled by the Confederates returning from the American Civil War, where Radio Rural may be heard, with careful listening, on 4.765MHz.

The next port to be passed is Parintins, on the borders of Amazona State and Para State. Radio Alvorada on 4.965MHz with an output of 5kW is a difficult catch.

Further up stream, Itacoatiara, the home of Radio Difusora Itacoatiara, was soon reached. Broadcasting in the difficult 120m band on a frequency of 2.34MHz conditions would have to be exceptional to log this one.

A further 100km west and we reached the ship's final destination, Manaus, once the centre of the Great Rubber Boom of the 1920s. Several stations operate from this city. The easiest, with an output of 250kW being Radio Cabocia on 4.845MHz. Radio Difusora de Amazonas is also regularly heard on 4.805MHz, but Radio Baré on 4.895MHz with only 1kW will be very difficult. Radio A Critica on 5.935MHz would be another excellent catch. In the 31m band, Radio Rio Mar puts out a 7.5kW signal on a frequency of 9.695MHz.

On to Peru

After three days of travel, I was now 1200m inland and regretfully had to say farewell to the comforts of the cruise liner. The next leg of my trip took me, by air, to Iquitos, just inside the Peruvian border. Shortly, after take-off, we passed over Coari, home of Radio Educação Rural, which transmits a hard-to-hear signal of 1kW on 5.035MHz. Benjamin Constant is the last Brazilian port on the river and has an outlet in Radio Nacional Tabatininga on a frequency of 4.815kHz.

A few minutes later, the plane began its descent for Iquitos, the world's furthest inland port, and accessible only by water and air. Extremely hot and humid, Iquitos is the world's centre for the distribution of tropical fish. Several stations operate from Iquitos, the easiest to hear being Radio Atlántida on 4.790MHz. La Voz de la Selva is also readily heard on 4.825MHz, but Radio Eco on 5.012MHz with only 1kW is virtually impossible.

During my stay in Iquitos I made a trip by dug-out canoe to visit one of the primitive Indian tribes living deep in the jungle where radio is still unknown. After spending a few days in this very humid town it was time to move on to my final destination, Lima. The last station, situated near the source of the Amazon is Radio Sideral at Pucallpa, but with an output of 1.5kW on 9.755MHz, is purely local.

Table 1

Town	Station	Frequency (MHz)	Sign off (UTC)
Belém	R. Clube do Pará	4.885	0300
Belém	R. Marajoara	4.955	0300
Belém	R. Cultura do Pará	5.045	0300
Macapá	R. Difusora (Radiobras)	4.915	0300
Santarem	R. Rural	4.765	0300
Paratins	R.Alvorada	4.965	0200
Itacoatiara	R. Difusora	2.340	0100
Manaus	R. Cabocia (Radiobras)	4.845	0300
Manaus	R. Difusora do Amazonas	4.805	0300
Manaus	R. A Criticá	4.935	0205
Manaus	R. Baré	4.895	0500
Manaus	R. Rio Mar	9.695	2000
Coari	R. Educação Rural	5.035	0230
Tefe	R. Educação Rural	3.385	0200
Benjamin C.	R. Nacional de Tabatininga	4.815	0300
Iquitos	R. Atlántida	4.790	0500
Iquitos	La Voz de la Selva	4.825	0100
Iquitos	R. Eco	5.012	
Pucallpa	R. Sideral	9.755	0400

Unforgetable

My Amazon trip was an unforgettable experience over a period of ten days, and although an enthusiastic s.w.l. could probably cover the same journey from the comfort of his own shack in a fraction of the time, he or she may well find the trip much more frustrating. Just as the dense jungle hides the animals and birds from the eyes of all but the most experienced traveller, so many of the station along the way are buried by interference and hidden under atmospherics.

If you should care to try this exotic journey by short wave radio, **Table 1** lists all the active frequencies of the stations along the way and will guide you along the route. The station details have been checked against the entries in *World Radio TV Handbook*.

Happy travelling. ■

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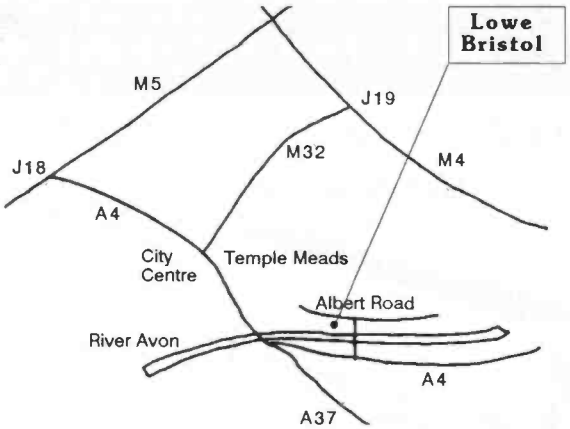

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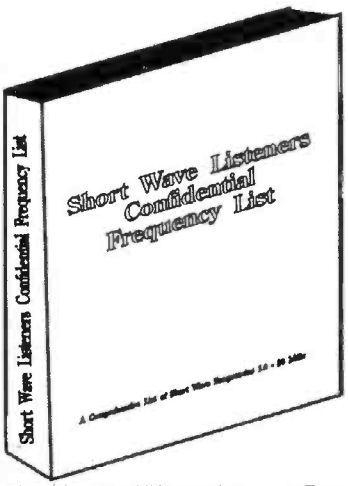

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Repairing an HRO

Chas. E. Miller discusses an HRO he returned to its former glory, and takes the opportunity to talk about some other allied topics, such as the strange way the Americans chose to identify their valves.

So many communications receivers have chequered careers, so it was pleasant to encounter an HRO that had been in the same family for 40 years. This set had been bought by the present owner's father just after the war and had given him good service for at least two decades. In recent years, however, it had fallen on evil times, as my initial examination showed only too clearly.

The main fault lay in the power supply unit that had evidently suffered a burned-out mains transformer. Someone had removed the original and pushed into the available space an RS Components 'economy' replacement. These are extremely well-made and, when used within their ratings, are utterly reliable. In this particular instance, the demands that would have been made by the HRO would have been far too great and would have brought about over-heating and eventual failure. As it happened, the replacement job appeared never to have been completed or, if it had, it had been partially dismantled again shortly afterwards. Thus the transformer was presumably spared the over-loading that would have otherwise come its way.

The original HRO used valves with heaters rated at 2.5V and prodigious amounts of amps, but subsequent models used 6.3V UX-based types. The HRO-5 employed metal Octal valves and this point presents me with an opportunity to apostrophise on the subject of valve numbering.

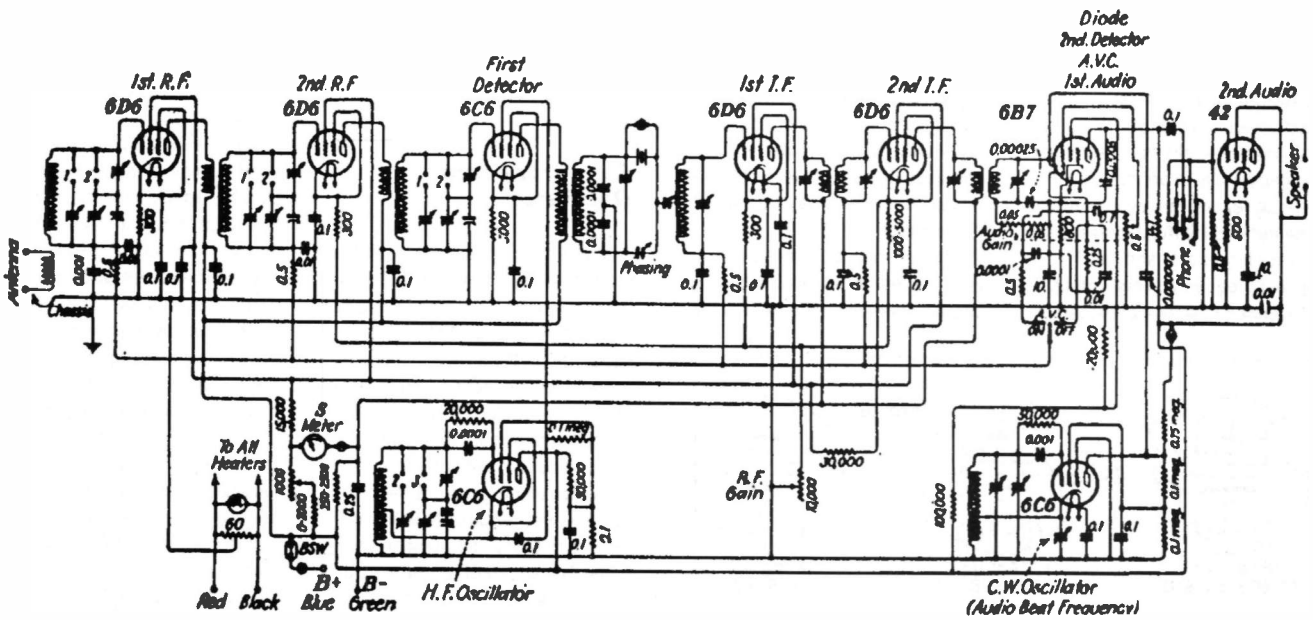
Valve Numbering

The original range of Octal valves that appeared in the mid-1930s was composed entirely of metal-shell types. It is important to bear in mind that the entire envelope itself was of steel and was not glass, sheathed in aluminium, as in the well-known EF50/VR91 and certain Marconi-Osram valves of the immediate post-war period. The metal Octals had three-figure numbers such as 6K7, 6J5, 5Z4, etc. Subsequently, glass-envelope variants were produced, initially with conventional curved-glass bulbs such as been used for the UX range. Type numbers for these had the suffix G for glass, e.g. 6K7G. The next development was a smaller glass envelope of tubular aspect about half the size of the G bulb. The suffix for this was GT, thus giving 6K7GT.

Regarding American valve numbering in general, men of powerful intellect to whom the intricacies of differential calculus and Sanskrit are merely child's play have grappled with the problem of understanding the system, only to have to be led away by kindly attendants in white coats. The fact of the matter is that there is **no** system and all attempts to detect patterns are defeated by the inevitable discovery of glaring inconsistencies, as we shall see. The one fairly reliable factor is that the first figure will give an approximate indication of the filament or heater voltage, e.g. 1 = 1.35V, 1.4V or 2V; 2 = 2.5V, 6 - 6.3V, 12 = 12.6V, 14 = 12.6V. (I have cheated a little here as 7 and 14 did originally indicate those voltages but were changed after a short while).

Photo by Ron Ham, Chalk Pits Museum.

I have heard it suggested that the final figure indicates the number of base pins employed; the evidence for this is superficial and easily demolished. Even if it were unassailable, it would be a singularly useless piece of information, giving no clue to the nature of the valve. To demonstrate the perversity of the numbering we have only to look at a later development of Octal bottles. The 6K7, which was a variable-mu r.f. pentode, and several other valves in the original range, had top-cap control grid connections. For certain applications, it was more convenient to have all the connections brought out to base pins and so single-ended versions of the valves were produced. With fiendish ingenuity, a letter S was added to the type numbers of valves thus modified, making a single ended metal 6K7 into an 6SK7. The small-glass variant was called 6SK7GT. There was no single-ended version of a G valve. Numerous other valves were issued in single-ended form with the 'S' added to the type number but lest anyone should gain the impression that this was a logical sequence of events, let them beware making the assumption that any valve with an S in its name is a single-ended version of a normal



Circuit diagram of the HRO receiver. *(Courtesy of The National Co. Inc,)*

valve. The 6L7 is a pentagrid mixer valve for frequency-changing stages whilst the 6SL7 is a high-mu double triode (which, incidentally, uses all eight base pins). The 6SN7 is another double-triode as is, indeed the 6N7, but whilst the former is a medium-mu type for voltage amplification, the latter is a very powerful valve for Class B operation in which mode it will deliver 10W output.

Finally, we return to the subject of heater voltages. Since a 12K7 is a 12.6V heater equivalent of the 6K7 and the same is true of many other valves, it must be safe, must it not, to assume that all valves starting with 12 follow the same rule? Not quite; characteristically the American threw in a 'rogue' and, inexplicably, the 12.6V version of the 6B8 is known as the 12C8....

Returning To The HRO

The total consumption of the heaters may be calculated at 2.85A @ 6.3V, plus 0.15A for the pilot lamp, a total of 3A. Oddly enough, National's own power supply unit is rated to deliver only 6.2V, so if we are to be pedantic about it, the current consumption would fall by about 5mA. Since mains transformers delivering 6.2V are thin upon the ground this anomaly may be ignored.

The h.t. output is rated as 230V @ 75mA, the latter figure being rather surprisingly low considering the number of valves in the receiver (the 6V6 output valve normally draws around 50mA, leaving only 25mA for the other eight). Of these, the four 6K7s alone might be expected to consume around 8mA apiece, so it would seem prudent to cater for a total h.t. current of more like 100mA. In fact, mains transformers tend to fall into categories whereby there are those intended for use in ordinary '4 + 1' domestic receivers drawing around 2A heater and 75mA h.t. current and those for larger sets and small amplifiers requiring some 3.5A l.t. and 120mA h.t., so one of the latter examples will have a good safety margin all round. It must be added that the h.t. voltage provided by the latter will probably be at least 50V higher than for the smaller type of transformer as (say) 300V as against 250V. This has to be taken into account since an excess of h.t. will do no good and may possibly be harmful.

Power Supply

The original transformer in the HRO power supply unit was encapsulated in pitch, but whoever had repaired it last had cleaned all this stuff out and simply dropped the replacement into the hole that was left with no pretence at fastening it down. The new transformer to be fitted was too large to go into this space, but there is ample room at the rear of the unit beneath the rectifier valve holder, where it could be bolted down securely. It should be noted that neither side of the heater winding is earthed directly, the return being made via a large 'hum-dinger' mounted in the receiver itself.

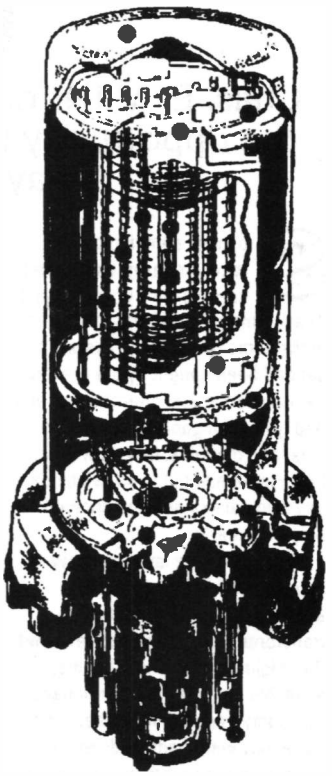
Alongside the original mains transformer housing is a large h.t. smoothing choke, also set in pitch. This proved to be in good order but the main smoothing capacitors (condensers) were in need of replacement. An 8μF + 16μF double unit was employed with the first section as reservoir. In combination with the choke, this provided a hum-free h.t. supply of just under 250V at the output terminals, on load. Given that the transformer was capable of delivering at least 100mA it was felt unnecessary to reduce the voltage further. However, 250V should be taken as a definite upper limit and resistors employed to drop higher outputs, not forgetting that the wattage ratings will probably be >2.5W. The space within the unit will permit such resistors to be mounted on tag strips well away from other components.

The connections from p.s.u. to receiver are via a 4-pin UX-type socket mounted on the front of the p.s.u. and a length of 4-core cable from the set carrying the appropriate plug. It was found that the heaters in the receiver were receiving power only intermittently, traced to a poor contact within one of the pins on the plug.

This showed no signs of ever having been disturbed, so one can only assume that it was never soldered properly in the first place. A good method to ensure a sound joint is to invert the plug so the pins are uppermost and to apply the soldering iron to each in turn, feeding thin cored solder directly into the openings at their ends. There was no recurrence of trouble after this work had been done. Curiously enough, though, another instance of poor workmanship was discovered in one of the coil sets that failed to give any signals. To narrow down the search, the usual test for negative voltage on the grid of the local oscillator was applied, indicating that all was well here. Next, the meter lead was applied to the section of the gang capacitor used to tune the mixer control grid (a handy place to inject signals) upon which some stations became audible. Transferring the lead to the section tuning the grid of the second r.f. amplifier increased the level of the signals but there was nothing from the antenna tuning section. It is easy to gain access to the coils themselves for the screening cans are held in position by small screws passing through slots into semi-captive nuts. It is necessary only to loosen the screws to permit the cans to be removed. One of the leads from the antenna coil to the stud contacts was seen at once to be disconnected and it was again difficult to believe that this had not been so from the start. Soldering it into position restored normal operation.

Beat Frequency Oscillator

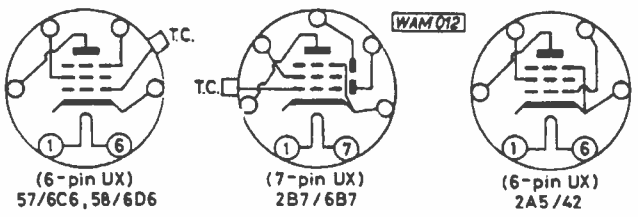
The only other job necessary on the receiver was re-tuning the b.f.o. to provide resolution of s.s.b. The b.f.o. main tuning is by a small variable capacitor on the front panel of the set with its connections made via a cable-form containing several other miscellaneous leads.Only slight readjustment of the pre-set capacitor shunted across the variable was required to achieve resolution at the mid-point of the latter. The standard test here is to receive the RAF VOLMET s.s.b. transmissions that may be assumed to be of good frequency stability and will show up drift in a receiver b.f.o. (or c.i.o, if you prefer). That in the HRO proved to be good in this respect once it had warmed up.



This cutaway drawing shows the construction of a typical metal Octal valve. (RCA).

Constantly On

Speaking of stability, after an article of mine on the HRO appeared in *Practical Wireless* some time ago, I received a number of letters from ex-WOPs who have used these sets during World War II. Among the interesting points raised was that, in some cases, to obviate warm-up tuning drift, sets were left on for months. perhaps years, non-stop! I have subsequently heard the same said of the GEC BRT400 receivers used for monitoring purposes in BBC transmitter stations. If we are to accept that, apart from the question of stability, the most wear and tear on valves takes place during the initial switching-on period, the advantages of constant operation would appear to outweigh the running costs. Certainly, some post-war American 'Midget' receivers were made with constantly-on heater circuitry to defeat the large surges that take place with cold, series-run, valves, whilst a slightly modified system was used in certain British rental TV receivers of the 1960s to provide 'instant-on' facilities. But that's another story. ■



Pin connections for the valves used in the HRO receiver.

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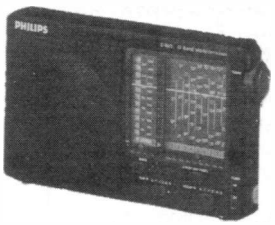

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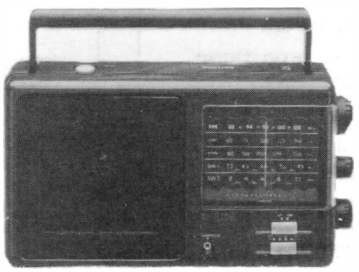

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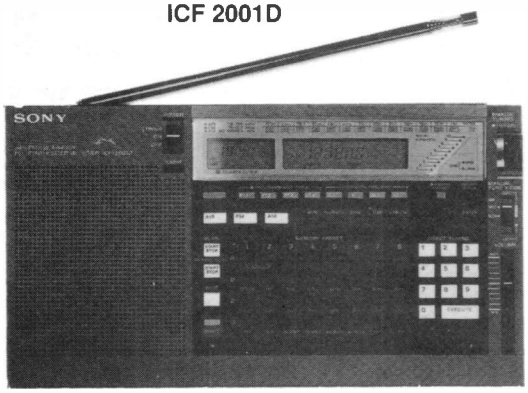

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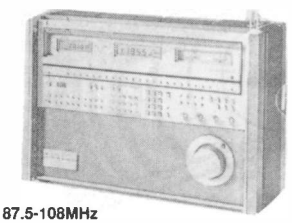

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Continuing Along the Right Lines - Part 1

Following on from his popular series in SWM last year, George Dobbs G3RJV offers more projects for the beginner.

The practical construction projects that follow in the rest of this series will use soldering techniques rather than the Veroblock used in the last series. Part 1 describes a useful item for the short wave listener's station, so that the Veroblock need not be 'pensioned off' and go to waste.

For serious listening, most short wave listeners will install an outside antenna (aerial), which is a simple way to increase the sensitivity of the receiver. Usually such outside antennas are random end-fed wires. That is, they consist of a length of wire running from the receiver to outside the building and as high and long as is possible within the available space. Some readers may recall the 'wireless poles' often found at the bottom of garden in the 1930s, 40s and 50s with a wire running from a pulley at the top of the pole to the eaves of the house and then down to the radio set.

Ideally, an antenna should be matched to the receiver and the frequency in use. Many radio amateurs use tuned antennas, where the element, or elements, of the antenna are cut to match a favourite band or frequency. The simplest example is the half wave dipole. But most short wave listeners want to be able to monitor a large portion of the short wave spectrum with just one antenna and in such circumstances an end-fed long wire is the simplest effective answer.

Simply plugging the long wire into the antenna socket of a receiver will increase the sensitivity, but the wire will almost certainly not match the frequency and the input impedance of the receiver. Most receivers have an antenna input impedance of 50Ω and a piece of wire used as an antenna is most effective if its length relates to the wavelength of the station received. (Complex ideas which can be explored further by reading a good book on antenna design) So, the long wire is very much a compromise antenna for short wave listening.

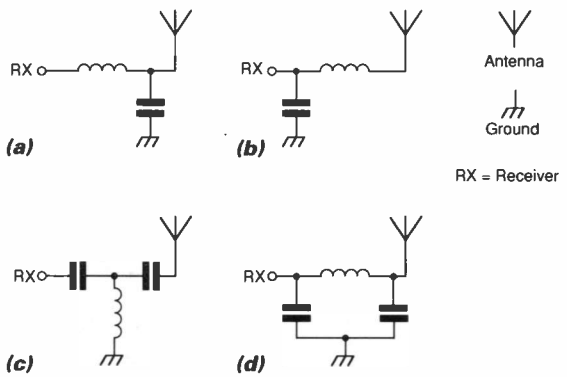

Fig. 1.1: (a) and (b) are of the L Match type. (c) is a T Match and (d) is a Pi Match.

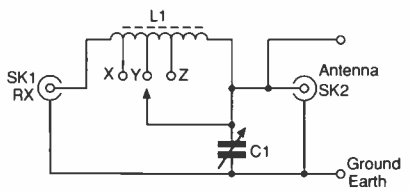

Fig. 1.2.

Antenna Tuning

Fortunately it is not too difficult to improve this situation using an **antenna tuning unit** (a.t.u.), often called a Transmatch in American books. An a.t.u. is a combination of capacitance and inductance placed between the antenna and the receiver. These are used to cancel inductive and capacitive reactance that may be present at the end of the antenna: see the section on **resonance** in Part 3 of this series (*SWM* December 1989). A simple way to put it is that the a.t.u. enables the receiver to 'see' an impedance of 50Ω at the end of the antenna at the frequency in use.

Thankfully, most a.t.u. circuits are quite simple.The three commonest types of a.t.u. circuit are shown in **Fig. 1.1**. The simplest is the **L Match** (the circuit looks like the letter L), which consists of one inductor and one capacitor. The capacitor may be at the receiver or antenna side of the inductor depending upon the length of the antenna and the frequency. The **T Match** and the **Pi Match** (with circuit shapes like a T and π) both use a single inductor with two capacitors. Although some a.t.u. circuits in books may look complex, most of them will be based on one of these three basic circuits. Much of complexity will be due to the fact that an a.t.u. has to have methods of varying the inductance and the capacitance.

A Practical Circuit

The circuit diagram of a practical a.t.u. that can be built using the Veroblock and some of the parts from the crystal set (the variable capacitor and the ferrite rod) is shown in **Fig. 1.2**. Compare Fig. 1.2. with the L Match in Fig. 1.1(a). They are the same circuit with a variable capacitor C1 and and inductor L1, which can be varied with tappings on the coil. The inductance can also be varied by sliding the ferrite rod in and out of the coil. This a.t.u. is simple to build and, in my tests with several receivers, it matches a range of wire antennas over a frequency range of 2 to 30MHz

The first stage is to wind the inductor, L1. This is wound on a paper sleeve, in the same way of the crystal set inductor. The coil has a total of 20 turns with three tapping points. The tappings are made in the same way as in the crystal set by pulling a loop of wire out from the coil as you wind and twisting it together. These tapping wires must be scraped clean of enamel to make a good contact when they are plugged into the Veroblock. Begin the coil by fastening one end of the wire to the paper sleeve with adhesive tape, wind 2 turns and make a tapping, then 3 turns and a tapping, 5 turns and a tapping and complete the coil with a further 10 turns. The winding is close-wound - the turns touching each other - but the ferrite rod must be able to slide in and out of the coil.

The layout of the a.t.u. on the Veroblock is shown in **Fig. 1.3**. Note the two wires that are passed over the ferrite rod. These are arranged to loop over the rod and help to hold it in place in addition to being part of the circuit. The receiver and antenna ends of the circuit are joined to sockets to connect the receiver and antenna leads. I used the cheap and easily available phono sockets but any appropriate sockets could be used.

The wire coming from 19B, the top of C1 on the circuit

diagram, has a free end that acts as a three-way switch. By pushing it into the hole adjacent to the tappings X, Y or Z, it can select the required tapping. With the free end of this wire withdrawn from the board, the whole of L1 is in the circuit. This simple switching arrangement, together with the ability to slide the ferrite rod in and out of the coil, allows a wide range of inductance to be selected.

Using the ATU

The tuning procedure is really very simple. The inductor L1 and capacitor C1 are adjusted for the loudest signals at the required frequency. A general rule of thumb is that the lower the frequency in use, the higher the inductance required (the actual amount depends upon the length of the antenna). Tapping X is the least inductance, followed by Y and Z, connecting the tapping lead to the finish of the coil for maximum inductance. The ferrite rod also alters the inductance - pushing it further into the coil increases the inductance.

Begin by connecting the receiver and the antenna to the a.t.u. Set the variable capacitor, C1, at about half mesh. Then adjust the inductance using the tappings and sliding the rod in and out of the coil slowly to peak the signals being received. The final peaking of the signals is done with C1. With a little practice, it soon becomes very easy to match the antenna and the receiver with the a.t.u.

Ideally, whenever the frequency of the receiver is changed, the a.t.u. settings require adjustment. In practice, once set up the a.t.u. should be effective across any single amateur or broadcast band with just a little retuning of C1. If bands are being changed or large frequency changes are being made, the whole tuning procedure must be performed. More sophisticated a.t.u.s have markings on the capacitor and inductor settings so these can be noted for future tuning on the same frequency.

The L Match configuration with the capacitor at the antenna end of the circuit works for most lengths of outdoor antenna in the average garden over the short wave spectrum. If difficulty is experienced in getting the a.t.u. to work with a particular antenna, the connections on the receiver and antenna can be reversed to put the capacitor at the receiver end of the a.t.u. ■

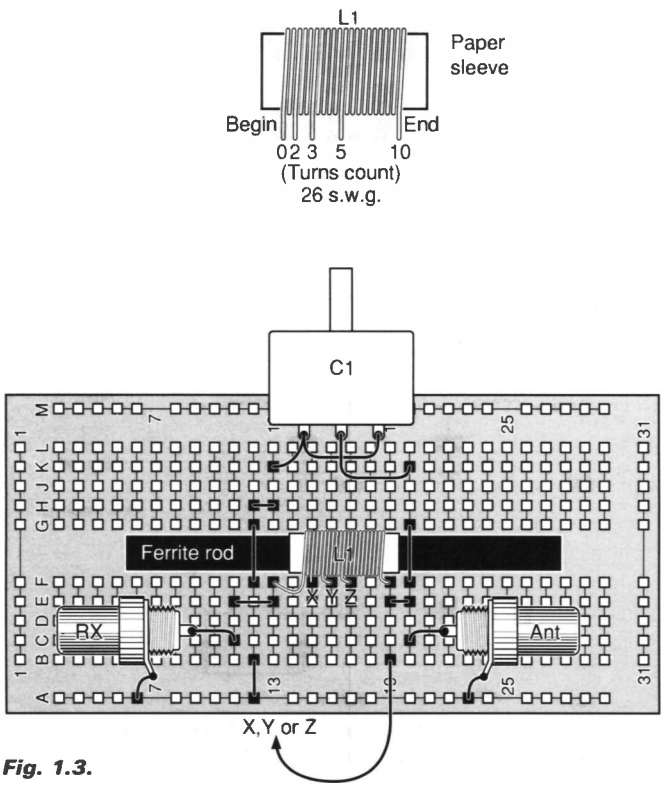

Fig. 1.3.

