

# Short Wave Magazine

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SEPTEMBER 1989

M S W M

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**REALISTIC PRO-2005  
SCANNER  
REVIEWED**

**HOT ROD YOUR  
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**FREE THIS MONTH**  
Pilot Issue of

**Vintage  
Radio**

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Sony AN-1 150kHz-30MHz	£40.00 (2.00)
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AT1000 ATU. 150kHz-30MHz	£69.00 (2.50)
AN3 3 way coax switch	£7.95 (1.50)
Alrband Groundplane 118-136MHz	£19.95 (2.00)
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FRA7700 Yaesu active antenna	£49.00 (2.00)
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## RECEIVERS (Free delivery)

R5000 Short Wave 150kHz-30MHz	£875.000
R2000 Short Wave 150kHz-30MHz	£595.00
VC20 VHF conv. for R5000	£167.00
VC10 VHF conv for R2000	£161.95
FRG8800 150kHz-30MHz	£639.00
FRV8800 VHF converter	£100.00
IC-R71 Short wave 150kHz-30MHz	£825.00
Sony 7600DS Short wave	£159.00
Sony ICF2001D band Short wave + air band	£299.00
Lowe HF 225 Short wave	£395.00
FRG9600 Scanner 60-950MHz	£509.00
IC-R7000 Scanner 25-200MHz	£957.00
AOR 2002 Scanner 25-1300MHz	£475.00
Sony Air-7 VHF scanner	£227.00
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[32] Realistic PRO-2005 Scanner



Cover Tandy have now released their successor to the popular and successful PRO-2004 scanner. The PRO-2005 looks set to be a best seller and John Waite puts it through its paces for you.

EDITOR: Dick Ganderton, C.Eng., MIEE, G8V FH  
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# FIRST WORD



This month we have something extra special for you - free! The Pilot Issue of what I hope will become a regular magazine - *Vintage Radio*. I know from the results of the reader survey, as well as from the large number of articles dealing with historical radio topics submitted to *SWM*, that there is a demand for such a magazine.

That the September issue of *Short Wave Magazine* has been chosen as the vehicle to launch the new title is no coincidence. Fifty years ago, on 3 September 1939, World War II started and with it over five years of intense development in the field of radio and electronics. *Vintage Radio* will be covering such developments as well as looking at the personalities who made wireless history. The practical side will not be forgotten either, with articles on restoration of classic vintage radio and television sets. There is a wealth of

articles just waiting for such a magazine. *Vintage Radio* is that magazine.

Although the Pilot Issue is free with this issue of *SWM*, I envisage that, ultimately, *Vintage Radio* will be published, in its own right, four times a year and be available on direct subscription only.

You will find a form on page 37 of this issue of *SWM* which you can use to register your interest in *Vintage Radio*. Completing the form will **not** commit you to placing an order for a subscription, but will enable us to assess the level of interest and hence the viability of the new magazine.

You will also have noticed that, with this issue, the cover price of your favourite magazine has increased. When we relaunched *SWM* as a listeners' magazine two and a half years ago I promised that the cover price would be held for as long as possible. In fact *SWM* has been £1.45 for the best part of four years, but the costs of printing and production have now risen by so much that there is no alternative to raising the cover price. I think that it is still the best value for money radio magazine on the newsagents' shelves - I hope that you agree with me.

You can still obtain *SWM* at the old price - for a limited period only, though - by taking out a subscription. Fill in the coupon on page 60, now, and you will not only save money but you will get your copy a couple of days before it appears in the shops!

DICK GANDERTON

# A WORD IN EDGEWAYS

**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.**

**Sir**

*I have recently taken up short wave listening as a hobby. I must say it is a very interesting and informative hobby. Since I have started listening to short wave radio I have sent off many QSL cards to many stations I have received and in return some of the stations have returned confirmation cards and literature on their station and country.*

*I would have to go on the record and say that Radio Sofia, in my opinion, is the best for confirmation and literature. I have been listening to Radio Sofia for about three months and every few weeks I send them a copy of my log for listening to their station. In return they send me newspapers in English from Sofia.*

*My RX is a Philips D1835 Compass and I am very pleased with all the contacts I have made with it. The D1835 may not have s.s.b. or be able to have an external antenna on it, but it still gets the job done. It has 12 wave bands plus f.m., l.w. and m.w. I would recommend this radio for any beginner or for anyone who is just interested in listening to short wave radio with nothing too flash or too much messing around with different antennas, etc.*

*Radio Sofia, Bulgaria can be heard on the 25m band (11.720) 0000-0100 each night.*  
REGINALD SHANNON  
DUBLIN

**Sir**

*How interesting to read about R. Luxembourg's French Service on 15.350MHz in "Bandscan", *SWM* June '89, a transmission I first came across some 15 years ago. Then, as now, their programme content was aimed at mainland France and not at us in Quebec. They can be heard here most days but interference, noise and fading would keep all but a dedicated s.w.l. off their frequency. I suspect they are feeding their l.w. (234kHz) programmes to their 19m transmitter - this could be easily verified by a UK listener.*

ALAN ROBERTS  
QUEBEC  
CANADA

**Sir**

*Re: A Word In Edgeways, July *SWM**

*I think Tom Marks is somewhat mistaken, when he writes about his father's sets using 6 volt accumulators.*

*I had a battery charging station, and also sold accumulators, and h.t. batteries for many years. During that time, the only 6-volt accumulators I saw, were car and motorcycle batteries. All radio accumulators were 2-volt. The most common being the mass plate type, and these needed charging weekly, when used on a 3 valve set.*

*However, Ever Ready, and several other manufacturers, did make some large high capacity, multi-plate 2 volt types. I am wondering if it is the latter type that Mr Marks remembers. In the UK, all battery sets of the thirties, whether commercially made, or home constructed, including those designed by J. Scott Taggart, used 2 volt directly heated filament valves, that is up to the introduction of the 1.4 volt "all dry" series.*

*As far as I can remember, the only 6 volt valves at that time were the CT8, UX and later, the Octal based ranges, most designed for mains operation, although some UK types could be found in some car radios. Even if these valves were run from a car battery, the h.t. required was anything up to 250 volts.*

*One of the smallest output valves in these ranges was probably the EL2. The anode and screen current of this valve was about 37.5 milliamps. No h.t. battery was designed to deliver that sort of current.*

GEORGE MILLMORE  
RYDE  
ISLE OF WIGHT

**Sir**

*I continue to enjoy your excellent magazine, and the features which are of particular interest to me are "Bandscan", "Starting Out" and "Long, Medium and Short".*

*I am writing to you now, to ask about the amount of space allowed for "LM&S" in the July issue, which I note has been reduced to four and a half pages. I do hope this is only a temporary measure and that this feature may have five pages, at least, some months. However, the thing which concerns me just as much is Brian Oddy's "Starting Out" feature. If space is getting short, will this be allowed to continue regularly each month? For a person like me - relatively new to the hobby (and female!) I find what Brian has to say each month very helpful and informative.*

SHEILA HUGHES  
MORDEN  
SURREY

# A WORD IN EDGEWAYS

**Sir**

I notice that the "LM&S" information in the July issue is shorter than the usual data. This information is why I have a standing order for your magazine with my newsagent. SWM is a source of up-to-date data as to what is happening in the world of DX.

The cover of SWM says - "For the Radio Listener" - and for me this section of the magazine is a starting point for my month's listening schedule. Good data is hard to come by these days, especially when other sources are dubious in availability and often unreliable. My listening experience goes back over fifty years and the advent of SWM was a red letter day. I hope that it will continue to feature pictures of "Listening Posts" and QSL cards. I do not expect the whole magazine to be given over

to short wave listening, and I have no complaints to make about the coverage SWM provides for other enthusiasms, but the ratio of interests should be reasonably catered for. Please keep it that way.

The feature "Starting Out" is also valuable to an old timer like myself. The constant changes in design, performance and technology can be confusing to those of us who began the hobby in the days of valves, magic eye tuning, accumulators, h.t. batteries and the whole creaking plethora of nostalgic paraphernalia that started the magic of radio. This may be the age of technology and new wonders, which is all the more reason why our education in such things should be catered for. Perhaps the older we short wave enthusiasts become, there may

be those who think we should be consigned to the knackers yard among the old fashioned radio components. From my experience the evidence is that the hobby is attracting many new adherents, several of them youngsters. That must mean more readers for your magazine - if it continues to cater adequately for the short wave hobby. Practical Wireless is now mainly concerned with amateur

radio, although it does not hold much interest for me.

I am not asking for a bigger slice of the SWM cake, just that you please maintain the size and content of the slice you have been providing so far. Please don't reduce the size of the present slice, which encourages readers like myself to keep buying your magazine.

ALAN SMITH  
DUSTON, NORTHAMPTON

Unfortunately, we have had to reduce the amount of space given over to LM&S. It was originally intended to fill 4-1/2 pages but like Topsy, just "grew & grew". I appreciate that it is very popular with its "fans", but so are other sections of the magazine that get far less space but just as many readers' reports. To try and please all of the readers all of the time is impossible, but at SWM we do try. We always take into account readers' views and have to listen to those against more space to LM&S as well as those for.

Incidentally, there are no plans to drop Starting Out, although at times, due to technical difficulties and pressure on space, it does miss the odd month - as do other "regular" articles. Ed.

## WHAT'S NEW

### Straight Key Week

The Straight Key Week takes place from 0100 on September 3 to 2359 on September 9. It is intended to encourage not only the use of the straight key but also to foster activity in c.w.

This is **not** a contest. All stations are welcome to join in and FISTS members will be invited to submit nominations for the "Best Fist of the Week". In sympathy with the EUCW rules, any station being accorded two or more nominations will subsequently receive a certificate.

All FISTS members worked during this period will qualify towards the FISTS Century Award. The club call, G0IPX or G0IPX/M will be active.

Suggested frequencies are 3.55/3.550, 7.027/9.0295MHz and 0.55 on the h.f. bands.

### A London Show

On 9 and 10 March 1990 there will be an amateur radio show at Picketts Lock Centre, Picketts Lock Lane, Edmonton, London N9, which is part of the Lee Valley Leisure Park complex.

There will be facilities for the disabled, restaurants and bars on site as well as free car parking for 3000 cars. If you're travelling a long distance to the show there is on-site leisure and camping facilities.

The tickets will cost £1 on the door or 75p for advance bookings of 10 or more. All enquiries should be sent to:

**The Secretary  
London Amateur Radio Show  
126 Mount Pleasant Lane  
Bricket Wood,  
Herts AL2 3XD.  
Tel: (0923) 678770.**

### Catalogues

STC Mercator have a new 284-page catalogue. Fourteen sections cover capacitors, resistors, inductors, EMI filters, resonates, etc., to mention just a few. Copies are available free of charge from: **STC Mercator. Tel: (0493) 844911.**

Electromail have their July to October catalogue available, although you'll need a reinforced bench to put it on - it weighs over 1.8kg! There are 1239 pages of components, etc., plus the index and stock number check lists. Each copy will cost you £4.95 from **Electromail, PO Box 33, Corby, Northants NN17 9EL.**

An abbreviated Component Catalogue is available in lieu of Newsheet No. 134 from The Vintage Wireless Company Ltd. The subscription rate for these newsheets is £5 for 12 issues (£6 overseas including Eire). Each issue contains much more than just product information. **The Vintage Wireless Company Ltd., Tudor House, Cossham Street, Mangostfield, Bristol BS17 3EN.**

The Cirkit Summer 1989 catalogue contains details of all their products as well as a competition and £10 worth of discount vouchers. The catalogue is priced at £1.50. More from **Cirkit, Park Lane, Broxbourne, Herts EN10 7NQ.**

Aerial Techniques will send you a copy of their latest catalogue for 75p. The 29-page, A5, booklet represents

### The ATV Compendium

The British Amateur Television Club have produced their latest handbook, called *The ATV Compendium*. It's available from **BATC Publications, 14 Lilac Avenue, Leicester LE5 1FN**, priced £3.50. It is divided into three sections, video circuits, special projects and r.f. projects. There aren't any 430MHz band projects included in this book as the author found more than enough information on other topics. He decided that, "with the pressure being placed on 70cm these days, from inside the amateur world as well as outside, perhaps the time has come for us to place the emphasis on the higher bands."

Membership of BATC is £6.00 per year and prospective members should apply to: **The Membership Secretary, BATC, Grenehurst, Pinewood Road, High Wycombe, Bucks HP12 4DD.**

# WHAT'S NEW

their largest catalogue to date. They also have a customer consultancy service available. **Aerial Techniques, 11 Kent Road, Parkstone, Poole. Tel: (0202) 738232.**

Inmac's 79th catalogue is now out (the July edition). It contains details of all their computer supplies, accessories, furniture and data communications. Catalogues are free, call (0344) 860606 and you'll be put on the mailing list. **Inmac (UK) Ltd., 16 Silver Road, London W12 7SG,**

The 1989/1990 edition of the STC Multicomponent Catalogue has recently been launched. The 136-page publication covers a range of

semiconductor products from Hitachi, Mitsubishi, NEC, Philips and Toshiba. Over 15 sections cover DRAMs, SRAM, EPROMs, bipolar and logic devices, microprocessors, linear and interface circuits, diodes, transistors, m.o.s.f.e.t.s, triacs/thyristors, optoelectronics and l.c.d./drivers. You can call (0279) 442971 for a free copy.

STC Electronic Services have a new 8-page, four-colour, brochure covering the range of 3M Scotchflex interconnections systems available. **IDC Connector Product Group, STC Electronic Services, Edinburgh Way, Harlow, Essex CM20 2DF. Tel: (0279) 626777.**

## ISWL Changes

The Secretary of the International Short Wave League has moved house, so the new address for correspondence is: **Yvonne Blain, 6 Moorhead, Preston upon the Weald Moors, Telford, Shropshire TF6 6DL.**

## WAB Award Changes

The Awards Manager for the Worked All Britain scheme has moved. It's important that anyone applying for awards uses the correct address. **Dave Rogers G4VID, 5 Braemar Close, Kettering, Northants NN15 5DD.**

## Newsletters

*Just Listening* is the quarterly newsletter of the International Listeners' Association. The June 1989 edition contains articles on the Amiga FAX, Supersonic Transport Flights, Polskie Radio and a Helpline page.

The International Listeners' Association was formed in 1985 by a group of listeners who wished to exchange information. The idea of the association is to give a service to its members at minimum cost while providing a link between listeners.

Apart from the newsletter there is a range of awards available for listeners to both broadcast and amateur bands. Details of membership are available from: **ILA, 1 Jersey Street, Hafod, Swansea SA1 2HF.**

The *WACRAL Newsletter* comes from the World Association of Christian Radio Amateurs and Listeners. In the July newsletter are details of their Conference to be held from October 13 to 15 at the Nantwich Christian Conference Centre, an article on wartime co-operation as well as news from America. Details from **WACRAL, Micasa, 13 Ferry Road,**



## Goldstar's Latest

The DM8135 is a digital multimeter with a large 3-1/2 digit l.c. display complete with an analogue indicating bar graph. It is capable of full measurement annunciation and automatic indication of low battery and over-ranging. A basic accuracy of 0.5% is possible for d.c. measurements from 100µV to 1000V, while a.c. voltages up to 750V can be measured. Resistance can be measured up to 20MΩ on high power with a resolution of 0.1Ω or on low power, 1Ω. Other facilities include npn and pnp hfe, diode and continuity test with an audible tone.

The DM8135 costs £39.95 excluding VAT from: **Alpha Electronics Ltd., Unit 5, Linstock Trading Estate, Wigan Road, Atherton, Manchester M29 0QA. Tel: (0942) 873434.**

## Wawne, Near Hull HU7 5XU.

The DX Association of Great Britain's newsletter has articles, in the June issue on BBC Local Radio, MW DXing, A Caribbean Report as well as various "what's been heard" reports -

and they're enough to make you green with envy. Subscription for a year costs £10 for UK and Eire, £11 for Europe and £15 elsewhere. The Secretary is **E.A. Rickett, Flat 13, 63 Eton Avenue, Hampstead, London NW3 3ET.**

# RALLIES

\* *Practical Wireless & Short Wave Magazine* in attendance.

**August 27:** The Galashiels & District ARS are holding their open day at the Focus Centre, Livingstone Place, Galashiels at 11am. There will be trade stands, a Bring & Buy and all the usual activities. Light refreshments will be available. Talk-in will be on S22. For more details, contact: **John Campbell G0AMB. Tel: (0835) 22686.**

**August 27:** The BARTG rally will be held at Sandown Park Racecourse, Esher, Surrey. Talk-in on S22 and SU22 by GB4ATG. Admission is £1 for adults and 50p for

children and OAPs (babies are admitted free). Doors open at 1030 and close at 1700. Details from: **Peter Nicol G8VXY. Tel: 021-453 2676.**

**August 28:** The Huntingdonshire ARS are holding a junk sale at The Medway Centre, Coneygare Road, Huntingdon. Doors open from 10.30am to 5pm. Food and drink will be available all day and you can rent a table to get rid of all your junk for £5. The contacts for the day are: **G1VVS on (0487) 830212 or G8LRS on (0480) 56772.**

**September 3:** The Preston ARS 22nd Annual Mobile Rally will be held at Lancaster University, as in previous years. It will be in the Great Hall, Nuffield Theatre, Minor Hall and A35 (for the Bring & Buy). The licensed bar and snack bar will be located in the Great Hall foyer. A separate restaurant will be available at lunch time too. Contact: **Godfrey Lancefield on (0772) 53810.**

\***September 3:** The Telford Amateur Radio Rally will be held in the Telford Exhibition

# RALLIES

Centre, Telford Centre, Shropshire. Doors open at 11am, 10.30am for the disabled. Usual facilities and attractions, plus specialist group stands. Catering & bar, talk-in via GB4TRG on S22. Contact **Martyn G3UKV (0952) 255416**.

**September 10:** The 6th National Amateur Radio Car Boot Sale will be held at the Shuttleworth Collection, Old Warden Aerodrome, near Biggleswade. Trading starts at 10am. Fly-in is available and permission can be obtained on Northill 288. Further details on the boot sale can be obtained from: **Tony Kelsey-Stead. Tel: (0582) 508259**.

**September 10:** The Vange ARS Mobile Rally and Electronics Fair will be held at Nicholas School, Nicholas Road, Basildon, Essex. The rally is open from 10am to 5pm and the entrance fee is 50p, with a free raffle being held at the door. There is free parking and refreshments available as well as a Bring & Buy and raffle. Further details are available from: **G4NVT. Tel: (0268) 43025 or Mrs D. Thompson. Tel: (0268) 552606**.

**\*September 10:** The Lincoln Hamfest will be held at the exhibition centre on the Lincolnshire Show Ground site. The rally opens at 10.30am and admission is by lucky programme. All the usual attractions for both radio enthusiast and family will be there.

**\*September 16:** The 1989 Scottish National Radio Amateurs Convention will be held at the Fife Institute of Physical & Recreational Education, Glenrothes, Fife. Doors open at 10am. Features include amateur traders, RSGB bookstall, special interest groups, lectures, Morse tests, refreshments & bar, talk-in station as well as Bring & Buy. Further details from: **John Hardwick GM4ALA. Tel: (0592) 742763**.

**September 24:** The 5th North Wakefield RC Rally will be held at Outwood Grange School, Potovens Lane, Outwood. Admission is 50p at 10.30am, disabled 10am. Free entry to OAPs, disabled and children. There will be a fully licensed bar with real ale, hot and cold food, raffle, Bring & Buy, usual radio, electronic and computer traders and repeater groups. Details from: **Richard G4GCX. Tel: (0532) 622139**.

**September 24:** The 1989 Harlow Mobile Rally will be held in the Harlow Sports Centre. Doors open at 10am.

**\*October 1:** The Great Lumley Radio Rally will be held at the Community Centre,

Great Lumley, Chester-le-Street, Co. Durham. Doors open at 10.30am for the disabled and 11am for everyone else. The entrance fee is 50p. There is a Bring & Buy stand, RSGB Book stand, the usual traders, repeater groups as well as refreshments available. **Barry G1JDP. Tel: 091-388 5936**.

**October 1:** The Blackwood Amateur Radio Rally will be held at the Oakdale Community College. Doors open at 10.30am and admission is £1. There will be the usual dealers, Bring & Buy, raffle, free car parking as well as a lecture on ATV. **B Matthew. Tel: (0495) 243858**.

**October 15:** The Bishop Auckland Radio Rally will be held in the Sunnydale Leisure Centre, Shildon, Bishop Auckland. **Ernie G4TYF, 64 Gurney Valley, Bishop Auckland, Co. Durham DL14 8RW. Tel: (0388) 607500**.

**October 15:** ELHOEX89 in The Floral Hall, Hornsea, North Humberside. Doors open 11am, 10.30am for the disabled.

Talk-in S22, trade stands, club displays, cafe, bar, Bring & Buy, etc. **G4IGY. Tel: (0964) 533331**.

If you are organising a rally and would like it mentioned in *Short Wave Magazine*, then drop us a line, preferably as soon as you have fixed the date but no later than six weeks in advance (marking your envelope Rally Calendar) and we'll do the rest. Please make sure that you include all the essential details such as the venue, starting time, special features and a contact for further information.

# LISTEN OUT FOR

**GB2WW:** This station will be on the air on September 3 from RAF Cardington for the 50th anniversary of the start of WWII. Further details can be obtained from the Special Events Manager: **Ray G0EYM. 30 Cotswold Close, Putnoe, Bedford MK41 9LR. Tel: (0234) 244506**.

**GB4ATG:** This is the talk-in station for the BARTG Rally on August 27 from Sandown Park Racecourse, Esher, Surrey.

**GB4VMR:** This is the talk-in station for the Vange ARS 10th Annual Mobile Rally from Basildon on September 10.

**GB1RLD:** Three members of Radio Link - Derby Hospital Broadcasting will be operating from the outside broadcast caravan at the City Hospital, Derby on 144MHz. The dates will be September 30 from 1000-1600, October 1 from 1000-1600.

**GB2SSD:** A station will be on the air from Scotland's smallest distillery - Efradour Distillery - on August 26/27.

**GB8FC:** This station will be on the air on September 9 and 10 for the Gala Open Day on September 10. Also September 23 and 24 for the Youth in the Air Day on September 24.

# SERVICES

## Subscriptions

Subscriptions are available at £17 per annum to UK addresses and £19 overseas. Subscription copies are despatched by Accelerated Surface Post outside Europe. For further details see the announcement elsewhere in this issue. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £28 (UK) and £32 (overseas). Three year subscriptions are also available for *SWM* at £45 (UK), £50 (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 board for the *SWM* Audio Filter, July '87 issue, is available price £2.75. The printed circuit board for the *SWM* Active Weather Satellite Antenna, June '88 issue is available price £4.20. Orders to Short Wave Magazine, Enefco house, The Quay, Poole, Dorset BH15 1PP. Prices of p.c.b.s include VAT and P&P.

## Back Numbers and Binders

Limited stocks of most issues of *SWM* for the past ten years are available at £1.65 each including P&P to addresses at home and overseas (by surface mail).

Binders, each taking one volume of

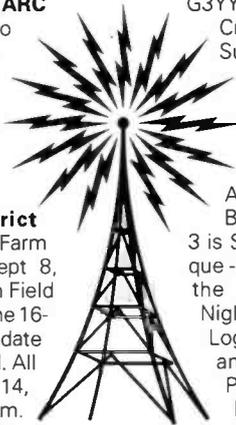
the new style *SWM*, are available price £3.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

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Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Poole (0202) 678558. An answering machine will accept your order out of office hours.