Components List

C1	Variable Capacitor (Maplin FT78K, Electrovalue F118G).
L1	Ferrite Rod 100 x 8mm (Maplin YG22Y, Electrovalue 5 x 3/8in, Cirkit 35-14-147).
Veroblock	(Maplin YL11M, Electrovalue 21092,Cirkit 21-09-100).

Enamelled Copper Wire 26s.w.g. (Maplin BL27E, Electrovalue EC222, Cirkit 03-03-026).

All of these parts have been used in the Crystal Set Project in the first series.

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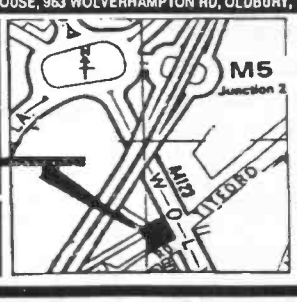

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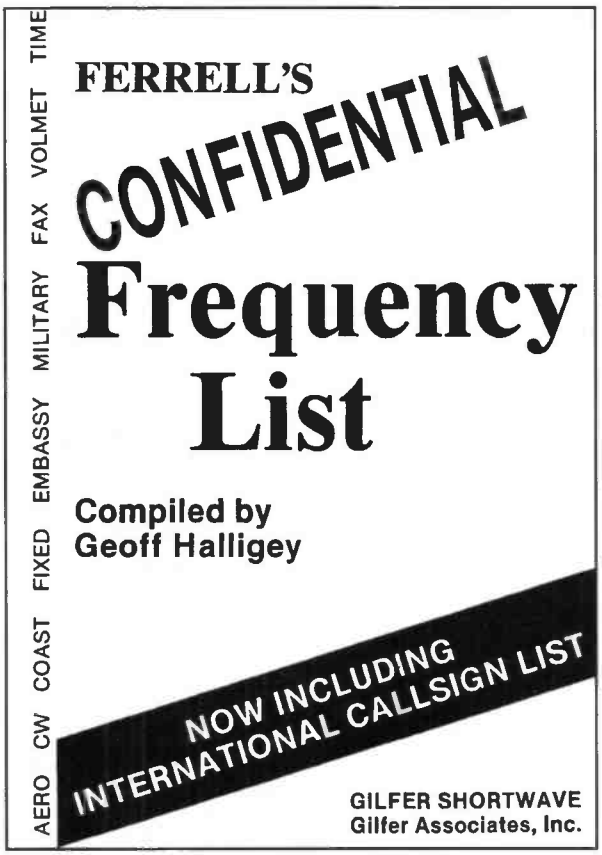

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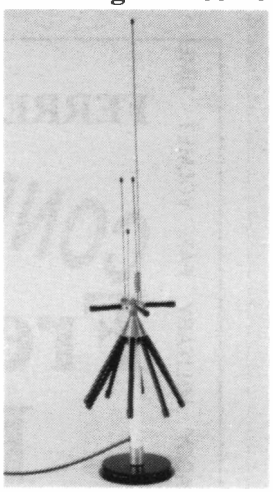

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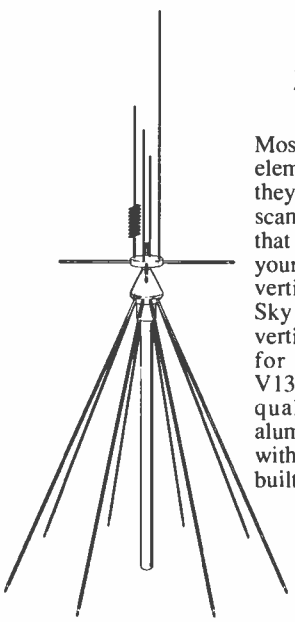

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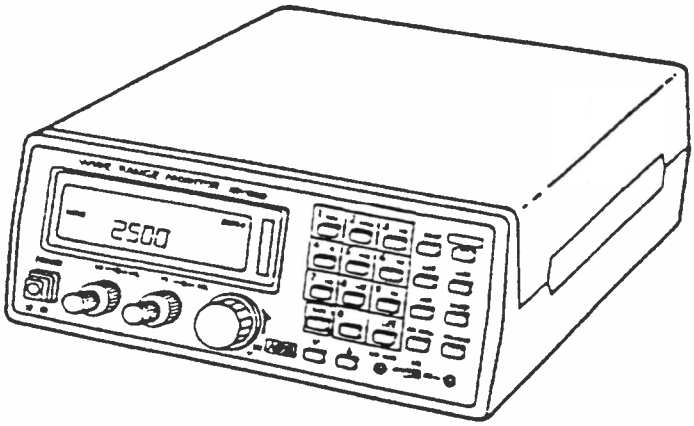

The AOR AR-2500

- ★ 2016 Channels. 100kHz to 1500MHz.
- ★ AM, FM, WFM & BFO for SSB, CW.
- ★ 64 Scan Banks.
- ★ 16 Search Banks.
- ★ RS232 Port Built in.
- ★ 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 2,000 memory channels (1984 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 100kHz to 1500Mhz, an added feature is a BFO for the reception of SSB signals.

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

BLACK JAGUAR MkIII

Independantly tested by a European magazine, the Black Jaguar was found to be the most sensitive handheld scanner on the market! That probably explains why it is still so popular. 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, 50-88MHz, 115-178MHz, 200-280MHz, 360-520MHz.

FAIRMATE HP200

1,000 CH Scanner exclusive to Nevada dealers! Freq Range: 500kHz-600MHz, 805MHz-1300MHz.
Modes: AM-FM-Wide FM. A 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.
NOTE: Sensitivity below 2MHz: 10µV for 20dBQ 60% MOD. AM.

MVT 5000 HANDHELD

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

MVT 6000

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

NEVADA MS1000

The worlds first 1,000 channel mobile scanning receiver. Modes: AM-FM-Wide FM. Freq Range: 500kHz-600MHz, 805MHz-1300MHz.

NEW FEATURES
** Switcheable Audio Squelch*
** Tape Recorder Output socket*
** Auto Signal Operated Tape Recorder Switching*
** All metal case for improved EMC compatibility.*

ICOM IC-R1

The new miniature wideband handheld scanner that covers 150kHz to 1300MHz with 100 memories and many features.

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.

NEW MVT 7000 HANDHELD

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

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Nevada MS-1000 Scanner

The latest release from Nevada Communications - the MS-1000 scanner is reviewed here by Mike Richards G4WNC.

The scanner market is probably one of the most competitive in the hobby radio business so any new scanner has to be good to survive. The Nevada MS-1000 is one of the new breed of scanners that features extremely wide frequency coverage. In this case, the range extends from 500kHz through to 1300MHz with just one gap between 600 and 800MHz. To make the best use of this wide range there are some 1000 programmable memories. So let's take a closer look.

Getting Going

The first thing that's needed is a good manual and this was supplied as a twelve page A5 booklet. Despite its somewhat small size, the manual covered the operation well. There were only four diagrams and they were used mainly to illustrate panel and display layouts. Most of the operational instructions were covered by simple step-by-step examples. These proved to be perfectly adequate in practice.

The MS-1000 required an external 13.8V d.c. supply rated at 180mA minimum. This could easily be met by using the vehicle's battery when operating mobile. For base station use a 240V a.c.adaptor was supplied with the review model. The power connection was made via a standard 3.5mm coaxial power socket on the rear panel.

One of the problems with scanners such as the MS-1000, is that the small internal speaker cannot do justice to the higher quality transmissions. This can be rectified by connecting an external speaker using the 3.5mm jack on the rear panel. Inserting a plug into this socket also disconnected the internal speaker.

I was very pleased to see that the antenna connection used a good quality BNC socket. This is a neglected area on so many scanners and is vitally important for successful u.h.f. operation.

For those with a desire to record signals off-air, there was one particularly useful feature. This was the provision of a remote tape switching jack on the rear panel. This 3.5mm stereo jack gave access to a relay contact that closed 3 seconds after the squelch was opened. This contact could easily be extended to the remote socket provided on many portable recorders. The result was that the recording process could be fully automated with no gaps between signals. This was great for monitoring stations with intermittent transmissions.

Frequency Entry

Despite its diminutive size, the MS-1000 boasts a good range of frequency selection options. The simplest way to tune to a particular frequency was to use the direct entry system. In this case the required frequency was typed-in using the numeric keypad on the front panel. Once selected, manual tuning was provided by a rotary control mounted concentrically with the squelch. As you would expect, the control operated using a number of click stops. The versatility of this rotary tuning system was further enhanced by the provision of user programmable tuning steps. These could be set anywhere from 5 to 995kHz in 5 or 12.5kHz steps. This is a truly remarkable adjustment range that makes manual tuning a real pleasure. Setting the required step was also very simple - you just hit STEP and

entered the step size on the numeric keypad. I must admit that I've never really been happy with scanners that use UP and DOWN buttons as the only form of manual tuning so the MS-1000 scores highly with me!

Programmable Memories

The heart of any modern scanner is the memory system and the MS-1000 is very well set-up. There are a total of 1000 user programmable memories available that are divided into ten bands of a hundred memories each. This is very convenient for separating areas of interest, i.e. air band, marine band, etc. Besides holding the frequency, each memory can retain the operating mode, i.e. f.m., a.m. etc. Storing and recalling memories used a very logical key sequence.

Once a number of favourite frequencies have been stored in memory, the scanning features can be brought into use. The basic scanning mode allows either all memories or selected banks to be scanned. One notable feature was the extremely high scan rate of twenty channels/sec. This was a great help when monitoring spasmodic transmissions such as those found on the air band.

One essential feature of any scanner is the ability to lock out specific channels. The MS-1000 included this feature plus an option to lock-out complete banks if required. In fact the operator could set the scan to operate over any bank combination.

The MS-1000 also featured a user programmable priority channel facility. With this the operator could set any channel as the priority channel. This channel was then automatically checked for activity every two seconds during scan or search operations. This feature proved to be very effective due to the short time taken to check the priority channel. When monitoring a station with priority scanning activated, all that could be detected was a small blip in the reception quality. This was one of the most effective priority scans I have encountered.

Search Banks

Besides all the scanning options, the MS-1000 featured ten search banks. It's these search banks that are so useful for finding new frequencies. With the MS-1000 the search banks aligned with the ten memory scanning banks mentioned earlier. When entering a search frequency range you could also specify the mode and frequency steps. There were also options to lock-out up to 1000 individual frequencies from the search. As you can see the search facility was very well thought out. The only other search/scan facility worthy of note was the Delay/Hold. With this the operator could set the action of the MS-1000 once a signal had been detected. The Delay option caused the MS-1000 to wait two seconds after the signal disappears then continue the scan or search. When using HOLD the search or scan is abandoned when a carrier is detected. With both options a signal is detected when the squelch is lifted. By operating the AF SCAN switch the scan would only stop on modulated carriers - very useful for avoiding birdies and spurious carriers.

Performance

Evaluation of the performance of the MS-1000 was carried out both in a operational environment and in the lab. For the measured performance I used e.m.f./2 to describe the input voltage and 12dB SINAD for the measurement threshold. The a.m. sensitivity gave a best result of 0.7µV and a worst case of 3µV both for 12dB SINAD. On narrow band f.m. this improved to 0.5µV throughout most of the operational range. The wideband f.m. gave a result of 3µV, again for 12dB SINAD. These were very good results that compare well with other scanners on the market. Whilst in the lab I also took the opportunity the check-out the audio distortion. The a.m. and narrow f.m. results were identical at 1.6% total harmonic distortion whilst the wide f.m. produced a very good 0.9%. Both these figures were the best obtainable.

For the on-air performance I started by trying the supplied antennas - a 690mm telescopic whip and an 80mm rubber-covered, fixed length unit. Whilst these were fine for operating static mobile from a hill top, base station users would be well advised to invest in an external antenna system.

Moving into the shack, I used the MS-1000 with my discone antenna for u.h.f. and v.h.f. monitoring, changing over to a long wire for the h.f. bands. The general ease of operation I found to be very good, with most of the functions requiring a logic sequence of key presses. This is important to avoid having to constantly refer to the manual.

The only front panel layout problem that I encountered was with the operation of the rotary tuning knob. With my rather fat fingers, I found that I occasionally altered the squelch setting whilst tuning!

From an operational point of view, all the features worked well up to expectations - except for one. The AF SCAN should have prevented the scan from stopping on unmodulated carriers, but in practice this was not the case.

Unfortunately, I didn't have time to investigate the reasons for this, so it may just have been a problem with the review model.

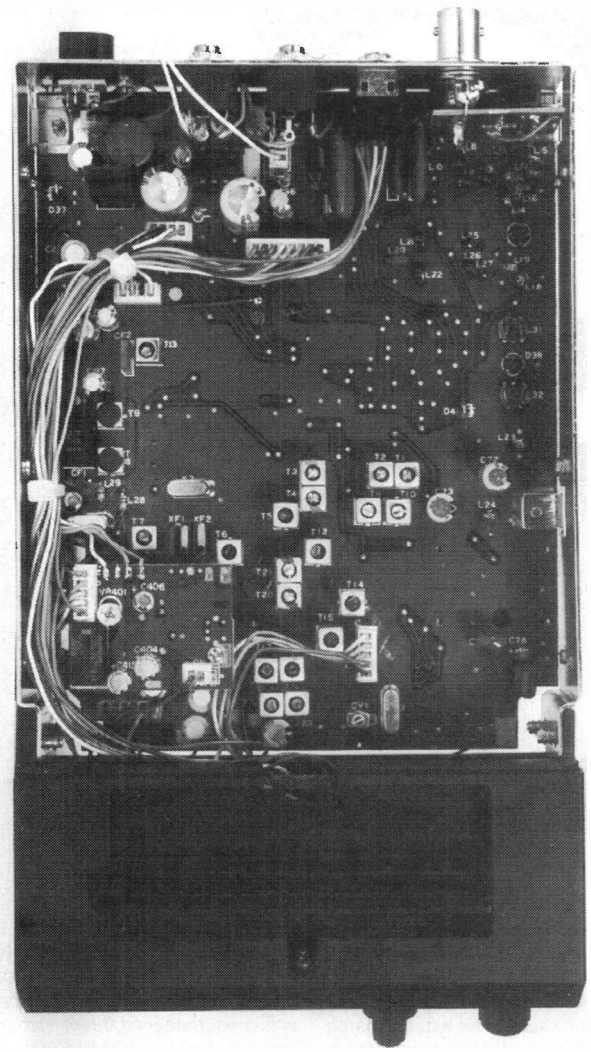
Abbreviations

a.c.	alternating current
a.m.	amplitude modulation
d.c.	direct current
dB	decibels
dBQ	decibels referenced to Quieting
f.m.	frequency modulation
g	grammes
GHz	gigahertz
kHz	kilohertz
mA	milliamperes
MHz	megahertz
mm	millimetres
mW	milliwatts
p.s.u.	power supply unit
SINAD	Signal to Noise And Distortion
u.h.f.	ultra high frequency
V	volts
v.h.f.	very high frequency
µV	microvolts
Ω	ohms

Summary

I found the MS-1000 to be a very compact easy to use scanner with a very respectable performance. It's equally at home both in the shack and in the car. The comprehensive range of memory storage options are worthy of note and should prove more than adequate for most operators.

The MS-1000 can be obtained from **Nevada Communications, PO Box 70, Portsmouth, Hants** and costs £279. My thanks to Nevada for the loan of the review model. ■



Internal view showing the neat construction.

Specification

Frequency Range:		
	Low Band	500kHz to 600MHz
	High Band	800MHz to 1.300GHz
Modes:		a.m., f.m., wide f.m.
Tuning Steps:		5 to 995kHz (5 or 12.5kHz multiples)
Memories:		10 banks of 100 (1000 total) 1000 search lock-out memories
Sensitivity:		
	Low Band	a.m. (500kHz-2MHz) 10µV 20dBQ a.m. 0.7µV-1.0uV 10dB S/N f.m. 0.5µV 12dB SINAD w.f.m. 1.0µV 20dB S/N
	High Band	f.m. 0.7µV-1.0µV 12dB SINAD
Scan Speed:		20 chan/second or more
Search Speed:		20 freqs/second or more
Antenna Impedance:		50Ω
Audio Output:		500mW
Power Source:		13.8V d.c, 240V a.c. with optional p.s.u.
Current Consumption:		180mA
Size:		120 (W) x 50 (H) x 203mm (D)
Weight :		750g

propagation

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

Despite the poor weather and often overcast skies in January and February, **Patrick Moore** (Selsey) managed to observe, and draw, the major sunspot groups that were present on the sun's disc on January 31 **Fig. 1** and February 22 **Fig. 2**. Patrick has special projection apparatus attached to his telescope for this purpose, so don't give it a try without getting proper advice, otherwise you may seriously damage your eye-sight or worse.

With 12in of snow on the ground, **Cmdr Henry Hatfield** (Sevenoaks) went to his observatory at 1157 on February 11 and, with his spectrohelioscope, located 1 sunspot group, 12 filaments and 7 quiescent prominences. Under similar conditions at 1230 on the 14th, he had a quick look and saw 5 groups, one with two medium sized flares, 14 filaments and 8 small quiescent proms. At midday on the 16th, he found 3grps, 10fs and 9qps. **Ron Livesey** (Edinburgh), using a 2.5in refracting telescope and a 4in projection screen, located 5 active areas on the sun's disc on February 1, 13, 15 and 22; 6 on days 4, 6, 7, 16, 21, 24 and 25, 7 on the 10th, 8 on the 15th and 18th and 10 on the 14th. "The Royal New Zealand Astronomical Society, Aurora section confirms that on January 31 two sunspot regions combined and set off a flare starting at 0153UTC reaching maximum at 0230 and ending at 0335UTC," wrote Ron in his February report to the British Astronomical Association.

Auroral

Ron Livesey received reports of visual aurora from observers in Denmark and/or Scotland describing what they saw as 'glow or unspecified form' for the overnight period on February 7, 9, 11 and 26; 'homogeneous arc or band' on the 12th; 'rayed arc or rayed band' on the 1st; 'ray bundles' on the 1st, 8th, 13th and 20th and 'active movement, flaming, etc.' on the 20th.

Doug Smillie (Wishaw) noted weak auroral tones on the signals from the 144MHz Lerwick beacon (GB3LER) on the 1st and 2nd and a station in the Faeroes (OY6FRA) at 1800 on the 1st. **Ern Warwick** (Plymouth) logged a weak auroral warning from the German beacon DK0WCY on 10.144MHz at 2210 on February 19. There was 'fast-fading' on the 28MHz signals from the beacons in Bulawayo (Z21ANB) and the USA (KC4DPC) on February 5 and January 31 respectively and the South-African beacons ZS6PW, on 28MHz, on the 5th and ZS6DN/B, on 14.1MHz, at 1927 on the 14th. In addition, he reports hearing 'echos' on ZS6PW on January 30 and February 16. None of these reports are surprising especially while those large groups were present on the sun's disc.

Magnetic

Using various magnetometers, **Tony Hopwood** (Worcester), **Karl Lewis** (Saltash), Ron Livesey, **David Pettitt** (Carlisle) and Doug Smillie reported active conditions on days 1, 9 and 11. **Bob Cooper Jr. ZL0AAA** (Houhora, New Zealand) has studied propagation since 1950 and among the many interesting items in his letter of March 5, I found the following paragraph setting the stage for his detailed report of conditions on February 10:- "As regards Sporadic-E link-up on the south end, there is a high degree of 'coincidence' between alpha-index numbers and Sporadic-E; and this is a blessing in disguise. The reported 'A' index number at 1800 on the 10th was 14. 'Double digit' 'A' numbers often portend (a) improved 50MHz 'F' layer activity, AND, (b) markedly improved frequency for Sporadic-E."

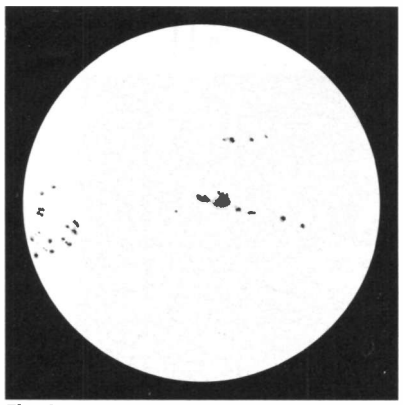


Fig. 1.

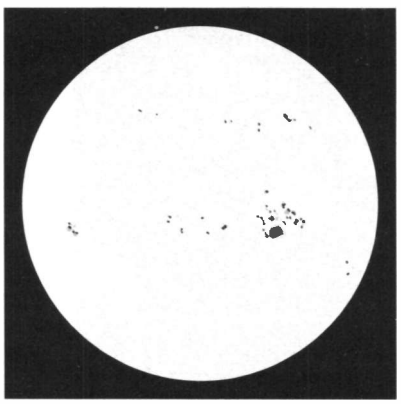


Fig. 2.

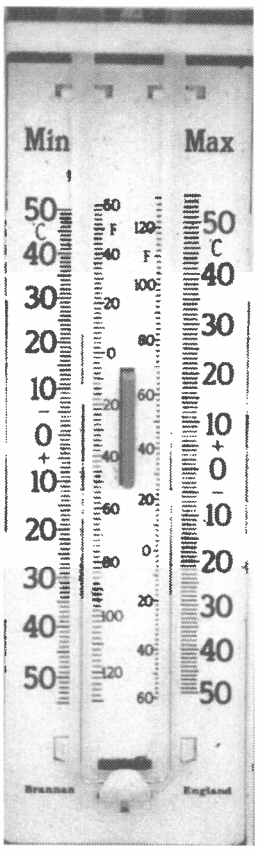


Fig. 4.

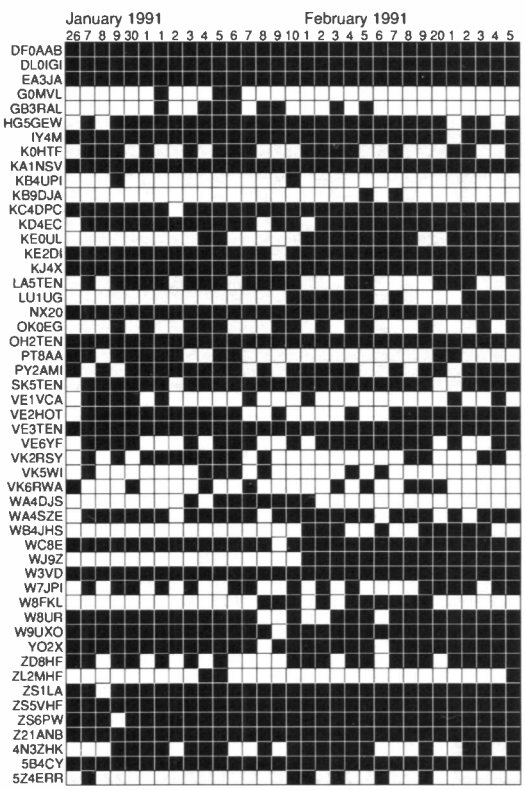


Fig. 3: 28MHz Beacon Chart for the period covered by this column.

International Beacons

First thanks are due to **Chris van den Berg** (The Hague), Bob Cooper, **Gordon Foote** (Abingdon), Henry Hatfield, **John Levesley G0HJL** (Bransgore), **Ted Owen** (Maldon), **Fred Pallant G3RNM** (Storrington), **Ted Waring** (Bristol) and Ern Warwick for their 28MHz beacon logs. I combined their efforts to produce the chart in **Fig. 3**.

Bob Cooper VP5D/K6EDX, copied signals from the two UK beacons G0MVL (28.214MHz) and GB3RAL (28.215MHz), at his residence in the most northerly part of New Zealand on the days indicated in **Fig. 3**. Bob also hears the Canadian beacons VE3TEN and VE6YF on most days from 1900-2400 and 1930-0200 respectively and rarely hears the Bulawayo beacon Z21ANB. Gordon Foote added KA1NSU to the list this time which he logged daily around 1900 on 28.259MHz. Ern Warwick copied "de WS2B/BCN FN32 POESTENKILL, NY ROCKY BEACON" on 28.283MHz at 1500 on February 17 and, during the period, frequently heard signals from IK6BAK (Italy) on 24.915MHz and PY2AMI (Brazil) on 24.931 and 18.100MHz, OH2B (Finland), ZS6DN/BCN (S.Africa) and 4X6TU/B (Israel) on 14.100MHz and DK0WCY (Germany) on 10.144MHz. Others to look out for on 14.1MHz are LU4AA (Argentina) and W6WX in the USA. Fred Pallant reports that G8MY was hearing ZL2MHF (New Zealand) at 0900 on February 22 using his quad antenna beaming in that direction. At 1903, Fred found LU1UG (Argentina) on a new frequency of 28.212MHz. Bob Cooper can hear VK2RSY and ZL2MHF via backscatter when the band is open or when Sporadic-E is present. Ern Warwick heard DF0THD (Germany) on February 1 and, for the first time W6WX, on the 14th and 15th on 28.200MHz. Our old friend EA6AU was heard by Henry Hatfield on the 23rd.

Troposphere

The slightly rounded atmospheric pressure for the period January 26 to February 25 can be seen in my television column elsewhere in this issue. However, the weather buffs among you may like to see that my outside thermometer, **Fig. 4**, displayed a minimum of 12°F (-11°C) around 0500 on February 7 and for your records, I measured 4.02 and 2.31in (102 and 58.7mm) of rain in January and February respectively.

ssb utility listening

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

The bulk of enquiries I have had so far concern antennas, despite the comments I made in the February issue.

My personal choice is the full size G5RV, which is a dipole constructed of wire with a special ribbon feeder of fixed length, which is then terminated for connection to standard 50Ω coaxial cable (in my case I make the connection via a 1:1 Balun). I had wrongly assumed that most readers would be familiar with the antenna as, at most exhibitions and rallies, just about every amateur radio dealer seems to sell them. How do you make a G5RV and the 1:1 balun? Quite frankly it is hardly worth the bother because you can buy the antenna and balun for roughly what it costs for the bits. Check out any of the regular advertisers in this magazine for prices.

The final note on the topic of antennas is for anyone in a flat or similar accommodation where no outside antenna is permitted. Loft antennas or active types are probably the best bet and I will look at those in more detail in the future. Meanwhile, you may care to check some commercial designs from firms such as Dressler and Datong and kit versions from Maplin, Cirkit and C M Howes. As a further matter of interest, I was faced with a similar problem when living in a flat a few years ago. The company that owned the building strictly banned any kind of antenna, washing line or anything else being attached to window sills, walls or the roof. For five years, I worked with a 15m long wire which no-one even spotted. It was made from fine enamelled wire unwound from an old miniature transformer and was virtually invisible. It ran from a window box to the roof of a garage and gave surprisingly good results via an antenna tuner.

What You Have Heard

Your letters are now flowing in at a regular rate and I am delighted that many of you checked out some of the frequencies shown for the NASA Shuttle launches. **Paul H.** of Newbury reports hearing hearing voice traffic from the Shuttle *Columbia* and Mission Control on 5.810MHz. He listened to several hours of conversation and has now had a QSL card from W5RRR at the Johnson Spaceflight Centre at Houston in Texas who were rebroadcasting the Shuttle audio. This is interesting because the list in the February edition (taken from KD2BD's *Spacenews*) showed this frequency as a secondary ETR night channel. W5RRR is an amateur station and part of ALINS (AMSAT Live Information Network System) and normally operates on 3.840 and 14.280MHz. Why they should have changed to a non-amateur frequency was not explained in the QSL.

Cliff Stapleton of Torquay has been monitoring civilian and military air traffic. His log includes the RAF on 4.743, 6.743 and 9.034MHz. He's also heard Canadian military traffic on 15.033 and USAF on 11.176 (usually very active; listen out for Croughton in the UK which is sometimes called by the callsign 'Mainsail'), 13.216 and 13.246MHz. Cliff also logged South American Airways on 17.925MHz.

Numbers Stations - Spies or Lies

Some readers (including the 'Laughing Cavalier' from London) have asked about the so called 'numbers stations' that are claimed to be sending coded messages to spies. This is certainly common belief amongst the national media and hobbyist magazines in America. The claim is that these spoken messages, which consist of nothing more than two, three, four or five digit number strings, are spy transmissions that can easily be received on simple, portable h.f. receivers which can be bought anywhere.

I have to say from the outset that I have always been sceptical about these claims. Now anyone with even a simple receiver has probably heard these transmissions. In the UK, the most powerful have been those with the lady announcing the numbers in German. These transmissions have been attributed to East Germany and my scepticism has increased because even though Germany is no longer split the transmissions can still be heard - this surely makes a nonsense of a connection with spying. However, just because the announcer speaks in German there's nothing to stop the transmissions coming from say Russia. Perhaps the mystery has just deepened.