# GRASSROOTS

Lorna Mower



**Wimbledon & District ARS** meet 2nd & 4th Fridays, 7.30pm in St. Andrews Church Hall, Herbert Rd. Aug 25 is Up the Amazon G4XLM/G1SHV which may include a video and Sept 8 is The Polar Trek Communications by Michael Meeran G0PA3BHF. Nick Lawlor G6AJY on 01-330 2703.

**South Manchester RC** meet Fridays, 8pm at Sale Moor Community Centre, Norris Rd, Sale. Aug 25 is Reflections & Visions of SSB Field Days G3SVW, Sept 1 is Informal, the 8th is Twenty Things About Bicycles That You Never Wanted to Know G0DMU, the 15th is Underwater Long Distance Communication G4SYC and the 22nd is a Surplus Equipment Sale. Ian Butterworth on 061-231 5870.

**Acton, Brentford & Chiswick ARC** have a discussion on Transmission Line for Sept 19. 3rd Tuesdays, 7.30pm in Chiswick Town Hall, High Rd, Chiswick. W. G. Dyer G3GEH at 188 Gunnersbury Ave, Acton, London W3 8LB.

**Norfolk ARC** have North Sea Problem G3IOR on Aug 30, Town & County Show Final Briefing on Sept 6, Club Station Demo at Town & County Show, Royal Norfolk Showground, Costessey (weekend event) on the 10th, Packet Update by G3LDI/G4VLS on the 13th, Equipment Reviews & EMC G3OSS on the 20th and an Informal on the 27th. Wednesdays, 7.30pm at The Norfolk Dumping, The Livestock Market, Harford, Norwich. Steve Sewell G4VCE on Mulbarton 78258.

**Verulam ARC** meet 2nd & 4th Tuesdays, 7.30pm at the RAF Association HQ, New Kent Rd, (off Malborough Rd), St. Albans. On Sept 26 Mr F. DeSousa will give a talk entitled Batteries. George Christofi G0JKZ on 01-427 4800.

**Midland ARS** meet at Unit 16, 60 Regent Place, Hockley (Jewellery Quarter), Birmingham. Last Mondays is BBC Computer Club, Wednesdays is Morse Tuition, Thursday is Natter Night & Night on the Air. Also meet Tuesdays, 1st are Committee Meetings, 3rd Monthly meetings and 4th are Birmingham RAYNET Group. All meetings start at 7.30pm except Morse at 7pm. Paul O'Connor G1ZCY on 021-443 5157.

**Biggin Hill ARC** have Valves/Any Questions on Sept 19. 3rd Tuesdays, 7.30pm at the Victory Social Club, Kechill Gdns, Hayes. Geoff Milne G3UMI at 142 Hayes Lane, Hayes, Kent BR2 9EL.

**Southgate ARC** have a DF Equipment Check on Aug 24, an Astronomics talk by Mr R. Butler on Sept 14 and a Darts Match with Cheshunt/Verulam on the 28th. Brian Shelton G0MEE on 01-360 2453.

**Bedford & District ARC** have their 2nd Visit to DTI Babdock on Sept 5 and Luton Airport on the 19th. Allens Club, Hurst Grove, Bedford, 8pm. Glen Loake G0GBI on Bedford 266443.

**Loughton & District ARS** have Aylmers Farm Planning Night on Sept 8, Autumn Aylmers Farm Field Weekend G4ONP on the 16-17 and Amateur TV Update by G6ESL on the 22nd. All meetings in Room 14, Loughton Hall, 7.45pm. John Ray G8DZH on 01-508 3434 (after 6pm) or on St. Albans 59292 ext. 4202 (office).

**Paisley (YMCA) ARC** meet 2nd Wednesdays in the YMCA, 5 New St. Aug 30 is Potted History of Amateur Radio by GM3AXX. Thomas Wylie GM4FDM on Johnstone 22749.

**Derby & District ARS** have a Junk Sale on Sept 6. Wednesdays, 7.30pm at 119 Green Lane. Kevin Jones G4FPY on Derby 669157.

**South Bristol ARC** meet Wednesdays at the Whitchurch Folkhouse, Bridge Farm House, East Dundry Rd. Aug 30 is a Progress Meeting - club library G0FGZ and a committee meeting, Sept 6 is the AGM, the 13th is Planning Evening for Bristol Rally 1990 and also a Committee meeting and the 20th is HF Activity Evening - Club Stn. Len Baker G4RZY on Whitchurch 834282.

**Pembrokeshire RS** meet Mondays (except Bank Holidays), 7.30pm at the Further Education Centre, Tower Hill, Haverfordwest. 1st Mondays are lecture nights, 2nd are committee meetings. Martin Goodall GW8ZMU on Haverfordwest 764009.

**Chelmsford ARS** meet 1st Tuesdays, 7.30pm at Marconi College, Arbour Lane. Sept 5 is G4YTG - Aerials are not magic! Roy G3PMX on Chelmsford 360545 (home) or 353221 ext. 3815 (office).

**Coventry ARS** meet Fridays, 8pm at Baden Powell House, 121 St. Nicholas St, Radford. Aug 25 is A Testing Time - Have Your Rig or Other Equipment Tested, Sept 1/15 are Nights on the Air with Morse Tuition, the 3rd is Treasure Hunt & Barbecue (Sunday), the 8th is a talk on Narrow Bandwidth Television, the 22nd is The Indoor Direction Finding Contest (Cup Qualifier) and the 24th is the RSGB National DF Contest. Jonathan Ward G4HHT on Coventry 610408.

**Hastings Electronics & RC** have their Summer Barbecue on Aug 26. 3rd Wednesdays, 7.45pm at Westhill Community Centre, Croft Rd and Fridays, 7.30pm at Ashdown Farm Community Centre, Downey Close. Reg Kemp

G3YYF at 7 Forewood Rise, Crowhurst, Battle, East Sussex TN33 9AH.

**Cheshunt & District ARC** meet Wednesdays, 8pm in the Church Room, Church Lane, Wormley, Herts. Aug 30 is SSB Field Day Briefing G0KLU, Sept 2-3 is SSB Field Day & Barbecue - Cheshunt Sailing Base, the 6th/20th are Natter Nights, the 13th is John Logie Baird & TV G0BTX and the 27th is Radio on Postage Stamps G3ZYQ. Roger G4OAA on Hoddesdon 464795.

**Dragon ARC** meet 1st & 3rd Mondays, 7.30pm at the Four Crosses, Menai Bridge. Sept 4 is a talk by County Emergency Planning Officer, Ray Jones GW7EMF and the 18th is Members Demonstrate their Latest Acquisition or Project. Tony Rees on Bethesda 600963.

**Workshop ARS** meet Tuesdays at 59-61 West Street, Workshop for Social/technical meetings and Thursdays for RAE/Morse classes. Aug 29 is Visit to South Midlands Communications. Details of time from John Higgins G0DZX at the club address.

**Dareh Valley RS** have an RSGB Video - World at their Fingertips on Sept 13 and an Activity Evening - G0KDV On the Air on the 27th. 2nd & 4th Wednesdays, 8pm at Crockenhill Village Hall, Nr Swanley, Kent. Sheila Hillman G1NMX on Orpington 26951.

**Mid-Warwicks ARS** have a Visit by C. M. Howes on Sept 12 and Cellular Radio on the 26th. 2nd & 4th Tuesdays, 8pm at 61 Emscote Rd, Warwick, (St. Johns Ambulance HQ). Mike Newell G1HGD on Kenilworth 513073.

**Fylde ARS** have an ARRL Video - *The New World of Amateur Radio* on Sept 14 and Tramways of Lancashire G4IHF on the 28th. 2nd & 4th Thursdays at South Shore Tennis Club, Midgeland Lane. Frank Whitehead G4CSA on St. Annes 720867.

**Stourbridge & District ARS** have G8JTL Packet Radio - The Further Adventures on Sept 5 and The 50th Anniversary Dinner on the 19th. Meetings held twice monthly at the Robin Woods Centre, Beauty Bank. C. Brunn G1WAI on Hagley 885602.

**Keighley ARS** meet Tuesdays, 8pm in the Clubroom, rear of Victoria Hall. Aug 29 is Using Test Instruments G4YDI, Sept 5/19 are Natter Nights, the 12th is an evening with Jim G4MH and the 26th is Quiz and Supper (v. Northern Heights). Kathy G1IGH on Bradford 496222.

**Farnborough & District RS** have a lecture on Propagation G3LTP on Sept 13 and pre-AGM discussion on the 27th. 2nd & 4th

Wednesdays, 7.30pm at the Railway Enthusiasts Club Premises, off Hawley Lane (by M3 bridge). Tim Fitzgerald G4UQE on Camberley 29231.

**Halifax & District ARS** have their AGM on Sept 19. 1st & 3rd Tuesdays, 7.30pm in the Running Man, Pellon Lane. David Moss G0DLM on Halifax 202306.

**The Radio Society of Harrow** meet Fridays, 8pm in the Roxeth Room at The Harrow Arts Centre, Uxbridge Rd, Hatch End. Aug 25 is an Activity Evening. Chris Friel G4AUF on Ruislip 635522.

**Torbay ARS** meet Fridays, 7.30pm at the ECC Social Club, Highweek, Newton Abbott. Aug 25/Sept 1/8/15 are Club Nights, Aug 27 is Torbay Mobile Radio Rally at STC Social Club, Brixham Rd, Paignton and Sept 22 is their monthly meeting. Walt G3HTX on Paignton 526762.

**Yeovil ARC** meet Thursdays, 7.30pm at The Recreation Centre, Chilton Grove. Sept 14 is a talk by G8AWB, the 21st is Product Detectors G3MYM and the 28th is a Natter Night. David Bailey G1MNM at 7 Thatchem Close, Yeovil BA21 3BS.

**Todmorden & District ARS** have a Visit by Lowe Electronics on Sept 4. Queen Hotel, 8pm. Mrs E. Tyler G0AEC on Halifax 882038.

**Wirral ARS** have Simple Receiver Construction by Rev. George Dobbs G3RJV on Sept 20. 1st & 3rd Wednesdays, 7.45pm at Ivy Farm, Arrowe Park Rd, Birkenhead (opposite Landican Cemetery Gates). Alec Seed G3FOO on 051-644 6094.

**Dunstable Downs RC** meet Fridays, 8pm in Room 3, Chews House, High St. South. Aug 27 is G4DDC/P on the Downs and Sept 10 is 6th National Car Boot Sale. Tony Kelsey-Stead G0COQ on Luton 508259.

**Holyhead & District ARS** meet 2nd & 4th Sundays, 7.30pm at the Forrester Arms, Kingsland Rd, Holyhead. Details from D. Richards, 5 Queens Park Court, Holyhead, Anglesey, Gwynedd LL65 1RB.

**Nene Valley RC** meet at 8pm in the Prince of Wales Public House, Well St., Finedon. Sept 27 is C. M. Howes - The Well Known Kit Manufacturer. M. P. Byles G6UWB on Wellingborough 71189.

**Plessey Christchurch ARS** meet 2nd & 4th Thursdays, 7.30pm at the Clubhouse, rear of Plessey Sports & Social Club, Grange Rd, Somerford. Dennis G3BJR on Highcliffe 27826.

**Bath & District ARC** meet alternate Wednesdays, 8pm at Englishcombe Inn, Englishcombe Lane. Sept 13 is a talk on Amateur TV and the 27th is an Equipment Sale. Eric Otten G4GEV on Combe Down 832156.

More Grassroots next issue. □

# TRADING POST

**FOR SALE** Yaesu FRG-7 h.f. receiver, 0.5-30MHz gen coverage, digital display, good condx, good beginners RX, £90 o.n.o. Simon GM4PLM. Tel: Dumbarton (0389) 61250.

**FOR SALE** Trio R-2000 receiver, VC10 convertor 118-174MHz, KX3 antenna tuner, Revco discone antenna 30-500MHz, £485. Buyer collects or add £25 postage. Young. Tel: Lancaster (0524) 63935.

**FOR SALE** Realistic PRO-2003 a.m./f.m. scanner, 68-88, 108-136, 138-174, 410-512MHz. Fifty memories with discone antenna. £100. Mr S. Kell G4KEL. QTHR. Tel: 01-330 0695 (Morden Park).

**WANTED** Service manual for Marconi CR100. P. S. Morice, 21 Kensington Mansions, Trebovir Rd, London SW5 9TF. Tel: 01-370 7555 evenings.

**FOR SALE** Hallicrafters Receivers. Following circuits service manuals for sale at £6.00 each. S-118, SX-111, S-120, S-38B, S-20, S-20R, S-27, S-36, S-36B, SX-28, SX-42, SX-62, SX-23, SX-24, SX-25. S. J. Austin, 8 Greenwood Avenue, Chinnor, Oxfordshire OX9 4HN.

**FOR SALE** Lowe HF-125 receiver in mint condition and boxed, £295.00. Sky Coupler KX2 a.t.u., £25.00. Kevin Bates. Tel: Derby (0332) 833661.

**FOR SALE** Racal RA117, s.s.b. adaptor, handbook £150. 144/430MHz converters, p.s.u. £25. 144/430MHz antennas, 40ft mast £200. Heathkit 'scope £20. 28MHz Ham International £120. BBC B, d/drives, teletext, RTTY, ROMS, software, manuals £300. T. R. Wiltshire. Tel: Reading (0734) 701163.

**FOR SALE** Dressler ARA30 active antenna 50kHz-40MHz. Two months old, £75 o.n.o. or exchange for s.w.l. a.t.u. George Mate. Tel: Carlisle (0228) 35177.

**FOR SALE** Icom R-7000 scanner as new, excellent condition with full service info, boxed, £700. G. Pritchard GW1BAV. Tel: Anglesey (0407) 710405.

**FOR SALE** RX4 program and TIF1 Interface for Spectrum+, decodes RTTY/Morse/AMTOR/SSTV, with full instructions, also logbook program and frequency book, £35 or will sell with Spectrum+2 for £100 o.n.o. the lot. S. M. Bryant. Tel: Farnham (0251) 253306.

**FOR SALE** Mapsat Weather Satellite receiver board, unused £30; JVC 3060UK mono tele/rad/cass excellent condition boxed, accessories £65; v.h.f. Hi/Low band scanner boxed as new £65; Kenwood RZ-1 £350. Ian Wilson. Tel: Morden 01-337 9718.

**FOR SALE** AEA Pakratt PK-232 multimode terminal unit, six modes including FAX, complete with BBC-B software. Under four months old, cost £280. Asking £220 + post o.v.n.o. Mr C. Pritchard. Tel: St. Ives, Cambs (0480) 62093 after six.

**FOR SALE** Realistic PRO-2021, 200-channel; Realistic PRO-2008, 8-channel scanners, 68 to 512MHz with gaps plus antenna. £180 o.n.o. or exchange for compact general cover RX prefer digital read-out. J. Bowditch, 21 East Wyld Rd, Weymouth, Dorset DT4 0RP. Tel: (0305) 775353.

**FOR SALE** ERA Microreader tutor/RS232 version (hard copy with printer) £95.00. J+P Electronics FAX/SSTV program for Spectrum +3 inc drumspeed generator £30.00. Sony AN1 active antenna £30.00 demo? Paul MacMichael. Tel: Warrington (0925) 724691.

**FOR SALE** Yaesu FT-290 plus MM30 linear. Hardly used, £285. 144MHz quad £15. 430MHz 48-el Yagi £20. ATV converter, new, £15. Several valves new and used. Buyers collect. Alan. Tel: Skegness (0754) 74259 evenings.

**FOR SALE** New Yaesu FRG-8800 (two months old) mint condition, boxed with manual, £500 o.n.o. M. Harris, 11 Dove House Green, Weybridge KT13 9NE.

**FOR SALE** Trio 9R-59 receiver + manual, working and includes parts for update, £40 o.n.o. Also National Panasonic DR28 0.5-30MHz, digital readout + b.f.o., £60.00 o.n.o. Mr N. Smith. Tel: Basingstoke (0256) 477002.

**FOR SALE** Sony 2001D portable receiver, two months old + Sony AN1 active antenna, £240 o.n.o. Also JIL SX200 scanner, £170. B. Francis. Tel: Swiss Cottage 01-722 4684.

**WANTED** £10 for a copy of your Mullard Oscilloscope Model TF1330. Service sheet or manual. Mr Lear, Flat 86, Block 205, Wensley Rd, Reading, Berks RG1 6ED.

**FOR SALE** Lowe HF-125 with a.m.s. f.m. detector fitted. Excellent condition, £290. Panasonic RFB50L travel portable including NiCads, £45. Allan Smart, 50 Copson Street, Ibstock, Leicestershire LE6 1LB. Tel: (0530) 61341 evenings.

**FOR SALE** Sony ICF-2001D receiver 150kHz-30MHz, f.m. broadcast and airband, includes manuals, p.s.u., etc., as new, £230. FT-290R c/w muTek board m/m & accs, £220. Heatherlite mobile mic for FT-290R, £20. SX-200 scanner & accs, £200. Clive Hextall. Tel: Leicester (0533) 433812.

**WANTED** There is money waiting for your German WWII Military Radio Equipment. Want receivers, transmitters, accessories. Will collect. Lissok, Rue M. Poedts 9, B-1160 Brussels, Belgium. Tel: 00-322-6737115.

**FOR TRADE** Plessey PR155, several Eddystone 958/3, Collins 32V2, Leitz trinocular microscope and more. **Want** Leica screw mount cameras and wireless equipment prior to 1930. All replies answered. W. J. Ford, Box 606, Smiths Falls, Ont K7A 4T6, Canada.

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**SWM  
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## The R-5000 from Kenwood

The R-5000 has established itself as one of the world's outstanding receivers, and a glance at the photograph will tell you what a range of facilities are on offer. The photograph of course only tells you what is on the front panel, but behind it is the engineering skill of Kenwood. The Kenwood engineers, widely acknowledged to be the best in the business, have made the R-5000 into one of the finest receivers you could wish to own. Not only in sheer performance but in the ease of use which is the hallmark of their careful approach to total design.

The R-5000 will satisfy the most demanding applications, whether in winking out the weakest rare amateur DX, or listening to Radio Hanoi under conditions in a heavily congested Broadcast band. The combination of operating facilities means that the operator can match the performance of the receiver to the prevailing conditions on the air. The result — total satisfaction.

Am I alone in being so enthusiastic? I don't think so. Read what Angus McKenzie said in his review (*Amateur Radio magazine*). "I was most impressed with the front end, as it is far superior to much of the competition. The selectivities of the various filters on CW, SSB, and AM were excellent. . . ." In "*Short Wave Magazine*", Ken Michaelson remarked "I used the R-5000 for some weeks and was impressed with its performance. . . . I was able to resolve signals which when I first tuned them in seemed too weak to decipher." These comments give you some idea of the listening satisfaction which can come from a truly top class receiver.

The R-5000 scores on quality of construction as well as performance. Rainer Lichte says in his review:—"The entire electronics are housed in a sturdy metal cabinet. This outer barrier and elaborate shielding of critical inside parts combine to form an RF-tight enclosure. Excellent workmanship is evident everywhere, the finish is outstanding." Ken Michaelson said much the same thing:—"In passing, I must comment on the finish of the interior. The whole assembly, when the top cover was lifted off, was a picture. Gleaming plated screening and circuit boards and components all having the appearance of being carefully put together. Quite different to some I have seen."

I think that there is little doubt that the R-5000 is one of the really classic receivers of the future, but having bought it, you will then find that you can extend its usefulness by adding the internally fitted VHF converter, giving you 108 – 174 MHz coverage in addition to the normal 30kHz – 30MHz range, with the VHF frequencies read out on the main receiver display. All the HF modes are available on VHF as well – AM, USB, LSB, CW, FM, FSK. There is also a selection of high specification optional filters for special needs, and even a voice synthesiser option which will announce the frequency in English (and Japanese if you prefer. . . .)

As Rainer Lichte concludes:—"The multitude of functions puts the R-5000 almost in a class by itself. Undoubtedly this is the best receiver ever offered by Kenwood." Well, he likes it, Ken Michaelson likes it, and Angus McKenzie likes it. I just think it's terrific and I'm sure you will agree when you try an R-5000 for yourself at one of our branches or your nearest Kenwood approved dealer. By the way, just to keep the record straight, the ONLY Kenwood approved dealer in London (apart from our own branch at Eastcote) is Radio Shack Ltd. Anyone else trying to sell you an R-5000 has no connection whatsoever with the UK sales and service organisation, and should be treated with due caution, even if you may be getting "Forty quid off, John."

In the words of Dr Samuel Johnson when he referred to London:—

"Prepare for death if here at night you roam,"  
"And sign your will before you sup from home."

Caveat Emptor.

John Wilson.  
G3PCY/5N2AAC

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There has never been a more exciting time for the VHF listener than right now. With the leading manufacturers making VHF and UHF receivers, and using microprocessor control which would have been impossible even five years ago, the keen listener can carry in his pocket the kind of receiving power that used to take up a nineteen inch rack, and consume enough electricity to light a small house.

We at Lowe Electronics have made it our task to seek out the best of these amazing radios, and bring them to you at attractive prices. We are the sole factory appointed importers for Signal, AOR, and WIN; all of whom represent the very best in scanning monitor receiver design and manufacture, and we show a small selection on this page. Not only do we stock and sell all these radios, we also offer you the best advice in the business, and we carry a full range of listeners' accessories from a humble egg insulator to RTTY and Morse decoders.

Let's start with what is acknowledged to be the finest wide range monitor receiver ever made; the AR-2002 from AOR. This receives in all modes, on frequencies from 25 to 550MHz, and also from 800 to 1300MHz, so there isn't much you cannot receive: airband both VHF and UHF, marine, amateur, FM broadcasts and TV sound, cellular radio, land mobile radio and so on. The AR-2002 is in use in professional installations all over the world, but is available at a price that the amateur can afford.



**AR-2002** ..... £487  
Carr. £8 (Securicor)



The established favourite hand held scanner from AOR is the AR-800E. This mighty midget covers 75-105, 118-174, 406-495, and 830-950MHz, and you can have AM or FM reception on any frequency in the tuning range. 20 memories, scanning, frequency searching, all the facilities you need, and it comes complete with rechargeable batteries, mains charger, and flexy aerial for an attractive price of only £199.

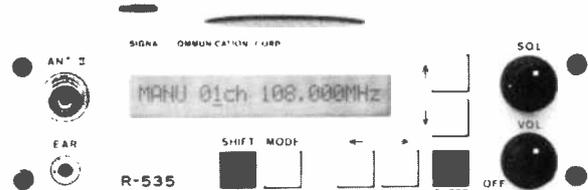
**AR-800E** ..... £199  
Carr. £8 (Securicor)



Brand new from AOR is the AR-900; a delightful hand held scanner with more than a hint of airband in its specification. AM/FM reception in the bands 108-136MHz, 137-174MHz, 220-280MHz, 300-380MHz, 406-470MHz, and 830-950MHz, give the AR-900 a wide appeal, particularly to the UHF airband listener. New slim and elegant styling, an attractive price, and a wide range of facilities including 100 memory channels make the AR-900 unbeatable in the market.

**AR-900** ..... £235  
Carr. £8 (Securicor)

Signal Communications have always specialised in receivers for the airband, and we have often said that Mr. Hayakawa is one of those rare men who truly understand how to design VHF AM receivers. The audio quality which comes from any Signal airband receiver is outstandingly good, and the operating facilities are equally excellent. Top of the Signal range is the R-535, which covers not only the VHF airband from 108 to 136MHz (also 136 to 143MHz), but also the UHF airband from 220 to 380MHz. No less than 60 memory channels can store any frequency within the range of the receiver, and scanning takes place at very high speed, so you don't miss any of the action.