One other curious aspect of these transmissions is that no matter what language they are in (some voices are distinctly American) they all seem to operate at around the same frequencies. Try tuning 5.015, 6.840, 7.404 and 7.415MHz particularly at night. Languages you are likely to hear are German, Russian, English and Spanish. Claims have been made in some American magazines that these transmissions are from the American CIA, Russian KGB, Israeli Mossad and Cuban DGI intellegence agencies. The station that signs Papa November on 7.404MHz is very easy to hear and usually repeats its callsign four times before transmitting a series of musical tones and then the numbers. You are likely to hear a variety of modes used; a.m., s.s.b. and c.w.

New Receivers

I have just spent three weeks in America and can give you news of two new interesting receivers that should be available here in the UK fairly soon. The first is the new NRD-535 which is an improved version of the 525. JRC have tidied up the look of this up-market receiver and added some new refinements such as fully variable i.f. bandwidth and ECCS phase-locked-loop a.m. detector. No price had been announced but it will obviously be over £1000 in the UK.

By comparison the new AR2500 scanner/h.f. receiver from AOR should attract a lot of attention (another Lowe import when it arrives). It is essentially a 2016 channel scanner covering 1-1500MHz. The specification looks quite good but what was not clear from magazine advertisements was how s.s.b. was resolved. It may be that rather than u.s.b./l.s.b. switching it only has a b.f.o. control. My experience so far of these combined h.f./v.h.f./u.h.f. types of receivers are that their h.f. performance is not ideal. Some models appear to suffer quite badly from overload problems and their s.s.b. filters are usually cheap ceramic types. Even so the quality of AOR's products is usually quite good and if it's true that the AR2500 will be only around £250, this may make it a very attractive proposition.

That's it for this month. Logs (please include times as well as frequencies), questions (that can be answered in the column) and so forth to the usual address. Complaints, writs and similar unpleasantries to the Editor and no, before any more of you ask, the authorities have not been in touch with us yet.

AOR AR2500

Abbreviations

a.m.	amplitude modulation
c.w.	continuous wave (Morse)
h.f.	high frequency
i.f.	intermediate frequency
l.s.b.	lower sideband
m	metres
MHz	megahertz
QSL	acknowledgement of contact
s.s.b.	single sideband
u.h.f.	ultra high frequency
u.s.b.	upper sideband
v.h.f.	very high frequency
Ω	ohms

The new NRD-535 from JRC.

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AMATEUR – SCANNERS – ANTENNAE – CB

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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

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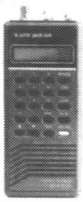

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+ p & p

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bandscan

AMERICA
Gerry L. Dexter

The control room at KNLS, Anchor Point, Alaska, which broadcasts in Russian, Japanese, Mandarin and English.

The crisis and war in the Gulf spurred thousands of North Americans to invest in short wave radios in the hope of getting more news and views on the situation. Sales of short wave sets shot up and many dealers sold out of their supplies. At one point, sales of short wave sets were said to be running 500% over normal! And it seemed as though every newspaper sought out a local s.w.l. and did a feature story, as did many radio and TV stations. DX clubs in the US and Canada reported big surges in memberships. Let's hope that a fair number of these newcomers will stay attracted to short wave and not simply toss the sets into the back hall closet!

New Activity in Nicaragua

Decades ago, Nicaragua was one of the more active of the Central American countries on short wave. However, the number of active stations 'dwindled down to a precious few' even before the Sandinista regime came into power. After that, all that was left was the government outlet. Now, perhaps, a turn-around has started.

Plans for several new stations were announced a few months ago and one has already come on the air. Radio RICA (Radio Informaciones de Centre America) based in Managua opened initial transmissions on 4.901MHz, then appeared on 4.926MHz before settling on its assigned frequency of 4.920MHz, a spot used by Radio Quito in Ecuador. The sign on is sometime after 1130, but before 1200 (it seems to vary) and the schedule runs to 0200.

Radio Nicaragua International - a privately owned station despite its official-sounding name - also plans to open a short wave frequency. The government expects to have its station back on the air (on 5.950MHz), but it will be called Radio Nicaragua instead of Voice of Nicaragua. Also said to be coming on are Radio Miskut (5.970MHz) and Radio Zinica in Bluefields which was active on 6.120MHz for many years.

Dominican Republic

Radio Barahona, mentioned last time, has been logged by a number of DXers and the station has now issued some QSL letters. The station is owned by Empresas Radiofonicas, SA, based in Santo Domingo. Radio Barahona uses 1kW on 4.930MHz and is one of several stations owned by the company - the rest are on m.w. and f.m. Radio Barahona's programming is all Spanish and includes news, music, religious and educational programmes and commercials.

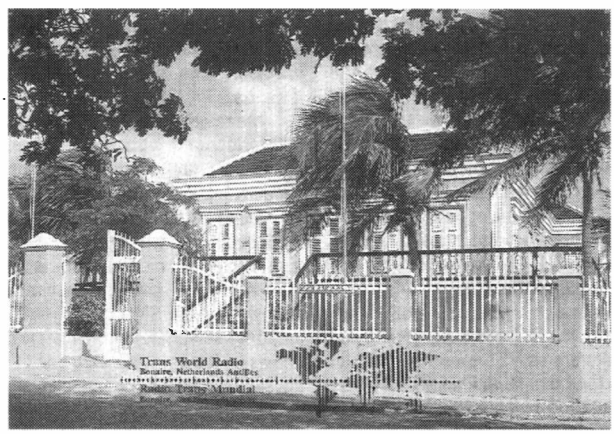
Another new station, not on the air yet, is Radio Variedades in La Vega. This one promised operation on three short wave frequencies: 3.205, 4.980 and 6.190MHz. The middle frequency will, of course, present problems with the powerful Venezuelan Ecos del Torbes active on that spot.

RFPI: All Shook Up

Radio For Peace International in Costa Rica was jolted by several earthquakes last December. Fortunately, the transmitters were not damaged, although some damage occurred to the studios and the telephone service was out for a time. The ex-pirate station Radio Newyork International, mentioned last time as being aired over WWCR, is now also on RFPI. The programme airs Saturdays at 2230-0030 on 13.630 and 21.565MHz and Sundays at 0500-0700 on 7.365 and 13.630MHz.

Also in Costa Rica, Radio Lira, operated by Adventist World Radio, should have four more transmitters in operation now - two of 20kW and two of 50kW. They'll be used for expanded broadcasting in the 49, 31 and 25 metre bands.

Radio Reloj, which has recently been up on 4.839MHz, has slipped back to its longtime spot on 4.832MHz. Radio Valera in Venezuela on 4.830MHz, which used to be a source of interference to Radio Reloj (and vice versa) seems to have gone off the air, hopefully not for good.



One of the series of four QSLs being issued by Trans World Radio, Bonaire this year.

Also from Central America - Sani Radio on Honduras has returned on 4.755MHz and runs until closing just before 0600, a schedule that seems reduced from its former days.

South American Notes

Radio Belgrano in Argentine is heard now and then in what appears to be another reactivation. The frequency is 11.781MHz and the sign on is reported variously at 1300 and 1400, running only until 1900. So far, it has proved a difficult log for listeners in North America.

Several old line Ecuadorians, some silent on short wave for several months, others for several years, have started up again. La Voz del Rio Tarqui from Cuenca on 3.285MHz, Radio La Liberatador, Saquisili on 4.900MHz, Emisoras Gran Colombia on 4.911MHz from Quito, Ecos del Oriente in Lagio Agrio on 3.270MHz and Ondas Quevedenas on 3.325MHz broadcasting from Quevedo. Emisoras Gran Colombia is being heard by many North America DXers.

Colombian Clandestine

Radio Patria Libre, thought to be operated by the ELN guerrillas in Colombia, has disappeared from the airwaves. This happened shortly after the national army waged and won a campaign against the headquarters of another Colombian guerilla army - FARC, the Revolutionary Army Forces of Colombia. The army says it destroyed a radio transmitter. Whether it was the Patria Libre transmitter isn't known. El Pueblo Responde, the station that seemed to be operating as an answer to Patria Libre continues to be heard, usually around 6.315MHz between 0030-0115.

The Colombian government station, Radio Nacional (easily spotted because of its classical music format) is noted between 2200-0000 on 11.821 and 17.860MHz, both variable.

New Life Station

KNLS, Anchor Point, Alaska points out that, although it is a religious broadcaster, the policy is never to ask for money on the air. The current KNLS schedule is: English at 0800-0900 on 11.715MHz, 1500-1600 on 9.615MHz, 1800-1900 on 11.945MHz and 2000-2100 on 11.910MHz; Russian at 0700-0800 on 11.860MHz, 0900-1000 on 11.820MHz, 1200-1300 on 7.365MHz, 1700-1800 on 12.025MHz, 1900-2000 on 11.910MHz and 2100-2200 on 11.965MHz. KNLS broadcasts in Mandarin at 1100-1200 on 9.870MHz, 1300-1400 on 9.840MHz, 1400-1500 on 7.365MHz and 1600-1700 on 9.615MHz and in Japanese at 1000-1100 on 11.820MHz and 1300-1400 on 9.840MHz.

KTBN Replaces KUSW

KUSW aired its last broadcast on December 16. Not quite a full three year run for this station. Trinity Broadcasting's KTBN took over the facility on the 18th and began a 24 hours per day religious format, airing the audio portion of Trinity's satellite TV network that is aired on cable TV and by several Trinity-owned TV stations. Reports on KTBN are confirmed with a card showing the KTBN antennas. Reports may be sent to KTBN, PO Box 18147, Kearns, Utah 84118. One story making the rounds has it that KTBN raised the $2 million it needed to buy KUSW in a matter of a few hours. They simply went on TV, placed a microphone in front of a short wave set tuned to KUSW's rock and roll and told listeners this is what their donation would get rid of!

Colourful Bonaire QSLs

Trans World Radio, Bonaire is offering four new QSLs for 1991. Each is a colour photo of a prominent building on the island - the market, the Protestant Church and a couple of government buildings. Reception reports to TWR must cover at least 15 minutes of programming with enough program details to prove reception. Reports should include date, time (in UTC), frequency and reception evaluation (preferably SINPO code). IRCs are appreciated, but not essential. Taped reports are not accepted.

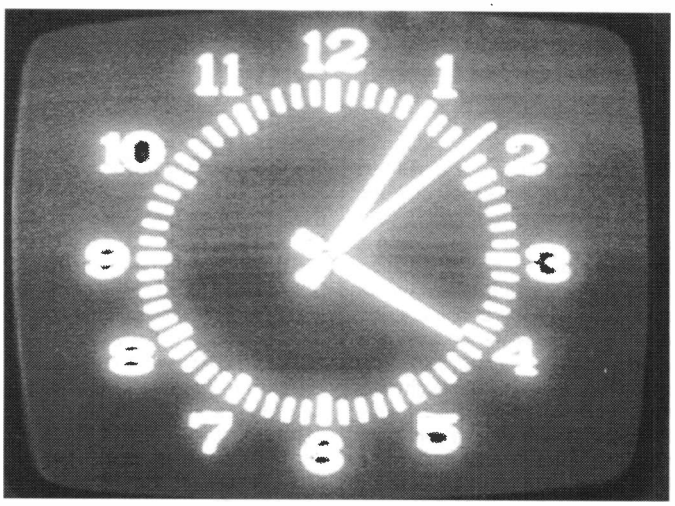
America Looks in on BBC Monitoring

The popular CBC-TV program *60 Minutes* did a story on BBC Monitoring recently. One scene has been commented upon by many DXers here: A monitor picks up the telephone and asks that something be done about the poor reception he's experiencing! Wouldn't it be nice if cures for our own reception problems were that easy!

That rounds things out for this time. Back with more from the North American listening scene in three months. **Good listening!**

satellite tv news

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



Russian Network 1 clock *via* Gorizont 15 at 14°W, 3.675GHz (C Band).

Since this column started, several letters have been received from readers asking for more information on what makes up a receiving system for use within the normal domestic environment for tracking TV satellites in synchronous orbit across the Clarke Belt. I'll try to briefly discuss the main points (and I'm only just scratching the surface of a very major subject) but I would recommend readers to beg, borrow or buy *The Satellite Book* by John Breeds, Swift Publications 1991, which thoroughly covers all that the enthusiast and engineer will need to know.

The obvious place to start is the dish, a precision piece of equipment that must be accurate in profile to within 1mm for maximum efficiency, and remain accurate across an extreme temperature range with mechanical stability in the extreme winds that the UK seems to have suffered regularly in recent years. Two types of dish commonly used in the gardens and on the walls of suburban England are the **'Offset'** dish (*a la* Amstrad) and the **'Prime Focus'** dish.

The 'Prime Focus' dish features the electronics at the centre (or focal point) of a parabolic dish. Incoming signal energy is focussed onto the focal point from the whole surface of the dish, other than the very small central area of the dish that is shadowed by the electronics and its supporting struts. The overall construction and profile accuracy together with shadowing, feed assembly matching will relate to the efficiency of the parabolic assembly which will typically lies between 60-70%.

Minimal Shadowing

The 'Offset' dish features the electronic package fed from one side, rather than in the centre, of the dish. It's rather like a section from a large parabolic dish with the focus still at the centre though with much of the dish cut away, using only part of the dish profile as a reflecting agent. The surface of the dish therefore suffers minimal or no shadowing and since this type of dish is a 'section', it is mounted more vertically than the more familiar 'Prime Focus' structure. The focal point relative to the dish area is much further distant than the 'Prime Focus' and care is taken to ensure that the feed electronics are firmly mounted. (In dish terminology the f/D ratio is much higher than a conventional 'Prime Focus' dish where f is the focal point and D the diameter of the dish) The 'Offset' dish is found in sizes from 200mm upwards to 1.2m, the usual *Astra* size for the southern UK is 650mm rising to 850mm in the northern UK and Scotland. A few 'Offsets' are found at 1.5m diameter but generally larger dishes favour the 'Prime Focus' type. The latter dish is found in all sizes, from the *Astra* 650mm upwards to Jodrell Bank!

To track accurately across the Clarke Belt and receive all those satellites carrying exotic signals, including the erotic *Tutti Frutti* from RTL the dish needs to be fitted onto a **'Polar Mount'** atop a stable stand, or an **'Horizon-to-Horizon'** mount. The Polar mount uses an actuator arm that pushes (or pulls) against the dish mechanics to move the dish in a designed arc that once aligned and set will match the geostationary arc in the sky. The 'Horizon-to-Horizon' mount generally found on dishes up to 1.2m diameter features an integral motor system atop the stand intimately fitted adjacent to the rear of the dish, again once set up it will track accurately down to 0° degrees elevation, East or West. The setting up of a Polar/Horizon mount is when first confronted time consuming (and I found frustrating) but once mastered alignment can be fairly quick, care taken at this time will optimise reception in the long term. Instructions in the various text books (again I recommend the above John Breeds, or the *Satellite Televison Installation Guide* by the same author) should be carefully followed. The gain incidently of a 900mm dia. dish is 39dBi, 42dBi for a 1.2m and 44dBi at 1.5m diameter - all at 11.7GHz.

Orbital Slot News

With the successful launch, via an *Ariene 4* rocket, and orbital positioning of *Eutelsat II F2* at 10° East, so various services on the earlier 10° East incumbant (Eutelsat I F5) have been transferred, additional Turkish channels (Star 1) have appeared at high levels-noise free on a 1.5m dish-together with new frequency capacity in the Telecom band currently testing in B MAC at 12.58GHz vertical. Some 12 transponders will be dedicated to TV service, another 12 in Ku-band will operate in industrial communications (termed SMS or Satellite Multiservice System). The official transponder allocations will be listed later in this column. During April the veteran ECS I F5 will make its way to 21.5° East for EBU news and occassional service traffic. The 3rd series II (F3) bird should fly in August next and already most of its 16 transponders have been leased by various European operators.

The 5th series II (F5) contract has been authorised for launch Autumn 1992 and a similar F6 is now under discussion. Meanwhile *Eutelsat I F2*, formally at 13° East and now moved to 4° East (having recently served temporary leasing by TF1 France with its news feeds ex-Gulf) is now commencing a new life in Euteltracs service. Euteltracs is a mobile communications system between a base and mobile unit operating in Ku band, allowing the facility for vehicle and mobile unit position location and reporting. A cylindrical housing atop the mobile encloses a rotating antenna which continuously locks onto the satellite whilst the vehicle is in motion. Message transmission to the mobile takes up to 20 seconds for display on a v.d.u., tests to date suggest that for a one-off transmission a 95% success rate at the equator, falling to 85% above the Arctic Circle. The new system is operational within western Europe and shortly will be available in eastern Europe.

Further comment on *Ariene 4* is news of a greater flexibility in payload design with the British Aerospace *Mini-Spelda* system which will allow a satellite of up to 2700Kg to be launched in tandem with a smaller 800kg bird, a good sales point now with some 50 *Ariene 4* vehicles on order in the pipeline.

Italsat, launched on the 15th January last is now operational at 13° East intended for experimental and commercial useage. Within the 19.04-20.07GHz band there are six spot beams on various regions within Italy at 57dBW levels using 120MHz transponders; a global beam covering the Italian land mass with three 36MHz transponders within the 19.7-20.18GHz band at 46dBw, again for commercial TV use; at 39.59GHz a 27dBW 1100MHz bandwidth transponder and at 49.49GHz a 26dBW transponder, the latter two for propagation experiments. The satellite footprint for the latter two transponders covers most of western Europe and into Scandinavia. *Primosat*, another Italian projected satellite launch is now reckoned to be orbital mid 1993 at slotting either 15° or 46° East. Concern in Holland from the established terrestrial networks over the new fledgling RTL4 that is carried over *Astra 1A* and is taking 35% of the viewing audience most nights, the result is a restructuring of the 'establishment' to redress the balance.

With *Astra 1B* safely orbited during March, SES the Luxembourg operators are now considering their options for *Astra 1C, D*. *Astra 1C* will carry 16 Ku-band transponders to provide additional backup for *1A* with an additional two transponders likely in the established DBS band and capable of HDTV use; *1D* will carry backup for *1B* and four additional DBS frequency transponders. The new Norwegian TV10 cable programme that downlinks from *Intelsat 1* West VA F12 operates at weekends Fri-Sun from 2000-0200 with a service of mainly films, light entertainment and bought-in series. It can be found on the TV Ruta transponder at 10.97GHz horizontal with periodic scrambling. A recent poll in Gibraltar showed that 69% of the viewing public favoured satellite sourced programming, a small 19% opted for the local GBC and a mere 12% showed interest in the Spanish services from over the border. It appears that GBC is only watched for specific programmes or news. *Kopernikus*, the German satellite series operating at 23.5° and 28.5° East (DFS-1, DFS-2) are now operating at capacity particularly after the recent unification, plans are now progressing for a third craft - DFS-3 - which will carry a greater payload of transponders to help carry the increasing traffic of both TV, corporate video and general telecommunications, though completion of the project is unlikely before late 1993.

In the USA the FCC are to conduct a one year series of HDTV tests (High Definition TV) with six differing systems, five of them being digitally based, to establish the most suitable standard to adopt. The tests from the Advanced Televison Test Center, Alexandria, Virginia will start April 8th and conclude in 1992 with a decision for the definitive USA standard by June 1993. Tests will include on-air, cable and satellite transmissions in both the USA and Canada.

Meanwhile the PSN (Private Satellite Network), also US based, have carried out both analogue and digital video transmissions over a single Ku-band satellite transponder to establish and confirm that compression techniques can be used to carry multiple channels over single transponders, with the aim of PSN providing multiple channel selection for their projected 'Pay per View' movie services in the forseeable future.

SDAB stands for the 'Satellite Digital Audio Broadcasting Company' and is a Japanese operation giving CD quality music currently satellite

downlinking from the *BS3a* bird across the Japanese mainland and giving up to 24 hours of programming daily. Their 'A Mode' digital broadcasting service provides sampling at 32kHz and a dynamic range of 80dB though their future 'B Mode' service will give higher quality 48kHz sampling and a +90dB dynamic range.

And further notes - Scientific-Atlanta are installing a completely digital *Intelsat A* station in the Oman ; discussions have been carried out in Jakarta, Indonesia with the Chinese over the possible launch of the next *Palapa* bird-Indonesia's own satellite-by Chinese rocket;CNN is now being transmitted on both Israeli cable systems and in the Lebanon/Syrian and North Jordan area, the latter over the Middle East Television service. Signals are derived from the *Gorizont* C-Band CNN feed from 40° East ; the BTI has signed an agreement with PanAmSat to feed two daily news slots via PAS-1 at 45° West from their USA News bureaux ; and Mexico is seeking tenders for two new satellites - *Solidarity 1* & *2* to provide C and Ku-band services, replacing the ageing *Morelos I, I I* birds that have been operating since 1985. Unusually, one of the requirements for *Solidarity 2* is an L-Band transponder.

Eutelsat II F2 10° East

The official detail for the above satellite as of the 4th week of March 1991 is as follows-
Rai Uno 10.972GHz vertical W
RAI Due 11.095GHz vertical W
to be ann. 11.158GHz vertical W
TVE Inter. 11.150GHz horizontal H
TVE video feeds leased for OBs etc on 10.986, 11.080GHz, hor, W.
A French video feed, also on 11.575GHz vert. W
Magic Box Star 1 11.167GHz vertical W
Magic Box Star 2 11.596GHz horizontal W
TRT-TV1 11.658GHz vertical W
Canal Courses 12.584GHz vertical H
NB. The 'W' and 'H' refer to the wide beam or high gain beam footprints from the *Eutelsat* series II craft.

Reception News

With the end of the Gulf War, news feed activity has fallen off markedly, though the Jerusalem Capital Studios still maintain activity on 10° East(11.176GHz) with European traffic most days. For some days in early March the Magic Box feeds on the same bird carried 24 hour test cards before programme transmissions started, though Star 1 programming was carried on both downlinks (11.12 and 11.63GHz vertical). The newly launched *Astra 1B* arrived on station 20/21st March and tests are expected within a day or two to confirm footprint pattern radiation. A beacon was noted on the 20th at 11.56GHz confirming its on-station status. Following narrowband tests to check its footprint coverage, video tests are likely in early April.

For smut viewing enthusiasts RTL's recent Tutti Frutti transmission over Astra 1*A* in 3D was a great success. Without the special glasses the picture (unlike earlier TV experiments) was perfect. With the glasses some very convincing 3D effects of the female form were very evident!

British Telecom offered up on Eutel*sat II F1* a corporate video presentation during the evening of the 20th March with test signals in B Mac and clear throughout the day prior to pictures from the studio - 'Imagination TX from BT Newgate St' and at 1600hrs a caption 'British Telecom Centre Studio 1'. A 'UK1-35 Acton' feed was logged 22nd March 11.64GHz vertical early pm over ECS 7° East. BBC news feeds have been monitored by **David Thorpe** (Crewe) over PAS 1 at 45° West for the BBC, signals strong, suggest checking 11.47GHz. David also reports in his 'Transponder' publication that a news feed has been monitored on several ocassions on Intelsat VA F10 24° West, normally in NTSC 525-lines, look on 11.072GHz.

Our old friend **Ken Kirkley** down in Botswana is still struggling with his 4.9m wide dish to receive European Ku-band TV traffic, it is known that a 6m one will bring in *Astra* below the equator, so far Ken has seen no signals. An 8 metre diameter dish in Harare, Zimbabwe will give entertainment quality Sky TV as reported by a local dealer.

Mystery signals were logged on the 11th March over 10° East with a caption on colour bars reading 'BA ES/2' 11.67GHz horizontal at 2145 hours, is this British Aerospace ? The same evening and satellite saw a suspected new Spanish feed testing at 11.20GHz vertical. **Paul Sanson** from Weybridge is using an Echostar 5500 with 900mm dish and logged the BBC outside broadcast feed over PAS-1 45W ex Los Angeles on March 17 of the British Academy Awards for BBC-1 though carried to the UK in NTSC 525 lines. Earlier in the month motor racing fan *Bob French* in Rugby watched the Arizona Formula 1 practice sessions live in full over the new *Eutelsat II* F2 12GHz transponder - the North Atlantic circuits are becoming very active and its worth keeping a watch - particularly PAS-1.

Finally **Alex Gordon** from the Scandinavian Scansat Broadcasting group has written giving much information on their European operation which I'll detail later, one point worthy of note, Scansat operate a mobile uplink vehicle 'Comink Skybus', if you receive the identification 'SWE-2' over 13° East, that's what it is!

amateur bands round-up

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

QSL card received by BRS26053 in September '66 from UA0 1433 Krasnojarsk, Siberia, USSR.

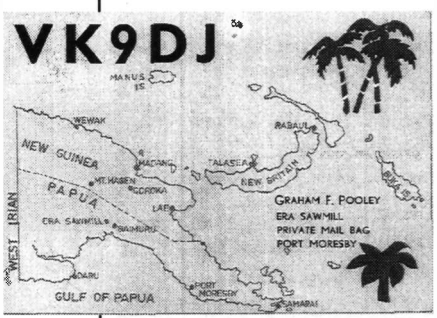
The long spell of super conditions seems to have ended at the time of writing, with 'low normal' as a bit of an anti-climax! Perhaps the best way to keep up with the vagaries of propagation is to listen in to RSGB's News Bulletins, on Sunday mornings on 3.5, 7.0475 and also on some 144MHz spots. The bit you really want is usually at the end of the section devoted to propagation, with the first part looking at the week in retrospect. The *SWM* RadioLine also carries regular propagation reports and for more detail on short-notice DX, you should be listening to the *PW* Wireless Line.

The Mail Bag

So, let's have a peep at the mail, with **Bill Williams** leading off. On 3.5MHz, Bill found K2AJY, N2NU and WA4MYA, on 7MHz it was FY5EW, while on 14MHz he booked-in A61AC, BV2AL, CE2CC, CE3RG, HK4KYP, HK6IMU, LU6EUP, PT2BW and VP2ES. A 28MHz morning tea-time session on March 2 resulted in 9K2AL, AP7KAI, BV2FA, FW0EK, HL1AAW, JA3JBT, JE2LCW, JH4UBW, TJ1CW, VK4FWH and VO5RP. As for 21MHz, he found A71AL, HK3MNQ, FW1IU, JJ2NUI, PP2JF, T23YL, VE3ITP, VO5FTE, XE2EOS, ZS1NM and ZS6LJ.

Next, my friends in the training establishment near London;. **Brian Lucas**, in charge, showed them the way with ON4ONH on 144MHz s.s.b. and followed up on h.f. with an assortment of JAs, VE2PTZ, TA3W, RA1N/UA3DCZ, VK3SP, SV1ADG, VK4DRI, TL8C, KR8R, VK4HF, 4K2OX on Franz Josef, 3A/WD9JLU, 7X5VRK, TA3PB, 4X4FR, 5Z4DU, ET2A, VO1TA, CO6GG, ZL3WU, TA2EM, PJ6/KV4AD, C51QD, YX and CG from the Canada Games, 9Q5UN, 5B4JE, TA5C, ZL1AC, ZL1HS, 7Q7JA, AP2JZB, 9H1NB, CG3XN, 9H1FL and 5R8JD.

As for the students, their own lists included the following: 24MHz with an RA17 latched on to JI0KXK and other JAs, a string of QSOs by 3A/F9UW, Ws including W7ZJ, VE2PTZ and UF7FWR, mainly at lunch-time and around knocking-off time. The morning sessions weren't so productive, although the odd JA, RA1N/UA3DCZ, VK3SP, RA9USA and EUs were noted. On 14MHz, a series of QSOs in French in the contest, SV1ADG and a series of EA8YG's contacts were all booked in. The surprising thing is a complete absence of South Americans, despite clear evidence that the antenna was putting a lobe over that way, and beyond, to VK/ZL by long-path.



QSL card from VK9DJ, Port Moresby, Papua New Guinea, received by James Kavanagh.

Dave Burt (Bideford) enquires acidly if I was 'having you on' with the reference to OD5RH and Tripoli. For the record, there is a place called Tripoli, or Tarabulus, in OD-land as well as the better-known Tripoli in North Africa; hence an OD callsign saying his QTH is Tripoli. Among Dave's catches was 9Q5SK/AM in C5, phone-patching with WB4CKO on 21.246 (this one was a little confusing since he was using 9K5SK/AM at one point in error). 7Z1AB from Riyadh, ST0DX in S. Sudan, HF0POL from King George Is and ET2A in Ethiopia were also booked in, with a verification received from Y88POL, Georg Forster Base and ZS9S, Walvis Bay.