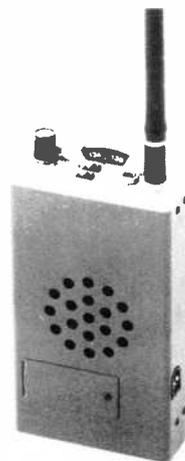


**R-535** ..... £249  
Carr. £8 (Securicor)

Signal also make the ideal starter receiver, the R-537S, which combines fully tunable operation for searching around the VHF band and two channel crystal control for spot-on accuracy when you need it. A special version of the R-537S is in use by most parachute clubs where the instructor can talk directly to a falling pupil — helps to advise them that they should have opened the chute.

Our most successful airband receiver has been without doubt the WIN-108. Designed to incorporate all the features asked for by UK users over the years, the WIN-108 is the most convenient, powerful, and feature packed dedicated VHF airband receiver ever made available. Simply cannot be described in this space, but details of the WIN-108 and all our other models are available on request, enclosing £1 to cover post and packing. You will also receive our "Listeners' Guide" and "Airband Guide" free of charge.

Send right away, and see why you should "look to Lowe" for all your listening requirements.



**R-537** ..... £69.51  
Carr. £8 (Securicor)



**WIN-108** ..... £175  
Carr. £8 (Securicor)

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All branches are closed all day Monday.

# SCANNING

Alan Gardener

## New Products

A new accessory has just become available that will be of interest to you if you enjoy picking out really weak signals with your scanner. The unit is a high performance pre-amplifier specially made for Nevada. The heart of it is a low-noise GaAs-f.e.t. - the lower the noise figure the weaker the signals you can hear. The unit has a very wide frequency range starting at 25MHz and continuing up to 2100MHz. By limiting the lower frequency range, the unit avoids one of the shortcomings often found in other designs - that of overloading on very strong short wave broadcast stations.

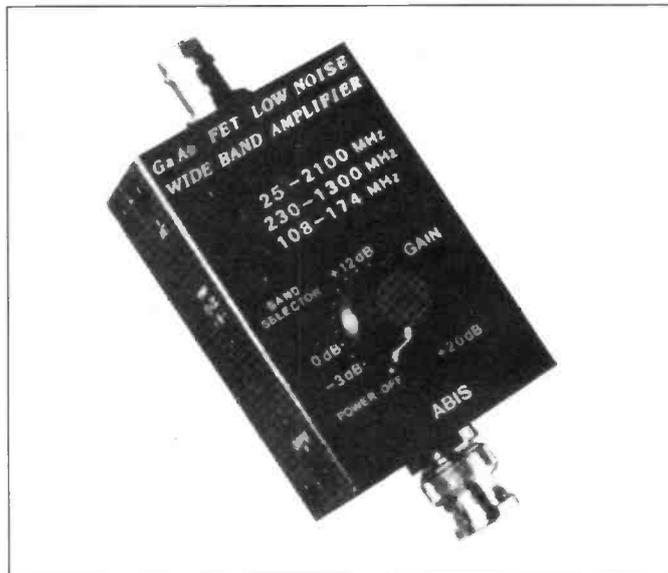
The unit also has a couple of additional features not normally present in commercial designs. The first is an adjustable control, which allows you to set the gain of the unit from -3dB to +20dB. The second is a series of switchable band-pass filters allowing the user to tailor the response of the amplifier to frequency bands of interest. The unit is compact, measuring approximately 50 x 25 x 25mm, and can be powered from either an external 12V supply or an internal 9V PP3 style battery, permitting its use with hand-held scanners. In fact, its small size and wide frequency range make it suitable for a whole range of applications - for example increasing frequency counter sensitivity, or feeding two receivers from the same antenna by connecting a TV antenna splitter on the output. The price - just under £80. Contact Nevada at 189 London Road, North End, Portsmouth, Hampshire PO2 9AE. Tel: (0705) 662145 for further details. Alternatively, you may like to visit their recently opened showroom and see the unit in the "flesh" as well as a whole host of other equipment of interest to the scanning enthusiast.

## Other News

Still no sign of the Icom ICR-9000, and talk of production problems with the AOR AR-3000 must mean good news for Standard and their AX700E scanner/panoramic display, which has been attracting a lot of interest wherever it has been demonstrated.

I also hear whispers of two new scanners from other manufacturers. One is a continuous coverage hand-held with 2000 memories - yes 2000! The second is intended primarily for mobile use and is being specially designed for the UK market. The main features being

What's new in the world of scanning? Read on and find out.



selection of the correct tuning step size depending on the band chosen, manual selection of a.m. and finally a reasonable price! Watch this space for further details.

## Use of Pre-amplifiers

One of the most common questions I still get asked is what difference will the addition of a pre-amplifier make to my scanner?

I covered this topic in the Nov 88 column but the new Nevada pre-amplifier makes it a good time for a quick refresher course.

There is no simple answer to the question, as any improvement depends on a number of factors. To start with take a close look at your existing system. A good antenna mounted outside and clear of nearby objects must be a first priority.

Almost as important is the type of coaxial connecting cable you are using and its condition. Cheap cable tends to deteriorate rapidly and should be replaced. Don't use thin cable such as UR43 as this tends to be very lossy, particularly when a cable run of 6-9m is common. This becomes increasingly important as the frequency rises and is especially true above 900MHz. At these sort of frequencies any advantage obtained from mounting the antenna high on the house roof could be immediately lost in the connecting cable. I would always recommend using the best quality cable and connectors you can afford, such as Pope H100, Westflex 103 or Andrews LDF 450. Note that special connectors are required for some of these so check before buying.

## Finishing Off

Once you have your new coaxial cable in place, take a few more minutes to finish the job off properly. Have you weather-proofed all the connectors used outside? A good way of doing this is to fit a plastics shroud over the connector (available from electrical suppliers) and then put a layer of self-amalgamating tape over the shroud, finally finishing off with a layer of standard insulation tape. By doing this you should prevent moisture from entering the cable and ruining your new investment. This is particularly important with semi-air spaced types, as there is nothing more embarrassing than finding a small pool of water next to the connector at the bottom end of the cable.

Another tip is to avoid sharp bends in the cable and never have long vertical runs without some form of support. This prevents the inner conductor of the cable from becoming stressed and prolongs the life of the cable. Once the antenna and cable have been optimised you can start thinking about a pre-amplifier. One of the most common mistakes made when choosing one is to select the model with the highest gain. What you should look at is the noise figure - this is a measure of the "goodness" of the amplifier and the lower the figure the better. Most manufacturers quote the performance at different frequencies, with good figures currently in the region of 1dB at 100MHz rising to 3dB at 500MHz and 5dB at 1GHz.

To get the best results from a pre-amplifier it should ideally be mounted at the masthead. This is because, when the pre-amp is mounted at the bottom end of the coaxial cable very weak signals become masked by the additional loss and electrical noise introduced by the cable. Each dB of loss produced in the cable adds to the noise figure of the pre-amp, so you may find that any improvement is limited as a result. By mounting the pre-amp at the masthead the weak signals are immediately boosted to a much higher level minimising the effect of the cable on the system.

## Excessive Gain

The gain of the pre-amp should not be excessive as this tends to result in the receiver becoming overloaded. This normally only occurs in the presence of strong signals - for example if you are unfortunate enough to live close to a TV

# SCANNING

or radio transmitter or if a taxi rank operates a base station around the corner from you.

However, with very high gain pre-amps the problem is exaggerated as all signal levels are boosted, not just the weak ones. This means that the strong local signals that your receiver is normally designed to cope with are boosted to a much higher level and begin to overload the input stages. One strong signal is not too much of a problem but when there are several present the signals tend to mix together creating a whole new range of spurious signals which can mask out the weaker but wanted ones.

On first listening it may sound as though the scanner is receiving lots of previously unheard stations. However, on closer inspection you may well find

that these new signals are produced as a result of overloading and are, in fact, a combination of two strong signals in another frequency band. This problem can occur within the pre-amp so strong signal handling performance becomes important, but this normally is a trade off against a low noise figure. With most modern designs the limiting factor tends to be the receiver rather than the pre-amp so if in doubt go for one with a low noise figure.

## Rule Of Thumb

The general rule of thumb is don't use a pre-amplifier with more gain than is absolutely necessary. The Nevada design has an adjustable control which allows you to optimise the gain. To do this find

a weak station without the pre-amp in circuit - use n.b.f.m. and select one with a fair amount of background noise on it. Connect the pre-amp in circuit and listen to the noise level. Increase the gain control until you are unable to detect any further reduction in background noise. Ignore any signal strength meter readings whilst you are doing this. The gain should not be more than about 10dB for the best results - more than this and you are likely to run into problems with overloading of the receiver.

One other feature of the Nevada design is the provision of switched band-pass filters. This model has three ranges: 25-2100MHz, 230-1300MHz and finally 108-174MHz. By selecting the appropriate filter the frequency range of the pre-amplifier can be limited to particular bands of interest thus excluding any strong out-of-band signals. This can make a dramatic improvement to reception particularly with some designs of continuous coverage scanners where only limited input filtering is provided.

## Summary

1. Before you buy a pre-amp check that you are not able to improve your existing antenna system - for example is it outside, in a good location, using high quality connectors and most importantly with the best cable you can afford ?

2. Check that there are no strong local signals which will cause the receiver to overload when a pre-amp is connected.

3. Choose a design with a low noise figure, good strong signal handling characteristics and preferably with an adjustable gain control.

4. Check that the frequency range of the pre-amp is compatible with that of your scanner.

5. Consider the use of band-pass filters to restrict the range of signals reaching the pre-amp/scanner at any one time, this is particularly important with some continuous coverage models.

By sticking to these guidelines you should be able to improve the performance of your receiving station whilst avoiding some of the more common pitfalls.

## What Can I Hear? Part 7

Last month we ended our examination of the radio spectrum at 165MHz, this month we venture ever higher in frequency starting with the p.m.r. "high" band.

This has the base stations transmitting between 165.05MHz and 168.25MHz with the mobiles 4.8MHz higher between 169.85MHz and 173.05MHz. A mixture of a.m. and n.b.f.m. transmissions are used, but all stick to the 12.5kHz channel

## Frequency allocations 165.05-225MHz

Frequency (MHz)	Service
165.050	169.850
168.250	173.050
168.950	
169.850	165.050
173.050	168.250
173.200	
173.350	
173.800	
174.500	
176.500	184.500
183.500	191.500
184.500	176.500
191.500	183.500
192.500	200.500
199.500	207.500
200.500	192.500
207.500	199.500
208.500	216.500
215.500	223.500
216.500	208.500
223.500	215.500
225.000	

# SCANNING

spacing laid down by the DTI. One major user of this band is the Ambulance Service who, like many other companies and local authorities, require a reasonable coverage area without the propagation difficulties sometimes encountered during the summer months in the p.m.r. "low" band around 86MHz.

Most of the activity is twin frequency simplex with the base and mobile stations taking it in turn to talk on the paired frequencies. Some single frequency simplex activity takes place between 168.95-169.85MHz with a few channels specifically allocated for short term hire use. As there are only a limited number of these channels available they tend to become very busy during special events, especially considering that in these circumstances most operators are not familiar with the correct on-air procedures.

Moving a little further up in frequency to 173.05MHz we reach an interesting band allocated for use by low power devices. The band is split into several sub-bands, each one set aside for specific purposes. These include radio-microphones, radio deaf-aids, medical and biological telemetry and telecontrol devices - special short range radio control devices to you and me!

Frequency 175MHz marks the start of what used to be the old 405 line TV Band III which stretched all the way up to 225MHz (although not used in this country for TV anymore it is still used throughout Europe and Eire). The band has now been allocated for use by p.m.r. companies but so far only the middle portion has been used. The allocation of

## PMR "high" band - short term hire channels

169.0125MHz	simplex
169.1375MHz	simplex
169.1625MHz	simplex
169.1875MHz	simplex
169.4375MHz	simplex
169.4875MHz	simplex
169.5375MHz	simplex
169.5750MHz	simplex
169.6375MHz	simplex
169.7625MHz	simplex

167.200MHz Base Transmit  
Paired with  
172.000MHz Mobile Transmit  
Duplex

blocks of frequencies in this band has been made on a very careful basis in order to ensure minimum interference to, and from, foreign TV services. This is particularly important at frequencies close to the sound and vision channels of the

French TV service. For this reason these channels have been allocated to radio-microphones as their low power and limited range are unlikely to cause problems. This is a very welcome development, particularly in the theatre district of London where the existing allocation was becoming seriously overcrowded as a result of ever more technically demanding productions.

The new p.m.r. services recently introduced into the middle of the band are interesting in that they make use of an increasingly important technique known as trunking. In this system many users share a pool of frequencies and base stations. Each radio has its own "identity" built in, so any calls can be addressed to an individual radio - it's rather like having its own telephone number. Base stations can be interlinked to give national coverage and because a pool of frequencies is available more users can be accommodated than would be possible in conventional systems. The way in which each radio is addressed is specified in a DTI publication called MPT1327 and is a requirement for all equipment operating in Band III. This represents a major step forward in equipment compatibility and may well result in the digital data "burp" present at the end of a transmission becoming increasingly common on other frequencies as trunking techniques become more popular.

Well, that's all for this month. Keep those letters coming in to the usual address: PO Box 1000, Eastleigh, Hants SO5 5HB. Until next month - Good Listening.

### Abbreviations

a.m.	amplitude modulation
dB	decibel
GHz	gigahertz
kHz	kilohertz
MHz	megahertz
n.b.f.m.	narrow band frequency modulation
p.m.r.	private mobile radio
V	volt

# FIRST AID

Omer Baras is restoring a transceiver, the FDK Multi II. He would like any information on this rig as well as information on the manufacturer and importer. **Omer Baras, Rue Samain 2, B-7131 Waudrez, Belgium.**

Mr H. Tarrant has a modified RX1155 and a Codar PR30 which he hopes to get up to scratch. Are there other retired people with "antique" equipment wanting to correspond with each other, he wonders? **Mr H. Tarrant, 46 Melrose Avenue, Fulwood, Preston PR2 4DE.**

Noel Carmody is in the Republic of Ireland and wonders if there are other Irish s.w.l.s interested in getting in touch. **Noel Carmody, Caherhenny, Ballingarry, Co Limerick, Eire. Tel: 069-68297.**

Mr Kinvig is trying to help a friend presently in India, he is looking for any information on the Davco DR30 receiver. If you can help, contact **Mr Kinvig, 79 Clagh Vane, Ballasalla, Isle of Man.**

John Hanna is re-furbishing an ex-military wireless set No.19, the p.s.u. No. 2 and the r.f. amplifier No. 2 Mk3. He has the circuit diagram for the No. 19 set but wants the technical details of the coils - the L21A/B and the L7A/B. **John Hanna, 51 Cumberland Drive, Dundonald, Belfast BT16 0AT.**

Mr Dotchin is looking for a handbook, or copy, for a Johnson Viking Ranger II. This is a kit-built transmitter. **Mr R.M. Dotchin G3WEP. 2 The Crescent, Shortstwon, Bedford MK42 0UJ.**

Does anyone have a list of spot frequencies on the h.f. bands. T.J. Taylor's main interests are in aviation, marine and unidentified stations. If you can help with pointing this newcomer to the right road, contact: **IL44, PO Box 6, Heathfield, East Sussex TN21 8DG.**

Michael Oldfield recently had the mis-fortune to be burgled and as a result lost his Sony ICF-5900W. It's equipped with a b.f.o. and bandspread coverage from 3.75 to 28MHz. Not many of these receivers were sold in the UK, so if you should come across one check to see if there is a name and post code security marked in the battery compartment. If there is, please contact us at *Short Wave Magazine* and we'll pass on the details on the receiver's whereabouts.

Stephen Nicholls would dearly like to be able to use his computer (an Amstrad PCW8256) for a log, or to retrieve data while working on the air. But, the QRM is too great, especially on 50MHz. Has anyone else experienced this and found a solution? Apparently, the QRM disappears when the antenna is disconnected so it's not mains-borne. **Stephen Nichols, Tor Haven Hotel, King Street, Brixham, South Devon TQ5 9TH.**

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# JANDEK DIRECT CONVERSION RECEIVER KIT

Dick Ganderton G8VFH  
Part 1

The stated philosophy behind the Jandek range of kits is simplicity and affordability, aiming to educate through construction. Their range of kits provides the constructor with the necessary modules to put together a single-band, direct conversion receiver. The modular principle allows the receiver to be built in a variety of different configurations to suit the requirements of the builder. It also breaks the receiver up into easily dealt with building blocks, each one of which can be built and tested individually.

When your kit-built receiver bursts into life, all your time and effort seems well spent.

components. The result is a stabilised 12V d.c. supply capable of providing up to 1A when fed from a suitable mains transformer. The instructions give full practical details on how to reduce common-mode hum when using the unit with a direct conversion receiver although

the ferrite ring and wire is not supplied with the kit.

Having built the p.s.u., I turned my attention to the front-end module. This is a much smaller board, but still very simple to put together. Some care is required when inserting the coils into the board to avoid bend-

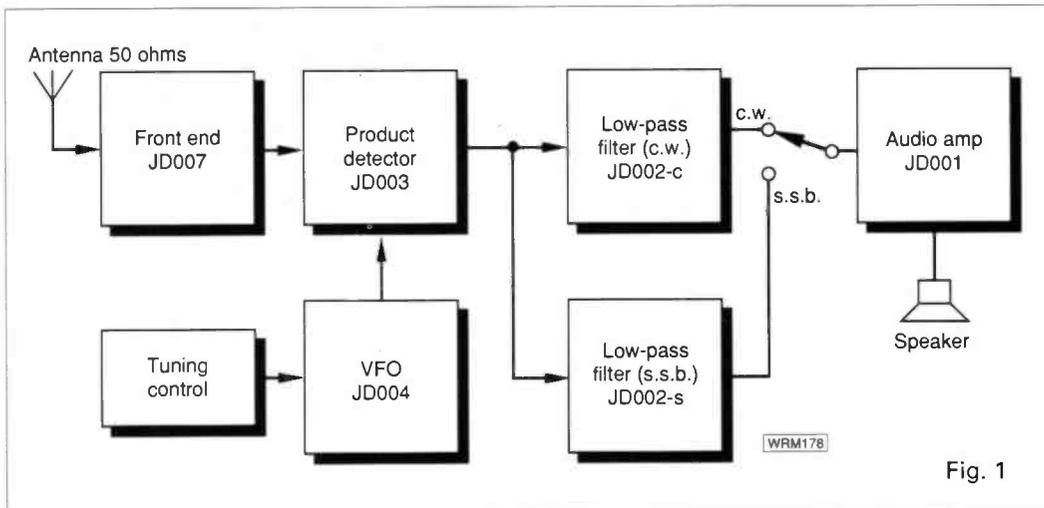


Fig. 1

## Basic Receiver

The basic direct conversion receiver is shown in block form in Fig. 1. The product detector, low pass audio filters, audio output and power supply modules are common to any version of the receiver, only the front end and v.f.o. modules differing for the band selected. There are five amateur bands to choose from, 1.8, 3.5, 7, 10 & 14MHz and I chose the latter.

Each kit module is supplied separately and consists of a good quality, glass fibre, printed circuit board with tinned tracks and all the necessary components together with detailed instructions. Instructions can make or mar a kit, particularly if you are a beginner. Jandek's instructions were well nigh perfect

covering everything that you could possibly need to know about building, testing and aligning the module. A comprehensive parts list is provided for each module and in the kit I had for review they were all of good quality and fitted the p.c.b.s with no problems.

## Power Supply

The logical place to start is with the power supply module so that you can at least provide the necessary power to test the other modules as you complete them. The unit could also be used with many other QRP projects requiring a stabilised 12V d.c. supply.

This module is very easy to build as there are no delicate tracks or

ing the pins. If you take too long soldering the polystyrene capacitors, you could melt them.

Alignment is ideally carried out with an r.f. signal generator but the instructions suggest that it could be done when the receiver is completed by listening to off-air signals.

## Product Detector

With the product detector module, which is based on the popular MC1496 double balanced mixer i.c., the complexity moves up a stage. There are more components packed fairly closely together, along with an i.c. which has to be soldered into the p.c.b. However, all that is needed is some extra care with the soldering iron.



The completed 20m v.f.o. board. A dual varicap diode is fitted for tuning purposes.

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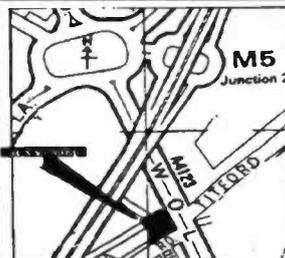
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# JANDEK DIRECT CONVERSION RECEIVER KIT

## VFO

To be able to test the product detector a suitable signal is needed and this can be easily provided by the v.f.o. module. This was the only module out of the seven that I had any problems with. I started by winding the two toroidal coils, but found that the wire specified was too thick and in trying to squeeze on the required number of turns the ring shattered.

I had also just received a communication from Jandek regarding the BF256C f.e.t.s used in the kit. Apparently they had been supplied with the "L" version which has the source and gate connections reversed. A revised pinout drawing was provided in case the kit had the "L" type, but my kit had BF256S types! What now? I have access to all manner of technical information in the office, but what if I had been a raw beginner building my first kit?

## Help

Well, at the top of each instruction sheet is an evening/weekend telephone number, which implied to me that I could get some assistance. Indeed, the necessary assistance was forthcoming and two new toroids, some thinner wire and the information that the "S" version had the same pinout as the original "C" type was with me by return of post. No further problems were encountered and I had proved to myself that Jandek's proprietor G3ZOM, was on the ball.

The v.f.o. can be controlled with either a conventional tuning capacitor, Varicap diodes or a combination of both. The kit doesn't provide either a tuning capacitor or Varicap diodes. I opted for Varicap

## Abbreviations

A	amperes
c.w.	continuous wave (Morse)
f.e.t.	field effect transistor
i.c.	integrated circuit
MHz	megahertz
mW	milliwatt
p.c.b.	printed circuit board
p.s.u.	power supply unit
QRP	low power
r.f.	radio frequency
s.a.e.	stamped addressed envelope
s.s.b.	single side band
V	volts
v.f.o.	variable frequency oscillator
$\Omega$	ohms

tuning using a BB204 dual Varicap diode.

The p.c.b. has provision for either two single Varicaps or a dual one as well as for a traditional tuning capacitor and the instructions cover both arrangements. A suitable 10k $\Omega$  potentiometer acts as the tuning medium.

As with any v.f.o., rigid mechanical construction is essential together with good screening if reliable operation is to be achieved. Jandek recommend that a die-cast box is used to house the v.f.o.

## Audio Filters

Three more modules complete the receiver - two low-pass, audio filters and the audio output stage. The two low-pass filters are identical in construction, only certain component values being changed to provide the different

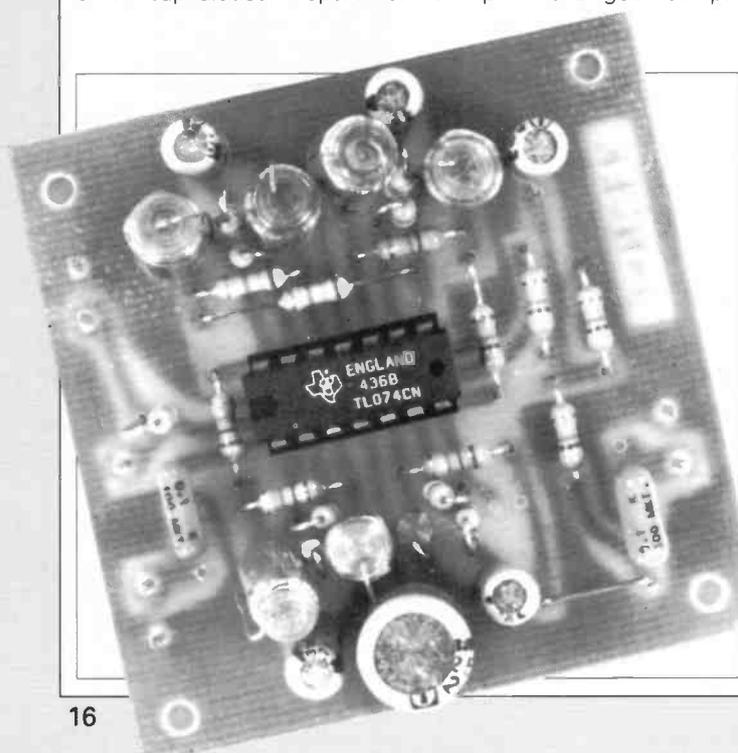
responses needed for either s.s.b. or c.w. The filter design is based around the TL074 quad op-amp i.c., three of its sections forming a six-pole, low-pass filter and the fourth acting as an amplifier, the gain of which can be varied if needed by changing one resistor. The board is similar in constructional complexity to the product detector but the i.c. is mounted in a socket so that it is not necessary to solder it into the board. The polystyrene capacitors are all mounted vertically and extra care is needed to make sure that the lead out wire from the top of the capacitor doesn't short out to its next door neighbour.

## Audio Amplifier

The last module is for the audio amplifier and is based around the ubiquitous LM380N audio power amplifier i.c. Very straight-forward to construct, even though the i.c. has to be soldered in, this module gives 700mW of audio into an 8 $\Omega$  speaker when used with a 12V d.c. supply.

As with the power supply module the audio amplifier could find a use with any project needing a simple and cheap audio output to a loud speaker.

Next month I will cover the fitting of the completed modules into a case and look at the results. In the meantime you can obtain further details of their kits by sending an s.a.e. to **Jandek, 6 Fellows Avenue, Kingswinford, West Midlands DY6 9ET.** □



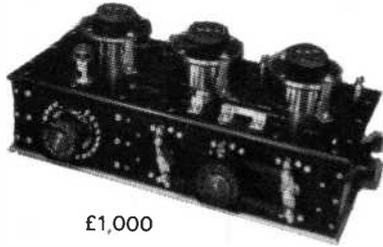
The 12V d.c. 1 amp stabilised power supply module which could also be used to power any project requiring 12V d.c.

The low-pass audio filter module for c.w. The s.s.b. filter is very similar.

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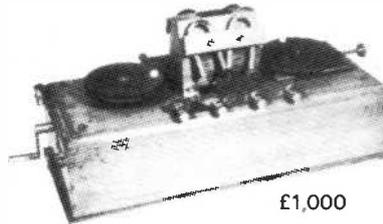
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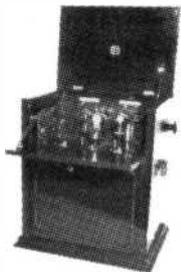
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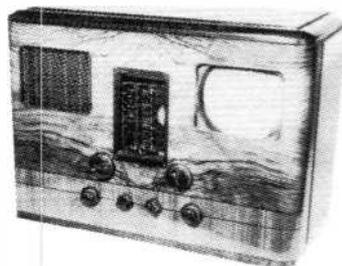
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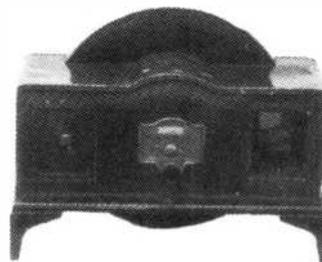
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# BANDSCAN

Peter Laughton

In recent weeks international phone circuits across the Atlantic seem to have improved to an extent where, here in Europe, we can use the fast 2400 baud speed on the US computer bulletin board with no interference problems.

Just like Dorothy in *The Wizard of Oz*, the computer bulletin board of the Association of North American Radio Clubs has found its way back to Kansas. The new number is 010 1 913 345-1978, and the address: ANARC BBS, PO Box 11201, Shawnee Mission, Kansas 66207-0201, USA. Call at off-peak times and you'll find it possible to get a lot of tips and gossip for just a few minutes on the line.

The US headquarters of the Kenwood receiver company has set up an electronic bulletin board. It is open to anyone and accepts speeds of 300, 1200 and 2400 baud. The format is the standard 8-N-1 configuration used by most electronic bulletin boards. I called the number in California and found the system to be a really practical idea and not a blatant commercial attempt to push Kenwood products. The system contains several useful hints on modifications as well as a free program to control the R-5000. It also allows you to ask technical questions and there's a special column about antennas. The Kenwood bulletin board is open daily from 0100 to 1500 UTC, which is simply outside working hours in California, and in fact that extends to round the clock at weekends. The number is 010 1 213 761-8284. This might be an idea for the UK.

## All India Radio Runs Into Trouble

All India Radio uses six satellite transponders on the *Insat-1B* communications satellite, made available

## The latest news from inside the broadcasting world.

to them by the Indian Department of Telecommunications. The transponders are not designed for direct home reception because the power from the satellite is quite low. You'd need a large receiving dish and budget well beyond the average consumer to receive the channels. In fact these AIR satellite channels are designed to link radio networks together across India, with priority being given to national hookups such as news bulletins, current affairs and sports from Delhi to all other regional AIR stations. Each of the regional stations, operating on both medium and short wave, have been provided with up and downlink satellite facilities, except at Aligarh which has only a downlink, because no programmes originate from there.

On the other hand, All India Radio's external service division, which makes programmes for overseas listeners, still uses speech-grade phone lines to send the studio signal from Delhi to sites at Aligarh, Bombay and Madras on short wave and Calcutta, Jalandhar, Pondicherry and Rajkot on medium wave. Some of the external service sites are fed by satellite in the late hours of the evening when the domestic service has gone off the air.

The set-up at Pondicherry is more complex. Apparently, the special programmes in Tamil beamed to Sri Lanka for about 10 hours a day, are produced at the All India Radio studios in Madras. They are then fed by telephone lines to the 100kW medium wave transmitter at Pondicherry operating on 1.449MHz. During the late afternoons when the two

short wave transmitters at Avadi, near Madras in Tamil Nadu are not being used for the home service, they also carry this Tamil programme for Sri Lanka operating on 7.205 and 7.160MHz.

However, there may be some problems on the horizon. Manosij Guha in New Delhi tells us that speculation is rife in India that the *Insat-1B* will fail before the end of this month. All AIR stations across the country have been put on "red alert". Before the satellite era, programmes were distributed round the country on short wave, and in fact this feeder network is once again being re-activated and put on standby. This is not an easy task especially as many regional stations have become accustomed to receiving programme feeds from Delhi satellite. Those national hookup programmes which did not have a short wave outlet, like the early morning news in Sanskrit and the evening sports news in Hindi, are now being broadcast on short wave from Delhi. The idea behind this elaborate exercise is that even if the ageing satellite fails, the domestic services of All India Radio can simply switch over to the old short wave network, although with severe degradation of quality.

## Launch Failures

The *Insat-1* series of communication satellites have been manufactured by Ford Aerospace Corporation in the United States, built to Indian specifications. India's track record in satellite launches has been plagued with problems. *Insat-1A*, the first in the series, was launched in 1985 by NASA's Delta rocket launch vehicle from Cape Canaveral. It promptly spun out of orbit. The second satellite, *Insat-1B*, was launched in 1986 by the space shuttle *Challenger*. This fared much better than its doomed predecessor and was brought on-line after some initial orientation problems. *Insat-1B* is the satellite currently being used, although nearing the end of its life.

The third in the series, *Insat-1C* was to be an "in-orbit" spare and was eventually to replace *Insat-1B* after it failed. But, after a successful launch on July 22 last year by an Ariane rocket from Kourou in French Guyana, it became an expensive piece of junk in geostationary orbit. It is only partly functional due to a massive power-bus failure and is sparingly used for some telecom services only. All India Radio's hopes of getting four additional satellite transponders to feed External Service programmes to transmitters sites around India were thus dashed.

To make up for *Insat-1C*'s failure, a fourth satellite, *Insat-1D* was hurriedly put together once again by the Ford Aerospace corporation at a cost of US\$

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140 million. The *Insat-1D* though identical in configuration to the *Insat-1B*, has improved features, such as a larger battery capacity and enlarged propellant tank. It was to be launched by a private-sector American firm, the McDonnell Douglas Space Systems Company of the USA from Cape Canaveral in Florida for a launch-fee of US\$ 50 million. A Delta launch vehicle was to be used, and 29 June 1989 set as the launch-date.

However, during the count-down things went wrong. Back on Monday June 19, the *Insat-1D* was severely damaged while being connected to the Delta rocket. That afternoon, the hoisting cable holding the payload snapped and the attached hook crashed into the satellite, damaging it. The damage is currently being accessed by specialists. It is clearly a serious set back of several months, and currently no new launch-date has been set. This situation could have serious consequences for the telecommunication and meteorological services in India. If satellite services on *Insat-1B* should fail, then the worst hit will be Doordarshan, where over 300 television transmitters are networked by satellite as terrestrial microwave links are minimal.

## BBC Ascension Upgrade

At the start of the new winter transmission schedule, the BBC will considerably improve services to West and Southern Africa by increasing the output from its Ascension Island relay station. This spot in the South Atlantic Ocean is also ideal for serving the eastern coast of South America. After testing during the summer, two more 300kW transmitters are being added to the existing four.

## French Plans Blown Away

After spending some considerable time planning and getting approval for a relay station on the island of Reunion in the Indian Ocean, it doesn't look as though the project will ever go ahead. It seems that the islands are often in the path of severe tropical storms, and this would mean much heavier antenna towers would be required than normal. The plan for a relay station in New Caledonia has also been put into cold storage.

At the moment, Radio France International has announced that priorities are being switched to the home front. The twelve 100kW short wave transmitters spread over two sites in France are now 27 years old and need to be replaced. RFI is expected to commission the Thomson company to put 500kW units in, although these may later run at 250kW to reach target areas in Europe.

As far as overseas relays are concerned, RFI has received permission from the Thai government to come up with a proposal for a relay station there. If it goes ahead, then up to four 500kW transmitters would be installed. These would mainly aim at China and Vietnam. As far as Africa and the Middle East is concerned, RFI has plans for a new station in Djibouti, although it won't be known until later this year if funds are available.

## RCI Threatened

Severe budget cuts at the Canadian Broadcasting Corporation are threatening to drastically reduce the programme services that the CBC provides. One solution currently on the table is to eliminate the overseas department, namely Radio Canada International. This would save some CAN \$17 million a year, although other cuts within the CBC would still be needed. RCI won't know its fate until November, but in the meantime if you care about the future of the station, now might be a good time to show solidarity. It might be an idea to address your letter to Ian McFarland, producer of the weekend programming at RCI. He, perhaps more than most at the station, seems to care about presenting a friendly voice of Canada to the world. RCI's address is Box 6000, Montreal, Quebec H3C 3A8, Canada. The station only has a fair signal into Europe at the best of times, but the DX and science programmes have a wide and loyal European audience, especially in the UK.

## Congratulations

A 50th anniversary passed at the end of August without much fanfare in the national dailies. Yet, without *BBC Monitoring*, many newspapers in Britain would lose a considerable amount of essential foreign background. The Foreign Office provides most of the funds to keep this service running from headquarters at Caversham Park, near Reading. About £500 000 is also raised annually by selling the monitored information to private companies and universities. *BBC Monitoring* has changed dramatically since its humble beginnings in Broadcasting House in 1939.

During the Second World War it played a vital role in monitoring Nazi broadcasts, and noting down the names of prisoners of war announced by the enemy. If anyone doubted its usefulness in 1989, just look at the recent news stories concerning Iran and China. Without being able to hear the government line through the state-run short wave stations, a lot of the analysis by political experts would be very difficult indeed.

In November this year a new listening centre will open in Caversham. This will provide much needed computer facilities to monitor foreign press services, and enable publications compiled by the service to be produced with a much greater efficiency. The Broadcast Reception Service is probably the best well-known to short wave listeners. This dedicated team checks station schedules round the clock and often discovers news items in the process. It's these stories that eventually end up in radio club publications and on DX programmes.

## KYOI Silent

If you have been searching for the Saipan based short wave station KYOI, then no doubt the effort has been somewhat fruitless. Richard Radford-Reynolds from Guildford wrote to me with news monitored from the *Christian Science Monitor's* station in Maine. KYOI was originally built by an Hawaiian entrepreneur who thought Japan needed American rock music. Several marketing mistakes caused this project to fail. The *Christian Science Monitor* bought the station and have set up a satellite feed from their studios in Boston, but Japan is no longer the main target area. Since it is difficult to work on a transmitter when it is live, the station has gone silent to allow engineers time to re-position one antenna, and build others. KYOI will start to serve South-East Asia and Australia when it comes back on the air.

## Cologne Loses the Pips

For many years broadcasts to Latin America by Radio Deutschewelle in Cologne, West Germany have been plagued by a time signal station operating in the middle of the 49m band. A good channel in an otherwise crowded band is 6.100MHz, but Venezuela has operated a time signal station on that channel too. This resulted in annoying pips behind most of the programmes directed to South America. Protests from Cologne appeared to have worked. The Venezuelan time signal station is now operating on 5MHz instead. This is in fact a good move for European listeners - if you can hear the Spanish announcements given just before each full minute that means that propagation to that part of the world is open. □

### Abbreviations

kHz	kilohertz
kW	kilowatt
MHz	megahertz
UTC	Co-ordinated Universal Time (=GMT)

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# ANTENNAS

F.C. Judd G2BCX Part 8

Now we turn our thoughts to the cubical quad and the Yagi, both very popular antennas.

Although there are many types of quad antenna, the basic square loop arrangement may have been derived from either of two basic antenna systems. Both derivations are shown in Fig. 8.1: "A" illustrates a folded dipole opened out to form a diamond shaped quarter-wavelength-sided loop, and "B" a square loop formed from two half-wave elements spaced a quarter-wavelength, one above the other, with the ends of each turned to meet.

A typical 2-element quad, shown in Fig. 8.2, consists of a driven element and a parasitic reflector element. It is unidirectional and has a directivity gain in the region of 7dBd for a spacing between the elements of about  $0.125\lambda$ . The radiation resistance and directivity are both dependent upon element spacing and, in the case of quads for h.f. use, the height above ground also has an effect on radiation resistance as well as the angle of maximum vertical radiation. They may be orientated to provide vertically or horizontally polarised radiation.

Where application is for v.h.f. or u.h.f., the antenna may well be located at a height of several wavelengths above ground at operational frequency - and therefore in a virtual free-space situation. In this case the ground beneath will have little or no effect on maximum vertical radiation which will be at an angle close to zero, i.e. parallel to ground. If the antenna is for h.f. operation its height above ground will almost certainly be some fraction of a wavelength at its operational frequency; height above ground is usually taken as the lower part of the antenna. Although the angle of maximum vertical radiation is determined by this height, it does not vary greatly for heights between  $0.25\lambda$  and  $0.625\lambda$  being on average between 25 and 40 degrees. At a height of  $0.75\lambda$  and higher, the major forward lobe is at a fairly low angle, about 18 degrees, but there will also be vertical and back lobes of considerable magnitude.

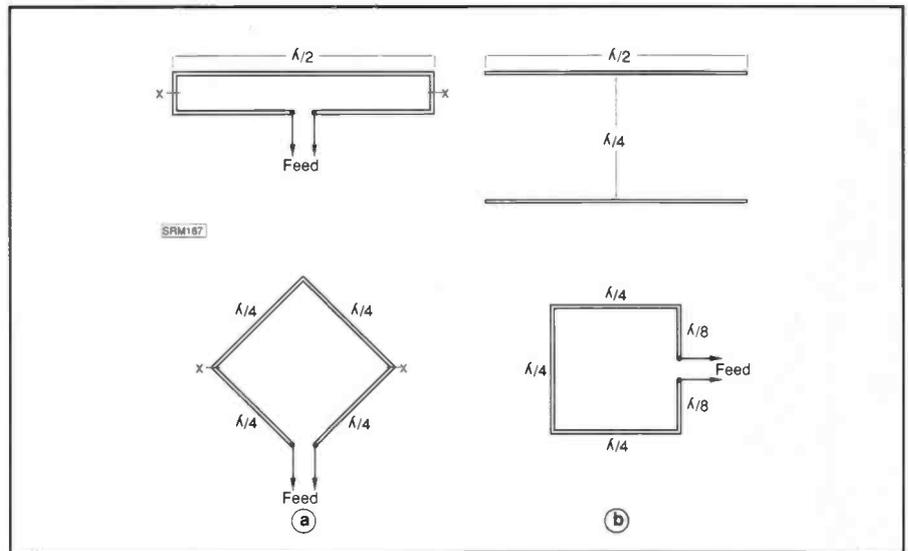


Fig. 8.1. Derivation of a quad element: "A" from a folded dipole; "B" from two driven half-wave elements spaced  $0.25\lambda$  apart, see text.

The vertical radiation pattern for a height of  $0.5\lambda$  is shown in Fig. 8.3. There is little real difference between this and the pattern for a height of  $0.625\lambda$  which has, in addition, an extra vertical lobe and a larger back lobe resulting in some loss of power to the main lobe. The angle of maximum, and forward, vertical radiation is only a few degrees lower than that obtained for a height of  $0.5\lambda$  and for which the back lobe is smaller.

## Front-to-Back Ratio v Bandwidth

With quad antennas consisting of a reflector and 2 or 3 parasitic directors, the front-to-back ratio is quite high and remains so over a fairly wide bandwidth. For example, a 3-element quad with a design, or centre, frequency of 144MHz has a front-to-back ratio of about 30dB, see Fig. 8.4. It does not fall much below this for a total bandwidth between about 140 and 150MHz, i.e. there is little increase in the magnitude of the rear lobe. For a v.s.w.r. of near 1:1 at centre

frequency, the rise at the band limits (as previously set) will be in the region of 1.5:1.

## Construction and Designs

Quad antennas are fairly easy to construct and can be matched with a  $50\Omega$  coaxial transmission line. There are many different designs for h.f., v.h.f. and u.h.f., as well as h.f. multi-band operation. For readers interested in the construction of these antennas, the book *All About Cubical Quad Antennas* by W.I. Orr W6SAI is recommended. It is available through the SWM Book Service.

## Parasitic Beam Antennas

What are commonly called Yagi antennas may consist of two or more linear elements, one being driven with r.f., the others being excited by mutual coupling with the driven element. All elements contribute to the total radiation which is unidirectional and, like all other antennas with this characteristic, necessitates the use of a rotator for ensuring that maximum radiation, and maximum signal for reception, is in and/or from a desired direction.

A simple 2-element beam may consist of a driven element and either a parasitic reflector or a parasitic director. The next stage is a 3-element beam which would normally have a driven element, a parasitic reflector and one director. The common configuration for obtaining a worthwhile degree of directivity gain is a driven element, a reflector and "several" directors, in which case the antenna would be described as a "so-many element" beam which takes into account all the elements, driven and parasitic. For example, a beam with a

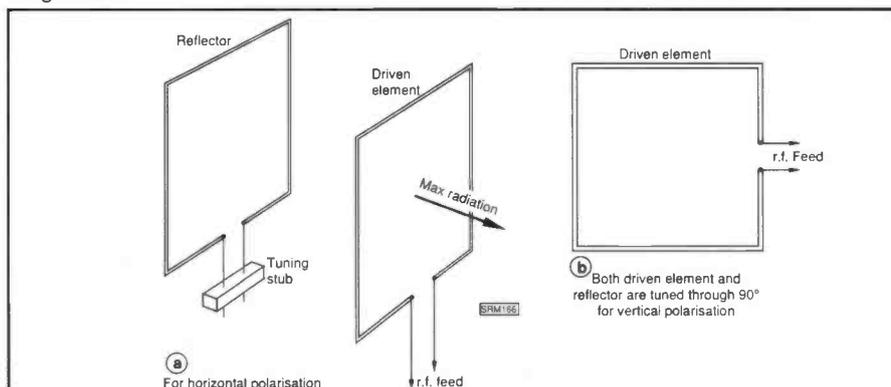


Fig. 8.2. "A" shows simple 2-element quad with driven element and parasitic reflector; "B" illustrates that horizontal polarisation is obtained by turning elements through 90 degrees.

# ANTENNAS

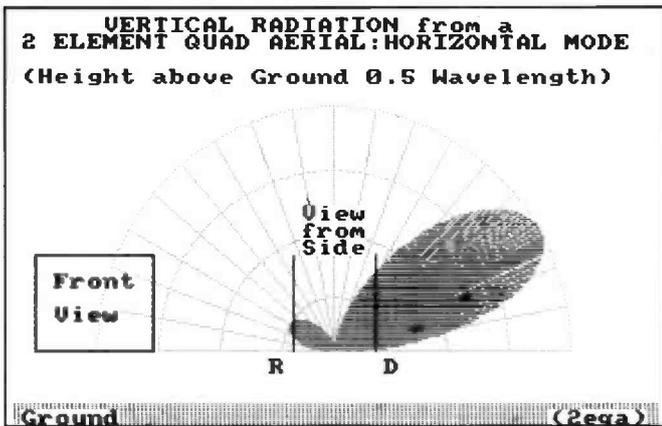


Fig. 8.3. Vertical radiation pattern for a 2-element quad at a height above ground of 0.5λ.

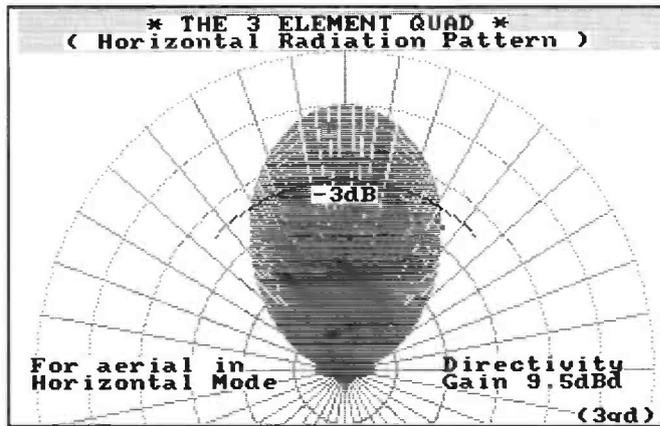


Fig. 8.4. Horizontal radiation pattern for a 3-element quad horizontally polarised; see "front-to-back ratio".

reflector, a single driven element and, say, 10 directors would be referred to as a 12-element beam. Beam antennas of this nature can also be operated in coupled groups of 2, 4, 6 and 8, or more, to obtain very high directivity gain.

## The Basic 2-Element Beam

The maximum directivity gain possible with a single parasitic element and one driven element is a function of the spacing between them, as shown in Fig. 8.5. The curves show the greatest gain obtainable when the parasitic is tuned to resonate either as a director or reflector. With the parasitic element tuned to function as a director, maximum directivity gain is obtained with a spacing between the two elements of about  $0.1\lambda$ . With the parasitic element tuned to function as a reflector the spacing required for maximum directivity gain will be  $0.15\lambda$ .

## Front-to-Back Ratio

The tuning conditions for maximum forward directivity gain do not give maximum signal reduction from, or minimum radiation to, the rear. It becomes necessary to lose a little gain in order to obtain the highest front-to-back ratio. A reduction in back response is achieved by adjustment of the tuning and/or length of the parasitic element. With a reflector the length must be made slightly longer than that which would otherwise give maximum gain, for spacings between the two elements of up to  $0.25\lambda$ . The director must be shortened to obtain the same effect with spacings of  $0.1\lambda$  or more. The parasitic element length which gives maximum attenuation to the rear is more critical than that for obtaining maximum gain. This means that an acceptable back-to-front ratio is possible without losing too much gain.