An Avid SWL

Peter Cain writes a first letter from Newcastle. He also picked up the Tripoli-in-OD-land question, not to mention the YQ3R in Bucharest. Peter is up to 273 countries confirmed since 1977, gleaned with an R-1000 receiver, end-fed wire and a.t.u. The list confirms that Peter is indeed an avid s.w.l. In the month he is reporting alone, four new countries were noted, ET2A, JD1BFQ, XQ0X and ST0DX, the list contained some 230 DX callsigns after Peter had pruned out the small fry such as W, VE, JA, PY/LU, and USSR! All the WAC continents are represented on each band 14/21/28MHz.

G. Bramwell (Swinton) is building a frequency counter to tack on to his 9R59DS receiver, which should keep him out of mischief for an hour or two! His list is divided up into sections: USA/Canada, USSR, Europe and DX. In the last column I note CN8NS, VE7CCK/Portable/7, YV5ENI, VK6VU, CP6RP, LU3HQ, ZP5CDV, 7X2DG, 9Q5BG, CP6UA, EA8BUI, PY2LJA, VK6ZB, 9L1US, J6LB, 6Y5EE and HL9HH, with TA2AU in this category for 28MHz. Ws and USSR predominated on 14, 21 and 28MHz.

What is DX?

An eternal question! Perhaps the best definition I know is 'whatever turns you on!' Seriously, the first QSO with the new licence, even if it's just down the road, is ever-remembered. To a new s.w.l., the first W, VK or ZL is opening new vistas, while to the old-timer DX listener, DX would maybe constitute logging and getting a QSL from a genuine, DXAC-approved, true-blue ZA!

Darrell Jacobs (Mortimer) started the s.w.l. trail back in 1985, when he was in the Cote d'Azur. He uses a Yaesu FRG-7700 that he picked up cheaply over there. He started off in Plascassier, situated some 370m a.s.l. in a valley that seemed to act as a huge reflector.

Now back in this country and just 30m a.s.l. he is finding the going is rather tougher! However, KL7XD, D44C, A3CAB, ZD8RP, 4S7EA, HL1AIW, A4XRS, CO5GV, S6HF/MM, KH6AFS, ZK1OXD (Cook Is), SU1ER, HS0B, 6K8BYC, 3B9FCK (Rodrigues Is), VP8BRR (S. Georgia), WP6RED (Jarvis Is), C9MKT, T50DX, H44FL, HK0HEU (San Andres), K9DFU/MM (St. Helena), XF1C (Revillagigedo). Plus, since a recent change of antenna, PJ2/OH6RM (Curacao), PJ3CW (Aruba), P43BW, 3X1SG, J37XC, FK2TKA, XT2VW (Upper Volta), XE2VEM, 6Y5RP, Z27JV, VP2V/VE5RA, S2MBL (Bangladesh), J2MFP, 9Q5AA, XE1BJA, CE7ZK, 9Y4WFA and YA2DX/3; mostly 28MHz gleanings.

Jeff Dolby is in Manchester and finally yielded to the desire for a general-coverage receiver and bought an Icom R70 receiver with an AT-1000 a.t.u. to match a random length of wire slung up around the loft. Jeff says he is pleased with his new toy, although as he says there must still be some DX out there! On 3.5MHz, Jeff ranged right up to the US phone band to find W4AJZ, KC1KQ, K5XX and VO1FG. As for 7MHz I note A92BE, 4X1AD, PY3KT, YV5AAX, VE6CIJ, VK2BIA, VK3XI, VK2WC, VK5BC, CM2IR, VK3QX, VP9HZ/MM and CO7GC. Down to 14MHz for ZS1AU, W1FDH, VO1KU, K1UN/M, VK4HF, VK2BYF/P, N1BLF, ZL1BDM, ZL3MF, TK5UC, VE1ANM/4U, OD5ZZ, JY5EC, JA7TI, VK6EWM, C31NH/P and 9M6GB. On 21MHz, Jeff notes W8ITR, WA4ZBC, VU2GI, KP4GN, ZY0RK, JA6COW, and JF3PS. That leaves the 28MHz list, containing calls like W9PYA, NV9R, ZS6TLV, OD5SK, CU7AA, CN2AQ, PY2EX, 7X2BK, TL8ML, UH8DA, TA3F, K0HG/P and EA7/G0CPA, not a bad first month's collection!

ILA

The International Listeners Association sent along a copy of their Newsletter *Just Listening* that I found very interesting and full of 'meat'; I was amused, but pleased, to see that the old HPX Ladder which we used to run in *Short Wave Magazine* has been revived by request to run in the ILA magazine. Details of ILA from their office at 1 Jersey Street, Hafod, Swansea SA1 2HF.

Top Band

A specialist on this band is **R. F. Merrall** of Dunstable. About 80 assorted UK/Europeans calls were logged in on c.w. One Sunday evening, N2RM pounded away for fifteen minutes before Europe woke up to his presence, when he worked a string including SM8CWY, G3BFP, ON6OX, DL5JQ and G8GP. Additionally, a weak W5 plus one W8 were noted on 1.840MHz but didn't quite get above the noise. On the sideband front, GM4CAZ/P was a storming signal from Shetland Is with a full quarter-wave vertical after the Powys Net closed down, and knocked off some 23 or more stations. GM3YXM/M completed his contact with GM4CAZ/P and then put out a CQ call, claiming to be 'Lost in the wilds of Glen Garry in the Western Highlands'!

John Heys is somewhat of a dab hand with antennas and makes an interesting point. He has a half-wave 14MHz dipole which, like most of the breed, favours some directions over others. John says he has got useful results by strapping the feeders together and operating the antenna as a vertical against a good ground - the 'good' in this case being quite important of course. John finds that changing from the normal dipole connection to this arrangement enables him to 'fill in' any gaps in coverage.

Finale

Right at the last moment, I received a letter from **Harold Wood**, who reports receiving a QSL card from OD5RH showing his details as Hani Raad OD5RH, PO Box 8, Tripoli, Lebanon, plus, on the back of the card, an address in Washington DC! Harold says he is now well confused! Probably it will be found that the American address is for a USA QSL Manager.

Many of your letters ask what is unacceptable about the 3X1SG operation, as the the QSLs are in. The story as at the time of writing, is simply that the 3X1SG operators have not, to date, submitted any of the required documentation on their operation to the DXCC Desk at ARRL.

That's it for another month; the deadline, most important, this!, for your letters is that they must arrive by May 14 or June 10, the address of course being the one shown at the head of this piece.

dxtv round-up

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

It was way back in June 1948, while checking a Philips combined radio and television receiver, that I first saw the chaos a Sporadic-E disturbance could cause to 405-line pictures on 45MHz. I have been fascinated by propagation ever since. The 9in screen was covered in fluctuating cris-cross patterns and a variety of foreign voices were coming from the loudspeaker. I have referred to this because, by the time you read this at the end of April, we will be at the beginning of the 1991 Sporadic season. We'll be looking forward to seeing those test-cards and snippets of programmes again from Scandinavia, through most of Europe to the Mediterranean sea. You can expect a Sporadic-E disturbance to start suddenly, spread to a peak when some signals will be fighting others for predominance on the screen and then fade away as quickly as it came. Your best checking points are Chs. E2 and R1 on your TV dial or tune your scanner to 48.25MHz or 49.75MHz respectively and listen for the synchronising pulses to appear.

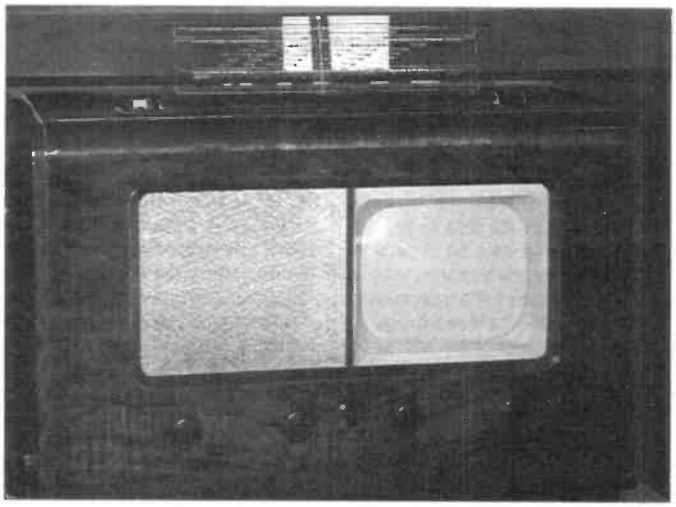
Should I Start TVDXing?

I am often asked by radio enthusiasts with other listening interests after reading the reports in this column each month., how do I get started with DXTV? The latest request came from one of our many young readers, **Paul Beach** (London), who has taken the magazine for several years and is particularly interested in receiving French and Italian pictures. What bothers me is encouraging any reader to install equipment for DXTV and then finding out that he or she is disappointed with the subject. Unlike recommending a communications receiver which has something to offer all of the time, DXTV is a random business and there simply isn't any activity until some form or atmospheric disturbance takes place. Therefore, before spending any money on equipment for this work I suggest that you to keep the following points in mind.

What Do I Need?

For long distance television reception , you require a 625-line television receiver, or a converter for a v.c.r., with tuners covering the v.h.f. Bands I (48-68MHz) and III (175-230MHz) and the u.h.f. Bands IV & V (471-608 & 615-856MHz). Most suitable receivers have their dials calibrated with the European channel numbers, E2-4, E5-12 and 21-69 respectively. First, try your library for the *World Radio TV Handbook* and, in the TV section, see which nearby countries operate in these bands and what system their networks use.

Under normal atmospheric conditions, TV signals from foreign countries are unlikely to be received in the UK, however, such signals do appear, in Bands I and II, when Sporadic-E is present and in Bands III, IV and V during Tropospheric openings. Although there are random Sporadic-E disturbances throughout the year, the main season is between May and September, peaking in June and July. Briefly, tropo-openings are most likely to occur at anytime while the atmospheric pressure is high, (say above 30.2in) and the prevailing weather is fine and clear.



Philips combined radio and television receiver.

I suggest that you send 75p to David Martin at Aerial Techniques, 11 Kent Road, Parkstone, Poole, Dorset BH12 2EH, for his latest catalogue of suitable receivers and antennas. David is an enthusiast as well as a director in the firm. It is also worth writing to HS Publications, 7 Epping Close, Derby DE3 4HR to get the gen on the D-100 TV converter and possibly purchasing the books, *Guide to World-wide Television Test Cards*, by the proprietors, Keith Hamer and Garry Smith, (£4.95) and *TV DX For Beginners*, by enthusiast Simon Hamer (New Radnor) (£2.95). *A TV DX-ers Handbook*, by fellow columnnist Roger Bunney (£5.95). Some of these are also available from the *SWM* Book Service.

Please note, that because of the various television systems used in other countries, the sound and picture are not always together and do **remember**, that you may wait days or perhaps weeks without receiving DXTV signals, but when the bands are open, the subject is fascinating as no doubt your have seen by the reports that I receive each month.

Band I

Back now to the winter of 1991 and during an 'F2' opening around 0830 on February 19, **Simon Hamer** watched a strong smeary signal from Australia (DDQ-0) on Ch. A0 (46.25MHz). He heard synchronising pulses from China (CCTV) and the USSR on Chs. C1 and R1 (both 49.75MHz) respectively and New Zealand (TVNZ) on Ch. 1 (45.25MHz). Later, he saw Dubai, Iran and possibly Zimbabwe on Ch. E2 and the USSR on Ch. R1. If that wasn't enough, he rounded the event off with an unidentified 525-line signal from North America on Ch. A2 (55.25MHz).

John Woodcock (Basingstoke) made a quick check on Band I in the mornings and afternoons on most days during the month prior to March 8. He frequently heard utility stations from Europe at the low end of the band and from the USA on the February 18. John thinks there was an 'F2' opening on March 4 when he received unidentified and unlockable pictures in the band.

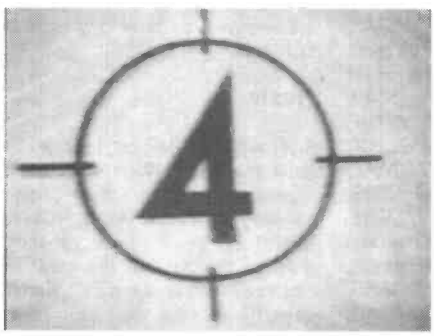


Fig.1: Sweden.

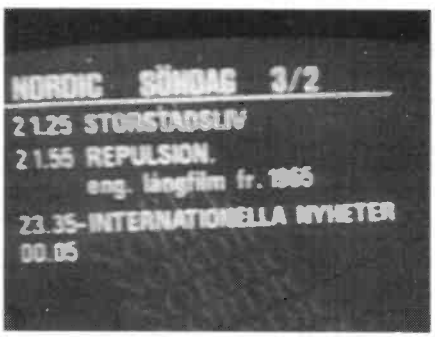


Fig. 2: Sweden.

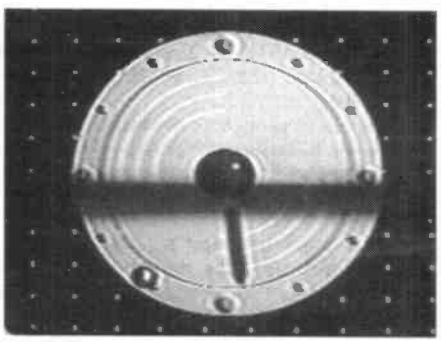


Fig. 3: Spain?

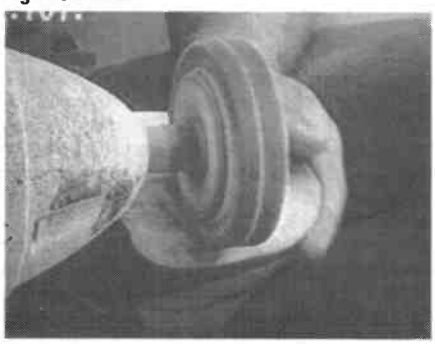


Fig. 4: Unknown.

Fig. 5: Malaya.

Fig. 6: Pakistan.

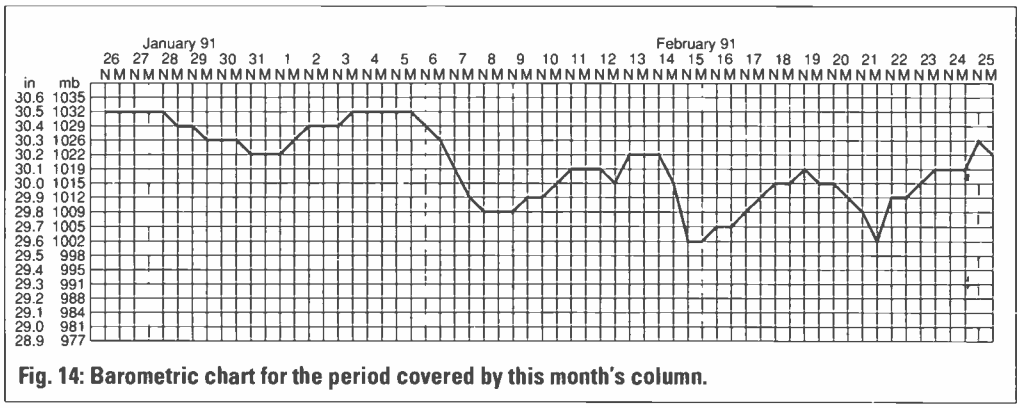


Fig. 14: Barometric chart for the period covered by this month's column.

While a couple of those brief winter Sporadic-E openings were in progress, **Russ Burke** (Northampton) received pictures from Italy (RAI UNO) on Ch.Ia (53,75MHz) at 1820 on January 2 and Spain (TVE1&2) on Chs. E2 and E4 (62.25MHz) between 2245 and 2300 on the 14th. The former event only lasted for 5 minutes.

Bob Cooper Jr. ZL0AAA (Houhora, New Zealand) received Australian video on 46.170MHz between 2106 and 2200 on February 10 via Sporadic-E and again at 0537 on the 11th. Also on the 11th he logged a New Zealand TV carrier on 45.240MHz via 'F2' back-scatter at 0454 and Russian video at 0454 and 0739.

Picture Archives

"The 'near miss' with my camera is a test-card from Sweden TV4, **Fig. 1**, on Intelsat VA F12, 1°W," wrote satellite TV enthusiast, **Les Jenkins** from Godalming. Les also logged a caption from Sweden's Nordic Channel, **Fig. 2**, on Eutelsat 2 F1, 13°E. While using his Sharp receiver during an opening last May, Russ Burke received a couple of mystery pictures, a clock **Fig. 3**, which he thinks was from Spain and the other, with a 'TVT' ident, **Fig. 4**. Any ideas readers? He caught sight of 'TVT' again at 0900 on February 18.

Looking back to 1990 and Sporadic-E, **Lt. Col. Rana Roy** (Meerut, India) watched a programme from Malaysian TV, **Fig. 5**, on Ch. E2, at 1945 on February 2 and the Quran from Peshawar TV (Pakistan), **Fig. 6**, on Ch. E4 at 1645 on June 12.

While on a trans-Siberian trip in 1989, **P. de Jong** (Leiden, Holland) sent me the photographs of the Irkutsk caption, "shown only 30 seconds before start of local px!", **Fig. 7** and Irkutsk 'general TV', **Fig. 8**, which he saw in his hotel room. Both were in the afternoon on Ch. R5 (93.25MHz) and it's worth remembering that the synchronising pulses on this frequency and the associated sound channel on 99.75MHz are often heard on our Band II receivers during some of the massive Sporadic-E openings of June and July.

Tropospheric

The slightly rounded atmospheric pressure readings for the period January 26 to February 25, **Fig.14**, were taken at noon and midnight from the chart of the continuously recording barograph installed at my home in Sussex.

While the atmospheric pressure was falling on February 19, Simon Hamer received Band III pictures from stations in Denmark (DR) on Ch. E8, Norway (NRK) on Chs. E5 and 11 and Sweden (SVT1) on Ch. E6. He also saw pictures in the u.h.f. bands from Belgium (BRT1&2), Denmark (TV2-Hedensted), Germany (DFF, NDR1&3, WEST3, WDR1 and ZDF) and Sweden (SVT2).

SSTV

Activity in the world of slow-scan television is very different to DXing in the broadcast TV bands mentioned earlier. For instance, the requirement is a good quality communications receiver (which has plenty to offer as well as SSTV), some form of decoder like a computer and software, a display and possibly a printer. Among the popular frequencies allocated to slow scan within the h.f. amateur bands is 14.230MHz, where many stations can be 'heard' transmitting pictures.

Briefly, the audio signal, a shrill and fast variable tone, is fed from the receiver's audio output into the decoder and with slight adjustment to the receiver tuning the picture slowly builds up on the display. During a six week period prior to March 4, **John Scott** (Glasgow) tuned between 14.227 and 14.235MHz and received idents and captions from stations in Belgium (ON4ABP), England (G4XDK), France (F6GIO), Germany (DL9SBL), Holland (PA3AII) **Fig.9**, Spain (EA2JO) **Fig.10**, Switzerland (with a special prefix HE7BYD) and Yugoslavia Y21UO. Sometimes callsigns are not easy to read, as in the case of the 'Flintstones' drawing, **Fig. 11**, received by John, so please forgive any errors that I have made in reading the call-letters. Over in Holland, P de Jong copied a Polish amateur (SP3AMZ) exchanging pictures with a station in Japan, **Fig.12** and a 'group' logo from Y21UO, **Fig.13**.

Fig. 13: SSTV Yugoslavia.

Abbreviations

Ch.	channel
DXTV	'long distance' television
in	inch
MHz	megahertz
SSTV	slow scan television
TV	television
u.h.f.	ultra high frequency
v.c.r.	video cassette recorder
v.h.f.	very high frequency

Fig. 7: Irkutsk USSR.

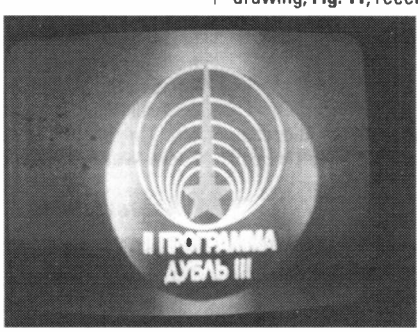


Fig. 8: Irkutsk USSR.

Fig. 9: SSTV Holland.

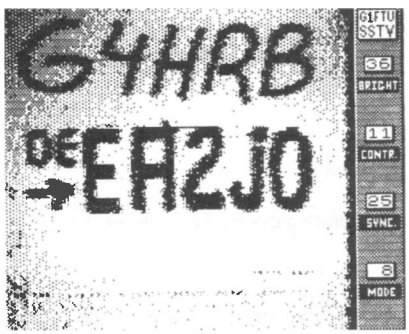


Fig. 10: SSTV Spain.

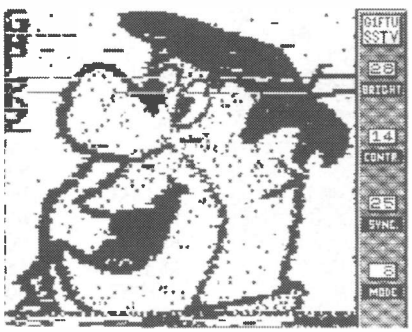


Fig. 11: SSTV.

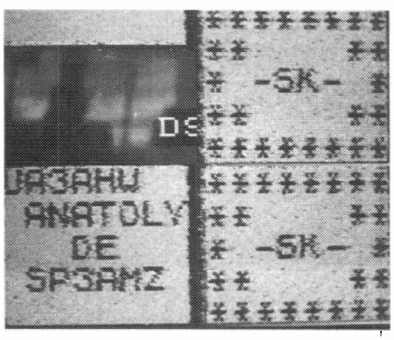


Fig. 12: SSTV Poland.

airband

Godfrey Manning G4GLM
The Godfrey Manning Aircraft Museum, 63 The Drive, Edgeware, Middlesex HA8 8PS.

This is the closed season for aviation, so as there's not too much to report by way of your letters this month I hope you'll indulge my historical ramblings that follow.

If you are going to a display or other event, let me know date, time and a meeting place; I'll publish it here in case any other readers would like to meet up with you. It's not yet clear which military displays will take place, as there is still great RAF involvement in the Middle East despite the Gulf cease-fire.

Your Flying Experiences

Chris Hasman (Arthingworth) flies a Cessna 172 from Sywell. On a recent flight, visibility was so poor that it was necessary to remain at 900ft (was this QNH?) to stay in visual meteorological conditions. Despite this low altitude, Cottesmore Radar warned of a Tornado which passed below Chris' aircraft! He points out that Midland Radar, originally based at Luffenham, has now demised.

Follow-Ups

As remarked on before, the An-225 experienced problems at Farnborough last year. **Paul Hilton** (Newbury) noticed that a Concorde ended up on an extended sightseeing tour of southern England while waiting for the runway to clear. Meanwhile, the Antonov's tow bar had broken and it was stuck on the runway until it could be taxied off.

Paul has certainly flown in some interesting types, including the CL-44 Yukon (Canadian adaptation of the Britannia, with hinged cargo-loading tail). If you can spare the documents on it for my Museum, I'd be delighted to accept. The remainder of your list is long, Paul, so I'm surprised to note that the Herald, 747 and C-130 are the only aircraft that you've experienced that I've missed out on! I did fly a Hercules simulator, though. I do enjoy reminiscing about the mixture of older types (Trident, 707, Viscount, Comet, etc.) and it seems that there is less variety nowadays when most airliners are B.7?7 or DC-?.

In March, **J. Cooper** (Bransholme) had the problem of identifying signals on 440-460kHz. Paul knows of c.w. transmissions in this band from the Canadian Coastguard Ice Advisory Service; if they are the ones responsible for J. Cooper's observations then they would only be expected to be received in the UK at night and probably with a reasonable antenna.

Fellow columnist **Paul Essery GW3KFE** (Newtown, Powys), better known for 'Amateur Bands Round-up', identifies the radio mast (March 'Airband') as definitely non-aeronautical, so enough said on this subject.

So that we know what an n.d.b. looks like, **Allan Lewis** (Kelsall) sends the photo of the Whitegate beacon mentioned in previous issues. You were lucky to watch the landing on 06 at Manchester from the cockpit of your 737 while returning from holiday, Allan!

GW3KFE has an interesting background, including working for Cossor on secondary surveillance radar transponders. These are the airborne devices that respond to the interrogation pulse sent out by ground-based radar. The information that the transponder sends back contains the four-digit squawk code and can also show altitude. The cockpit ends of a Cossor SSR 1601/3 (Trident) and 1601/4 (VC-10, complete with BOAC label!) are on display in my Museum and I see that Paul was involved with these.

History

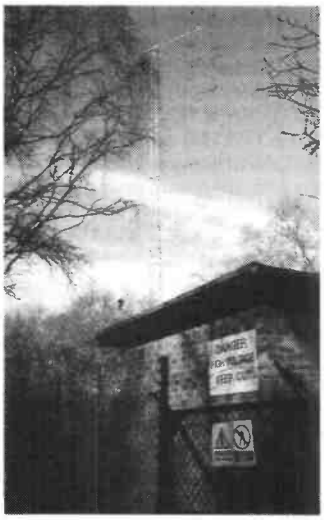
SSR is still known as IFF (Identification Friend or Foe) in some places (I noticed this in France) as it was developed from this wartime system. Allied aircraft sent out interrogation pulses and awaited a reply from possible target aircraft. A reply from the target's transponder indicated a friendly aircraft, as the enemy did not have IFF and in any case wouldn't know what codes to generate. Hence it was important that no IFF sets ever fell in to enemy hands, and in this way the codes remained secret. Wartime IFF sets were fitted with explosives so they could be destroyed in the event of a crash on enemy territory. Even today, aircraft remaining buried after a crash can become an explosive menace if excavated.

Delving in to this history reminds me that radio beam navigation was developed by the Germans during the war. A highly directional antenna array would transmit a narrow beam, modulated on one side by dashes and the other by dots. Only when flying precisely along the centre of the beam would the modulation be heard to merge into a continuous tone.

An aircraft on reconnaissance duty crash-landed whilst testing beam reception and the receiver was recovered intact. The receiver seemed to work in the manner of a known form of early blind landing aid, but was more sensitive than would be needed to follow a beam near to the runway. This gave the clue that accurately-shaped long-distance radio beams might be in use.

The RAF eventually found such beams and usually succeeded in jamming them, even using medical diathermies as makeshift transmitters. Unfortunately, the day the beam was pointed at Coventry the RAF failed to locate it and the resulting devastation from unhindered, accurately-guided bombing is well known.

Paul Hilton provides some history, too. The photo shows a Lufthansa Focke-Wulf Fw200 Condor dating from 1938 at either Vienna or Munich. Paul's step-father is in the foreground. D-A?HR is named Saarland, but is it the first example of the Fw200 which bore the same name but was registered D-AERE? Can anyone else solve this? Thanks for the photo, Paul; it must be especially interesting for you to have a documented family connection with even a brief encounter with aviation history.



The Whitegate non-directional beacon. *Allan Lewis.*

Frequency & Operational News

GASIL 2/91 from the CAA reports various aerodrome frequency changes, and I have tried to summarise a long list which is almost like a timetable at certain airfields. Other information comes from CAA AIC 10/1991:

Blackbushe - preferred entry/exit lanes abandoned as they appeared to increase traffic congestion;

Focke-Wulf Fw200 *Condor* in 1938. *Paul Hilton's collection.*

Abbreviations

AIC	Aeronautical Information Circular
An	Antonov
B	Boeing
BOAC	British Overseas Airways Corporation
CAA	Civil Aviation Authority
c.w.	continuous wave
DC	Douglas Commercial
ft	feet
GASIL	General Aviation Safety Information Leaflet
kHz	kilohertz
kW	kilowatts
MHz	megahertz
n.d.b.	non-directional beacon
NOTAM	NOTice to AirMen
QNH	Altimeter setting which gives height above sea level
RAF	Royal Air Force
SSR	Secondary Surveillance Radar
VOLMET	VOLume METeorological report
v.o.r.	very high frequency omni-directional radio range

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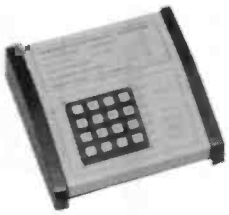

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Access

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Coventry Tower - 119.25MHz Mon-Thu 0700-1000 & 1830-0050, Fri 0700-1230 & 1830-0050, Sat-Sun 0830-2000, and outside operational hours; 124.8MHz Mon-Thu 1000-1830, Fri 1230-1830

Coventry Radar - 122.0MHz by arrangement, closed Tue 1200-1600 for maintenance

Coventry Approach - 119.25 Mon-Fri 0700-0050 & Sat-Sun 0830-2000

Coventry Fire Service - 121.6MHz (for aircraft emergencies on ground)

Duxford Aeronautical Flight Information Service - 122.075 replaces 123.5MH;

London (Stansted) zone - 122.55MHz. Radar not always available on 125.55MHz. Transit traffic should try 126.95MHz for radar, but route clear of zone if no response

Northrepps Air/Ground - new frequency 129.825 callsign 'Cromer Micro'

Norwich - runway 04/22 reinstated

Southampton - new zone frequency 120.255MHz

Paul Hilton elucidates the current hand-off procedure when aircraft leave the Dover sector (London Airways 134.9MHz) for Maastricht Control, whilst heading for the Koksy v.o.r. in Belgium. Either 132.2 or 132.85MHz are used by Maastricht.

Roy Patrick (Derby) obtained information on New York VOLMET from the authority that transmits it. Roy's main interest over the last 55 years is listening to short wave broadcasts for which he now has a Lowe HF-125, long wire and a.t.u. New York VOLMET is on 6.604, 10.051 and 13.270MHz, and 3kW output is run to a rhombic antenna. The transmitter is 72km east of JFK on Long Island. Transmissions are on the hour and at half-past each hour.

The next three deadlines (for topical information) are May 17, June 14 & July 12.

Marshaller at work during a Cranfield PFA Rally. *Christine Mlynek.*

Procedural control: Controlled airspace without radar. Pilots report position and altitude, and the controller maintains separation using this information. Typically, a fixed approach procedure is flown so all aircraft tend to follow each other on similar courses. The North Atlantic Track System is controlled procedurally as it is too far from land to be seen on radar.

Special Rules and Controlled Airspace: Consists of airways and areas surrounding larger airports. Usually controlled by radar. Most aircraft only permitted in this airspace while responding to ground instructions given by radio. Exceptions sometimes made for gliders which may cross certain airways by the shortest route. Some special rules or control zones may admit non-radio aircraft providing prior clearance is obtained and an estimated time of entering the airspace is known to the controller.

On approaching controlled airspace the pilot must obtain onward clearance from the correct authority even if currently receiving a radar information or advisory service from elsewhere.

scanning

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

Yes - yet another new scanner! The Shinwa SR001. Rather a strange name, but that's nothing compared to the receiver itself. Most of the front panel controls you would normally expect are missing, the main functions being selected by means of a hand-held infra-red remote control, a bit like a TV channel changer. Now, I could understand this if the scanner was designed for use as a base station, but the size and construction makes it more suitable for use in a car. However, I'm not too sure about how to operate it when driving!

The styling of the unit reminded me of the Kenwood RZ-1, in that the look is similar to an up-market car radio, with the die-cast chassis performing an additional function by acting as a heatsink. The front panel consists of a large, luminescent, multi-colour display, with a row of 13 bevelled push-buttons underneath. To the right of the display is another bank of four push-buttons and a couple of recessed rotary controls for setting the volume and squelch levels.

The frequency coverage extends from 25 to 999.995MHz with adjustable tuning steps of 5, 10, 12.5, 20, 25, 50 and 100kHz. The receiver can resolve a.m., n.b.f.m. and w.b.f.m. signals and store up to 200 memory channels in 10 banks of 20 or search between 10 groups of programable frequency limits, the scan rate being 25 channels per second and the search rate 35 channels per second. The search/scan can be performed in one of three different ways, stopping when a signal is detected, stopping and then resuming again after a preset period or stopping when audio is detected. Two antenna sockets are provided at the rear, one is an 'N' type mounted on a short flying lead, the other is a chassis mounted 'BNC' allowing remote switching between them. A blanking plate covers a slot in the rear panel, which accepts an optional RS-232 computer control board.

Performance

The r.f. performance is moderate, with the sensitivity tailing off at either end of the range. This is particularly true at the high frequency end, suggesting that it was originally only intended to stretch as far as the Japanese personal radio band at around 900MHz. One plus point is the high frequency first i.f. that should help minimise problems from image frequency interference.

Overall, the unit is neat and certainly catches the eye, but I just can't get used to the infra-red remote control. However, I am sure that there must be an application for it - somewhere. The price has not been set at the time of writing, but if you would like further details then contact: Martin Lynch, The Amateur Radio Exchange Centre, 286 Northfield Avenue, Ealing, London W5 4UB Tel: 081-566 1120.

Antennas

The subject of antennas seems to feature regularly in readers' letters. I don't really find this too surprising as it is often possible to obtain a considerable improvement in reception for very little financial outlay. **John Combes** of Dorking has sent me details of an inexpensive antenna that he has made for the v.h.f. and u.h.f. airbands. He has mounted this in the roof space of his house and says that it gives a dramatic improvement in reception when compared to the antenna supplied with his AR1000.

The elements are made from wire coat-hangers that are first straightened out and then cut to length. Connection to the 50Ω coaxial cable is made via a large 'chocolate block' style connector that forms the centre insulator. The whole antenna is then suspended from the apex of the roof with nylon garden twine. The design John developed, is based on a principle commonly used for multi-band short wave antennas, that of connecting several different frequency dipoles in parallel with each other. Providing that the frequency of operation of each dipole is sufficiently removed from the others, and also providing the elements can be kept physically separate from each other, then the performance should be comparable to that of a single dipole operating at its resonant frequency.

Each element has to be cut to the correct length for the frequency of operation. This can be determined from the formula: 75000 ÷ the frequency of operation (MHz) = length of the element in millimetres. So, the first stage of construction should be to choose the frequency ranges required from the antenna. A dipole will normally give a good impedance match 10-15% either side of its design frequency. For example, a dipole tuned to 100MHz should work reasonably well from to 85 to 115MHz, but one tuned to 400MHz will give a much larger span of 340 to 460MHz. By a careful choice of frequencies, it should be possible to obtain good results on most of the commonly used bands. John only used three pairs of elements in his design, but I would think that six pairs is the practical limit. John chose frequencies of 130, 275 and 350MHz giving lengths of 570, 270 and 210mm. A good choice of frequencies for a 6-element version would be 80, 115, 150, 275, 350 and 430MHz with lengths of 1310, 570, 500, 270, 210 and 170mm.

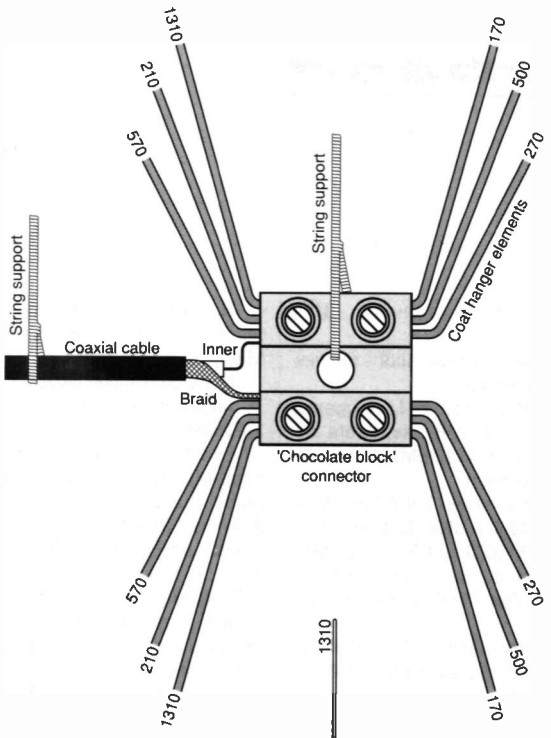

Fig. 1: Details of the construction of the simple antenna.

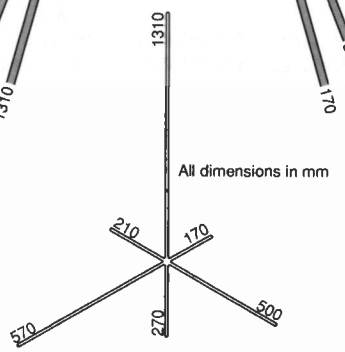

Fig. 2: View from top showing relative disposition and lengths of the elements.

Really Straightforward

The bottom end of each element is fastened in the chocolate block connector with each pair of dipole elements being arranged to lie one above the other. (**Fig. 1**). To minimise interaction, they should be interleaved so that similar length elements do not lie next to each other. As an additional precaution, each element should be bent away from the centre connector at an angle of about 30°, so that the completed antenna looks like two cones with their apexes joined together. (**Fig. 2**). The antenna should be mounted with the support string running vertically through the centre of the cones. Use the best quality coaxial cable that you can afford and lead it away from the centre of the antenna horizontally for a short distance. String can be used to support the cable if needed. Try and mount the antenna well away from any mains wiring or water pipes and fasten it as high up as possible.

Although this description may seem rather complicated, construction of the antenna is very straightforward and lends itself to further experimentation, so why not have a go? - my thanks to John for passing on the details.

From your comments, it would seem that some of the helical antennas supplied with hand-held scanners give disappointing results on the u.h.f. bands. This is because the spirally-wound element tends to only have one fundamental frequency of operation as opposed to the harmonic responses of other wire antennas. One way of improving the operation of such an antenna is to include an additional element specifically for operation on u.h.f. This need only take the form of a short quarter wavelength of wire connected in parallel with the existing element.

To check if your helical needs modifying, try pulling the protective end cap off the tip of the antenna. Look down the centre of the wire spring and see if you can spot the end of an insulated wire. Do not confuse this with the plastics support rod that is sometimes fitted by manufacturers to improve the mechanical strength. If you can't see anything, then carefully remove the rest of the insulation covering the spring. This can usually be achieved by holding the base and 'unscrewing' the spring from the insulating cover. Once this is done, strip a small amount of insulation away from the end of a short length of stiff wire. Feed it down the inside of the spring, un-insulated end first. Next, pull the end of the cable through the

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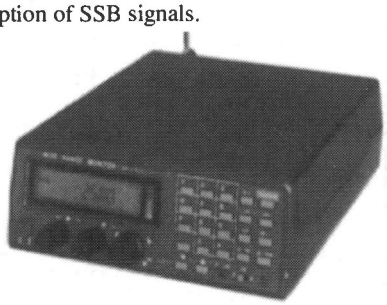

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For further information please send a large SAE or if you would like a chat please give us a call, it would be nice to speak with you.

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side of the spring at the base, as near to the bottom as possible. Solder the wire to the bottom of the spring and cut off the other end flush with the end of the spring. Make sure that the end of the cable is well insulated and cannot short against the spring. Once this has been completed replace the outer layer of insulation and the protective end cap. You should now find a marked improvement in the reception of signals on u.h.f. when using the antenna.

Antenna-uator

Whilst we are on the subject of helical antennas, **J. Bihfils** of Co. Kildare passes on a suggestion for coupling external antennas into a hand-held scanner by wrapping a coupling coil around the helical antenna rather than by connecting it directly into the antenna socket. This may seem a rather strange idea at first, particularly as I am always saying how important it is to have a good antenna system and only to use the best quality coaxial connecting cable. However, some hand-held scanners just cannot cope with the high level of signals often encountered when an external antenna is connected. So it becomes necessary to reduce the level of the incoming signals by attenuating them in some way. This is normally achieved by placing a resistive network in series with the coaxial cable, however attenuators are not particularly cheap and several different values may be required in order to give the optimum signal level.

By using a coupling coil and varying its size and position, different degrees of attenuation can be obtained. In order to make it easier to move the coil it is a good idea to wind it on a former. This can be made by wrapping a small length of thin card around the antenna and then winding the coil on the top as shown in **Fig. 3**. Insulation tape is then be used to fasten the coil in place and to secure the coaxial connecting cable. You may have to experiment with the size of coil and its spacing in order to obtain the best results but 6 turns would seem to be a good starting point. Connect the two ends of the coil winding between the inner and outer conductors of the of the coaxial cable. The assembled coil can then be moved along the antenna in order to achieve optimum coupling. You may have to choose between losing really weak signals or overloading on very strong ones but you should be able to find a compromise somewhere between the two extremes. My thanks to J. Bihfils for his useful suggestion.

Antenna Kits

Several readers have commented on the excellent results they have been achieving with the C.M Howes AA4 active antenna kit I mentioned in the October 1990 column. This seems to work particularly well on the u.h.f. military airband, where it is reported to out-perform most commercially manufactured discones. One or two people have experienced problems when using the antenna with some of the current generation hand-held scanners that offer continuous frequency coverage. This is because the additional r.f. gain provided by the amplifier stage in the antenna tends to overload the receiver at a much lower signal level than normal. Switching the 10dB attenuator on the interface board into circuit should help to reduce the problem without seriously degrading performance. The current price of the Kit is £18.80 and you can obtain further details from their catalogue by sending an s.a.e. to: C.M. Howes Communications, Eydon, Daventry, Northants NN11 6PT or phone: (0327) 60178. Incidentally, their AA2 h.f. active antenna kit also works very well - and no I don't have shares in the company!

Military Satellites

Regular readers will have spotted the item on military satellites in Peter Rouse's March 'ssb utility listening' column. This concerned the appearance of Russian sounding signals on a few of the down-link channels. These signals had been puzzling me for some time as I had received reports just over a year ago relating to Arabic sounding speech on down-links at 266.6375 and 266.8375MHz. However, I now believe that I have solved the mystery.

The Russian signals mentioned by Peter are likely to be terrestrial radiotelephone links. These provide telephone services to remote communities without incurring the cost of having to lay miles of expensive cable. A Russian speaking friend reports that the signal he heard was in fact a discussion relating to the black market price of cigarettes! This was being received by the American satellite on an up-link frequency at approximately 302MHz during favourable propagation conditions. The signal was then re-transmitted back down to earth on a new frequency. The reason that these signals only seem to appear on 12.5kHz offset channels is that transmissions occurring on the exact up-link frequencies are masked by the much stronger genuine up-link signals. From this it can be assumed that the Russians do not use the u.h.f. airband exclusively for airborne communications, but share it with other services. The sale of telecommunications equipment by Russia to Arabic countries would also explain the other strange signals reported to me.

Well that's it for this time around, keep your ears open for further interesting signals and then drop me a line. Until next month - Good Listening.

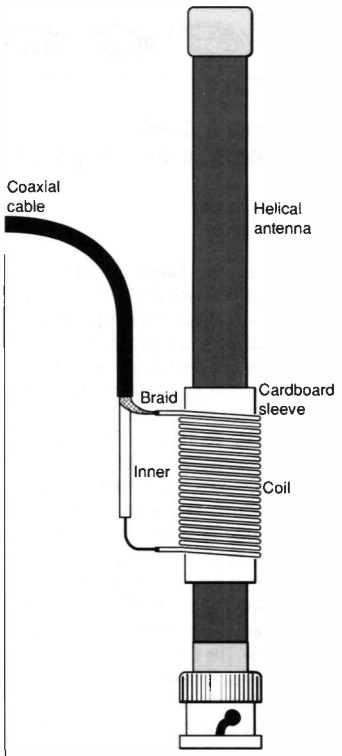

Fig. 3: Helical antenna coupling coil construction.

Abbreviations

a.m.	amplitude modulation
dB	decibels
f.m.	frequency modulation
h.f.	high frequency
i.f.	intermediate frequency
kHz	kilohertz
MHz	megahertz
mm	millimetres
n.b.f.m.	narrow band f.m.
r.f.	radio frequency
s.a.e.	stamped addressed envelope
TV	television
u.h.f.	ultra high frequency
v.h.f.	very high frequency
w.b.f.m.	wide band f.m.
Ω	ohms

decode

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

Maurice Lloyd (Blackpool) has written with his experiences connecting an ERA Microreader to a remote terminal. The terminal in question is a Volker-Craig 410 that's currently on the computer surplus market. The going rate for these seems about £35.00 each. To make the connection between the Microreader and the terminal you'll need a 2-wire cable wired to a 3.5mm jack plug at one end. The wire connected to the centre of the jack should be wired to pin 3 of the terminals 25-way plug. The other wire is the ground lead that connects to pin 7 at the terminal. The final connection is to link together pins 4 and 5 at the terminal. When it comes to setting terminal speeds, the task is simplified as the Volker-Craig defaults to 4800 baud which matches the Microreader.

An alternative is to look at the new display unit from ERA, as this boasts a very comprehensive array of features.

Reg Dunkley of Havant has recently joined the ranks of Microreader users. His is used with the popular Icom IC-71E receiver and a 13m wire antenna running east-west. Having gained familiarity with the equipment, he's now getting very good results. To help with his monitoring and station identification, he uses *The Admiralty List of Radio Stations*. As this title is a bit of a mouthful, it's usually abbreviated to *ALRS*. As you can imagine, this is a very comprehensive publication and comprises six main volumes with another four volumes of diagrams. To give you an idea of the topics covered, here's an outline of the contents:

Volume 1: Coastal Stations, INMARSAT satellite service, Regulations and procedures for distress, Search and rescue, ship reporting.

Volume 2: Radio beacons, Radio Direction-finding, Calibration services & Radar Beacons.

Volume 3: Weather Stations and Meteorological codes.

Volume 4: Meteorological Observation Stations.

Volume 5: Standard Time Signals, Radio Navigational Warnings, Electronic Position-fixing Services and Satellite Navigation Systems.

Volume 6: Port Operations and Information Services.

If you're interested in any of these volumes they cost in the region of £13.00 each and can be obtained from branches of Kelvin Hughes.

Colin Bates of Yeovil is having problems getting his ICS FAX-1 to automatically receive Offenbach signals. The problem's due to the narrow shift used by Offenbach. The only solution is to make sure you tune the receiver so that the signal is 'dead centre' on the display. With careful tuning, I've regularly been able to use auto reception on my FAX-1. For more information see the section on l.f. reception.

One of the many types of computer available on the second-hand market is the ACT Apricot. **Brian Stracey** of Margate has adapted one of these for use in his station. The only problem is that the three original system disks are missing. Brian has asked if I would put out an appeal on his behalf - consider it done!

F.R. Joyce of Caernarfon has a very comprehensive station comprising both Icom R-70 and NRD-525 receivers. He also has a Commodore PC-30 computer with a Star 24-pin printer. Mr Joyce is contemplating buying a PK-232 multi-mode controller for decoding utility stations. However, as he's not interested in amateur radio, he's not sure if this is the right choice. Well, the PK-232 is certainly capable of receiving more than amateur transmissions. It can handle most RTTY stations as well as FAX and SITOR signals. The PK-232 is also very easy to use with its built-in tuning display. There's also the flexibility to upgrade the unit as new software becomes available.

If I'm right in thinking that the PC-30 is IBM compatible, it may be worth looking at the Hoka Code-3 decoding package. The Hoka is in a similar price range to the PK-232 but features far more decoding modes. For more details see the Hoka advert in this magazine or my review earlier in the year.

John Belcher of Shipley uses an AOR-3000 receiver with a 70-700MHz discone and 30m long wire antennas. The computer is a BBC Master 128 that runs the Technical Software RX-8 decoding package. John has discovered a useful tip for those with Epson MX-80 printers. Apparently these printers only use the top half of the ribbon. The simple, but messy, way to double the life of the ribbon is to split the case and turn the ribbon over - thanks John.

BBC User Help

Following my recent requests for help, I've received several interesting replies. The first letter comes from **Roger Evans** in the Isle of Man. He uses an early BBC B with OS 1.2 to display the decoded output from his Microreader. The program used to set up the serial port is very simple and is shown here:

```
10 *FX 7,6
20 *FX156,150
30 *FX2,2
35 REPEAT
37 IF ADVAL(-2)=0 THEN GOTO 60
40
A%=&91:X%=&01:Y%=((USR(&FFF4)
AND&FF0000)DIV&10000)
50 PRINT CHR$(Y%);
60 UNTIL FALSE
```

I've shown details of the connections used by Roger in **Fig. 1**. One point to note is that the BBC serial plug can be inserted 180° out of alignment. This is unlikely do any damage, but the program won't work!

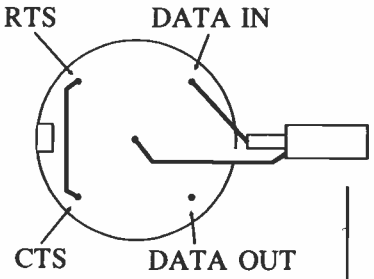

Fig. 1.

For those readers who have BBC Electron computers, **P. Jones** of Burton upon Trent has sent in the following well documented program:

```
10 REM ************************
20 REM Simple Terminal Emulator
30 REM ************************
40 :
50 MODE 0
60 REM Enable RS432 input
70 *FX2,2
80 REM Set baud rate to 4800 baud
90 *FX7,6
100 *FX8,6
110 REM Disable Escape
120 *FX229,1
130 REM Set format to 8 bit, 1 stop bit
140 *FX156,20,227
150 REM This is an 80 column terminal
160 osbyte=&FFF4
170 REM main loop
180 REPEAT
190 REM Set osbyte to insert in buffer
200 A%=138:X%=2
210 REM If character in input buffer
220 REM put in RS432 output and
230 REM inform Rom Box
240 IF ADVAL(-1)>0 AND ADVAL(-
3)>0 Y%=GET
250 CALL osbyte:A%=&8F:
X%=&13:CALLosbyte
260 REM Set next input to read RS432
270 *FX2,1
280 REM Check RS432 buffer
290 IF ADVAL(-2)>0 VDU GET
300 REM Restore old state
310 *FX2,2
320 REM Carry on forever
330 UNTIL FALSE
340 END
```

Although designed to run on an Electron with Jafa RS432 interface, it may well run on a standard BBC B.

Bill Nicoll from Aberdeen has a very comprehensive station and uses a BBC Master Compact Series computer. However, Bill found it very difficult to find software for this model. With some help from Andrews Computer Services and some original programming, he has now over come the problem. In his letter Bill has very generously offered to help readers of 'decode' with software for the Compact. Anyone wishing to avail themselves of this offer should write direct to Bill at the following address: Bill Nicoll, 124 Hilton Avenue, Aberdeen AB22L. To be fair to Bill, please include a stamped addressed envelope with your enquiry. My thanks to all those who sent in ideas for this section.

TASS Reporters

Some of you may remember that a few months ago Kevin Delve wrote in describing how he tracks TASS reporters. Kevin found this to be an interesting extension of his hobby. Another regular contributor, Maurice Lloyd, has this month sent me a list of the most active reporters. This may help those attempting to keep a record of their whereabouts.

Mikhail Krutikhin	Vladimir Isachenkov
Valentin Kriukov	Wndrei Sirorpn
Vladimir Vovikov	Alexander Anishchev
Ivwn Ivonov	Splev Askenov
Alexander Kvrisov	Cmris Zverevh

One TASS transmission that may be worthy of note is the World Service *World News Update*. This goes out at 1200 and 1700UTC on 12.315MHz. If you would like more information or to QSL with TASS the address is: Telegrafnoje Agenstwo Sowjetskoje Sojusa, TASS Main Communications Dept, 10 Twerskoij Boulevard, SU-103009, Moscow, USSR.

If any of you have heard stations other than TASS giving reporters' names, please drop me a line with the details.

Press Agency QSLs

From the letters I receive it seems that press stations are by far the most popular type of RTTY transmissions. There is also a very keen interest in QSLing with these stations. To help with addresses, here are a few of the more popular stations:

Bakhtar News Agency, Ministry of Information and Culture, Mohammed Jan Khan Wat, Kabul, Afghanistan.

Agencia Telegraphic Albanaise ATA, Department Technique, Boulevard Marcel Cachin 23, Tirana, Albania.

Agencia Angola Press ANGOP, Departemento Tecino, Le Directeur Tecknique, Rua Mouzinho de Albuquerque 13, 10 Andar CP3181, Luanda, Angola.

Australian Associated Press, 364 Sussex Street, Sydney, NSW, Australia.

Gulf News Agency, PO Box 301, Manama, Bahrain.

Prensa Latina, Departemento Tecnico, Calle 23 No 201 vedado, Habana, Cuba.

CETEKA, Ceskoslovenska Tiskova Kancolar OLX, Technical Department, 5 Opletalova Street, CS11144 Praha 1, Czechoslovakia.

Middle East News Agency MENA, Head of Engineering Section, 4 Sherifein Street, PO Box. 1165, Cairo, Egypt.

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VT-TU70E Svc Man	Port VCR	1.50
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ITT		
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CVC2 Svc Man	C TV	2.00
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Golf Elect Svc Man	mus/cent	0.50
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MC6341 Svc Man	CTV	1.00
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Rank Arena T/TAC6333 Svc Man	CTV	1.50
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SL-BD2 Svc Man	TT/Sys	1.00
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SL-PJ1 Svc Man	CD Player	2.00
SL-QD2 Svc Man	Dir/drv T/T	1.00
SL-QL5/(K) Svc Man	Dir/drv T/T	1.00

Abbreviations:

Svc	Service
Man	Manual
Port.	Portable
CTV	Colour TV
T/T	Teletext
Dir/drv	Direct Drive
Sys	System

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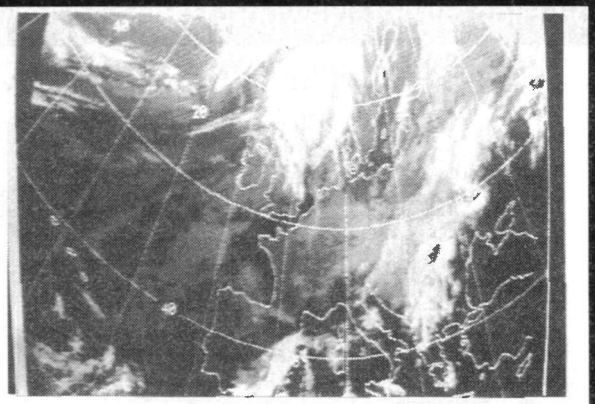

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VISA Access

INFOIND Press Trust of India, PTI Engineer in Charge, 4 Parliament Street, New Delhi 110001, India.

Islamic Republic News Agency IRNA, International Dept. 873 Vali Asr Avenue, Tehran, Iran.

Jewish Press Agency, Israel Bureau, Jerusalem Port Building, Romema, Jerusalem, Israel.

Agenzia ANSA, Societa Cooperativa della Stampa, Via della Datari 94, 1-00187 Roma, Italy.

Jordan News Agency PETRA, Technical Department, PO Box 6845, Amman, Jordan.

YONHAP News Agency, 98 Unni-dong, Chunguo-ku, PO Box 1039, Seoul, Republic of Korea.

If you have any updates or amendments to this list please send me the details.

US Navy FAX Stations

Being a major naval power, it's not surprising to find that the US Navy has a formidable world-wide radio FAX network. **Jan Nieuwenhuis** from The Netherlands has just sent me his latest compilation of these FAX stations. I've reproduced the details here for all you FAX enthusiasts. The list is arranged in station order for convenience.

Adak 8.494MHz

Apra Harbour, Guam, 5.258, 10.253, 19.858, 25,478, 5.262, 10.157, 16.029, 19.862, 23.01MHz.

Catania/Sigonella, Italy, 9.05, 17.04MHz.

Diego Garcia, 7.582, 12.806, 20.302MHz.

Exmouth, Australia, 8.614, 12.7215, 16.9145MHz.

Norfolk, USA, 3.357, 8.08, 10.865, 16.41, 20.015MHz.

Pearl Harbour, Hawaii, 4.855, 9.398, 21.839MHz.

Rota/Moron, Spain, 4.704, 5.785, 9.3825, 9.875, 12.315, 17.585MHz.

San Francisco, USA, 6.453, 9.09MHz.

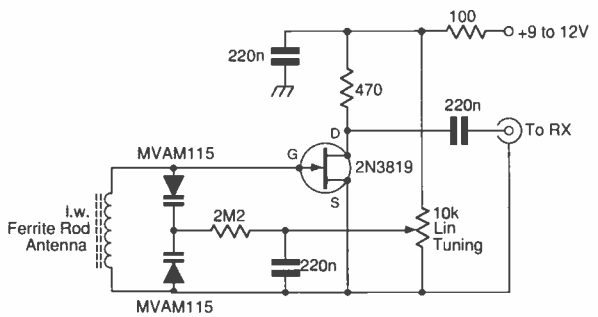

Fig. 2.

Subic Bay, 10.964, 15.923MHz.

Totsuka, Japan, 4.963, 12.777, 22.3225, 4.967, 22.3265MHz.

LF Reception Tip

Over recent months many readers have written asking how they can improve reception of the l.f. FAX station Offenbach Meteo. The reason for the interest in this station is the range of interesting images transmitted.

Probably the most popular are the re-broadcast Meteosat satellite images. These are full grey scale photographs which, with the right equipment, can produce excellent pictures.

Reception of this station is complicated by three main factors:

a: Narrow shift of 150Hz.

b: Low Frequency of 134.2kHz.

c: Adjacent channel interference.

The narrow shift means that tuning accuracy becomes critical, as does the stability of the receiver. It's common for listeners to have problems with automatic reception of narrow shift signals. This can usually be traced back to inaccurate tuning.

The reception of l.f. signals often requires a change of antenna, as many conventional h.f. antennas loose efficiency at these low frequencies. If you're using a G5RV or similar centre fed antenna, there is a way to improve the l.f. performance. All you do is short the inner and outer of the feeder at the shack and connect them to the antenna input of the receiver. However, this doesn't help with the final problem of adjacent channel interference.