## Forward Radiation Patterns and Bandwidth

The forward radiation pattern for simple 2-element beams can vary considerably with the tuning and spacing of the parasitic element. The angle of maximum vertical radiation when the antenna is used for an h.f. band will, as with nearly all antennas for h.f. operation, depend on height above ground. At v.h.f. and u.h.f. where the height of a beam antenna is several wavelengths above ground, the angle of maximum vertical radiation is virtually zero, i.e. parallel to ground.

The bandwidth of an antenna can be related to different performance parameters, e.g. to the frequency range over which the directivity gain falls from maximum at the centre frequency to an acceptable minimum, or to a frequency range for which a given back-to-front ratio is maintained. The more usual specification for bandwidth is the relationship to an acceptable level of v.s.w.r. at each end of a frequency range and where the v.s.w.r. is virtually unity, i.e. 1:1, at the centre frequency. This latter relationship is probably the most useful as the v.s.w.r. determines the percentage power loss in the transmission lines.

More about parasitic beams next time. □

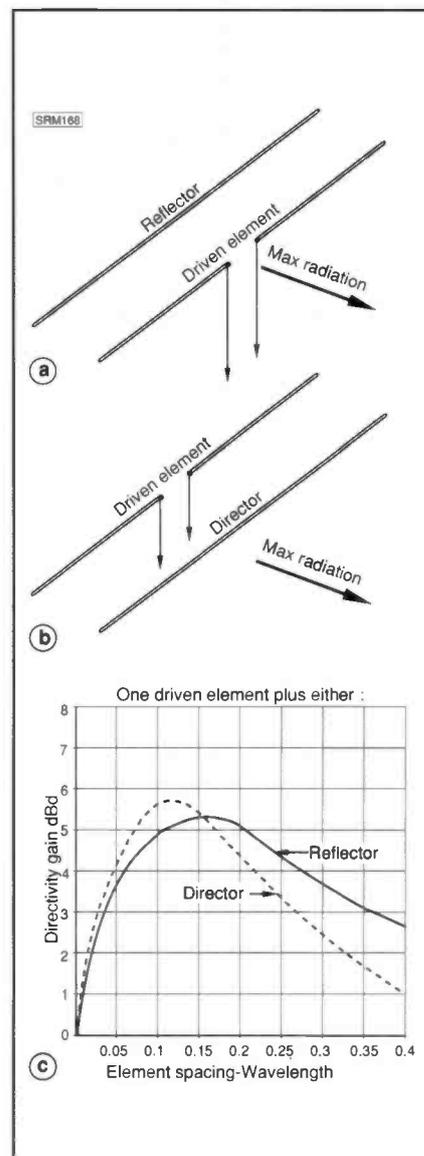


Fig. 8.5. "A" shows a 2-element quad with driven element and reflector; "B" is a 2-element quad with a driven element and director; directivity gain obtainable from either for a given element spacing is shown at "C".

### Abbreviations

dB	decibel
dBd	gain relative to a half-wave dipole
h.f.	high frequency
MHz	megahertz
r.f.	radio frequency
u.h.f.	ultra-high frequency
v.h.f.	very high frequency
v.s.w.r.	voltage standing wave ratio
$\lambda$	wavelength
$\Omega$	ohms

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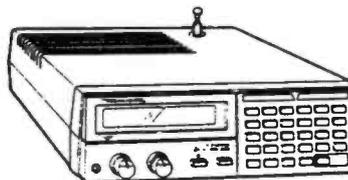
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# WHAT ON EARTH IS A SWL?

Leighton Smart GW20049

To the uninitiated, a short wave listener may be someone who "listens to the wireless all day", or "one of those strange people whose homes and gardens look like GCHQ". Yes, my friends, that is what we are from the point of view of the man in the street. Mostly, when I try to explain a little about short wave listening, my friends seem to be interested but after five minutes or so they tend to drift off, as if in some sort of trance. Maybe it's the way I tell them, I don't know. If a person is to become an s.w.l., he must be prepared to face the following:

Neighbour: "Whatever you've got in there is playing hell with my telly"

Postmaster: "Got a lot of friends around the world have you? You're not a spy are you?"

CBers: "Will you mend my CB for me mister?"

Wife: "If you don't come out of that shack, I'll switch the mains off!"

I kid you not, all these things are true. Mind you, having a small "antenna allotment" does have its advantages. Recently, there was a knock on my door and I opened it to find a radio amateur on the doorstep. "Excuse me, I couldn't help noticing the antennas in your garden, would you like to join our club?" It was, it transpired, Tommy GW6POH, a local ham and that is how I came to join his club. So, it's not all bad having your garden looking like GCHQ, it seems.

About a year and a half ago, I was experimenting with an antenna rotator. After about ninety minutes had been spent erecting the antenna, rotator, etc., I settled down at the receiver to compare reception using different beam headings, different bands and so on. This took about an hour or so and,

This is a question which is asked almost every time I tell someone what my hobby is.

pleased with the results I was getting, I switched off the receiver, and promptly went to check that the mast hadn't moved as the rotator was turning the antenna. When I reached the back garden, I was surprised to see that my installation had attracted an audience of about 10 people on either side! There was much amusement amongst the "spectators",



and I received numerous requests to "turn it again", especially from the children next door.

I often wonder what it would be like if things were the other way round and it was my neighbour who was an s.w.l. What would my reaction be to the wires, beams, "turning antennas", strange noises, etc?

I think we have to be tolerant in our hobby. After all, we probably all started off by being curious and inquisitive. Maybe we, each one of us, can satisfy someone's curiosity enough to help them become an s.w.l. How would I explain what a s.w.l. is? Well, perhaps he or she is someone who has travelled the world without leaving home. That just about sums it up for me personally.

It's a wonderful hobby, short wave listening, what other hobby can help you make friends with people you've never even met? Apart from that fact, you can also become an authority on world affairs and world problems. Whether or not you can solve those problems is another matter!

Personally, I try to encourage would-be s.w.l.s as much as I can. Indeed, during 1987, I helped two young enthusiasts to get started and hopefully, I may be able to assist more newcomers in the future, even though I am basically a newcomer myself.

I would like to end this article by saying that, even today, with all the latest technology we see around, there is a great deal of ignorance (in the politest sense of the word) about short wave listening. Let us introduce more people to the delights of short wave listening. It's not everyone's cup of tea, I know, but I think you'll find that some people only need a taste and they'll be hooked. Now, doesn't that remind you of someone? □

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# HOT-RODDING THE ICF-2001D

Steve Whitt  
Part 1

The 2001D (known as ICF-2010 in North America and not to be confused with its predecessor the ICF-2001) represented a major step forward in affordable radio technology principally because it was the first widely distributed receiver fitted with synchronous a.m. detection. This ensures superior reception of short and medium wave signals and also allows easy reception of independent sideband (i.s.b.) signals. Although the receiver is a sophisticated piece of engineering it has been designed for easy operation by the layman. Despite all its qualities, this receiver, like most other mass market receivers designed to a price, has its weak points and design compromises, some of which can be improved upon with remarkably simple modifications. It is the aim of the rest of this article to show you how to "soup-up" the performance of the 2001D for very little cost and to make it comparable to, or better than, some receivers costing twice as much.

## What's Inside the Box?

Before we consider any modifications to the receiver it is a good idea to understand how the unmodified receiver works, what its limitations are and how they can be overcome. Before you tackle any internal modifications it is highly advisable to get a copy of the *Service Manual* (and updates) for the 2001D [1]; these detailed handbooks are available from Sony at a reasonable price. Neither the *Service*

**Sony's ICF-2001D, introduced early in 1985, brought real quality reception to the portable market. Remarkably, it remains unchallenged over four years later.**

*Manual nor Operators Handbook* [2] (supplied with the receiver) contain a decent description of the receiver so I'll try to fill in a few gaps here.

The 2001D is an all band portable (though not lightweight) receiver that offers digital tuning across all bands from 150kHz - 30MHz, 76 - 108MHz and 116 - 136MHz although in certain countries models are on sale with restricted tuning range. On the short wave bands the receiver uses double frequency conversion and offers a.m., u.s.b., l.s.b. and c.w. reception with a choice of two i.f. bandwidths. In addition fully synchronous a.m. detection can be selected; this is still a unique feature on a receiver in this price bracket and it performs extremely well, particularly enhancing a.m. signals disturbed by fading and interference.

## Synthesised

Like many modern receivers, the 2001D employs a frequency synthesised local

oscillator with digital readout to a liquid crystal display. Frequency synthesis opens up the door to a wide range of tuning methods and the 2001D offers continuous tuning (fast or slow) via a rotary tuning knob, direct frequency entry from a keypad, storage of stations in memory as well as automatic band scanning.

Unlike most other portable radios around today, the 2001D is designed to interface with the outside world via a range of sockets for external antenna inputs and audio outputs.

In contrast to the flexible performance offered on the short wave frequencies, the f.m. broadcast band and airband offer no user selectable features and in fact the performance on both of these bands is distinctly disappointing. Improving these sections of the receiver could call for considerable effort, so the rest of this article will concentrate on maximising the receiver's potential below 30MHz, though some changes will benefit the other bands as well. A functional block diagram of the 2001D, emphasising its operation on frequencies below 30MHz, is shown in Fig. 1.

## Performance

An unmodified, factory-fresh 2001D is a very good receiver provided that Sony's quality assurance is stopping dud units getting out of the factory. There have been a number of reports of sub-standard examples of the 2001D so, if you suspect

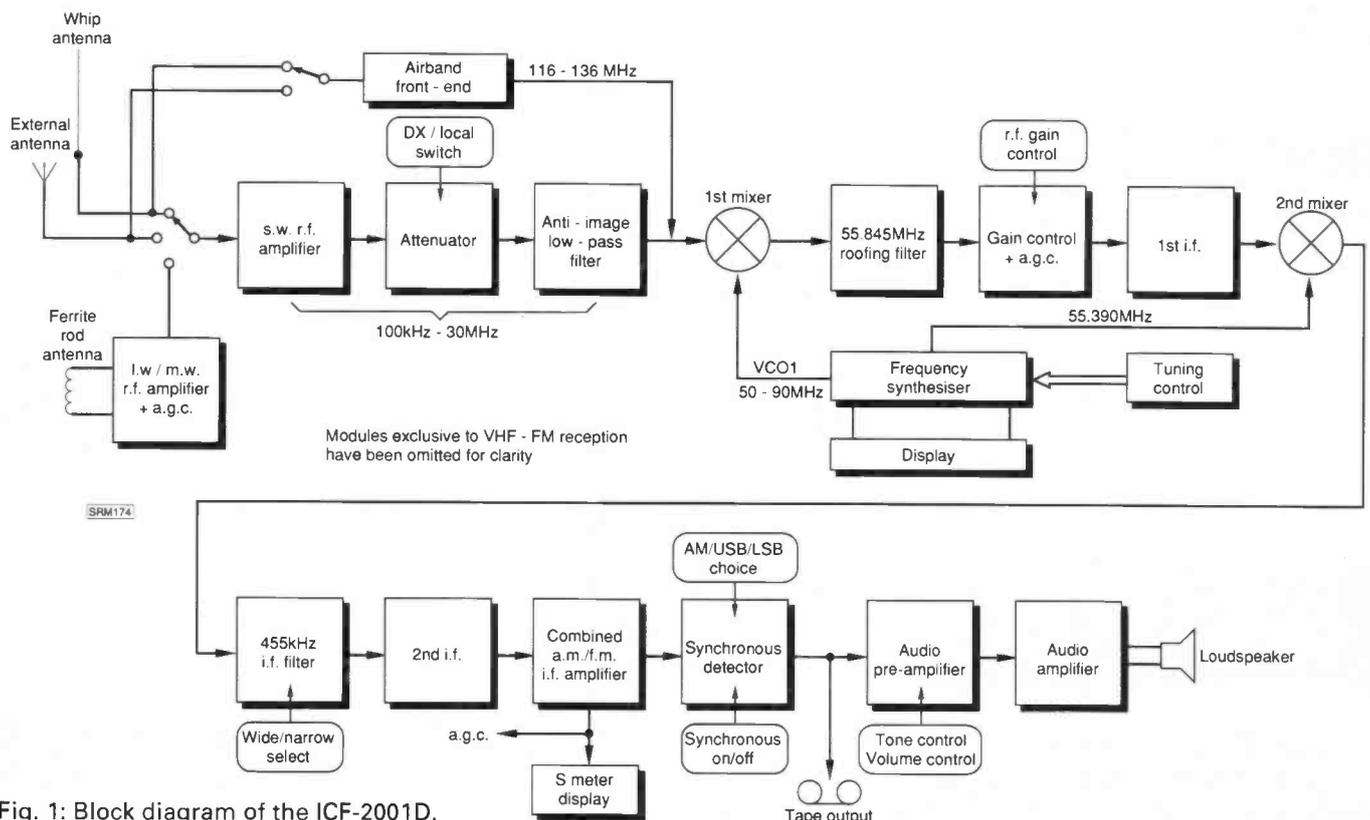


Fig. 1: Block diagram of the ICF-2001D.

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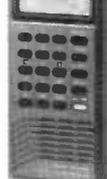
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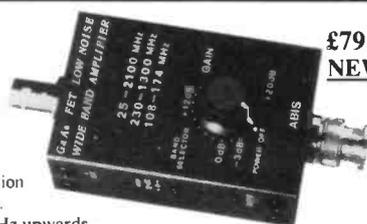
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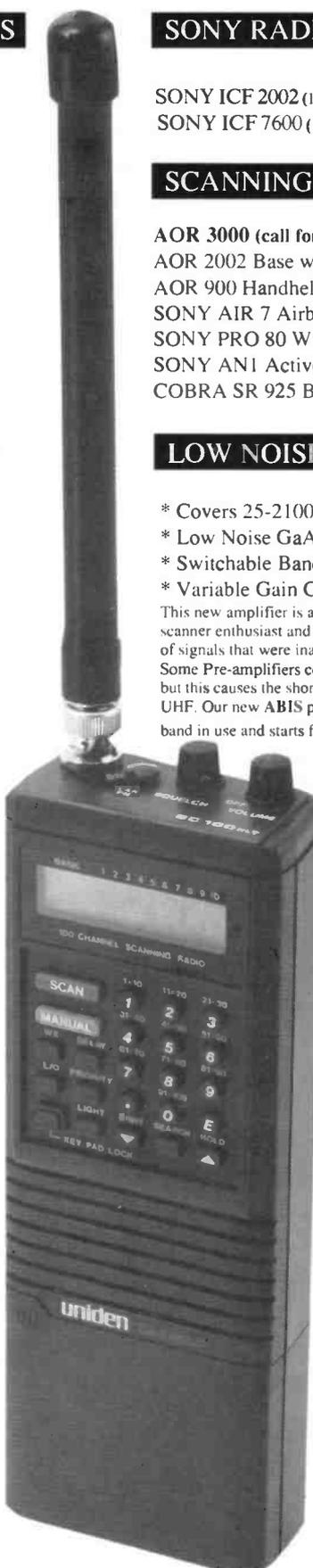


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# HOT-RODDING THE ICF-2001D

that something is amiss with a new 2001D, you should immediately contact the dealer from whom it was bought. In practice most users will never notice most of the inherent design limitations of the 2001D, but if you are serious about hearing weak signals from faraway lands or if you had the opportunity to conduct laboratory tests you would soon recognise the receiver's weaknesses. The following sections treat individual problems one by one starting with those that are most apparent to the user.

A word of caution is in order before proceeding with modifications since work conducted by "unauthorised personnel" will almost certainly invalidate any warranties or guarantees offered by Sony. Of course, if the equipment is more than a year old this is not really a problem. Secondly some of the modifications do require a certain level of technical skill and should not be attempted unless you are confident of your abilities. In many cases a skilled service technician will probably be willing to undertake the modifications for a small fee.

## Memory Wipeout

The 2001D has a bank of easy-to-use internal memories which can store all the receiver parameters (e.g. frequency, i.f. bandwidth, sideband choice) associated with up to 32 different stations. Normally switching off the receiver does not destroy the memory so, having committed 32 stations to memory, it is particularly infuriating to find that the 2001D can occasionally develop complete amnesia. This loss of memory is caused by shock or vibration momentarily dislodging two AA penlight style batteries that are used to provide permanent power to the receiver memory. The simple solution to this

	Wide		Narrow	
	Specified	Measured	Specified	Measured
-6dB	11kHz	10.6kHz	14.4kHz	4.2kHz
-50dB	18kHz	16.6kHz	110kHz	7.5kHz
-60dB		17.9kHz		8.3kHz
Shape factor	1:1.7	1:1.98	(excellent)	(very good)

Table 1: Unmodified 2001D

annoying problem is to use sticky tape to stick the AA batteries down to the main plastic case of the receiver. To do this you only need access to the battery holder and the receiver does not need to be dismantled. I have heard reports that Sony have rectified this problem in more recent models of the receiver.

## Filter Bandwidths

Two switch-selectable i.f. bandwidths come as standard on the 2001D. Sadly, no useful information about these appears in the operating instructions supplied with the receiver and rather more surprisingly there is no detail in the service manual either. The only information published by Sony seems to be in a glossy 12-page shortform catalogue dealing with all their short wave radios [3]. Sony's specified figures as well as typical laboratory measurements are summarised in Table 1.

The 2001D has two levels of i.f. filtering, as shown in Fig. 2, starting with a roofing filter (MCF1 & MCF2) at the 1st i.f. of 55.845MHz which provides an unspecified and, as yet, unmeasured bandwidth. This is followed by a choice of two filters centred on 455kHz. These latter filters are surprisingly good quality

considering their low cost; this is especially apparent in the measured shape factors.

The only headache with the filters as supplied is their rather wide bandwidth. In general a good communications receiver should allow 2.4-3.0kHz bandwidth for s.s.b. reception and about 6kHz for reasonable a.m. reception. Clearly neither of the supplied filters are optimum. Although the 10kHz filter allows very good audio on an a.m. signal it is far too wide for anything but the stronger signals around since adjacent channel interference will be a problem; short wave broadcasts use channels separated by 5kHz. The 4.4kHz filter is OK for a.m. but a bit too wide for s.s.b. and vastly too wide for c.w. reception; it could permit simultaneous reception of over 20 separate c.w. transmissions!

The solution to the problem is to change the filters for narrower ones. This is not too difficult a task but it hinges on the availability of pin-compatible replacement filters. The construction of the 2001D relies on several densely packed printed circuit boards loaded with components on both sides. Space is therefore restricted and a replacement filter has to be the same size as the original.

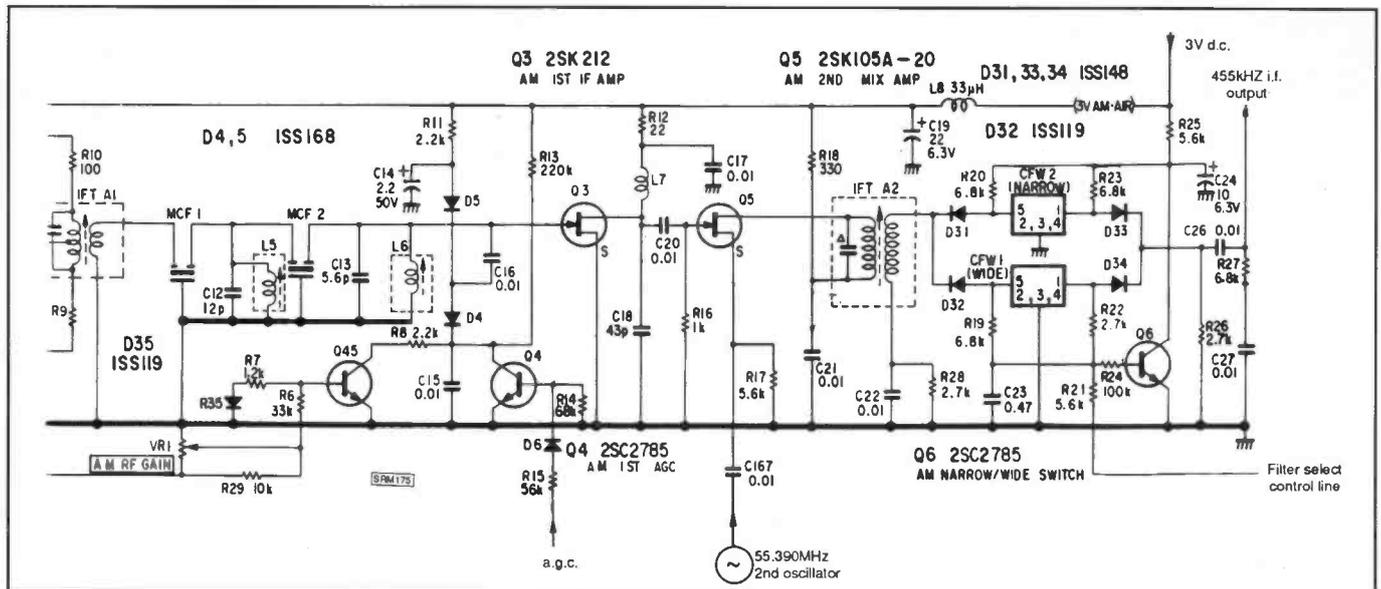


Fig. 2: Detail of ICF-2001D main i.f. stage.

# HOT-RODDING THE ICF-2001D

The filters supplied in the 2001D are:

Wide: Murata CFW455G  
Narrow: Murata CFW455JT.

Finding a suitable, alternative, filter is a hard task, but I obtained an ideal component from Radio West in California who also offer a service to retro-fit said filter into 2001D receivers. This component is not cheap, costing at least five times as much as the original filters, but the improvement in performance is worth the extra money.

To change the filters requires experience with closely packed p.c.b.s and confidence in your soldering skills. Above all the service manual is essential for its extremely clear diagrams of component placement, its circuit diagrams and mechanical assembly/disassembly instructions.

The first step is to remove both existing filters (identified as CFW1 and CFW2 on the circuit and p.c.b. layout diagrams) from the receiver putting on one side the existing wide filter. The original narrow filter (CFW455JT) is then inserted into the holes originally occupied by the wide filter (CFW455G). Finally the new 2.7kHz filter is soldered into the space vacated by the 4.4kHz unit. The net result of this filter juggling is a 2001D with the filter performance shown in Table 2.

Operationally the filter swap makes great improvements on short wave and it also improves airband reception. In the latter case the 2001D does not allow front panel selection of filters since the wide filter is always automatically selected when airband is chosen. Even though the 2.7kHz filter is recommended for s.s.b. reception it also produces excellent results on a.m. signals when one or other sideband is selected by the synchronous detector.

	Wide		Narrow	
	Specified	Measured	Specified	Measured
-6dB	4.4kHz	4.2kHz	2.7kHz	2.95kHz
-50dB	10kHz	7.5kHz	5.0kHz	5.5kHz
-60dB		8.3kHz		6.4kHz
Shape factor	1:1.98	1:2.17	(very good)	(good)

Table 2: Modified 2001D

## Recommended Reading:

- [1] *ICF-2001D/2010 Service Manual* - Sony order code 9-951-647-11  
*Correction to Service Manual No1* - Sony order code 9-951-647-91  
 Both can be ordered from Sony Service Centres.  
 [2] *ICF-2001D Operating Instructions* - supplied with receiver.  
 [3] *Sony Shortwave Radios/Accessories* - published by Sony (UK) Ltd.

## Abbreviations

a.m.	amplitude modulation
c.w.	continuous wave (Morse)
dB	decibel
f.m.	frequency modulation
i.f.	intermediate frequency
i.s.b.	independent sideband
kHz	kilohertz
l.s.b.	lower sideband
MHz	megahertz
p.c.b.	printed circuit board
s.s.b.	single sideband
u.s.b.	upper sideband

In Part 2 we will look at overcoming the restricted tuning range and receiver overload problems.

## Useful Addresses

Sony UK Ltd., Sony House, South Street, Staines, Middlesex TW18 4PF. Tel: (0784) 67000  
 Radio West, 850 Anns Way Drive, Vista, California 92083, USA. Tel: (619) 726-3910  
 Radio Database Int., IBS Ltd., PO Box 300, Penns Park, PA 18943, USA.  
 Specialised Electronic Services (Sony Service Centre), Unit 4, Goose Green Trading Estate, 47 East Dulwich Road, London SE22 9BS. Tel: 01-693-9622

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# A RECEIVING STATION FOR THE FAMILY MAN

S. A. Slater.

Where does your hobby fit into the domestic bliss situation?

There are few indoor hobbies that fit in completely with the domestic environment and unfortunately short wave listening is no exception. Hopefully though, after reading this article they may appear to be a little more compatible.

When I started in the hobby of short wave radio in 1962, I was able to utilise a both quiet and large, but unoccupied, room at the top of my parents three storey house in south London. It was bitterly cold in winter and so by the following autumn I moved my receiver down a floor to my bedroom. The attic room, despite being cold, was mine to do with as I pleased. However, at least one half of my bedroom was devoted to my new hobby and my parents didn't seem to mind too much. The bedroom was a great deal warmer and I found that this helped to foster the ability to sit in one position for three or four hours at a time. Following a move of house, I set up the receiver in my new bedroom and also acquired a second rig and a reel-to-reel tape recorder.

## Incentives

After getting married, I used my gear in the spare bedroom of our maisonette and shared it with odd sticks of furniture, suitcases and wedding presents. By the time we started a family, we were in a three-bedroom house. I started to use the receiver in either the kitchen on a work-top or in the lounge on a small table. But before each listening session, I had to run an antenna lead across the floor to a socket near the back door and also had to get the rig out of a cupboard. This in itself was not always an incentive to listen, especially for a short period of time. I subsequently used a spare bedroom and a space under the open-plan stairs in the lounge behind a sofa, but it was too cramped and too near the television.

Five years ago, we moved to a much larger house and now have three children, I am lucky enough to be able to make use of the "box-room" which measures 2.4 x 1.8m, as a "radio room". It has since occurred to me that not many family men are quite so fortunate. So in looking around our "semi", I resolved to work out a solution as to how and where John Smith with wife and 2.4 children could set up a receiving station.

## Outside or Inside?

There are two distinct types of QTH suitable for our purpose, either outside or inside the house. The outside possibilities are not so good as the inside ones and I will discuss them first. The obvious places which come to mind are sheds, garages and such like buildings. However, they all suffer from extremes of climate; cold in winter and hot in summer. If there is a brick-built garage available and you don't have a car, then there are certain possibilities here. It can be made much more cosy by constructing



...AND SUCH LIKE BUILDINGS...

a stud-partition wall inside the garage itself. The wall can be packed out with loft-insulation to ensure coolness in summer and warmth in winter. Do not make the mistake of heating whatever space you have with either paraffin or bottled gas heaters, as both systems will produce so much condensation as to damage both your room and the equipment contained within, in a very short space of time. If you have a car that is small enough to leave some space at the bottom of the garage and that space is not used for storing the sort of things found in most garages, then you may be able to work something out.

As far as a shed is concerned, the problems of extremes of temperature arise again. If there is a brick-built outhouse available, then this is a place to

put to good use. The other two outdoor locations to consider are, a caravan that sits in your drive and a conservatory. Both are subject to the old problems of temperature and humidity extremes.

## Internal Solutions

This brings us on to consider an internal solution to our quest. If you live in an older type of house that has a cellar, then this has good possibilities. It will be necessary to check thoroughly for any signs of damp penetration. Whether a house is old or new, there is the loft to think about. If you have a property with a converted loft, which could be used as a playroom or guest room, then think about this area. If it is just a basic loft, then doing a "conversion of sorts" can be considered.

Lofts are again subject to the perennial problem of extremes of temperature, but if you can construct an enclosure up there, it can be made to be very cosy and warm. Always remember that loft insulation can work both ways, keeping you warm in winter and cool in summer.

I must give a word of warning however, as it is prudent to obtain some advice from the planning and building department of your local council regarding the construction of such things as we have mentioned, in both the loft and the garage. Fire regulations must be taken into account and a word with your local fire prevention officer will not come amiss.

## Ground Floor

Now with the outside and some of the inside ideas considered, let us look at the main body of the house and we will start on the ground floor. If you have alcoves in the lounge or dining room either side of a chimney breast then this is a place to consider, a table placed within the alcove and closed off with the addition of louvre doors; these help to "hide" the station when not in use. If you have sufficient headroom under the stairs and have no gas or electric meters there, and don't mind not having any daylight, plus being able to put up with headaches, then this could be the place for you. I have heard of people using a porch cupboards and even hallways intended for hanging coats in as a site for listening post. Some years ago, I read an article written by an

# A RECEIVING STATION FOR THE FAMILY MAN

American radio amateur who said that physiologically, it was best to have a "shack" with a window where you can see both daylight and the antennas. There is certainly something to be said for seeing daylight. In older houses, there may be a passageway that can be used for our purpose but this may prove to be too narrow to permit other members of the family to pass easily.

## First Floor

Let us now think about the first floor and also let us assume that all the bedrooms are occupied, (a spare bedroom is the best solution of all.) There may be landing space available and all you need is an area not less than say 600 x 600mm. A cupboard or similar piece of furniture to house all the equipment can be purchased or built in order to prevent any tampering by the children. But, if the landing space is too small then why not use part of a wardrobe or an alcove in a bedroom? If the gear is in a cupboard then at least the door can be closed on it, but if you intend to operate at odd times during the night, then difficulties will arise. I have heard of people using a redundant airing cupboard with the cylinder removed and even using a wide window ledge. Basically, you are looking for a space that does not hinder the smooth running of the household. It should be a space where you will be subject to a minimal amount of interference from, and will give minimal interference to, the rest of the family. Do not forget about the temperature problem and remember, your space needs to be somewhere that can be shut off when you are at work.

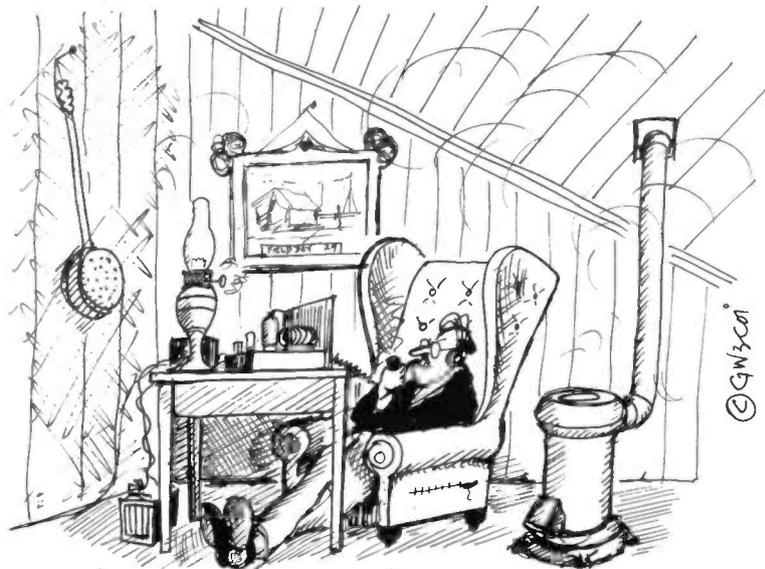
Once you have decided and agreed upon a suitable space, then is the time to consider how to equip it. Even the perfect answer can have its little problems. Add to all we have considered, interference from colour televisions, computers, telephones, refrigerators, thermo-stats and fish-tank pumps plus noise from stereo systems and you will realise the need to have a quiet a spot as possible.

## DIY

Equipping a station is obviously a matter of choice and need, but I will try

and give a cheap method of constructing a bench for all your equipment. First, if you have a space with limited floor area but can go upwards, then some form of metal racking such as those advertised in the mail-order columns of the weekend newspapers could be considered. The proprietary makes of metal shelving used in commercial warehouses may be difficult to obtain and not cheap either. There are inexpensive ones available from well-known high street discount shops for between £9 and £12. If you can use more floor area, then think about buying man-made boards from a d.i.y. store.

White veneered particle board costs between 40 pence and 45 pence per square foot at the time of writing, (it is still sold in Imperial sizes.) A piece that measures 2440mm long by 534mm wide will enable you to build a bench which measures 1067mm by 534mm wide with two sides cut to give a height of 686mm. This seems to be a comfortable height to sit and listen. A softwood strip can be



...HAVE A COMFORTABLE CHAIR...

screwed to the bottom at the rear of the bench to strengthen it but a better method would be to use a sheet of hardboard cut to size measuring 1067mm by 686mm and pin it to the edge of the white board. This is probably the best solution. Hardboard costs about 15 pence per square foot so this will be a cost effective way to give your work surface some stability. You can buy plastics corner blocks to join the sheets of board and I would suggest the use of purpose made "chip-board" screws which have more thread than ordinary screws. The thread runs the whole length of the screw. I have suggested the use of 534mm width particle board as it will give plenty of depth for your elbows, forearms and logbooks, etc.

## Cutting and Comfort

It is also beneficial to have a comfortable chair upon which to sit as you will need to use it for quite a few hours at a time. It is easier on the eyes to raise each piece of equipment at the front and this can be done by the use of rubber doorstops screwed to the bench.

The easiest way to cut man-made composite material such as particle board is to use a large diameter electric circular saw. I use a 184mm diameter model which can cut through a 534mm sheet of board in about fifteen to twenty seconds; to give a pleasing finish. For those of you that are a little uneasy in the operation of large power saws, then a viable alternative is an electric jigsaw fitted with a suitable blade. Packets of blades can be purchased for almost any type of material to be cut. When using any form of power tool it is worth remembering a few points. The first thing to remember is power saws cut human flesh very

easily so always be carefull, allow the tool to stop operating before putting it down to rest. The second point is that these types of tool create a lot of dust, so do your cutting either outside in the garden or in the garage. Another couple of points worth mentioning are, always mark out the wood with a soft pencil, a set-square and straight edge, never try and cut things by eye. Always mark the waste material and cut either on the line, or on the waste side of it. Finally, never push old or blunt blades into service, as this is not only dangerous, but it will

also give you an untidy finish to the material being cut. After all the cutting has been done "iron-on" edging strip can be used to cover any bare faces.

## Storage

Some of the space under the bench can be used to store logbooks and other items of reference as well as spare parts if you do any constructional work. Storage space can be obtained by using one of the many cheap "flat-pack" bedside tables which the d.i.y. stores offer for about £10. This will give you suitable storage for all these items. If you have enough wall space above the receiving equipment, then this will form an ideal

# AIRBAND

Godfrey Manning G4GLM

One criticism I often hear is that, even though our skies are becoming ever more crowded, only pilots can file an airmis report. Up until now the only way an air traffic controller could make a problem known was by the Confidential Human Factors Incident Reporting scheme (CHIRP) but now Civil Aviation Authority (CAA) *Aeronautical Information Circular (AIC) 56/1989* introduces aircraft proximity hazard (APHAZ) reporting by controllers through a revised occurrence reporting scheme.

In *AIC 78/1989* is a brief reference to the report on the airmis between a Tristar and a Tu154 near Lydd (6/2/88). This one made the media. Despite various rumours at the time, it appears that the aircraft were working two different controllers (if I remember correctly, they were going to or from different aerodromes in the UK). This led to lack of co-ordination and hence the incident, as reported. Full details are in the report AAR-1-89 available from Her Majesty's Stationery Office, Government Bookshop, 49 High Holborn, London WC1V 6HB, price £6.50.

## HF Happenings

Regular contributor **Geoffrey Powell** (Tamworth, Staffordshire) has been making himself known to the airlines again. Hawaiian Airlines fly worldwide; for example, in the New Zealand area they might use 3.467, 5.643, 8.867, 13.273 or 17.904MHz. Elsewhere, Beijing and Singapore operate on 8.942MHz. Remember that all aeronautical h.f. communications are now on upper sideband.

From North Walsham, Norfolk, **Tim Christian** sends the latest copy of his h.f. allocations list. This is a detailed, computer-produced document which although marked "Not authoritative" is clearly the product of a major effort. What you don't tell us, Tim, is whether you are hoping to make this available to other readers. If so, how should they contact you, and what expenses do you require? Tim has been flying around as a passenger due to his work. With air traffic control delays into Europe being "unpredictable", Tim doesn't see that European control will ever be unified since no country will wish to relinquish authority over its military flights. So much for 1992? On his flights, Tim shares his preference in that a visit to the flight deck beats trying to digest economy class airline meals. Like me, Tim prefers to see the old-fashioned electromechanical instruments rather than the modern glass versions.

Tim's hints are as follows: Sydney VOLMET 11.387MHz, Far East circuit 11.396MHz, traffic leaving Turkey on airways VA4 or VG8 to overfly Iran calls

**Now it's official! The v.h.f. airband is being extended - read on for more.**

Tehran on 5.658MHz. By the way, aeronautical information sources always put h.f. channels in kHz not MHz, just move the decimal point to convert.

## Equipment Ideas

A final word from Tim about his v.h.f. equipment. He's just made a two-element collinear supported by the matching section. Material is 15 & 22mm plumber's pipe and fittings; gain 3dBd. The big diameter tube helps achieve good bandwidth. Please do send in the details, as offered. Personally, d.i.y. plumbing always makes me bad tempered (I'd rather be flying than fixing the central heating at home, but you can guess which takes priority!) but at least antennas don't require perfect watertight joints.

Tim has also experimented with the problem of offset transmissions. His Bearcat 175XL refuses to trip on a strong signal displaced as little as 2.5kHz from the nominal channel centre frequency. Again, a case of the manufacturer's selectivity specification actually being too good for the required purpose!

## Frequency News

First, the big news from the CAA in *AIC 79/1989*. The v.h.f. band will be extended by 1MHz to a top limit of 137MHz effective 2 January 1990. The top 8 channels (25kHz spacing) will be allocated to operational control and the rest to air traffic control. The various frequency publications already show some spot frequencies above 137MHz in shared allocations, e.g. Lakenheath Radar (148.4MHz). These spot allocations seem to belong mainly to United States Army Air Force bases and are probably available to pilots on demand.

Again from the CAA comes the ever-useful *General Aviation Safety Information Leaflet 6/89*. This shows that the Cardiff Tower frequency of 121.2 has moved to 125.0MHz. The Brecon

v.o.r./d.m.e. is on a new frequency of 117.45MHz/Channel 121Y. At Blackbushe, Surrey, there's a new n.d.b. (BLK: dah-di-di-dit, di-dah-di-dit, dah-di-dah) on 328kHz with a 15 mile range. And what do you think of this one? "Got my boots on and laced, want to bounce and blow" may be acceptable to an old time American military pilot but I would suggest that nowadays it would be more appropriate to tell the controller: "Gear down and locked, request touch and go" (!).

The CAA's last word for this month on n.d.b.s appears in *AIC 77/1989* which contains the usual warning that these beacons can give unreliable bearings due to static interference, adjacent/co-channel station interference, night effect (more prominent skywave reception), mountain diffraction and coastal refraction. As I often emphasise in this column, safe use of an a.d.f. requires frequent checks that the beacon really is still being received at adequate strength. The most critical moment is when beginning a descent from overhead the beacon; the sudden erratic swing of the bearing pointer could indicate "overhead the beacon" or "loss of/interference to signal." Which is it?

## Book Review

*The Aeronautical Communications Handbook* (h.f. edition), by Robert E. Evans, is published by the Ontario DX Association. In its first printing (May 1989) it is presented in loose leaf form but the typeface is good and clear with neat headings and diagrams as you might expect from a product of desktop publishing. Thanks for the sample, Robert.

Some of the information seems to be more appropriate to North American conditions and practice, but it is, nonetheless, a wideranging reference book giving an introduction to so many of the topics that seem to interest this column's readers. There's even a lengthy section demonstrating the principles of aeronautical fixed telex network message decoding. Near the back of the book is an h.f. allocation listing that I'm sure will be popular. Some less common aircraft operators are mentioned, the military (including the RAF) are not forgotten and there's even a brief reference to space shuttle flights.

This Handbook is available from The Ontario DX Association, P.O. Box 161, Station A, Willowdale, Ontario, M2N 5S8, Canada, price \$25 + postage.

Hope you'll be joining me "in formation" next month; in the meantime, if you've still got a summer holiday flight to come, I hope that the departure flow control regulator smiles favourably upon your slot time. □

### Abbreviations

a.d.f.	airborne direction finder
CAA	Civil Aviation Authority
dBd	decibel relative to a dipole
d.m.e.	distance measuring equipment
h.f.	high frequency
kHz	kilohertz
MHz	megahertz
n.d.b.	non-directional beacon
v.h.f.	very high frequency
v.o.r.	very high frequency omnidirectional radio range

# REALISTIC PRO-2005 SCANNER

John Waite

The PRO-2005 scanner from Tandy is the latest release in a long line of popular scanners from this company. Among the main features of this scanner are an increased frequency coverage of 25MHz to 520MHz and 760MHz to 1300MHz and the provision of 400 memories. So, having whetted your appetite read on to see how it performed.

## Instructions

Having unpacked the PRO-2005 and realising that I had to find my way around some 31 buttons and two rotary controls I thought I'd better read the manual first!

This was supplied as a 91-page booklet which measured about 210 x 150mm. As is usual with this type of equipment, the manual was multi-lingual and was divided into three sections - English, French and German, with the English section occupying the first 30 pages.

The manual was very well organised and indexed, making it very easy to find details of any of the functions. Good use had also been made of charts and illustrations to simplify some of the more complicated operations.

For the more technically inclined there was a fairly comprehensive specification and a section listing all the spurious signals. Finally, there was a short help section to get you out of trouble in case of an apparent failure.

## Connecting-up

The PRO-2005 is designed primarily as a base station scanner although there is nothing to stop you using it either mobile or portable, except perhaps its size.

The power requirements was the first area to sort out and I found the PRO-

**When the latest model from the Tandy stable was put through its paces, how well did it fare?**

2005 to be well equipped here. For normal base station operation, the built-in mains power supply was the first choice. This can handle 220V to 240V 50Hz supplies and is provided with a hard wired mains lead which is wire ended to accept any suitable plug.

An alternative to the mains unit was the external power socket which was mounted on the rear panel. The socket provided was of the coaxial type and was designed to accept 13.8 volts d.c. so was ideal for connection to a vehicle electrical system. As is usual with most microprocessor-based receivers, the PRO-2005 needed a battery for memory back-up. This comprised a standard PP3 style 9 volt battery which fitted in a dedicated compartment on the rear panel. When the time comes for the routine replacement of this battery (every six months according to Tandy) the memory contents could be preserved during this operation by keeping the mains or external power switched on.

Moving on to the antenna connections, I am pleased to be able to report some real progress as the PRO-2005 is fitted with a BNC socket for the external antenna. Anyone who is familiar with scanners will be well aware that the majority use car radio type antenna sockets which are totally unsuitable for use at u.h.f. So well done Tandy! Best performance is obviously obtained with an appropriate external antenna but, for use away from the shack, the PRO-2005

is supplied with a telescopic antenna. This antenna screws into a hole in the top panel and can be extended to match the band in use, guidance for which is included in the manual. The final item associated with the antenna is an attenuator switch which is mounted on the rear panel next to the antenna socket. The only unusual point about this attenuator was that it had a value of 10dB which to my mind was not really enough and the more common value of 20dB would perhaps have been more appropriate.

In addition to the basic connections, there were two other sockets on the rear panel. The first was a conventional 3.5mm jack socket for the connection of an external speaker. Inserting a plug in this socket disabled the internal speaker. The second socket was of the phono type and was supplied for the connection of an external tape recorder. The output level from this socket was in the order of 600mV into 10k $\Omega$  and was unaffected by the volume control setting.

With all the connections sorted out it was time to examine the operational features of the PRO-2005.

## Operation

The front panel of the PRO-2005 is quite formidable with some 31 buttons, two rotary controls and a very comprehensive display. Despite this apparent complexity, the panel markings were relatively self explanatory making operation quite straightforward, once the initial familiarisation had taken place. The most obvious functions were the two rotary controls which were used for volume and squelch, with the volume doubling-up as the on/off switch.

The next section to examine was frequency selection and, as is common with a lot of scanners, there was no direct tuning function and all tuning functions were based on memories or search parameters. This was not, in practice, a problem - though the operator who is more familiar with a communications receiver may find it takes a little getting used to.

Probably the main use of a scanner is to monitor activity on a number of frequencies stored in memory so I will describe that aspect of the PRO-2005's operation first. The storing of frequencies in memory was quite simple involving selecting the required channel number and entering the frequency. As I mentioned earlier, the PRO-2005 has 400 memories or channels and these are organised into ten groups of forty. This type of split was very convenient as you could put different types of services into different banks which can save a lot of time when you want to monitor a particular service. With single key



# REALISTIC PRO-2005 SCANNER

operations you choose to include any combination of the ten banks into a scan.

The scan was started simply by pressing the SCAN button on the front panel and the default scan rate was a very fast 16 channels per second. This scan rate could be changed to 8 channels per second by pressing the SPEED button on the front panel. In addition to being able to select particular banks for the scan, you could also lock-out individual channels if required. This was achieved by selecting the appropriate channel and pressing the LOCK-OUT button. Cancelling the lock-out required the same operation, as the lock-out button has a toggle action. One common problem when using scanners with a lock-out facility is remembering which channels have been locked-out. The PRO-2005 overcame this problem with a facility called "lock-out review" which did exactly that, i.e. it allowed the operator to sequentially review all the channels that had been locked-out. I thought this was a very good and simple idea.

Another helpful facility was the delay function which, when activated, caused the PRO-2005 to pause on a channel for two seconds after carrier has disappeared. This, of course, was useful when monitoring two-way channels as it stopped the scan restarting in-between overs. The final scanning aid which I think is new to Realistic scanners is the sound squelch. This is activated by a push-button on the front panel and indicated by a small l.e.d. When enabled, the PRO-2005 monitors every channel with a carrier up for an audio signal. If none are detected the scan re-starts. This facility is a real boon for scanner enthusiasts as it saves having to lock-out silent carriers and spurious signals.

No modern scanner would be complete without a priority channel facility and the PRO-2005 is no exception. The implementation used on the PRO-2005 allowed the user to select any one of the 400 channels as the priority channel. Once selected the feature was enabled by pressing the PRI button whereupon the priority channel would be monitored every two seconds with the scanner remaining on the priority channel if activity is detected.

Despite the comprehensive scanning facilities there was also a manual channel mode. This enabled the operator to select any channel and then to step up with subsequent presses of the MANUAL button. There appeared to be no way of stepping to a lower numbered channel which was a shame.

One of the main features of a scanner is the ability to search a specific band to locate new stations for inclusion in the memories. The PRO-2005 supported this mode in a conventional way, requiring the operator to enter upper and lower

limits for the search followed by a press of the UP or DOWN button to start the search. Where the PRO-2005 really scores is with its facility to store up to ten separate searches in each of the ten memory banks.

In addition to the normal limit search, the PRO-2005 features a very powerful direct search. This operates from any memory channel and gives the user the option of searching up or down from the displayed frequency. This meant that any of the 400 memories could be used as the starting point for a search. As well as the facility to search up or down in frequency, the delay and sound squelch functions also operated in the search modes.

The inclusion of these two search modes made the PRO-2005 a very powerful tool when it came to finding new frequencies.

Of course finding the new frequency is only half the battle, as you then need to store the new frequency in a memory so that it can be included in a scan. This operation was made easy on the PRO-2005 thanks to the inclusion of ten monitor memories which were accessible from both the limit and direct

scan modes. The transfer of a frequency from the scan to a monitor memory involved a single press of the MONITOR button and the frequency was stored in the next available monitor memory. The memory number used was indicated by the bank numbers on the display.