In the case of Offenbach this interference is from a radio-location system and the effect can be severe. There are two basic routes to reducing the effect of this interference. The first is to use an adjustable audio filter such as those available from Datong and ERA. These need careful adjustment to minimise the effect of the interference.

Final Option

The final option is to use a directional antenna to null out the interfering signal from the Offenbach signal. To help with this **J. Briggs** of Sheffield has written giving details of the ferrite rod antenna system that he uses. The system is based around the type of ferrite rod antenna that can be recovered from an old portable radio.

For those with some constructional skills, I've shown the basic circuit in **Fig. 2**. This has been adapted from the circuits sent in by Mr Briggs. His full design probably justifies a complete article and covers 60 to 650kHz using two plug-in heads. The unit in Fig. 2 has been adapted for use over the range 115 to 360kHz.

Frequency List

To finish off, here is this month's selection of frequencies. All the transmissions listed have been received by readers of 'Decode' over the past couple of months.

The format is the usual; frequency, mode, speed, shift, callsign, time and notes.

4.268MHz, TOR(B), 100, 170, SAB23, 0500UTC, Ships

5.460MHz, RTTY (Arabic), 50, 425, -, 0442UTC, Arabic Press.

5.46MHz, RTTY, 75, 425, -, 0038UTC, VoA Tanger

7.65MHz, RTTY, 75, 400, -, 0053UTC, Xinhua Beijing

7.845MHz, RTTY, 50, 375, SOH284, 0033UTC, PAP Warsaw

7.91MHz, FAX, 60, 288, RCW79, 2310UTC, Alma Ata Meteo

10.1172MHz, FAX, 120, 576, BAF4, 2346UTC, Beijing Meteo

10.233MHz, RTTY, 75, 70, -, 0014UTC, VoA Bethany

10.6477MHz, ARQ342, 200, 660, -, 0001UTC, French encrypted

11.476MHz, RTTY, 50, 215, HMF52, 2255UTC, KCNA Pyongyang

12.11MHz, RTTY, 50, 400, YOM21, 1130UTC, ROMPRES Romania

12.315MHz, RTTY, 50, 400, RVW57, 1148UTC, TASS Moscow

13.43MHz, RTTY, 100, 400, -, 0715UTC, APN Moscow

14.367MHz, RTTY, 75, 425, BZP54, 0706UTC, Bejing Xinhua Press

15.575MHz, RTTY, 50, 400, REN30, 0455UTC, TASS Moscow

15.935MHz, RTTY, 50, 275, SUA291, 0724UTC, MENA Cairo

16.9060MHz, CW, -, -, YIR, 1530UTC, Basrah Iraq

18.947MHz, ARQ/SW, 100, 400, SAM, 1008UTC, MFA Stockholm

22.3275MHz, CW, -, -, SVG7, 1500UTC, Athens Radio

22.3725MHz, CW, -, -, IAR22, 1530UTC, Rome Radio

22.387MHz, CW, -, -, VCS, 1550UTC, CCG Halifax Weather

22.417MHz, CW, -, -, LPD91, 1700UTC, Pacheco Radio Argentina

22.431MHz, CW, -, -, PKX, 1720UTC, Jakarta Radio Indonisia.

QSL card from OST - OSU coast station at Ostend, Belgium, received by Maurice Lloyd.

info in orbit

Lawrence Harris
5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5QB

In early January we had two Russian weathersats operating, METEORS 3/3 and 2/19, with occasional short transmissions from OKEAN 2. From the eve of the Gulf War 3/3 went into semi-retirement with irregular transmissions and then it was off from about January 18. For several weeks, only METEOR 2/19 was operating. Late February saw METEOR 2/20 replace 2/19 (on 137.85MHz) which was by then moving close to the terminator, and from March 13 METEOR 3/3 came back on using 137.30MHz. As always the American NOAAs have carried on - NOAA 9 being switched off due to pass coincidences with NOAA 11 during February and early March.

The NOAAs move in orbits that synchronise with the sun so that each passes us (and every other place on Earth) at around the same local time. NOAA 10 is always passing northbound around 1800UTC and southbound around 0600UTC, give or take an hour. The METEORS are in orbits that slowly change their plane with respect to the sun, so they pass by some 20 minutes earlier each day (for the 3/ series), or later (for the 2/ series). OKEAN 2 continues to transmit sporadically and, finally, the Chinese FENGYUN 1B satellite has not been operating since it apparently started to tumble.

METEOSAT & GOES

The new METEOSAT 5 was successfully launched and will undergo commissioning before it replaces METEOSAT 4. The administration messages are broadcast every three hours from 0218UTC and will keep watchers up-to-date with progress - see **Fig. 2**. It has been a long time since GOES (the American geostationary wxsat) was visible easily from the UK but I can just hear a weak a.p.t. signal over in the west, obscured by a roof. I hope to purchase a Yagi soon to mount higher up than my dish can get!

Letters

Various sets of photographs have arrived and I have received many requests for Kepler elements. **P de Jong** wrote from Leiden in Holland with a set taken with his equipment which comprises a Slowefax-2 decoder and a WX237 satellite receiver. He tells me that the 137MHz band is the double frequency of TV Band 1 in Holland so he uses his TV antenna in the loft to receive signals! An infra-red picture from METEOR 3/3, taken by him in early January, is shown in **Fig. 1**. He also noted that the switch-off coincided with the start of the Gulf War. He now has an operating METEOSAT system using an 850mm dish, located indoors, feeding a LNA1701 pre-amp and down-converter! Shown in **Fig. 2** is an administration message reporting imagery problems following a moon eclipse.

Dave Allen of Droitwich wrote to me several months ago requesting tape recordings of METEOSAT data for testing his system and he writes to say that it was successful. He is a teacher and has organised a band of helpers to run satellite predictions and record passes. He has sent me some photographs of the monitor - **Fig. 3** is a NOAA 11 image showing Italy and Sicily, taken by **Richard Palmer**, **Nick Woodburn** and **Ashley Thomas**. Dave reports that they suffer from interference in the form of breakthrough from low-flying aircraft, and he can hear the pilots talking in the middle of NOAA passes! The most likely causes of this interference are using a high gain pre-amp with a short cable run (use only if the run exceeds about 20m) and inadequate filtering in the receiver.

Pictures also came from **Laurence Patton** of Perth who used one of my tapes some months back to check out his system - I'm glad this has been helpful. He uses the Amigasat system with a Philips monitor to avoid the Amiga flicker. His receiver is the Dartcom unit which is a synthesised frequency module normally supplied in a form requiring to be wired up and boxed. This was also my first purpose-designed weather satellite receiver and looking at the picture - **Fig. 4** - makes me wish that I had Laurence's constructional skills!

Ice in Bothnia

The ice that winter brings to the upper section of the Gulf of Bothnia is clearly shown in **Fig. 5**, also from Laurence. This year I noticed that the ice didn't really form until the intense cold in early February when the whole area froze within a few days. I marvel at the ability of modern weather satellite equipment to provide views of unprecedented clarity. Laurence mentions that Amigasat provides 16 grey levels, limited by the memory constraints of the computer, which needs a minimum of 1Mb. The version he uses is currently 1.11 and a new one - v 1.2 will be out soon.

Upgrades Coming

I have been told by other manufacturers that they are also releasing upgraded software soon - Timestep Weather Systems' MEGANOAA and VGASAT 4 and Comar Electronics's PCGOES. I understand that the Timestep upgrade MEGANOAA will store the entire pass of any satellite at full resolution in a 2Mb file on the hard disk, temperatures can be read directly, and line-by-line synchronisation is available. Details of both systems and hopefully reviews will be published here as soon as available.

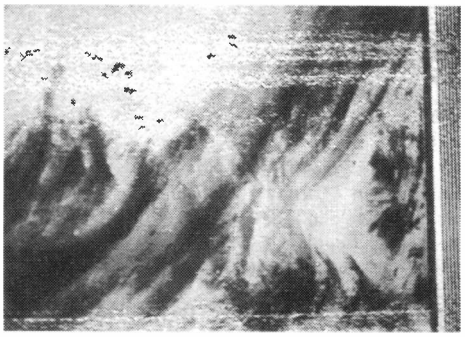

Fig. 1: METEOR 3/3 infra-red picture from early January by P. de Jong.

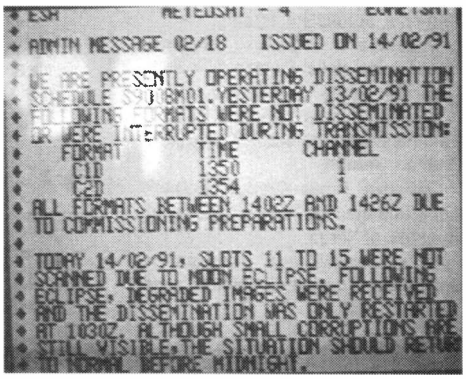

Fig. 2: METEOSAT administration message reporting imagery problems.

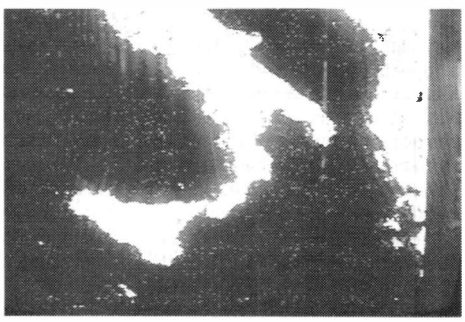

Fig. 3: NOAA 11 Italy and Sicily from Dave Allen.

METEOSAT animation

A new version of Timestep's ANIMATE program will be released shortly. The previous version was good, and I received an early copy of the new version to try out which has improved facilities using almost the whole screen. One cannot review programs in a couple of paragraphs, but when I say that I have shown it on both local and SKY television while monitoring the Gulf region to show the movement of the smoke clouds from the oil wells, you can appreciate the clarity. It is also easy to set the program to record a set of METEOSAT pictures, ranging from the Amazon regions to the UK - ideal for worldwide monitoring. Simple editing then allows a set of animated frames to be produced, e.g., recording the D2 and D3 frames on disk sequentially, and then editing the frame names gives two separate sequences each containing as many frames as your computer can store! Super!

Maplin Problems

Another picture arrived, this time from **Harry Wagg** of Birkenhead who is using the Maplin kit fed by a home-made antenna and pre-amp. Harry is also experiencing paging interference on his Maplin receiver. Many users of the unit complain of this interference and so I have written to Maplin to see whether they plan to modify the design circuitry. I have also asked for the specifications of their Meteosat system, about which I have also received letters! I will publish the response when it is received. Harry also asks about the availability of BBC software for satellite predictions. Any information that other BBC users can send me will be mentioned here.

For those of you who have only recently become involved in weather satellite monitoring, the interference problem started when an allocation was given to paging transmitters to use a nearby frequency band. The weathersat's transmitter power is a fraction of the paging units so interference was inevitable. Most other satellite receiver manufacturers have done modifications since the problem started three years ago. Meanwhile if anyone has already fixed the problem perhaps they would drop me a line. **Dave Robson** of York found that he could hear the WXSATs on his AR2515 scanner but uses his Maplin receiver fed by a home-made turnstile antenna for weather pictures. He reports much interference from Gas Board and other stations using the 138MHz band, particularly since December.

Brian Dudman of Harrow has been comparing his Maplin receiver with his Realistic PRO 2006 scanner and

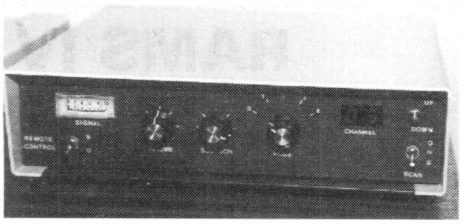

Fig. 4: Laurence Patton's Dartcom receiver.

has found the scanner to be more sensitive. He wants to use the Maplin ASSEMBLY program to decode satellite data on his Amstrad CPC6128 computer. Maplin provide the listing in ASSEMBLY but not everyone has such a program or is familiar with its use. My son Tim has written a program to load ASSEMBLY programs via BASIC, so perhaps this will help.

Another user of a Maplin receiver is **R C Harvey** of Weston-Super-Mare who decodes his data with a BBC computer and the RX-8 program. He requested recorded data to test his system so I hope that the recordings will have helped. Reader **John Williams** of Stourbridge is using a home-made receiver, a Maplin decoder and a BBC computer for producing pictures. He anticipates buying a down-converter to allow the reception of METEOSAT pictures and so requested some METEOSAT recordings for this purpose.

Winter pictures

Jim Granville of Blackpool was a keen radio man back in the 1930s and has recently started operating a weather satellite set-up that includes an Icom R9000 receiver, a 286 computer and a collection of antennas including a crossed dipole. Jim has noticed that METEOR pictures have been good but he finds the NOAAs disappointing, containing only a few shades of grey. The visible pictures from NOAA 11's mid-day passes are not too bad but with the sun so low during northern winter there is always a problem with low contrast. It is so dark that you can hear NOAA 9 change from visible to water vapour (infra-red) as it moves northwards over Norway. During March there is a rapid improvement and listening to METEOR 2/20 on 137.85MHz I could hear it all the way up to mid Greenland, whereas only four weeks ago I heard it switch off just after Scotland! Good software will allow the stretching of contrast levels and I have found this essential to use on winter pictures.

Tape recorders

Many readers will know that the humble cassette recorder can be used to store a.p.t. signals for future replay. I recorded several passes for posterity including early METEOR satellites which, at the time, could not be played back properly without the parallel recording of a time signal. Developments in digital signal processing overtook us and I can now play back those old tapes into my computer (running VGASAT) and obtain perfect reproduction. However, the tape recorder must **not** apply signal compression techniques. Most recorders will automatically compress a signal unless it is below a threshold level, so if you record straight from your receiver using excess the recording will not include the complete range of grey levels. Therefore, you have to reduce the input level, normally a potentiometer is used, often already fitted in your receiver, and this is set by trial and error until the replayed picture is good. A letter from **Tony Branton** of Worcester told me of his experiments with different recorders and he confirms the manually adjustable ones are best.

PC Decoding

More readers are moving towards the use of IBM-type PCs (personal computers) for their satellite monitoring. **Robert Fulford** of Exeter has a Commodore PC-1 computer and was wondering whether it might be suitable for pictures. Unfortunately, his model has the CGA (Colour Graphics Adapter) which was the first generation IBM screen display and is of rather limited resolution. However, Robert might be able to buy a suitable card which supplies more memory to convert the display to an enhanced version, preferably the VGA (Video Graphics Array - sometimes called the Versatile Graphics Adapter). These cards are not too expensive - try *SWM* advertisers. In addition, a hardware decoder is required and there are two or three types available as described in the special weather satellite supplement. Finally, before buying any hardware, one must check that all of the units will be compatible with the computer - a reputable manufacturer will be able to advise Robert whether a particular system will run on his machine. You can buy the computer hardware and the satellite card from the same source.

Photography

I have recently discovered the secret of stripe-free pictures of the monitor! During a visit by a local television crew to see METEOSAT gulf imagery I mentioned the fact that most of my pictures of the monitor show the well-known stripe. One of the crew told me to try an exposure of about one-tenth of a second. The result was a delight! My latest batch of 24 pictures were perfect for the first time ever. I pass this on to those who similarly may not know.

Atari-ST

A letter from **Victor Suller** of Knutsford tells me that he has found an excellent public domain satellite tracking program for this computer which he obtained from the Page 6 Software Library. Victor says that the program gives identical results to his other programs but has additional features. It is on the disc Ham Radio (ST-243).

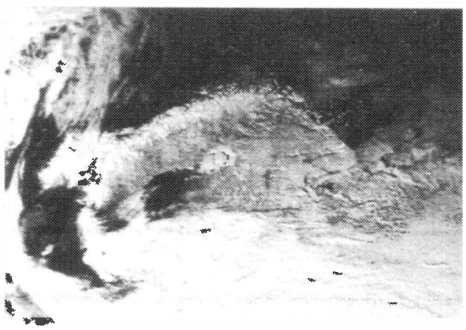

Fig. 5: Norway and Sweden in winter.

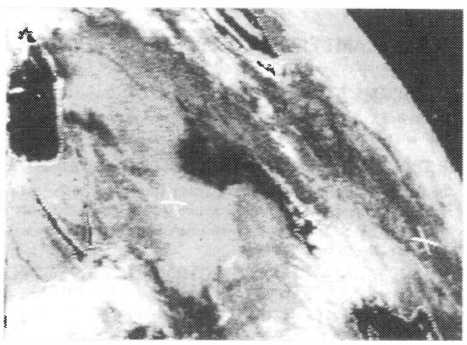

Fig. 6: METEOSAT 4 C3D frame showing the huge oil smoke cloud that formed just hours after the start of the ground offensive in Iraq.

Macintosh

Victor mentions that there is a satellite tracking program, also from the public domain, called MacSat which gives identical results to the previous programs. Thanks to Victor for much helpful information!

WXSAT Frequencies

The American NOAA satellites transmit on:
NOAAs 9 and 11 - 137.62MHz; NOAA 10 - 137.50MHz
OKEAN 2 - 137.40MHz occasional transmissions
The Russian METEORS 2/17 to 2/20 and 3/2 or 3/3 use 137.30, 137.40 or 137.85MHz when switched on. (METEOR 3/3 is on 137.30MHz and 2/20 is on 137.85MHz)

Predictions

I have included satellite pass times in some previous months and these are always based on elements current at the time, and so when *SWM* is published the actual pass times may be slightly out. I have checked the errors to see how accurate the pass times are, and not surprisingly the METEOR Series 3 (i.e. METEORS 3/2 and 3/3) came out better than the others. This is because they are in higher orbits and therefore not suffering from so much atmospheric drag. The predictions given in the January edition of *SWM* were very good for the METEORS, though I hope that you remembered that those travelling southbound out of the dark north polar regions would appear to be 'late' because you would hear them switch on as they passed into sunshine! The NOAA satellites were just a few minutes out compared to the predictions but OKEAN was several minutes out. I will include occasional sets of predictions to help those just starting out and having no suitable predictions facility. The following list is for Sunday April 28 and includes Maxel (the maximum elevation of the satellite and whether over to the east or west), and lastly whether its direction was north or southbound.

Satellite	a.o.s.	l.o.s.	Maxel	Direction
METEOR 3/3	0911	0931	47°E	NB
METEOR 2/20	0917	0934	60°W	NB
NOAA 10	0943	0956	18°W	SB
METEOR 3/3	1102	1121	42°W	NB
NOAA 11	1308	1323	44°E	NB
NOAA 11	1449	1504	35°W	NB
NOAA 9	1716	1732	57°E	NB
NOAA 10	1750	1804	38°E	NB

I hope that this list proves useful to those who are just entering this fascinating field!

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When logging details of a s.w. broadcast, it is worth remembering that almost all stations operate on frequencies that are multiples of 5kHz, e.g. 15.325MHz, 15.330MHz, 15.335MHz, etc. If your receiver has a digital frequency display and it indicates a frequency ending in another figure, then adjust the main tuning control slightly so the signal is correctly tuned.

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 7/3/91.

Some nights, weak l.w. signals from Europe and N.Africa were heard in Quebec by **Alan Roberts**. On February 11, he logged Saarlouis, Germany on 183kHz as 21232 at 0635UTC. Two signals from France were heard on the 16th, Roumoules on 216 rated 21232 at 0618 and Allouis on 162, which peaked 23333 at 0623. The best conditions were on February 28, when two signals from Algeria were heard. He says, "There was no trace of Donebach on 153kHz, so the Bechar signal was clear". He logged it as 23233 at 0555. Due to an aircraft beacon on 248kHz he used u.s.b. to resolve Tipaza on 252, which he rated as 21222 at 0610.

The comments on the signal strength from Atlantic 252 (Jan & Mar '91) prompted **Bob Ellis** (Matlock) to 'phone the station. An engineer confirmed that 500kW is radiated until 1800UTC, when it is reduced to 100kW. This change equates to 6.98dB, so a reduction in S-meter reading should be evident.

MW Transatlantic DX

While searching the band in Bridgwater at 2300, **Darren Beasley** heard a transatlantic signal for the first time! It was CJYQ in St.John's, NF on 930kHz. At 2330, he logged VOCM on 590. He says, "Reception was not too good and the signals sometimes faded away totally. At best I rated them as 23322". He also heard up a very weak signal from Canada on 1400kHz, but could not identify it. Encouraged by this, Darren now intends to search the band from 0000 until 0400UTC!

In Co.Wexford, **Bart O'Brien** logged CJYQ as SIO232 at 2329. His reception last month of the Caribbean Beacon, Anguilla on 1610kHz has now been confirmed by QSL. CJYQ was also heard by **Darran Taplin** in Brenchley on two nights. He rated their signal as 23422 at 2330 and a remarkable 44433 at 0108. At 0050 he logged CBM in Montreal, Quebec on 940 as 22322. He was very surprised to hear these because he was using a Yaesu FRA-7700 active antenna ahead of his FRG-7700 receiver. Signals from six stations in the USA were logged by **Tim Shirley** in Bristol. The earliest was from WMCA in New York on 570, which he rated SIO334 at 2145.

While listening at all hours of the night in Grimsby, **Jim Willet** logged 18 broadcasts from the USA, Canada, the Caribbean and S.America. He found conditions to be quite good and rated CJYQ as SIO333 at 2310, but others were SIO222. No doubt his giant 4m square loop helps!

Other MW DX

Sky wave signals from stations in N.Africa have reached the UK after dark. Those from Algeria were Les Trembles 549 (600kW) logged by **Cliff Stapleton** in Torquay; Ain Beida 531 (600/300kW) SIO333 at 1830 by Tim Shirley; Alger 891 (600/300kW) 23323 at 2310 by **Sheila Hughes** in Morden; Alger 981 (600/300kW) heard in the evening by **Phil Townsend** in E.London.

MW Local Radio DX

The m.w. programming of ILR Southern Sound and ILR Ocean Sound has been combined to form 'South Coast Radio', radiated from Farlington Marshes on 1170, Southwick on 1323 and Veals Farm on 1557kHz. 'Classic hits' are broadcast on their v.h.f. outlets, now renamed 'Ocean Sound FM' (96.7/97.5MHz) and 'Southern Sound FM' (102.4/103.5MHz).

Short Wave Reports

Solar activity is continuing at a very high level. Some days, solar flares have disturbed the ionosphere and disrupted reception in the h.f. bands. This is likely to continue.

Several broadcasters are taking advantage of the good propagation conditions in the **25MHz (11m)** band. They include R.Denmark via RNI 25.730 (Da to S.Am 1130-1155) SIO444 at 1150 by **John Coulter** in Winchester; RNI Oslo, Norway 25.730 (Norw to Asia 1200-1230, Eng Sat/Sun) 35544 at 1200 by **Roy Patrick** in Derby; BBC via Daventry 25.870 (Fr to W.Africa 1200-1245) 45555 at 1245 in Quebec; DW via Julich 25.740 (Ger to US 1200-1400) SIO544 at 1300 by **John O'Halloran** in Harrogate; R.Australia via Carnarvon 25.750 (Eng to M. East 0800-1055) 24442 at 0810 by **David Edwardson** in Wallsend; RFI via Issoudun 25.820 (Fr to E.Africa 1000-1555) 43333 at 1530 by **Jim Cash** in Swanwick; R.Moscow, USSR 25.780 (Eng to E.Africa, M. East ?-1400) 44444 at 1244 by **Denis Bosher** in Dolgellau; HCJB Quito, Ecuador 25.950 (u.s.b.+ p.c.) SIO343 at 1345 by **Bill Clark** in Rotherham.

Some days, good long distance reception was noted in the **21MHz (13m)** band. R.Australia's signals to C/SE. Asia via Darwin 21.525 (Eng 0100-0900) was 34333 at 0701 by **Kenneth Reece** in Prenton; to Asia via Carnarvon 21.775 (Eng 0100-0958) as 34343 at 0930 by **Ron Damp** in Worthing.

Most broadcasts to Europe have been heard clearly. Those from R.Japan via Moyabi 21.690 (Eng 0700-0800) were 53333 at 0745 by **Chris Shorten** in Norwich; the Voice of the UAE in Abu Dhabi 21.735 (Ar 0200-1300) SIO455 at 0900 by **Kenneth Buck** in Edinburgh; UAE R.Dubai 21.605 (Ar, Eng 0615-1640) SIO444 at 1030 in Rotherham; R.Pakistan, Islamabad 21.520 (Eng 1100-1120) 43543 at 1115 by **John Nash** in Brighton; R.Japan via Moyabi 21.700 (Eng 1500-1600) 32233 at 1515 by **Robin Harvey** in Bourne; WCSN Scotts Corner, MN 21.780 (Eng 1400-1600) SIO444 at 1547 by **Ted Walden-Vincent** in Gt.Yarmouth; WYFR via Okeechobee 21.525 (Eng 1600-1700) SIO333 at 1630 in Torquay; HCJB Quito, Ecuador 21.480 (Eng 1900-2000) 44333 at 1915 by **Ted Agombar** in Norwich; also 21.455 (u.s.b. + p.c.) 43344 at 1918 in Dolgellau.

Some broadcasts to other areas were logged: BBC via Tsang Tsui, Hong Kong 21.715 (Eng to C.Asia 0300-0900) noted as SIO454 at 0810 by **Simon Hamer** in New Radnor; R.Austria Int via Moosbrunn 21.490 (Eng to Australia, NZ 0800-1100) SIO333 at 0830 by **Cyril Kellam** in Sheffield; R.Yugoslavia, Belgrade 21.715 (Eng to US 1300-1330) 55544 at 1310 in Brenchley; BSKSA Riyadh, Saudi Arabia 21.505 (Ar to N.Africa 1100-1700) 45544 at 1340 in Wallsend; BBC via Limassol 21.470 (Eng to E.Africa 0900-1615) SIO434 at 1345 in Harrogate; SRI via Schwarzenburg 21.630 (Eng, Fr, Ger to M. East, Africa 1515-1700) 23332 at 1515 in Swanwick; R.Sweden via Horby 21.500 (Sw, Fr, Eng to US 1430-1600) 22232 at 1558 by **Ron Galliers** in N.London; R.Norway Int via Kvitsoy 21.730 (Norw, Eng to E.Africa 1600-1700) noted as 'clear' at 1610 by **Charles Beanland** in Gibraltar; WCSN Scotts Corner, MN 21.640 (Eng to E.Africa 1600-1800) 44444 at 1605 by **Donald Blashill** in Cheltenham; VOA via Wertachtal 21.535 (Ar to M. East 1500-2200) SIO322 at 1734 by **Philip Rambaut** in Macclesfield; BBC via Ascension Island 21.660 (Eng to

Local Radio DX

Freq kHz	Station	IBA BBC	Power kW	DXer
558	Spectrum R.	I	7.50	B
585	R.Solway	B	2.00	C,F
603	Invicta Snd(Coast)	I	0.10	B
603	R.Gloucester	B	0.10	B,C*
630	R.Bedfordshire	B	0.20	B
630	R.Cornwall	B	2.00	B,C
657	R.Clwyd	B	2.00	A,B
657	R.Cornwall	B	0.50	C,F*
666	DevonAir R.	I	0.34	B,C
729	BBC Essex	B	0.20	B,G*
738	Hereford/Worcester	B	0.037	A,B,C
756	R.Cumbria	B	1.00	C
756	R.Shropshire	B	0.63	B,C
765	BBC Essex	B	0.50	B,F
774	R.Kent	B	0.70	A,B
774	Severn Sound (3CR)	I	0.14	B,C
792	Chiltern R.	I	0.27	B
801	R.Devon	B	2.00	B,C
819	Hereford/Worcester	B	0.037	B,C
828	R.WM	B	0.20	C
828	2CR	I	0.27	B,C
837	R.Cumbria	B	1.50	C
837	R.Leicester	B	0.45	B
855	R.Devon	B	1.00	B,C
855	R.Lancashire	B	1.50	C
855	R.Norfolk	B	1.50	A
873	R.Norfolk	B	0.30	A,B
936	GWR (Brunel R.)	I	0.18	A,B,C
945	R.Trent (GEM-AM)	I	0.20	A,B,C,D*
954	DevonAir R.	I	0.32	B,C
954	R.Wyvern	I	0.16	C
990	R.Devon	B	1.00	B,C
999	R.Solent	B	1.00	A,B
999	Red Rose R.	I	0.80	C
1026	Downtown R.	I.	1.70	C
1026	R.Cambridgeshire	B	0.50	A
1026	R.Jersey	B	1.00	A,B,C
1035	Northsound Radio	I.	0.78	C
1035	R.Kent	B	0.50	A,B
1035	West Sound	I	0.32	C
1107	R.Northampton	B	0.50	A,B
1116	R.Derby	B	1.20	C
1116	R.Guernsey	B	0.50	B,C
1152	LBC (L.Talkback R)	I	23.50	B
1152	Piccadilly R.	I	1.50	C*,E*
1152	Plymouth Sound	I	0.32	C
1152	R.Broadland	I	0.83	C*,E*
1152	R.Clyde (Clyde 2)	I	3.60	C
1161	GWR (Brunel R.)	I	0.16	C
1161	R.Sussex	B	1.00	B,C*
1161	R.Tay	I	1.40	C
1161	Viking R.(C.Gold)	I	0.35	C*
1170	Ocean Sd.(C.Gold)	I	0.12	B
1170	Swansea Sound	I	0.58	C
1170	TFM Radio (GNR)	I	0.32	C*
1242	Invicta Snd(Coast)	I	0.32	C*
1242	Isle of Wight R.	I	0.50	B,C
1260	GWR (Brunel R.)	I	1.60	A,B,C
1260	Leicester (GEM-AM)	I	0.29	A
1260	Marcher Sound	I	0.64	C
1305	Red Dragon (Touch)	I	0.20	A,B
1323	R.Bristol	B	0.63	C
1323	Southern Sound	I	0.50	B,G*
1332	Hereward R.	I	0.60	C*
1332	Wiltshire Sound	B	0.30	B,C*
1359	R.Solent	B	0.85	B
1368	R.Sussex	B	0.50	B
1368	Wiltshire Sound	B	0.10	B
1413	Sunrise R.	I	0.125	B
1431	Radio 210	I	0.14	B
1449	R.Cambridgeshire	B	0.15	B
1458	GLR	B	50.00	B,C*
1458	GMR	B	5.00	C*
1458	R.Cumbria	B	0.50	C
1458	R.Devon	B	2.00	B,C
1458	R.Newcastle	B	2.00	C*
1458	Radio WM	B	5.00	C
1475	C'ty Snd(1st Gold)	I	0.50	B,C
1485	R.Merseyside	B	1.20	C
1485	R.Sussex	B	1.00	B
1503	R.Stoke-on-Trent	B	1.00	B,C
1521	R.Mercury	I	0.64	B,C
1521	R.Nottingham	B	0.50	C
1530	Pennine R.(C.Gold)	I	0.74	F*
1530	R.Essex	B	0.15	B
1530	R.Wyvern	I	0.52	B,C
1548	Capital R. (Gold)	I	97.50	B,C*,F*
1548	R.Bristol	B	5.00	B,C
1548	R.City (City Talk)	I	4.40	C,F*
1557	Chiltern R.	I.	0.76	C*
1557	Ocean Sound(C.Gold)	I	0.50	B
1557	R.Lancashire	B	0.25	C
1584	Gatwick	I	?	B,F*
1584	R.Nottingham	B	1.00	C*
1584	R.Tay	I	0.21	C
1602	R.Kent	B	0.25	A,B,C*

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

DXers:
A: Sheila Hughes, Morden.
B: George Millmore, Wootton, I.O.W.
C: Bart O'Brien, Co.Wexford.
D: John O'Halloran, Harrogate.
E: Roy Patrick, while in Leek.
F: Tim Shirley, Bristol.
G: Phil Townsend, London

long medium & short

S.Africa 0900-1745) 44434 at 1726 by **Rhoderick Illman** in Thumrait, Oman.