Once the searching session was complete the operator could transfer the contents of the monitor memories to any one of the permanent memories. This system was very easy to use and made the often tedious job of building up the database of frequencies a joy rather than a chore.

## On The Air

From its physical size the PRO-2005 is best suited to base station use, so for the air tests I set the scanner up in my shack using my v.h.f./u.h.f. discone antenna and the shack 13 volt power supply. I started off using the internal speaker to see how it fared and I must admit to being very impressed with its performance. As expected the performance was best on communications channels where the sound quality was an excellent balance

## Specification

Frequency Coverage	25MHz to 520MHz 760MHz to 1300MHz
Tuning Steps Modes	5kHz, 12.5kHz and 50kHz Narrow band f.m. Wide band f.m. a.m.
Memories	400 permanent 10 temporary
Sensitivity	w.b.f.m. 30dB s/n @ 25kHz 25MHz to 520MHz 3µV 760MHz to 1100MHz 3µV 1100MHz to 1300MHz 10µV n.b.f.m. 20dB s/n @ 3kHz 25MHz to 520MHz 0.5µV 760MHz to 1100MHz 0.5µV 1100MHz to 1300MHz 3µV a.m. 20dB s/n @ 60% mod 25MHz to 520MHz 2µV 760MHz to 1100MHz 2µV 1100MHz to 1300MHz 5µV
i.f. rejection	610MHz @ 70MHz 60dB 608MHz @ 100MHz 60dB
Selectivity	n.b.f.m. and a.m. - ±9kHz -6dB, ±15kHz -50dB w.b.f.m. - ±150kHz -6dB, ±300kHz -50dB
Scanning Rate	16 or 8 channels/second
Priority sampling	2 seconds
Delay time	2 seconds
Antenna impedance	50Ω
Audio power	1.3 watts nominal
Tape output	600mV in 10kΩ
Power requirements	240V a.c. 20 watts, 13.8V d.c. 12 watts
Dimensions	76 x 220 x 205mm
Weight	2.2kg.

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# REALISTIC PRO-2005 SCANNER

between intelligibility and fidelity. On the wide band f.m. mode the performance was quite acceptable though a significant improvement could be obtained with an external speaker.

I soon stored some of my favourite frequencies in the memories and started scanning for activity. The sensitivity appeared to be very good and I was soon receiving plenty of interesting stations.

After my initial flurry of activity, I set about using the search facility to check for activity in specific bands. The sound squelch also proved to be a particularly valuable aid as there always seems to be plenty of silent carriers or birdies on the bands which can make searches rather frustrating. The sound squelch was not perfect though as it could not discriminate between a carrier with a whistle and speech so it did not, in practice, completely prevent the scan stopping on "quiet" channels. Nevertheless it was a great help whilst searching for new frequencies.

When in the search mode the PRO-2005 automatically selected the appropriate mode and frequency step according to the frequency in use. This was a great time saver for the operator making wide range searches very simple.

Abbreviations	
a.c.	alternating current
a.m.	amplitude modulation
dB	decibel
d.c.	direct current
f.m.	frequency modulation
Hz	hertz
i.f.	intermediate frequency
kg	kilogram
kHz	kilohertz
l.e.d.	light emitting diode
MHz	megahertz
mm	millimetre
mV	millivolt
n.b.f.m.	narrow band frequency modulation
S/N	signal to noise ratio
u.h.f.	ultra high frequency
V	volt
v.h.f.	very high frequency
w.b.f.m.	wide band frequency modulation
$\mu$ V	microvolt
$\Omega$	ohm

There are of course times when it would be useful to be able to change the mode or frequency step and this was simply achieved by pressing either the MODE or STEP buttons on the front panel. These buttons caused the PRO-2005 to sequentially step through the range of steps or modes with each press of the

button. To indicate that the mode or step had been changed the current selection was shown flashing on the display.

I also found the liquid crystal display to be very good in all lighting conditions, with the two stage back-lighting being particularly effective in poorly lit situations.

I must admit I had very few complaints with the general operation of the PRO-2005 which implies that they have got most things right!

## Summary

The PRO-2005 represents an improvement over the previous model and its overall performance was very good for a scanner of this type. I was impressed with the additional facilities, with the sound squelch being particularly useful.

Finally, if the Tandy PRO-2005 fits your budget you won't go far wrong as it does represent good value for money. There is, of course, the added advantage that it is freely available from any Tandy shop, of which there are plenty.

The PRO-2005 costs £339.95 and I would like to thank **Tandy UK** for the loan of the review model.

## *Practical Wireless* SEPTEMBER 1989 ISSUE

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**The Lake Electronics 3.5MHz c.w. Transceiver Kit**

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# STARTING OUT

Brian Oddy G3FEX

Many would have us believe that the conveyance of information in Morse code by means of a keyed continuous wave (c.w.) carrier, is on the way out. The fact is that this system of telegraphy has stood the test of time and it is without doubt the simplest and most reliable form of radio transmission.

No wonder, then, that it is still in regular use by commercial and amateur radio operators throughout the world! Unfortunately most of the less expensive receivers are not equipped for the reception of c.w., but with the addition of a few external units adequate results can be obtained.

The detection of c.w. signals has already been covered in some detail in this series (*SWM* July '88). An essential requirement in the process is to mix the selected c.w. signal with the output from an oscillator operating on a frequency close to the chosen signal. As a result a heterodyne, or beat note, arises in the audio output from the detector. In a superhet receiver this may be accomplished by loosely coupling the output from a beat frequency oscillator (b.f.o.) operating within a few hundred hertz of the receiver intermediate frequency (i.f.) into, or just ahead of, the detector stage.

The b.f.o. can be operated either above or below the desired c.w. signal at i.f. and the beat note from the detector will be identical provided the same frequency difference exists in either configuration. A fixed frequency from the b.f.o. could be used to demodulate any selected c.w. signal. From the operational point of view, there are distinct advantages in using a b.f.o. whose frequency can be varied above and below the centre frequency of the i.f. passband by about 5kHz.

To appreciate why, consider an example in which the injection frequency

**You've all heard the saying "Morse is dead", but is that true?**

from the b.f.o. is set to 1kHz above a desired c.w. signal at i.f. The output from the detector will consist of a 1kHz beat note, which can be easily decoded. However, a serious problem will arise if an unwanted c.w. transmission commences on a frequency 2kHz above the wanted signal because, at i.f., it will be 1kHz above the b.f.o. injection frequency and will also result in a 1kHz beat note. Decoding either signal will be very difficult, if not impossible. This situation can be overcome by moving the injection frequency so that it is 1kHz below the desired signal. A 1kHz beat note will then arise from the wanted signal, but the unwanted one will result in a 3kHz beat note, so there will be adequate separation.

## Add-On BFO Units

Since a b.f.o. is not usually fitted to the less expensive receivers, an add-on unit must be provided. Before purchasing a ready-made unit or a kit, it essential to ensure that the injection frequency will be compatible with the i.f. of the receiver concerned. A detailed technical specification is often included in the receiver instruction manual and this may indicate the i.f., otherwise it will be necessary to obtain this information from the nearest agent, distributor or the manufacturer. Unfortunately, very few ready-made units are available commercially - one source being Corrigan Radiowatch, 7 York Street, Ayr KA8 8AR - but building one is well within the capability of most beginners.

The circuit of a b.f.o. suitable for use with receivers employing a 450-470kHz

i.f. is shown in Fig. 1. This type of oscillator is basically a transistor amplifier with a parallel tuned circuit consisting of a pile wound inductance, L1, and fixed capacitor, C1, as its load. A bias derived from a potential divider R1/R2, decoupled by a capacitor C2, is applied to the base of the transistor Tr1 via a coil, L2. Since L2 is pile wound on the same former as L1, voltage feedback will be applied to the base of Tr1. The feedback will be either negative or positive depending upon which way round L2 is connected - positive feedback being required for self-oscillation. The action of switching on the supply to the circuit will apply a charge to C1 across L1 and trigger the circuit into self-oscillation on a frequency determined by the component values chosen for L1/C1. The frequency of oscillation should be set to exactly the centre of the receiver i.f. passband by adjusting a ferrite "slug" in the coil former of L1/L2 with the vanes of the variable capacitor, C3, set to half mesh. Adjustment of C3, which is often referred to as the b.f.o. pitch control, will then enable the injection frequency to be varied above or below the receiver i.f.

It is very important to ensure that the completed unit is totally enclosed in a metal case and that screened (coaxial) cable is used to convey the output to the detector. Otherwise, harmonics of the injection frequency will be picked up by the early stages of the set and they may well be evident throughout all ranges. The PP3 9 volt battery should also be fitted inside the case. It is desirable to keep the injection level as low as possible otherwise an excessive amount of hiss will be present in the output from the detector. This can be achieved by using a very small value of coupling capacitor, C4, between the b.f.o. and the detector. To avoid the stronger signals masking the weaker ones it is advisable to turn the automatic gain control (a.g.c.) off and control the r.f./i.f. gain manually, but there may be no provision for doing this in the majority of the receivers in this class.

## CW Filters

The combination of human ear and brain result in remarkable powers which enable one to distinguish between audio tones which have very small differences in frequency or pitch, despite differences in amplitude which may exist. With practice it is possible to employ these powers as a kind of filter, thereby making it possible to copy the beat note resulting from the demodulation of a weak c.w. transmission, even though it may be buried under numerous tones of varying intensity and pitch arising from the demodulation of other c.w. transmissions close to the frequency. Needless to say it involves a good deal of concentration!

Fig. 1: Suitable b.f.o. for 450-470kHz i.f. receivers.

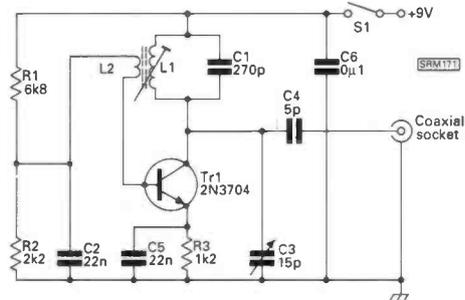
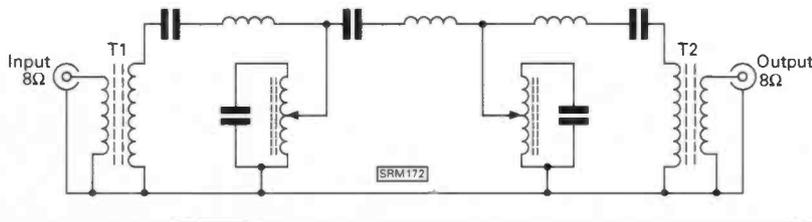


Fig. 2: A passive c.w. filter.



# STARTING OUT

One of the advantages of a c.w. transmission is that it occupies a minimum of bandwidth. Consequently, a very high degree of selectivity can be employed in the i.f. stages of a superhet receiver. Quartz crystal filters with bandwidths of 500Hz at -6dB and 1.5kHz at -60dB are common in communications receivers. Some have an even sharper response of 250Hz at -6dB and 480Hz at -60dB. Unfortunately, the installation of a highly selective crystal filter in the i.f. chain of an existing receiver may well be beyond the scope of many listeners. It may involve changes to the original circuit and i.f. re-alignment will then be necessary. However, very satisfactory results can be achieved by simply inserting a c.w. audio filter between the receiver headphone jack and a pair of headphones. Such filters are designed to pass one particular audio frequency and reject all others, consequently they can greatly enhance reception in difficult circumstances.

There are two main categories of c.w. audio filter, passive and active. The passive type usually consists of a combination of series (acceptor) and parallel (rejector) tuned circuits, as shown in Fig. 2. Provided proper attention is paid to impedance matching at the input and output of the filter, the overall response will be very sharply peaked at

Abbreviations	
a.g.c.	automatic gain control
b.f.o.	beat frequency oscillator
c.w.	continuous wave
dB	decibel
Hz	hertz
i.f.	intermediate frequency
kHz	kilohertz
mH	millihenry
Q	the "goodness" of a tuned circuit
r.f.	radio frequency

the resonant audio frequency. One method of ensuring correct matching is to employ a step-up transformer, T1, at the input to the filter and a step-down one, T2, at the filter output. The resonant frequency of most commercially made filters is 800Hz or 1kHz, which may not suit all listeners. A preferred frequency could be employed by building a passive filter. Suitable 88mH toroidal inductors are available commercially, but non-standard values of fixed capacitor will be required, which will have to be made up by connecting several standard value components in parallel and then checking them on a capacitance bridge to ensure accuracy. Highly selective resonant filters of this type tend to produce a ringing

effect which can make it difficult to copy some signals. They also introduce a certain amount of loss which must be made up by increasing the receiver audio gain.

These disadvantages do not arise in an active c.w. filter. Integrated circuit operational amplifiers (op-amps) provide a convenient basis for the construction of this type of filter. Their exceptionally high, open loop gain enables frequency-dependent negative feedback to be applied to reduce the gain and tailor the response. How this may be exploited was outlined last month. It was shown that by applying feedback to an inverting amplifier via two frequency-dependent paths, a band-pass filter can be produced. By carefully selecting the components, a high Q filter with a sharp peak can be obtained. A single op-amp could be employed as an active c.w. filter, but superior results can be obtained by using up to four of these filters in cascade, as shown in Fig. 3. To obtain a very sharp peak it is essential to ensure that each section of the filter is resonant at the same frequency. This could be achieved by using carefully selected components, but a simpler approach is to employ a pre-set variable resistor in each stage (R10-13), so that the resonant frequency of each section may be accurately set up. □

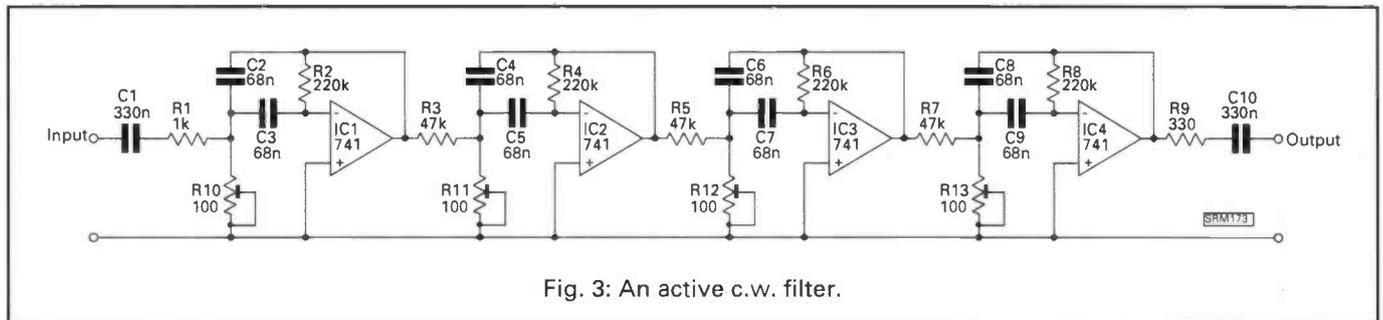


Fig. 3: An active c.w. filter.

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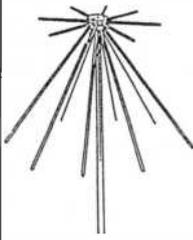
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Another option is the N-type connector instead of the popular SO239. N-types give a better UHF performance, but they cost a bit more. The choice is yours.

Because the REVCONCONE is British-made by a Company which has been in business for 30 years, you buy with confidence, knowing that there is back-up should anything go wrong.

### RADAC



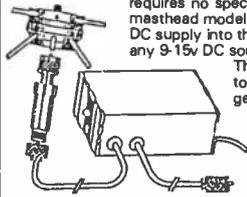
This Wide-band antenna offers an interesting alternative to the discone. It is simply an array of dipoles, but the clever bit involves arranging the dipoles to maximise bandwidth and minimise interaction. The RADAC can be set up for a range of frequencies from 27MHz to 500 MHz, and because very good impedance matches can be obtained the user can specify any six frequency bands in this range for optimised performance, either for receiving, or more usefully, for transmitting. For example, all the Amateur Bands from 10m to 70cm can be covered in one antenna. If you are in the PMR business, the RADAC can be customised for your needs. Aircraft listening enthusiasts can specify VHF & UHF Airband coverage.

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The problem with omni-directional wide-band antennas is their lack of gain. The REVCO PA3 range of wide-band pre-amplifiers complement the antennas and compensate for their short-comings.

The basic specification of the products is similar: coverage 20MHz-1GHz, at 1GHz: minimum gain 13dB, noise factor 5.5dB. Choose from a mast-head version PA3 or a standard die-cast box style (PA3I). Best results are normally obtained from the masthead model which gives a boost to weak signals which would otherwise have been lost in the feeder cable. Also feeder cable noise is not amplified which is the case if the amplifier is mounted at the base of the feeder. On the other hand, the die-cast box version requires no special installation and is readily taken out of circuit. The masthead model is supplied with a special power unit which feeds the DC supply into the antenna feeder. No PSU is provided for the PA3I, as any 9-15v DC source is suitable (current requirement about 25mA).



The PA3I finds application in instrument work, e.g. input to spectrum analysers, boosting the output from signal generators to give a low-power Tx.

The standard version of the PA3I has BNC sockets and is designated "PA3I/B"; available to special order N-type sockets ("PA3I/N") or SO239 ("PA3I/S"). A special feature of the PA3I series is a high-pass filter to attenuate frequencies below 20MHz; high-power HF & MF broadcast stations can be very troublesome!

### ON-GLASS ANTENNAS

This type of antenna mount has been around for a long time, but they are very difficult to produce successfully at VHF. The Cellular Radio Industry has popularised the glass-mount, but there are fewer design problems at 900MHz, because the coupling assemblies are small. REVCO's extensive experience in making the UK's best Cellular On-glass has led to the production of superior quality VHF and UHF models. Here are a few facts which you should know:

**Coupling efficiency:** apart from the question of effective power transfer to the outside world, you don't want too much RF floating around inside the car, do you? Not healthy for vehicle electronic systems, and possibly not good for humans either. REVCO glass mounts feature very efficient power transfer.

**Sticking power:** no good if they fall off half way home. A properly installed REVCO stays on. Should you change your car, a refit kit is available.

**Simplicity:** Some of the competition has a multitude of loose components; the REVCO has 2 pre-assembled parts: inside and outside. What could be simpler?

**Weather-resistance:** REVCO antennas are made from corrosion resistant materials so you can leave them out in the rain with confidence. It is not necessary to plaster the product with silicone rubber to keep the water out. The REVCO glass mounts do cost a bit more, which reflects these superior features.

REVCO also make a full range of mobile antennas for frequencies from 27MHz to 950MHz, and new products are constantly under development. Contact your local Dealer or in case of difficulty write, phone or fax. Trade enquiries welcome.

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# SEEN & HEARD

## AMATEUR BANDS ROUND-UP

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

Over the past few issues I've been trying to explain in very simple terms about propagation. Now it is time to crack open a few myths about receivers.

First, there were some receivers about in the twenties and thirties which could "inhale" all the DX that appeared on the amateur - or, indeed the broadcast - bands up to 30MHz. So, what's so good about the current production that makes it better than the old-time receiver?

There are points in both directions. First, in the twenties and thirties most receivers were home-built and transmitters used lower power levels, while in the forties most of us used an ex-WD surplus receiver. Now the home-brewed receiver or the ex-surplus one could be modified nearer the heart's desire quite easily and the magazines of that day were full of articles discussing how.

Now think of that old adage "One man's meat is another man's poison" and apply it to a receiver.... what suits me as a mainly c.w. listener is useless to you as an s.s.b. listener, while the BC listener wants a wider pass-band still for his a.m. reception. I might only ever listen to the amateur bands, and to me the BC coverage is unwanted; Joe Blow down the road is a BC listener and never listens to amateurs, so for him s.s.b. or c.w. is useless; Jack Jones up the road is an ex-seagoing operator who listens only to ships at sea, by way of c.w., or the amateur/MM nets on s.s.b. He listens to no other frequencies. Each ideally wants a receiver tailored to his own purposes.

Thus, all those years ago, in general, a s.w.l. or licensed amateur built his receiver to suit himself with no thought of selling. Since the first recorded all-continent contact occurred as far back as 1929 so far as I know, obviously receivers were comfortably as sensitive or more as today's, since amateurs in 1929 didn't have beams and usually only ran around 25 watts. On the BC bands, ten kilowatts was a "Biggie".

So, turning to the modern receiver, it can't be more sensitive, since the limit in that direction is really set by the external noise level on all but - occasionally - 28MHz. On the other hand transmitter levels have increased enormously, between higher power and high gain directive arrays, both for commercial and amateur radio, so a new problem is listening to a weak signal while right alongside is a megawatt broadcaster. The designer is aiming for a compromise which will please everyone as much as possible and annoy everyone as little as possible. It must be styled to be attractive looking and not too unlike the competitors and at a given level must be priced competitively.

It will be well-decorated with push-buttons and "memories" will be made to provide functions which on the older receivers were achieved by switches and dials. It will - probably - be physically smaller, almost certainly lighter. It will probably have a digital readout of frequency, which sounds marvellously accurate until you hear a local net where everyone has digital frequency readout and they all indicate slightly different frequencies! The stability needs considering two

ways: short-term (the wobbles) and long-term (the wanderings!). The older receiver if of valved design usually took several minutes to settle down, and was also more prone to the wobbles, while a tap on the case might make it imitate a canary. The modern receiver is better in all these aspects, and it draws far less power, so much so that it can usually be battery-powered for a day in the hills.

However, against that, it is difficult to modify and a mod reduces the resale value. Unless you have the specialised skills and test equipment it is necessary always to send it to a suitable repairer if anything goes wrong, as the local radio shop are well out of their depth both as to knowledge and equipment. Above all, solid-state equipment is far more vulnerable to storm and lightning damage; where a spark-gap was enough to save the front-end of a valve receiver from a near-miss, it won't protect the solid-state receiver, which must be unplugged from both antenna and mains.

To sum up: if you, dear reader, are seriously off-put from our hobby by the prices you see for new gear in the adverts, take heart. You can always get hold of something older and less covered in pushbuttons, and still listen to the DX.

### Events

For these of course I am, as ever, indebted to *DX News Sheet*, a weekly offering available from RSGB and edited by G4DYO; *The DX Bulletin* from Chod Harris VP2ML; *CQ Magazine*; *The Canadian Amateur*, your letters, and of course my ears! In most parts of the country, the use of 144.525MHz f.m. with vertical polarisation for an "alerting" net is usual. Leave a receiver listening there but squelched, and when it opens up you will hear the word being passed about the activity of some DX station.

However, while the weekly sheets provide a better picture (many interesting calls and prefixes come and go between our deadline and publication), they like us, cannot do anything without INPUT. For example, a DX station appears on the bands, several of you report it, but I for one reason or another miss it. Between all your letters it is possible to build up a clear picture of what happened, so when so-and-so couldn't copy the call through the QRM or whatever, I can still help.

If you have been hoping to latch on the XU1SS, you should be aware that the latest news of the operator was that he had married and was studying in the Philippines. He has hopes of then going to the USA; which adds up to a statement that XU stations have become even rarer!

Another one to be in the same rare category is Ghana, 9G1. 9G1MR had all his equipment confiscated, and is still trying to convince the Ghanaian authorities of the value of amateur radio.

For all you c.w. buffs, DK7PE is, we hear, going to Burkino-Faso, XT-land, for a week, and if you are quick

off the mark you might just catch him - IF he can get a call.

Turning from the warm parts to the chillier ones, Svalbard, JW, should be active throughout August and September, by way of SP8FUO/JW. The QSL route is to the home call.

A note for those hearing either VQ9SS or VQ9ZZ; both stations appear to be active from on board ship.