Good lomg distance reception was noted in the **17MHz (16m)** band on some days. The signals to Pacific areas from Radio New Zealand Int. via their 100kW transmitter at Rangataiki, N.Island on 17.770 (Eng 2111-0630 Mon-Sat; 0000-0630 Sun) were 44333 at 0420 in Prenton. Some signals from Radio Australia have also reached here. Their signals to SE.Asia via Shepparton 17.715 (Eng 0900-1030) was 22232 at 0909 in N.London; to S.Asia via Carnarvon 17.630 (Eng 1500-1800) SIO444 at 1506 by **Fred Pallant** in Storrington; to C.Pacific, W.USA via Shepparton 17.795 (Eng, Fr 2030-0800) SIO343 at 2100 in New Radnor.

Among the 16m broadcasts noted in the morning were Vatican R, Rome 17.710 (Eng to Africa 0500-0530) rated 44444 at 0509 in Oman; R.Sophia, Bulgaria 17.825 (Eng to Europe 0730-0800) 43333 at 0800 in Norwich; R.Finland via Pori 17.800 (Fin, Eng to Australia, SE.Asia 0800-0925) SIO555 at 0800 in Harrogate; R.Japan via Yamata 17.890 (Eng, Jap to Oceania 0700-0900) SIO444 at 0900 in Sheffield; R.Beijing, China 17.710 (Eng to S.Pacific 0900-1100) 24333 at 0930 in Morden; SRI via Schwarzenburg 17.670 (Eng to Pacific 1000-1030) 45444 at 1008 by **Robin Clark** in Plymouth; Voice of Greece, Athens 17.525 (Gr, Eng to USA 1200-1250) SIO455 at 1200 by **Ken Willis** in Scarborough.

Later, DW via Wertachtal 17.765 (Eng to S.Africa 1500-1550) was noted as 52333 at 1506 in Swanwick; R.Sweden via Horby 17.880 (Sw, Fr, Eng to USA 1430-1600) SIO444 at 1545 by **Phil Cooper** in Guernsey; RFI via Issoudun 17.620 (Eng to Africa 1600-1700) SIO444 at 1630 by **Neil Wheatley** in Lytham St. Annes; Voice of Israel, Jerusalem 17.545 (Heb to Europe 0615-1900) SIO444 at 1650 in Gt.Yarmouth; R.Norway Int, Oslo 17.760 (Eng to W.USA 1700-1730) 44344 at 1700 in Worthing; R.RSA Johannesburg 17.790 (Eng to W.Africa 1700-1800) SIO434 at 1705 in Torquay; BRT via Wavre 17.550 (Du, Fr, Eng to Africa 1700-1855) 53333 at 1835 in Norwich; RCI via Sackville 17.820 (Eng to Africa 1900-1930) heard at 1900 by **Paul Hilton** in Newbury; HCJB Quito 17.790 (Eng to Europe 1900-2000) SIO433 at 1940 by **Alf Gray** in Birmingham; WYFR via Okeechobee 17.612 (Ar, Fr, Port, Eng to Europe, Africa 1600-2200) 33543 at 2012 in Brighton; R.Nederlands via Bonaire 17.605 (Fr, Du to Africa 1830-2125) SIO543 at 2056 by **Thomas Barnett** in Slough; R.Cultura Sao Paulo, Brazil 17.815 (Port to S.America 0900-0300) SIO212 at 2220 in Macclesfield; WSHB Cypress Creek 17.555 (Eng to S.America 2000-0000) 44343 at 2252 in Bourne; VOA via Tinang 17.735 (Eng to E.Asia, Pacific 2100-0100) SIO212 at 2303 by **Julian Wood** in Elgin; R.Cairo, Egypt 17.770 (Ar to S.America 2345-0045) 45554 at 2357 in Wallsend.

Freq kHz	TX Location	Country	Power kW	DXer
531	Ain Beida	Algeria	600	J*
531	Leipzig	Germany	100	H,I*
531	Oviedo	Spain	10	H
531	Beromunster	Switzerland	500	H
540	BRT-2 Wavre	Belgium	150/50	F,H*,I*,J*
549	Les Trembles	Algeria	600	L*
549	Nordkirchen	Germany	100	F,H*,I*
558	Rostock	Germany	20	I*
567	Berlin	Germany	100	H*,J
567	RTE-1 Tullamore	Ireland (S)	500	F,H*,I*,L*,M*
576	Stuttgart	Germany	500	F*,I*,L*
585	Orf Wien	Austria	600	I*
585	FIP Paris	France	8	H*
585	RNE-1 Madrid	Spain	200	E*,F*,H,I*,M*
594	Pleven	Bulgaria	250	I*,L*
594	Frankfurt	Germany	400	H*
612	RTE-2 Athlone	Ireland (S)	100	H*,I*
612	Sarajevo	Yugoslavia	600	L*
621	RTBF-1 Wavre	Belgium	80	H*,I*,M*
630	Vigra	Norway	100	F*,J*
639	Liblice	Czechoslovakia	1500	H*
639	La Coruna	Spain	100	F*,H*,L*,M*
648	BBC Orfordness	UK	500	H*
657	RCE-2 Madrid	Spain	20	M*
666	Bodenseesender	Germany	300/180	L*
675	Hilversum-3 Lopic	Holland	120	F,H*,M*
684	RNE-1 Sevilla	Spain	250	F*,M*
684	Beograd	Yugoslavia	2000	H*
702	Presov	Czechoslovakia	400	J*
711	Rennes 1	France	300	H*,L*,M*
720	BBC-R4 Lots Rd	London UK	0.5	H*
729	RTE-1 Cork	Ireland (S)	10	F*
729	Oviedo	Spain	50	F*,M*
738	Paris	France	4	H
738	RNE-1 Barcelona	Spain	250	F*,L*,M*
747	Hilversum-2 Flevo	Holland	400	F,H*,M*
783	Burg	Germany	1000	H*,M*
792	Limoges	France	300	H*
801	Munich	Germany	420	M*
810	SER Madrid	Spain	20	H
810	Westerglen	UK	100	H*,M*
846	Rome	Italy	540	H*,L*
855	Berlin	Germany	100	H*
864	Paris	France	300	H*,L*
864	Yerevan	USSR	150	G
873	AFN via Frankfurt	Germany	150	H*,I,M*
873	Moscow	USSR	150	I
882	Washford	UK	70	H*,I,M*
891	Algiers	Algeria	600/300	F*,H*,I,M*
900	Milan	Italy	600	I,M*
918	R.Intercont. Madrid	Spain	20	B*
918	R.Ljubljana	Yugoslavia	600/100	I*
927	BRT-1 Wolvertem	Belgium	300	H*,I*,M*
936	Bremen	Germany	100	I*,M*
945	Toulouse	France	300	H*
945	Rostov-na-Donu	USSR	300	I*
954	RCE Madrid	Spain	20	I*
963	Pori	Finland	600	H*,K*,M*
972	Hamburg	Germany	300	H*,M*
981	Alger	Algeria	600/300	M*
1008	Hilversum-5 Flevo	Holland	400	H*,M*
1017	Wolfsheim	Germany	600	L*,M*
1062	Kalundborg	Denmark	250	F*
1089	Krasnodar	USSR	300	G
1107	AFN via Munich	Germany	40	F*
1107	RNE-5 Barcelona	Spain	20	F*
1125	La Louviere	Belgium	20	H*
1125	RNE 5	Spain	10	F*
1125	Llandrindod Wells	UK	1	F*
1134	Zadar	Yugoslavia	1200	H*,M*
1143	AFN via Stuttgart	Germany	10	B*
1179	Solvesborg	Sweden	600	C*,H*,L*,M*
1197	BBC-R3 B'm'th	UK	0.5	H*
1206	Haifa	Israel	50	G
1224	Nasiriya	Iraq	300	G
1233	Melnik	Czechoslovakia	400	L*
1233	Al Khatisah	Qatar	100	G
1251	Marcali	Hungary	500	M*
1251	Huisberg	Netherlands	10	F*
1260	Valencia	Spain	20	F*
1287	Litomysl/Liblice	Czechoslovakia	300/200	M*
1296	BBC Orfordness	UK	500	M*
1314	Kvitsoy	Norway	1200	F*,H*,L*,M*
1323	BBC Zyyi	Cyprus	50	G
1323	R.M'cow via Leipzig	Germany	150	M*
1332	Rome	Italy	300	M*
1341	Ulst.Lisnagarvey	Ireland (N)	100	H*
1350	Nancy/Nice	France	100	A
1359	Berlin	Germany	250/100	A
1359	Moscow	USSR	150	L*
1368	Manx R., Foxdale	IOM	20	A
1377	Lille	France	300	A,H*,M*
1386	Kaliningrad	USSR	500	H*,M*
1395	R.Tirana via Lushnje	Albania	1000	E*,F*
1395	Alicante	Spain	2	F*
1404	Brest	France	20	H*
1422	Heusweiler	Germany	1200/600	H*,M*
1422	Riyadh	Saudi Arabia	20	G
1440	Marnach	Luxembourg	1200	C*,H*,L*,M*
1503	Stargard	Poland	300	F*,H*
1512	BRT Wolvertem	Belgium	600	C*,E*,F*,H*,K
1530	Vatican Radio, Rome	Italy	150/450	F*,K*,L*,M*
1539	Mainflingen	Germany	700	H*
1584	Hamadan	Bahrain	1	G
1593	Langenberg	Germany	400/800	A*,H*,M*

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

DXers:

A: Denis Bosher, Oolgellau.
B: Bill Clark, Rotherham.
C: Robin Clark, Plymouth.
D: Robin Harvey, Bourne.
E: Paul Hilton, Newbury.
F: Sheila Hughes, Morden.
G: Rhoderick Illman, Thumrait, Oman.
H: George Millmore, Wootton IOW.
I: John O'Halloran, Harrogate.
J: Tim Shirley, Bristol.
K: Chris Shorten, Norwich.
L: Cliff Stapleton, Torquay.
M: Phil Townsend, London.

Medium Wave DX

The **15MHz (19m)** broadcasts to Pacific areas from R.New Zealand Int. have reached the UK some evenings. In Cambridge, **Mike Smith** rated their signals on 15.130 (Eng 1800-2111 Sun-Fri) as 32332 at 1830. Some of Radio Australia's broadcasts via Shepparton have been clearly received here. Their signal to C.Asia on 15.170 (Chin 1000-1400) was rated 54444 at 1100 in Bridgwater; to S.Pacific areas on 15.240 (Eng 2200-1030) 44444 at 0825 in Cheltenham; to C.Pacific areas on 15.320 (Eng 2030-2200) SIO343 at 2100 in New Radnor; to SE.Asia on 15.465 (Eng 2030-0030) 53444 at 2041 in Swanwick.

Broadcasters using the 19m band to reach Europe include R.Algiers via Bouchaoui 15.160 (Fr 0700-1800) rated SIO444 at 1306 in Winchester; RNB Brasillia, Brazil 15.265 (Eng, Ger 1800-2000) 33343 at 1900 by **Patrick McKeever** in Birmingham; RCI via Sackville 15.325 (Eng 1930-2000) 44434 at 1940 in Norwich; VOFC Taipei, Taiwan 15.270 (Fr, Ger 2000-2200) 44444 at 2002 in N.London; WSHB Cypress Creek 15.610 (Eng 2000-2200) SIO455 at 2020 in Edinburgh; R.Damascus, Syria 15.095 (Ger, Fr, Eng 1805-2105) SIO433 at 2025 by **David Middlemiss** in Eyemouth; Voice of Vietnam, Hanoi 15.010 (Eng 2030-2100) 55544 at 2035 in Wallsend; R.Korea, Seoul 15.575 (Eng 2030-2130) SIO434 at 2035 in Torquay; SLBC Colombo, Sri Lanka 15.120 (Eng 1830-2130) 45344 at 2115 by **John Robertson** in Alnwick; VOA via Tangier (Eng 2100-2200) 43343 at 2109 in Plymouth; RAE Buenos Aires, Argentina 15.345 (Ar, Eng, Ger, Fr, It, Sp 1800-0000), noted as 'fairly good' at 2147 in Gibraltar; WINB Red Lion 15.185 (Eng 2002-2245) 34433 at 2149 in Brenchley; WWCR Nashville 15.690 (Eng, Ger 1200-0100) SIO433 at 2300 in Birmingham.

Some broadcasts to other areas originate from R.Pyongyang, N.Korea 15.180 (Eng to SE.Asia 0400-0500) rated 24222 at 0414 in Prenton; R.Japan via Yamata 15.325 (Eng to Middle East 0700-0800) 34333 at 0700 in Morden; R.Beijing, China 15.400 (Eng to S.Pacific 0900-1100) SIO344 at 1000 in Harrogate; KFBS Saipan, N.Mariana Islands 15.375 (Sun, Jav, Ind, Mal to SE.Asia 1000-1300) SIO333 at 1042 in Macclesfield; RTL Luxembourg 15.350 (Eng to E.USA 1000-1400, Fr 1400-1000), heard at 1100 in Derby; AIR via Aligarh, India 15.020 (Sin to S,Asia 1300-1500) SIO223 at 1423 in Gt.Yarmouth; R.RSA Johannesburg 15.270 (Eng to E/C/S.Africa 1500-1800) 32332 at 1506 by **Alan Smith** in Northampton; R.Finland via Pori 15.185 (Eng to Middle East, E.Africa 1500-1530) 43333 at 1515 in Worthing; KHBI Saipan, N.Mariana Islands 15.610 (Eng to NE.Asia 1600-1800) 43543 at 1600 in Brighton; R.Portugal, Lisbon 15.140 (Port to S.America 1300-2100, Sat/Sun only) SIO555 at 1800 in Rotherham; R.Nederlands via Talata Volon 15.570

(Eng to C/S.Africa 1830-1925) 44433 at 1848 in Oman; RNI Oslo, Norway 15.220 (Eng to New Zealand 1900-1930 Sat/Sun), heard at 1900 by **J. Jager** in Cape Town, S.Africa; RNE via Arganda 15.395 (Eng to M. East 1900-2000) 53444 at 1912 in Dolgellau; ISBS Reykjavik, Iceland 15.770 (Ic to USA 1930-2010) 43333 at 1930 in Norwich; BBC via Ascension Island 15.260 (Eng to S.America 2000-0330) 42333 at 2005 in Bourne; RCI via Sackville 15.150 (Eng to Africa 2130-2200) SIO444 at 2130 in Sheffield.

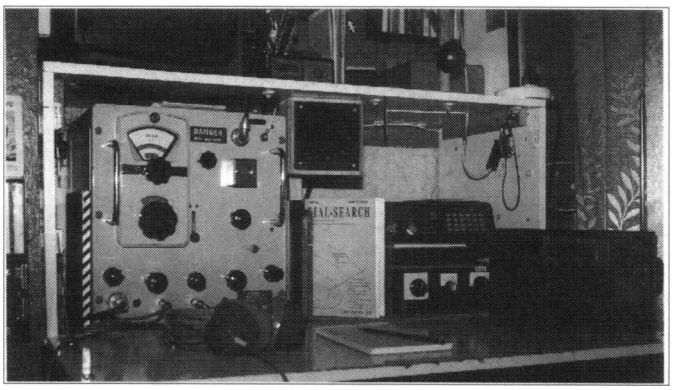
Potent signals from R.Australia have reached the UK in the **13MHz (22m)** band. The transmission to C.Pacific areas via Shepparton 13.705 (Eng 0630-0930) was rated SIO433 at 0910 in Macclesfield; to S.Asia via Carnarvon 13.745 (Eng 1530-2100) SIO423 at 1610 in Guernsey and 44544 at 2010 in Brighton; to C.Pacific via Shepparton 13.705 (Eng 1900-2130) SIO454 at 2045 in New Radnor; to S.Asia via Carnarvon 13.605 (Eng 2200-2257) SIO444 at 2200 by **John Stevens** in Largs.

Other occupants of the band include DW via Leipzig 13.610 (Eng to W.Africa 0600-0650) 33433 at 0640 in Prenton; BRT Brussels, Belgium 13.675 (Eng to Europe 0730-0755) 53333 at 0740 in Norwich and 33333 at 0731 in Oman; R.Korea, Seoul 13.670 (Eng to Europe 0800-0900), heard at 0802 in Cape Town; R.Austria Int, via Moosbrunn 13.730 (Ger, Fr, Eng, Sp, Ar to Europe 0400-1700) 43333 at 1032 in N.London; R.Jordan, Al Karanah 13.655 (Ar to Europe 1100-1400), heard at 1210 in Torquay; ISBS Reykjavik, Iceland 13.830 (Ic to Europe 1215-1245) 55555 at 1240 in Bridgwater; BBC via Rampisham 13.660 (Ar to N.Africa 1250-1800) SIO444 at 1250 in Winchester; SRI via Sottens 13.685 (Eng, Fr, It to Middle East 1515-1700) SIO444 at 1535 in Gt.Yarmouth; UAE R.Dubai 13.675 (Ar, Eng to Europe 1605-2055) 44434 at 1848 in Norwich; R.Nederlands via Flevo 13.700 (Eng to W.Africa 2030-2125), heard at 2030 in Newbury; WHRI Noblesville 13.760 (Eng, Sp, Port, Yu to Europe 1700-0000) SIO444 at 2030 in Edinburgh; WSHB Cypress Creek 13.760 (Eng to S.America 0000-0400) SIO544 at 0030 in Harrogate.

There is plenty to interest the listener in the **11MHz (25m)** band! Amongst the many log entries were HCJB Quito, Ecuador 11.835 (Eng to Europe 0700-0830) rated 44444 at 0700 in Newbury; KFBS Saipan, N.Mariana Islands 11.650 (Russ to N.Asia, E.Europe 0900-1400) 45444 at 1200 in Bridgwater; R.Norway Int, Oslo 11.860 (Norw to Europe, W.Africa 1300-1330) SIO444 at 1325 in Eyemouth; Voice of the Mediterranean, Malta 11.925 (Eng to N.Africa, S.Europe 1400-1600) SIO343 at 1400 in Torquay; KTWR Guam 11.650 (Eng to S.Asia 1445-1700) 35433 at 1515 in Derby; R.Australia via Carnarvon 12.000 (Eng to S.Asia 1800-2100) SIO232 at 1800 in Winchester; RNB Brasillia, Brazil 11.780 (Port to S.America 0800-2300) SIO333 at 2130 in Largs; AIR via Aligarh 11.620 (Hi, Eng to Europe 1945-2230) 44333 at 2230 in Bourne; R.Sophia, Bulgaria 11.680 (Eng to Europe 2230-2300) SIO333 at 2240 in Elgin; R.Japan via Moyabi 11.735 (Jap, Eng to Europe, Middle East, Africa 2200-0000) SIO444 at 2330 in Edinburgh.

Some mornings, the **9MHz (31m)** broadcasts from R.New Zealand Int. were received quite clearly in the UK. In Largs, their transmission on 9.700 (Eng to Pacific areas 0630-1110) was rated SIO222 at 0850. Among the many other log entries were WCSN Scotts Corner 9.840 (Eng to Europe 0600-1000), rated 44334 at 0900 in Cambridge; R.Pyongyang, N.Korea 9.325 (Eng to Europe, N.Africa, Middle East 1500-1600) SIO323 at 1545 in Eyemouth; R.Jordan, Al Karanah 9.560 (Ar, Eng to Europe, USA 1415-0030) SIO433 at 1900 in Scarborough; R.Budapest, Hungary 9.835 (Eng to Europe 1930-2000) 33433 at 1951 by **John Sadler** in Bishops Stortford; VOIRI Tehran, Iran 9.022 (Eng to Europe 1930-2030) SIO544 at 2030 in Slough; R.Cairo, Egypt 9.900 (Eng to Europe 2115-2245) SIO555 at 2117 in Edinburgh; RCI via Sackville 9.760 (Eng to Europe 2200-2300) SIO222 at 2227 in Elgin; Voice of Turkey, Ankara 9.445 (Eng to USA 2300-0000) SIO444 at 2330 in Lytham St. Annes; R.Beijing via Mali 9.770 (Eng to USA 0000-0100), noted as 'good' at 0030 in Gibraltar.

The broadcasters using the **7MHz (41m)** band to reach listeners in Europe include WWCR Nashville 7.520 (Eng 0200-0600, also to USA) rated 44444 at 0424 in Prenton; AWR via Forli 7.230 (Eng 0830-0900) SIO433 at 0830 in Sheffield; R.Romania Int, Bucharest 7.195 (Eng 1930-2030) 53333 at 1943 in Swanwick; RCI via Daventry 7.235 (Eng 1930-2000) 55444 at 1945 in Norwich; AIR via Aligarh 7.412 (Eng, Hi 1845-2230) SIO544 at 1945 in Scarborough; Voice of Israel, Jerusalem 7.465 (Eng 2000-2300, also to USA) SIO555 at 2035 in Slough; R.Budapest, Hungary 7.220 (Eng 2100-2130) SIO333 at 2115 in Birmingham; RHC Habana via USSR? 7.215 (Eng 2200-2300) 54444 at 2200 in Brenchley; R.Prague, Czechoslovakia 7.345 (Eng 2200-2215) 54544 at 2204 in Plymouth; R.Beijing via USSR 7.170 (Eng



Patrick McKeever's listening post in Birmingham.

Freq kHz	TX Location	Country	Power kW	DXer
153	Bechar	Algeria	1000	B*,E*
153	Donebach	Germany	500	A*,C,D,G,H*
153	Brasov	Romania	1200	G
162	Allouis	France	2000	A*,B*,C,D,F*,G,H*
171	Kaliningrad	USSR	1000	A,C,G,H*
171	Moscow	USSR	500	G
177	Oranienburg	Germany	750	A,B*,D,H*
183	Saarlouis	Germany	2000	A*,B*,C,D,F*,H*
189	Motala	Sweden	300	G*
189	Tbilisi	USSR	500	G
198	BBC Droitwich	UK	500	A,B*,C,H*
207	Munich	Germany	500	A*,C,D,H*
207	Vatnsendi	Iceland	100	E*
216	Roumoules	Monaco	1400	B*,C,D,F*,H*
216	Oslo	Norway	200	A*
225	Konstantinow	Poland	2000	A*,C,D,H*
234	Junglinster	Luxembourg	2000	B*,D,H*
243	Kalundborg	Denmark	300	A*,C,D,H*
252	Tipaza	Algeria	1500	A*,F*
252	Atlantic 252	S.Ireland	500	A*,B*,C,D,H*
261	Burg	Germany	200	A*,C,D,H*
261	Moscow	USSR	2000	B*,D,G*
270	Topolna	Czechoslovakia	1500	A*,B*,C,H*
279	Minsk	USSR	500	B*,H*

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

DXers:
A: Sheila Hughes, Morden.
B: Patrick Mc Keever, Birmingham.
C: George Millmore, Wootton, IOW.
D: Fred Pallant, Storrington.
E. Kenneth Reece, Prenton.
F: Alan Roberts, Quebec, Canada.
G: Tim Shirley, Bristol.
H: Phil Townsend, London.

Long Wave DX

Equipment Used

Ted Agombar, Norwich: Grundig Satellit 400 + r.w.
Thomas Barnett, Slough: Kenwood R2000 + r.w.
Charles Beanland, Gibraltar: Sangean ATS-803 + a.t.u. + r.w.
Darren Beasley, Bridgwater: Philips D2935 + Hexagon loop or a.t.u. + 10m wire.
Donald Blashill, Cheltenham: Grundig Satellit 500 + built-in whip.
Denis Bosher, Dolgellau: Matsui MR-4009 + single loop.
Kenneth Buck, Edinburgh: Lowe HF-225 + r.w. in loft.
Jim Cash, Sanwick: Kenwood R5000 + trap dipole.
Bill Clark, Rotherham: Sony ICF-7600SW + r.w.
Robin Clark, Plymouth: Saisho SW5000 + 16m wire.
Phil Cooper, Guernsey: Sony ICF-7600DS + r.w.
John Coulter, Winchester: Yaesu FRG-7 + r.w.
Ron Damp, Worthing: Racal RA17 + chimney mounted whip.
David Edwardson, Wallsend: Trio R600 + inverted V trap dipole.
Ron Galliers, London: Philips D2935 + 30m r.w.
Alf Gray, Birmingham: Codar CR70 + PR30 + a.t.u. + Ex-Army whip.
Simon Hamer, New Radnor: Lafayette HE30 or Grundig S1400 + loop.
Robin Harvey, Bourne: Matsui MR-4099 + s.w. loop.
Paul Hilton, Newbury: Sony ICF-2001 + Datong AD270.
Sheila Hughes, Morden: Sony ICF-7600DS + loop or Panasonic DR48 + 15m wire.
Rhoderick Illman, Thumrait, Oman: Sony ICF 7600DS + 23m wire
J. Jager, Cape Town, S.Africa: Philips D2935 + 20m wire.
Cyril Kellam, Sheffield: Sony ICF-7600DS + AN-1 or 5m wire.
David Middlemiss, Eyemouth: Yaesu FRG-7 + r.w.
George Millmore, Wootton, IOW: Tatung TMR 7602 + loop.
John Nash, Brighton: Kenwood R5000 + Datong AD370.
Bart O'Brien, Co.Wexford: Sony ICF-2001D + hexagon loop.
John O'Halloran, Harrogate: Racal RA17 + a.t.u. + r.w.
Fred Pallant, Storrington: Trio R2000 + r.w. in loft.
Roy Patrick, Oerby: Lowe HF 125 + 44m wire.
Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.
Kenneth Reece, Prenton: Icom R9000 or Kenwood R5000 or NRD-525 + delta loop or r.w.
Alan Roberts, Quebec, Canada: Lowe HF-225 + 11m or 19m dipole.
John Robertson, Alnwick: Lowe HF-225 + E/W r.w.
John Sadler, Bishops Stortford: Omega 4020 + a.t.u. + whip.
Tim Shirley, Bristol: Trio R600 + loop or r.w.
Chris Shorten, Norwich: Matsui MR 4099 + 10m wire.
Alan Smith, Northampton: Matsui MR4099 + a.t.u. + r.w. in loft.
Mike Smith, Cambridge: Lowe HF-225 + a.t.u. + r.w.
Cliff Stapleton, Torquay: Trio R1000 + dipole or 25m wire.
John Stevens, Largs: Icom R-70 + r.w.
Darran Taplin, Brenchley: Yaesu FRG-7700 + FRA-7700.
Phil Townsend, London: Lowe SRX-30 + LW converter + a.t.u. + r.w.
Ted Walden-Vincent, Gt.Yarmouth: Grundig Satellit 1400L + r.w.
Neil Wheatley, Lytham St.Annes: Sangean ATS-803 + built-in whip.
Jim Willett, Grimsby: RCA AR77 + 4m sq loop or a.t.u. + X dipole in loft.
Ken Willis, Scarborough: Kenwood R-2000 + r.w.
Julian Wood, Elgin: Kenwood R2000 + Yaesu FRT-7700 a.t.u. + 5m wire.

Transatlantic DX

Freq kHz	Station	Location	UTC	DXer
	USA			
570	WMCA	New York, NY	2145	C
660	WFAN	New York, NY	2230	C
880	WCBS	New York, NY	2330	C
890	WLS	Chicago, IL	0000	C
1010	WINS	New York, NY	0600	C
1030	WBZ	Boston, MA	0320	E
1130	WNEW	New York, NY	0340	E
1210	WOGL	Philadelphia, PA	0100	C
1470	WLAM	Lewiston, MA	0230	E
1510	WKKU	Boston, MA	0230	E
1560	WQXR	New York, NY	0400	E
	Canada			
590	VOCM	St.John's, NF	2320	A,E
640	CBN	St.John's, NF	0120	E
860	CJBC	Toronto, ON	0010	E
930	CJYQ	St.John's, NF	2300	A,B,D,E
940	CBM	Montreal, PQ	0050	D
1200	CFGO	Ottawa, ON	0050	E
1410	CIGO	Pt.Hawkesbury, NS	0430	E
1570	CKLM	Lavel, PQ	0025	E
	C.America & Caribbean			
1210	R.Caraibes	Roseau, Dominica	0300	E
1570	Atlantic Beacon	Turks & Caicos Ils	0320	E
1610	Caribbean Beacon	The Valley,Anguilla	0410	E
	South America			
950	R.Vision	Caracas, Venezuela	0345	E
1220	R.Globo	Rio, Brazil	0250	E
1470	OAX6M R.Tacna	Peru	0320	E

DXers:
A: Darren Beasley, Bridgwater.
B: Bart O'Brien, Co.Wexford.
C: Tim Shirley, Bristol.
D: Darran Taplin, Brenchley.
E: Jim Willett, Grimsby.

2200-2300) SIO223 at 2207 in Bishops Stortford; R.Tirana, Albania 7.215 (Eng 2230-2300) 42332 at 2230 in Morden.

A few of the 41m broadcasts to other areas stem from KTBN Salt Lake City 7.510 (Eng to USA? 0200-1600) logged as 54444 at 0623 in Northampton; R.RSA Johannesburg 7.230 (Eng to E/C/S.Africa 1500-1800) 33333 at 1651 in Oman; R.Korea, Seoul 7.550 (It, Fr, Kor, Ar, Ger, Eng, Sp, Port to Middle East, Africa 1545-2345) 34233 at 2036 in N.London; R.Vilnius, Lithuania 7.400 (Eng to USA 2300-2330) 44444 at 2300 in Newbury; WRNO New Orleans 7.355 (Eng to USA 0000-0400) 33333 at 0000 in Cambridge; R:Kiev, Ukraine 7.400 (Eng to USA 0000-0100) 55555 at 0045 in Wallsend.

Some of the **6MHz (49m)** broadcasts to Europe originate from R.Nederlands via Flevo 5.955 (Eng 1430-1525), rated 55555 at 1500 in Bridgwater; VOA via Woofferton 11.710 (Eng 1630-1700, also to N.Africa, Middle East) 43333 at 1646 in Cheltenham; R.Riga, Latvia 5.935 (Eng 1830-1900 Sat only) 54533 at 1830 in Alnwick; R.Finland via Pori 6.120 (Eng 1930-2000) 32332 at 1940 in Bishops Stortford; R.Pyongyang, N.Korea 6.576 (Eng 2000-2100) SIO433 at 2032 in Slough.

Tropical Bands

Freq kHz	Station	Country	UTC	DXer	Freq kHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	2000	I	4.830	R.Tachira	Venezuela	2310	D,H
2.325	ABC Tennant Creek	Australia	2000	I	4.835	RTM Bamako	Mali	2110	N
2.485	ABC Katherine	Australia	2000	I	4.845	ORTM Nouakchott	Mauritania	1930	G,H,M,N
2.560	Xinjiang	China	0050	G	4.850	R.Yaounde	Cameroon	2034	C,H,M,O
3.200	TWR	Swaziland	1828	L,M,U	4.850	R.Tashkent 2	USSR	0030	H,K
3.215	R.Orange	S.Africa	1821	I,M,P	4.850	R.Capital, Caracus	Venezuela	2015	B
3.240	TWR	Swaziland	1823	M,P	4.855	R.San'a Yemem	Yemen	1740	H
3.255	BBC via Maseru	Lesotho	1824	P	4.860	R.Moskva 2 (Chita)	USSR	2040	H,M
3.270	SWABC 1, Namibia	S.W Africa	1800	I,M,P,Q,U	4.860	R.Moscow (Kalinin).	USSR	1545	H,M
3.280	R.Beira	Mozambique	1650	L	4.865	PBS Lanzhou	China	2150	M
3.290	SWABC 2, Namibia	S.W.Africa	1630	Q	4.865	Caracol	Colombia	0445	M
3.295	SWABC Windhoek	S.W.Africa	2142	H	4.865	V of Cinaruco	Colombia	0705	G,S,U
3.315	AIR Bhopal	India	0030	I,U	4.870	R.Cotonou	Benin	1900	N
3.320	Pyongyang	N.Korea	1425	M	4.875	R.Roraima, Boa Vista	Brazil	2153	M
3.320	R.Orion	S.Africa	1800	I	4.885	R.Beijing	China	2347	G
3.325	FRCN Lagos	Nigeria	1835	P	4.885	Voice of Kenya	Kenya	1900	N
3.355	R.Botswana	Gabarone	1831	P	4.895	R.Moscow (Kalinin)	USSR	1902	D,H,K,N
3.355	AIR Kurseong	India	1540	M	4.895	R.Moskva 4 (Tyumen)	USSR	0033	H
3.365	GBC Radio 2	Ghana	1830	P,Q,U	4.905	R.Nat.N'djamena	Chad	2150	G,H,M,N,S,U
3.905	AIR Delhi	India	1600	I,L,M	4.915	R.Ghana, Accra	Ghana	2100	H,M,N,S
3.915	BBC Kranji	Singapore	1945	D,H,M,U	4.920	ABC Brisbane	Australia	1918	I,N,U
3.930	R.Capital	Transkei	2200	Q	4.920	AIR Madras	India	1600	I,N
3.950	PBS Qinghai Xining	China	2347	G	4.930	R.Moscow	USSR	2056	D,H,K,M
3.955	BBC Daventry	England	1943	A,H,J,M	4.935	Voice of Kenya	Kenya	2100	H,M,N
3.956	PBC Rawalpindi	Pakistan	2339	H	4.940	R.Kiev 2	USSR	1918	H,M,N,O
3.965	RFI Paris	France	2300	F,H	4.960	R.Federacion, Sucua	Ecuador	2340	U
3.975	BBC Skelton	England	1740	A	4.960	AIR New Delhi	India	0100	G
3.980	VOA Munich	W.Germany	2100	H,K	4.960	R.Baku	USSR	2100	N
3.985	R.Beijing, China	via SRI Berne	2205	G,H,R	4.970	R.Rumbos, Caracas	Venezuela	0510	R
3.985	SRI Berne	Switzerland	0750	H,K,R	4.975	R.Uganda, Kampala	Uganda	1948	N
3.995	DW Cologne (Julich)	W.Germany	1947	A,H,K	4.980	PBS Xinjiang	China	0020	K
4.035	PBS Xizang Lhasa	Tibet	0015	U	4.980	Ecos del Torbes	Venezuela	2300	D,H
4.050	R.Frunze 2	USSR	0057	H	4.985	R.Brazil Central	Brazil	0500	M
4.080	R.Ulan Bator	Mongolia	0045	U	4.990	AIR via Madras	India	0000	O
4.220	PBS Xinjiang	China	0025	G,H	4.990	FRCN Lagos	Nigeria	0525	M
4.460	R.Beijing	China	2035	M	5.005	R.Nacional, Bata	Eq.Guinea	1931	C,N
4.500	Xinjiang	China	0025	G	5.005	R.Nepal, Kathmandu	Nepal	1630	I,M,U
4.600	R.Baghdad	Iraq	2000	D,E,O,T,V	5.010	R.Garoua	Cameroon	1931	N
4.635	R.Dushanbe Tadzhik	USSR	0105	H	5.010	SBC Singapore	Singapore	1600	I,L
4.735	Xinjiang	China	2320	G,H,O	5.015	R.Moskva 4 (Ashkhabad)	USSR	2349	H
4.740	R.Afghanistan	via USSR	1848	D,N	5.015	R.Vladivostok	USSR	0022	H
4.760	R.Moscow (Dushanbe)	USSR	2100	D,N	5.020	ORTN Niamey	Niger	0617	S
4.765	Brazzaville	Pep.Rep.Congo	2016	N	5.025	R.Parakou	Benin	2118	N
4.770	FRCN Kaduna	Nigeria	1855	C,N	5.025	R.Rebelde, Habana	Cuba	0510	M
4.775	RRI Jakarta	Indonesia	1600	U	5.035	R.Bangui	C.Africa	1906	D,H,M
4.775	R.Afghanistan	via USSR	1850	N	5.035	R.Alma Ata	USSR	0024	G,H
4.785	RTM Bamako	Mali	1934	D,N	5.045	R.Cultura do Para	Brazil	0527	M
4.785	R.Tanzania	Tanzania	1801	N	5.055	RFO Cayenne(Matoury)	French Guiana	0605	U
4.785	R.Baku	USSR	2000	H,N	5.060	PBS Xinjiang	China	0030	K
4.800	PBS Xinjiang	China	2315	D	5.065	R.Candip, Bunia	Zaire	1942	N
4.800	AIR Hyderabad	India	0030	I	5.075	Caracol Bogata	Colombia	0530	M
4.800	LNBS Lesotho	Maseru	1810	G	5.095	R.Caracol, Bogata	Colombia	2355	H
4.810	R.Yerevan 2	USSR	2219	M	5.163	R.Beijing	China	2235	M
4.815	R.Amazonas	Peru	0100	U	5.260	R.Alma Ata 2	USSR	2030	M
4.820	La Voz Evangelica	Honduras	0255	U	5.275	WYFR Oakland, CA	via Taiwan	1542	D,M
4.820	R.Moskva 4 (Khanty-M)	USSR	1535	H,K	5.290	R.Moskva 1Krasnoyarsk.	USSR	2120	U
4.825	R.Moscow	USSR	1701	D,H,M	5.320	R.Beijing	China	2228	M,U

Station Addresses

BBC Radio Newcastle, Broadcasting Centre, Barrack Road, Newcastle-upon-Tyne NE99 1RN.
Airport Information Radio, Broadfield House, Brighton Road, Crawley, West Sussex RH11 9TT.
Sunrise Radio, 5 The Crescent, Southall, Middlesex UN1 1BU.
Latvijas Radio, Zakusalas krastmala 3, 226018 Riga, Latvian SSR, USSR.
Red Cross Broadcasting Service, 19 Ave de la Paix, 1202 Geneva, Switzerland.
Voice of Malaysia, P.O.Box 11272, 50740 Kuala Lumpur, Malaysia.

Abbreviations

Ar	Arabic
Chin	Chinese
Da	Danish
Du	Dutch
Eng	English
Fin	Finnish
Fr	French
Ger	German
Gr	Greek
Heb	Hebrew
h.f.	high frequency
Hi	Hindi
Ic	Icelandic
Ind	Indonesian
It	Italian
Jap	Japanese
Jav	Javanese
kHz	kilohertz
Kor	Korean
Mal	Malay
MHz	megahertz
Norw	Norwegian
Port	Portuguese
Russ	Russian
r.w.	random wire
Sin	Sinhala
Sp	Spanish
Sun	Sundanese
Sw	Swedish
u.s.b.	upper sideband
Yu	Yugoslavian

DXers:
A: Ted Agombar, Norwich.
B Thomas Barnett, Slough.
C Charles Beanland, Gibraltar.
D· Darren Beasley, Bridgwater.
E: Jim Cash, Swanwick.
F: Bill Clark, Rotherham
G. David Edwardson, Wallsend.
H: Ron Galliers, London.
I: Simon Hamer, New Radnor
J· Robin Harvey, Bourne.
K Sheila Hughes, Morden.
L: Rhoderick Illman, Thumrait, Oman.
M: John Nash, Brighton.
N: Fred Pallant, Storrington.
O Roy Patrick, Derby.
P: Philip Rambaut, Macclesfield.
Q Tim Shirley, Bristol.
R: Chris Shorten, Norwich.
S Alan Smith, Northampton.
T: Neil Wheatley, Lytham St.Annes.
U Jim Willett, Grimsby
V: Ken Willis, Scarborough.

watching brief

Andy Emmerson G8PTH
71 Falcutt Way, Northampton NN2 8PH

Welcome to this new, quarterly column in which I will be covering the ATV scene for readers of this magazine. My brief is to look at ATV technology, but not operating, with a broad appeal right down to entry level.

Most radio enthusiasts, whether listeners or hams, seem to specialise after a while. One particular 'mode' of transmission tends to take your fancy more than others: it may be packet radio, weather satellites, RTTY, utility transmissions or even amateur television (ATV). If you're a keen devotee of the ATV scene you won't need further explanation, but perhaps you haven't come across it yet. Perhaps you didn't even know that hams could transmit 'real' television.

They can, however, and you can even watch some of these transmissions without too much difficulty. If you are really keen you can invest a lot of effort (and money) in ATV, but this is not entirely necessary. Read on and find out how.

Back to Basics

First of all some basics. There are two kinds of amateur television, slow-scan and fast-scan. Fast-scan is just another name for normal, real television with moving pictures in colour or black and white. Slow-scan on the other hand is a specialised form of TV where you send only still pictures: they may be in colour but they don't move. In fact they are just freeze-frames ('grabbed' from video recordings) or perhaps computer graphic images or pictures from photographs. The advantage of slow-scan is that the transmissions occupy no more bandwidth than normal speech, so they can be sent on any voice communication channel or even down a telephone line (which is what the police do with 'mug-shots'). For people like me, slow-scan does not have the appeal of TV with moving pictures and I have not got involved with it. For that reason this article will confine itself to fast-scan TV.

Fast-scan ATV uses the same television standards as normal broadcast TV: this is so that normal TV receivers can be used. If you have a home video camera or an industrial closed-circuit one, you can use this as well, together with normal video recorders and other accessories. Some ATV is in colour, though not on 70cm, where the need to share the band with other amateur radio users means that operation is restricted to black and white. Sound to accompany the pictures is often transmitted on 144MHz v.h.f. separately from the pictures. On the microwave bands (24cm and above) this may not apply.

What's On Tonight?

What will you see on ATV? Well, it's certainly different from broadcast TV. You might say it's 'amateur' because few of its devotees are professional TV people. Most ATV transmissions are one-to-one affairs, because amateurs are not supposed to broadcast at random. So people end up sending their pictures to friends, generally in the local neighbourhood. TV repeaters (see below) extend the range of the signals, as do 'freak' weather conditions (tropospheric openings) now and again, when the weak transmission may be received in another country several hundred miles away! Amateurs are limited to relatively low power (to avoid interference); they have to stay clear of offensive material and music is also banned. Furthermore, using the station for business, advertisement or propaganda purposes is taboo. But that leaves a wide range of permissible subjects, so what do TV hams put out?

Abbreviations

ATV	amateur television
cm	centimetres
m	metres
MHz	megahertz
RTTY	Radio TeleTYpe
s.a.e.	stamped addressed envelope
TV	television
u.h.f.	ultra high frequency
v.h.f.	very high frequency

No Holiday Films, Please!

Most people start off by sending shots of home, their family and views of the garden, either 'live' from the camera or off video tape recorded previously. Holiday films are also shown (but generally discouraged by the viewers!): some people take the opportunity to make 'programmes' of their hobby and subjects as varied as local history, old trains and amateur dramatics productions get the ATV treatment.

Some ATVers, as they are called, are more adventurous and take their video and transmitting gear to country fairs, sports events and the like, where they help by providing video facilities to assist the public service officials. A couple of amateurs have mounted small cameras in radio-controlled helicopters and buggies - the views transmitted back from these unusual vantage points are most amazing! Cameras and transmitters have also been taken aloft in light aircraft and hot air balloons, as well as aboard trains, on canal barges and in cars.

Joining In

Up to now most amateur transmissions have been on the 430MHz (70cm) amateur band, just below the normal u.h.f. broadcast TV channels, and this is the band where most beginners start. There are also other frequencies on which amateurs are active, starting at 1296MHz (24cm), but these are in the microwave region and need special apparatus (and skills, which you can develop gradually) to receive them. It's worth making the effort, though, because this is where the television repeaters are. Repeaters are well-sited stations with a wide coverage. People then beam relatively weak signals up at the repeaters, which then re-broadcast the signals simultaneously over a much wider area.

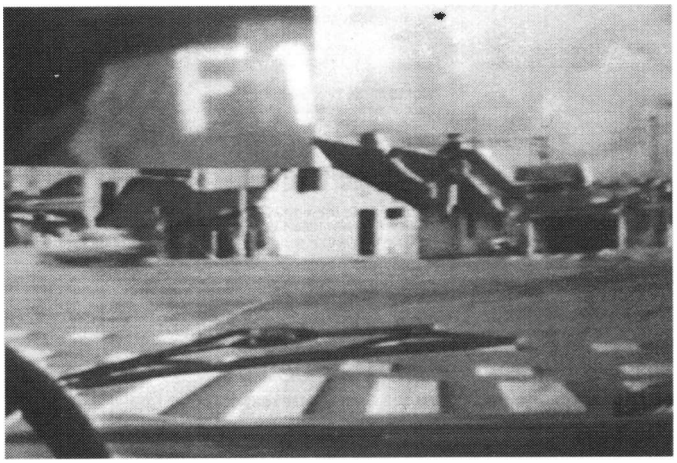
The licensing side of ATV is quite straightforward: anyone who holds a normal TV reception licence is entitled to watch amateur transmissions (read the small print!), while to transmit pictures you need a radio amateur licence. You will doubtless know that you can't just go out and buy this licence at the post office like you would a citizens band one. There is a technical examination (no Morse code though!) and most people pass after six to nine months' studying. If you are good with electronics you'll have no difficulty, but all sorts of people, of all ages and backgrounds, pass every year.

Next time I shall describe the equipment you need to receive or transmit ATV. If you can't wait until then why not send off for the booklet mentioned below.

Fast Facts

Joining the BATC costs just £9 a year: for this you receive four 100-page magazines a year, cheap sales and wants ads, plus many other membership benefits. For more details send an s.a.e. to Dave Lawton, Grenehurst, Pinewood Road, High Wycombe, Bucks. HP12 4DD.

A low-cost guide, *TV for Amateurs*, will tell you how to build your own TV station and get on the air. Send £1.75 to BATC Publications, 14 Lilac Avenue, Leicester LE5 1FN.



You can get quite adventurous with amateur television. Here Marc Chamley F3YX, nicknamed 'the pope of ATV', has fitted a camera and mobile TV transmit and receive gear to his car. He is transmitting the view of the road ahead while simultaneously receiving another station, whose picture has been inlaid electronically in the top left-hand corner of his own picture!

Andy Emmerson's new column will appear on a quarterly basis. In the intervening two issues this page will be taken up by Brian Oddy's 'Long Wave Maritime Beacons' column followed by another new column devoted to reporting on Pirate Stations. This is in response to the numerous requests from readers who are interested in finding out what is going on - which stations are legitimate and which are pirates.

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RADIO

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WANTED Eddystone EA12. Tel: (0226) 288718.

FOR SALE AOR 1000 portable hand scanner 9 months old with charger and NiCad batteries, £150 o.n.o. Philips D2935 receiver, 1 year old, excellent condition, £75 o.n.o. K. Williams, Whitefoord House, 53 Canongate, Edinburgh EH8 8BS.

FOR SALE Sony ICF PRO80, 150kHz-223MHz, 8 ways to tune, mains adaptor, £175. Also Sony ICFSW1S kit including antenna controller, antenna module, mains adaptor, earphones, all in hard case £80. Tel: (0734) 815354 near Basingstoke (evenings).

WANTED R210 70mm 52in film tuning scale, part number ZA-49511. David. Tel: (0926) 425220 Royal Leamington Spa.

FOR SALE Tektronix dual-trace oscilloscope, type 546 good working order, reason for sale, it's no longer in use. Buyer collects, £90 o.n.o. Tel: (0604) 583441 Northampton.

FOR SALE Fairmate HP100E scanner, excellent condition, complete in box with all accessories and charger, £175 o.n.o. A. Carter. Tel: (0892) 835075 Paddock Wood (evenings and weekends).

EXCHANGE TR1000 for TR200 or similar, cash adjustment. W. Bell, 33 Back Canning Street, Liverpool L8 7PB. Tel: 051-709 6927.

WANTED Realistic PRO2005 scanner. Tel: (0204) 398844 Bolton (evenings).

FOR SALE Versatower P60, complete with winches, head unit and ground post (easily removed), telescopic and tilt-over, approx height fully extended with mast, 22m, excellent condition, £500. Tel: (0923) 220774 Watford.

FOR SALE HRO-60, l.s., 2 coils, BC221-M and a.f. TX Navy type GS-5, Panoramic adaptor BC1032B, Elmac TX model A-54, Triplett meter model 666H and Test Set Demolition Mk1, offers. Tel: (0634) 70715 Minehead, Somerset.

FOR SALE Icom IC R72 communications receiver, new, mint, boxed, manual, £475 carriage paid. Tel: (0482) 838097 after 5pm.

FOR SALE Yaesu FRG-9600 scanner 0.2kHz-950MHz, manuals, power supply, discone antenna, magmount antenna, all as new, £425. **EXCHANGE** for h.f. receiver and can deliver 100 miles radius. Tel: (0472) 352359 Grimsby.

FOR SALE AOR 2002 v.h.f./u.h.f. receiver and scanner, covers 25-550MHz and 800-1300MHz, seldom used, 18 months old, manual and boxed, excellent condition, £325 o.n.o. Tel: (0942) 728531 Wigan.

FOR SALE Selena Vega 215, 8-band (5 short wave), battery/mains, £15. Steepletone MBR7 multi-band receiver including air and marine bands, battery/mains, £20. Tel: (0254) 775141 Lancashire.

FOR SALE Valved radios Pye 19A, l.w., m.w., three s.w., band spread, pilot, X754H, l.w., m.w., two s.w., 15 to 550m, Ekco A104 l.w., m.w., s.w. KB MR10 Bakelite l.w., m.w., v.h.f., each £60 o.n.o. All complete working, v.g.c., buyer collects. Sharples, 13 Beryl Avenue, Blackpool, Lancs FY5 3PA.

FOR SALE AOR 2001 25-550MHz, boxed and complete with all accessories, £180 o.n.o. Tel: (0256) 477002 Basingstoke.

FOR SALE Philips D2935, cost £129, sell £80. Uniden Bearcat 175XL scanner, cost £169.95, sell £100. Both rarely used, bought 1990, anytime, buyer must collect. Mr R G Ealden, 51 Cedar Road, Bedford MK42 0HP.

FOR SALE Kenwood R2000 communications receiver, as new with box and manual, £325 o.n.o. **WANTED** Kenwood R5000 receiver, must be in mint condition. Tel: (0625) 429030 Macclesfield.

FOR SALE Icom IC-R1 hand-held scanner with accessories, leatherette case, additional battery case, cigarette lighter cable with noise filter, brand new, unwanted gift, £275 o.n.o. Tel: (0926) 886713.

FOR SALE/EXCHANGE ICS MET-2 weather satellite receiver system for Meteosat4, also Icom-7000 receiver with TV adaptor, Citizen 120d printer. Chris G0DQW. Tel: Shrewsbury 241194.

FOR SALE Microreader MkII, £60. Tel: (0742) 846742.

WANTED Beginner requires basic low-cost h.f. receiver, may possibly swap AR1000 scanner or will buy outright. Please write with details. Mr Clark, 13 Settle Street, Barrow-in-Furness, Cumbria LA14 5HR.

FOR SALE Yaesu FRG-7 communications receiver with f.m. board fitted. Covers all modes 0-30MHz, excellent condition £100. Also AOR AR1000 hand-held scanner with NiCads, charger, carrycase and strap. Covers 8-1300MHz, fully boxed, £200. Richard. Tel: (0909) 564536 after 6pm.

TRADING POST ORDER FORM PLEASE WRITE IN BLOCK CAPITALS

Please insert this advertisement in the next available issue of *Short Wave Magazine*.
I enclose Cheque/P.O. for £.....(£2.35).
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A photocopy of this form is acceptable, but you must still send in the corner flash below, for proof of purchase.

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SWM MAY 91 TP

ICOM

From the manufacturers of the superb IC-R7000, two new wideband communication receivers, would you accept anything less than the best from ICOM!

IC-R1 Handportable Receiver

The new IC-R1 is a pocket-size receiver with continuous 150KHz through 1300MHz, AM/FM and FM wide reception. With 100 memory channels this tiny receiver is packed full of features: Multi-scan functions, 11 search step increments, clock timer, power-save, S-meter and a convenient frequency selection via the keypad or tuning knob.

IC-R100 Mobile/Base Receiver

For the enthusiast who prefers a more permanent installation the IC-R100 is ideal giving full frequency coverage of 500KHz – 1800MHz and AM/FM.FM wide modes of operation. The IC-R100 boasts 100 memory channels to store your favourite stations and features similar to the little pocket receiver.

Refusing to compromise on quality can have its price but at ICOM our products reflect our style. We only make the best.

Both the IC-R1 and IC-R100 are shown full size in this advertisement.

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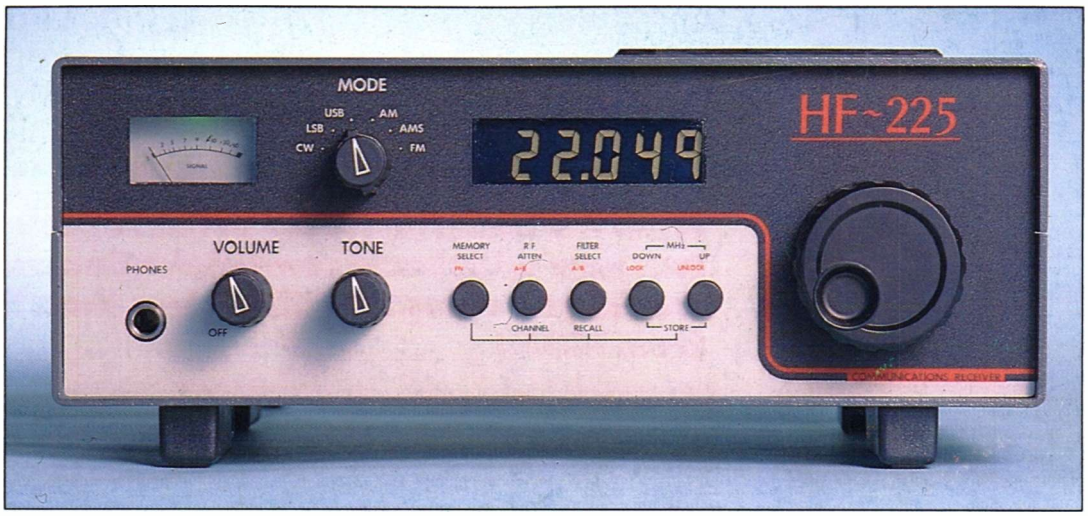
THE HF-225 GENERAL COVERAGE RECEIVER



Your gateway to the world

What ever 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.

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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**