Finding the Pacific stations has always been a bit difficult, largely because there are so few amateurs in such a large area, but I do hear that SM7PKK is planning a trip round the islands between October 1989 and May 1990. Proposed stopovers at 3D2, T2, T30, ZK3 and ZK1.

On Christmas Eve, LA1EE, LA2GV, and LA6VM hope to set off on their expedition to Bouvet. As a strictly non-Government exercise, a visit to Bouvet is enormously expensive, with costs estimated at \$200,000. If any reader is desperate for a Bouvet hearing, a donation can be made via G4DYO at DXNS.

Now an interesting snippet about the usefulness of amateur radio. Revilla Gigeo found itself minus all commercial communications recently. Fernando XF4L was instrumental in these circumstances in saving the lives of a woman with a miscarriage and a man with lung problems; Fernando was in fact trained and got on the air by the recent XF4L DXpedition group.

There has been word that some of the BYs may soon appear with their own calls in the BZ series; but for the moment still operating from the club stations. However, the recent troubles may have put a crimp on this.

A week ago, I heard a rumour that an EI group were going to Mount Athos first and then on to Albania, ZA. About all I can say to that is that I haven't heard a genuine ZA in umpteen years, although I have lost count of the number of ZA Slims I have come across. As for Mount Athos, there seems to be a tendency for the SVs to regard Mount Athos as their private in-house DXCC country. But - listen, and log. Don't though, waste a QSL until you hear of someone who has received one!

### Letters

A. G. Duck (Birchington) uses the Matsui receiver and is quite pleased with it, though he has trouble with putting up any antennas. To overcome the difficulty an antenna tuner is being created out of bits and pieces to be found in any household, plus of course much fiddling about.

Graeme Stoker (South Shields) recently got back on the band. Using just the built-in antenna on his Philips D2999, "special" HK3JJH, J88AQ, 7X4LX, VK6RU, C6ARC, TU2VE, all collected between 2200 and 0130Z. In addition, one night the French DX Net was heard, including KE2CG, 5Z4BP, HK4LRM, W2RPP, KA1XG, PY2PE between 2330 and midnight, at which time the shack temperature seemed to have fallen too much for comfort!

Changing tack a little, Graeme has a serious problem with interference since his move to the present QTH. Where he used to enjoy AX25, Packet, AMTOR and similar digital modes with a BBC-B computer hooked to a PK252; but since the move, the noise from the computer simply wipes up every signal on the band. At the time he wrote an external antenna in the form of a G5RV in inverted-vee configuration should be up and running which it is hoped will be a cure: if not, a first move will be to compare the situation at the old and the new place; possibly re-routing mains leads, repositioning of equipment and so forth will help. Then one can try screening and earthing the inside of the computer box not to mention using ferrite rings on the leads out of the computer.

It is important with such a problem to go about it methodically, rather than in a "grope and hope" frame of mind, as well as to recall that many mains-wiring runs are run out of sight under the plaster. If any reader has suggestions on this particular problem and its cure, let me know and I will pass everything on.

P. Parmentier (Kortrijk, Belgium) is an old hand at the game, and prefers c.w. for his activity. For the month in question, Pat notes, on 28MHz, A22AA, ZS6X, ZS3PH, 9Q5DX, FM5BH, JX7DFA, 3B8FE, NP2E, VP8BWW (Falklands), TT8CW, Z21FM, ZS3TX, VK7AAQ, 5H3TW, PA0GAM/9L, ZD8BOB, JP1DMX/H18 and J79T. On 21MHz, he found T12BEV, WL7E/KH6, ZS3UN/OH7MRW, KH6XT, TT8CW, JY9SR, BY4RSA, 9V0XO, KH6LW/KH7, KN0E/KH3, FP/KR1H, J79T, VP2EXX, 9X5AA, OX0ZV, KX6OI, FW/NM7N, PA0GAM/9L, YS7CR, FW/KA00MX, FW/N4DDK, UA6HZ/JW, FOA0G, VP5/W9NPPX, JA1SGU/JD1, 3D2MB and AP2UR. While on 14MHz, he managed PY0FF, YK0F, UA1ANP, WA7CWM in Nevada, UA6HZ/JW, FP/K1RH, ZP6XDW, VK8AV/P, PA0GAM/9L, OX/OZ1LLC, UA3DJY/UA1P and J79T. Down to 7MHz, and here he noted ZD8SE, 9X5AA, SV5/DJ4GJ/P and UA6HZ/JW. Quite a crop there.

Another c.w. addict is P. T. Williams up in Cumbria, who uses a Drake receiver inhaling from a sixty-foot end fed wire. Paul noted on 7MHz, a station calling himself ZA1PI, and claiming to want the QSLs to SP1PI, Box 90 Turon. Naturally enough there was a tremendous pile-up on this one, but, really there is a mighty small chance of it being anything better than Tirana Slim. On 14MHz, plenty of Europeans of course, plus lots of Yanks, OH/OZ1JVN who could have been on Aland Is or even Market Reef, VP2MQ, VO1TK, VEs, YV and 4L1NV believed to be a Russian in Antarctica. While 21MHz yielded CO2VG, EC8ASY, a crop of Ws, VE1ALZ and assorted Russians near and far.

### WAB

I guess that almost every reader knows about WAB and its s.w.l. equivalent. It has been a great success for more years than I can remember, for generation after generation of amateurs and s.w.l.s. It provides a mildly competitive activity, plus of course the knowledge that any profits go to the Radio Amateur Invalid and

# SEEN & HEARD

Blind Club or other radio amateur charities. Get the details and have a little fun! Write to Brian Morris G4KSQ, 22 Burdell Avenue,

Sandhills Estate, Headington, Oxford OX3 8ED, not forgetting the all-important s.a.e.

**THE NEXT THREE DEADLINES ARE  
SEPTEMBER 18, OCTOBER 17 & NOVEMBER 20**

## DECODE

Mike Richards G4WNC

200 Christchurch Road, Ringwood, Hants BH24 3AS

I'm afraid I must start this week with an apology to all those readers that have been waiting for frequency lists and replies to technical queries. I have been inundated with correspondence which when combined with my domestic chores like decorating etc. mean that I have fallen behind. Having said that Elaine has just put in a sterling effort to correct the situation so things should start improving very soon - so I would ask you to please be patient.

### Readers Letters

Kevin Flood of Andover asks how he can interface his Ollivetti M24 (IBM compatible) computer to his Kenwood R-2000 receiver with the object of being able to decode Morse, RTTY, ASCII and SSTV. I'm afraid I don't know of any single package that will handle all those modes on an IBM machine. Probably your best bet, if your pocket can stand it, is to investigate an intelligent terminal unit such as the PK-232 or Kantronics KAM. These devices can handle RTTY, ASCII, c.w., FAX, ARQ plus one or two other modes though I don't think any cover SSTV. The interfacing between the terminal unit and the computer only requires an RS-232 port and lead which is pretty basic. From the point of view of interfacing with the receiver an audio output is all that is required.

Incidentally, I shouldn't worry too much about ASCII, as this code is very little used on h.f.

If any reader has a better suggestion for Kevin, please drop me a line and I will pass the news on via the column.

Kevin Bates, Derby started his utility monitoring with a Microwave Modules 2001 but having been bitten by the bug, has now upgraded to a computer based system. The software came from J & P Electronics and the computer is a Spectrum plus 3 which he reports to be working extremely well. On the receiver front Kevin has changed to an Icom IC-R71E which is fed by a Sony AN1 active antenna. In addition to this comprehensive h.f. station he has also invested in an Icom IC-R7000 v.h.f./u.h.f. receiver which uses a Dresler discone antenna. All I can say is that with that lot I shall expect to see some pretty comprehensive logs dropping through my letter-box! One comment Kevin makes on the magazine concerns the reporting, or rather lack of, for utility voice communications. I'm afraid this is out of my patch so I should make noises to the Editor for an answer to that one.

W. Willes, Dorchester is another newcomer to this mode and currently uses a Yaesu FRG-8800 receiver with a FRT-7700 antenna tuning unit and a long wire antenna. On the decoding side he uses a

computer based system with a BBC Master and the software package from G3WHO. The terminal unit is the active filter design by G3LIV which is the same as the one I have been using with great success for several years. Although Mr Willes has had a fair degree of success he is looking for an "idiots guide" (his words not mine!) to utility monitoring. Although I have one or two ideas, I don't think I am the best person to advise because I have been involved both professionally and as a hobby for many years so it is difficult to appreciate what is really needed. I wondered if any readers who are new to the hobby had found any publications to be particularly useful to the beginner. If you have, perhaps you would be kind enough to write with the details and I will pass them on via the column.

Bryan Hayes, Northampton has been interested in Utility monitoring for many years and currently uses a Microwave Modules RTTY to TV converter. This ingenious device takes an incoming audio RTTY signal from the receiver, decodes it and displays the result on a standard television. The great advantage being that it is small and neat which can be a very useful if you have limited accommodation for a shack. One of its other virtues is that it has auto speed selection which helps to take a lot of the confusion out of identifying a new transmission. Incidentally, the receiver used in Bryan's shack is a Kenwood R-5000.

### BARTG Changes

Pat and John Beedie who have been responsible for membership, components and publications are retiring from this post on November 4 this year. This will obviously make a difference that will effect all BARTG sales. This gap is being filled by three people as shown here.

Membership Secretary  
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169 Bell Green Road,  
Coventry,  
Warcs CV6 7GW

Components and Software  
Ted Hatch G3ISD  
147 Borden Lane,  
Sittingbourne  
Kent ME10 1BY

Publications  
Peter Addams G6LZB  
464 Whippendell Road,  
Watford,  
Herts WD1 7PT

The changeover to the new addresses will take effect from 4 November 1989, which is the AGM.

### Press Reception

Roland Perkins, Leigh-on-Sea is a newcomer to utility monitoring and uses the popular ERA Microreader

decoder. Although Roland has had great success on c.w. his main interest lies with Press broadcast. Unfortunately, he is having a few problems finding and resolving English broadcasts. I think I can offer some help as Peter Starling, Saffron Waldon has written giving details of press stations he has copied recently. Peter uses an Amstrad CPC-6128 computer with software from SARUG and a home made terminal unit which uses an XR2211 phase-locked-loop integrated circuit. The receiver is the popular Lowe HF-125 which is fed with a 16m long wire antenna.

Anyway back to the topic in hand, one of the important points to remember with press stations is that they all transmit to a schedule so you will often find these station idle for quite long periods of time. One source of the press schedule is the *Guide To Utility Stations* by Joerg Klingenfuss which is available from the *Short Wave Magazine* book service. In addition to listing the schedules, there is a very useful section titled "Chronological Press". As the title implies this gives all the press stations and frequencies indexed by time of day. So if, for example, you sat down in your shack to monitor some press signal at 6.00pm you simply look-up the time in this section and you can see at a glance all the active stations and frequencies.

For those of you who have yet to purchase your copy of this book here are some details of press stations logged by Peter.

11.125MHz - ADN Berlin logged at 1900UTC using 50 baud and 425Hz shift.

13.770MHz - Voice of America logged at 0800UTC using 75 baud and 425Hz shift. This station transmits Monday to Saturday and the text is usually rather dry with reports of political speeches by Americans.

9.114MHz - MTI Hungary logged at 1700UTC using 50 baud and 425Hz shift.

16.067MHz - ANSA Rome. Logged at 1800UTC again using 50 baud and 425Hz shift. This is one of the more interesting Western agencies and usually contains lots of European news - worth watching.

12.315MHz and 14.7MHz - TASS Moscow. TASS is probably the most active press agency on h.f. and they can be found on many frequencies using 50 baud and 425Hz shift. Being Soviet based the text can often be quite interesting.

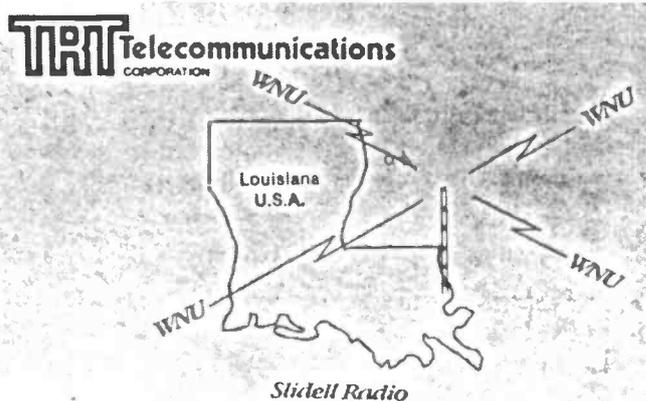
Do you have a favourite mode that you have built-up a stock of information on? If so, drop me a line and I will endeavour to include it in the column.

### Decoding Problems

Mr L. Hawkings, Nottingham has recently bought himself an ERA Microreader for utility station decoding but is a little concerned with its ability to handle word spacing in both RTTY and c.w. I can understand the problems with c.w. as this apparently simple task is actually surprisingly difficult in practice. Mr Hawkings can read c.w. by ear and says he can often understand c.w. signals that the Microreader fails to space properly. Unfortunately this situation is actually quite common with most automatic decoders as they really need near perfect c.w. in order to maintain correct word spacing. The reason for this problem is simply timing, because a space between words in c.w. is just a gap in the transmission equivalent in length to seven dots. So, from this, if the decoder sees a gap of this length or longer it will insert a space. If, on the other hand the gap is shorter, the next character is added to the last word.

So, as you can see, timing is absolutely critical and the slight timing variations that occur in hand-sent c.w. can play havoc with an automatic decoder.

Moving on to RTTY word spacing, there is not normally a problem here as a space in RTTY is just another



QSL card received by Jan Nieuwenhuis





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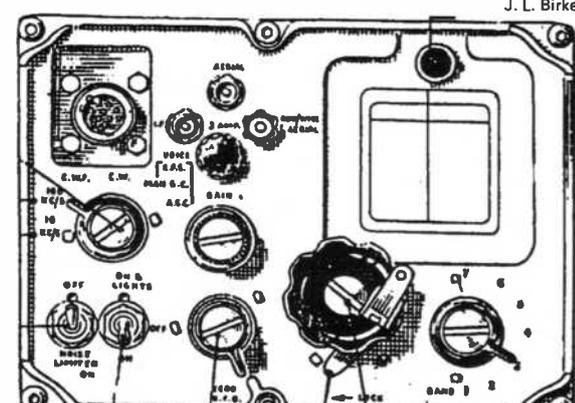
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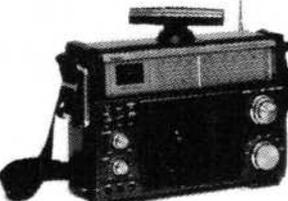
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# SEEN & HEARD

Here are the latest elements to hand for Mets 2/16 and 2/18.

Sat	Met 2/16	Met 2/18
Epoch	1989 165.0853	1989 165.0865
Decay	2.2e-6	1.2e-6
Inc	82.56	82.52
RAAN	221.99	161.7
Ecc	0.0011	0.0015
ArgP	201.14	324.76
MA	158.93	35.26
MM	13.8348	13.83805
Rev	9208	1465

## Weather Satellites

Things seem to have settled down recently and only Met 3/2 has been subject to changes in its transmissions. So the usual group of weather satellites, NOAAs 9, 10 and 11 are all broadcasting good quality pictures, as are Mets 2/16, 2/17 and 2/18. Here is a frequency list for the benefit of the many newcomers, such as **Malcolm Smith**, who wrote a very kind letter asking for such a list. He finds *Short Wave Magazine* to be very helpful. Thank you for your good wishes Malcolm!

NOAAs 9 and 11 transmit on 137.62MHz  
 NOAA 10 transmits on 137.50MHz  
 NOAAs 9, 10 and 11 also have beacons on 136.77 and 137.77MHz  
 Met 2/16 and 2/17 transmit on 137.40MHz  
 Met 2/18 transmits on 137.30MHz  
 Met 3/2 transmits on 137.85MHz

The list of Russian Oceanographic satellites needs clarifying though because the Mets sometimes have their frequencies changed and NOAA 9 may not always be switched on.

Monitoring the Russian Mets is fascinating because you can never be sure whether any changes have been made since you last tuned into them. Both Mets 2/16 and 2/17 are still transmitting slow-scan infra-red pictures during the night-time sections of their orbits but I have not seen very good quality images from these transmissions. Met 2/18 is not transmitting any infra-red pictures.

Met 3/2 is in a class of its own. It is in a higher orbit than the other Mets and is capable of transmitting good quality visible and infra-red pictures. However, it is switched on and off for periods of several weeks at a time. During June I received good pictures



Fig. 2

until 0758UTC on the 20th after which it was off for the rest of the month. It came back on a few days ago, i.e. mid July.

Some observant listeners have noted that its orbit has changed very slightly during some of these "off" periods without any obvious reason for the adjustments. The current transmissions from Met 3/2 do not include infra-red pictures unfortunately.

## International Co-operation

METEOSAT may go walkies. Back in January the imaging bulb on the American geostationary weather satellite GOES-6 failed and this resulted in the various GOES satellites being repositioned for the best coverage of the USA. Currently GOES-7 collects images of the USA which are transmitted from GOES-E and GOES-W. We can see GOES-E from the UK because it is positioned at 65 degrees longitude.

It does seem possible that Meteosat 3, currently a back-up for the recently operational Meteosat 4 could be "drifted" across the Atlantic into GOES territory to help out with imaging needs. This is one benefit of operating fully compatible satellite systems. Both Meteosat and GOES transmit wifax pictures on the same frequency and with similar picture formats.

## GOES Transmissions

I recently obtained a new transmission schedule for GOES-E but within a few days I found that all was not right with it! There were Meteosat pictures where NOAA pictures should have been, and other apparent discrepancies in the timetable. Fortunately the GOES satellite transmits its own timetable each day at 1055UTC so I recorded it the next day and sat down that evening to write it all out.

The schedule had been revised on June 19 and now includes the broadcast of 61 Meteosat images, 73 GOES images, eight GMS images, 44 Tiros Polar images, ice charts and assorted wind speed data charts. Some of these are also transmitted as FAX pictures via short wave radio as you may know from reading the column "Decode" written by Mike Richards.

## Pictures

I have produced two pictures for this issue after a fair amount of image adjustment. I fed a live Meteosat

picture of the whole visible disc (CTOT format) into the computer that I use for satellite imagery processing. I reversed the image to make the background white, leaving the clouds black and then did a screen dump of the four quadrants separately, cut them to form a composite and photocopied the result - Fig. 1. It was printed on an 8-pin printer so there are only eight grey levels even though the original image was rather better.

I would like to have been able to print it out on a 24-pin printer but these things can't always be arranged at the right time!

The other picture - Fig. 2 - is a screen dump of Florida from GOES-E taken a few weeks ago and processed as described previously for the Meteosat picture.

## MIR

MIR remains unmanned for the time being so there are no voice transmissions to be heard for some weeks to come. As mentioned in previous reports from **Pat Gowen G3IOR**, MIR can still be tracked by monitoring 160.000MHz when it is near the USSR.

## UoSAT-1

This amateur satellite, known also as Oscar 9 is rapidly decaying. Recent high solar activity affects the density of the upper atmosphere and causes the lower orbiting satellites such as UoSAT 1 to decay.

Recent measurements of its mean motion, or revolutions per day show it to have increased:

Day of year 170	MM was
15.61579	
DOY 181	MM was
15.637	
DOY 190	MM was
15.653	

Please send in your reports and include pictures when possible together with details of your equipment. All pictures will be returned.

**THE NEXT THREE DEADLINES ARE  
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 NOVEMBER 20**

## BAND II DX

Ron Ham

Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

## Tropospheric

While the barometer was around 1025mb (30.3in) on May 5, P.R. **Guruprasad** (Molepolole, Botswana) using a Sony ICF-7600DA with its own rod antenna, received signals between 1605 and 1612 from Radio RSA (105.2MHz) and Tswana (87.9MHz) and possibly Radio Lesotho on 88.8MHz. As the pressure fell one millibar from 1024.5 (30.25mb) on the 27th, he heard a South African based station on 95.1MHz speaking in Afrikaans and English at 0755 and by 1505 strong signals were coming in from Radio RSA on 105.2MHz. He again heard the bi-lingual station on 95.1MHz at 0630 on the 27th, broadcasting news and a commercial.

Don't forget, readers, that tropospheric openings can occur at anytime during the year when the weather is fine and the atmospheric pressure is high, therefore, if you have a radio fixed in your car, or a portable, with a v.h.f. band, it is worth stopping on high ground and having a tune around. One of our favourite sites is in Ashdown Forest, Sussex, where Joan and I often stop for tea and use the Plustron for a spot of DXing, Fig. 1. During the winter, or when it's raining in the summer, the receiver sits on the rear seat of the car. I know from their reports that **George Garden** (Edinburgh) and **Simon Hamer** (New Radnor) check Band II on their car radios while TVDXing from their usual high points

in Scotland and Wales respectively. Such elevated positions will increase reception range under normal conditions so at least you should add a few first-timers to your log.

## Sporadic-E Reports

**David Glenday** (Arbroath) heard East European f.m. broadcast stations between 66 and 73MHz during the early evenings of June 5 and 11 and Italian television sound (Ch. 1c 87.75MHz) between 2300 and 2350 on the 10th. Also on the 10th, **Barry Bowman** (Prestwich) received

stations from Portugal and Spain and, on the 17th, he heard a programme in Arabic (possibly Morocco) and logged stations from Italy, Spain and Yugoslavia (Radio Zagreb). Although these openings seem rarer this season, I counted 35 and 21 such broadcast stations respectively during the early evenings of July 5 and 12 and a dozen at midday on the 15th. As usual, all signals were very strong and some, especially on days 5 and 12, were overlapping each other. On June 12, **Simon Hamer** received programmes from Iceland, Italy and Scandinavia.

# SEEN & HEARD

This time the weather was cloudy and foggy and the pressure fell during the day from 1022.5mb (30.2in) to 1019mb (30.1in). At 0700 he logged Radio Tswana's 3kW transmitter at Zeerust and a number of unidentified stations, some carrying the same programmes, on several spots in the band throughout the day. The pressure was up and down again over the period May 28 to 31, when Radios Botswana and RSA were heard plus a wide variety of programmes from many unidentified stations between 87.9 and 105.5MHz. "All these stations, except that of R. Botswana, are either based in South Africa or in 'independent' territories recognised by South Africa", wrote P.R. G.

While TVDXing on Cairn O' Mounth, on June 18, George Garden checked Band II and added BBC Radios Derby and York and ILRs Hallam, Tees and Metro Radio to his score. George is an experienced DXer and had to be patient and tune very carefully to find Radio Derby on 104.5MHz because of its close proximity in frequency to the stronger Radio York, serving the north and north-west, a mere 200kHz away on 104.3MHz. He found the precise spot on his dial where bits of the signal were popping up and then, for about a minute around 1500, he heard Derby's ident loud and clear. That's keen DXing George!

With the pressure hovering around 30.4in (1029mb) at 0830 on June 18, it was no surprise to find Band II wide open to many countries



Fig. 1

and although I can only recognise French and German, these numbered high among the 32 foreign voices I counted between 87.5 and 103MHz. Many of these were pounding in and, on the 20th, Simon Hamer heard stations from France, the Benelux countries and Scandinavia. At 1745 on the 22nd, I tuned through the band and found programmes from Belgium, France and West Germany plus BBC Radios, Bedfordshire, Bristol and WM. I again checked the band while the pressure was falling during

the afternoon of June 26 from the car-parks at Alfriston, Sussex and nearby Michelham Priory and heard French stations gradually getting stronger between 96 and 100MHz.

Because the sky looked changeable on July 4, Joan and I took the Plusstron out again. Although we found conditions normal at 1115 when we stopped near Barcombe, Sussex and again at 1415 from Bodiam Castle, Sussex, by the time we reached Sissinghurst Castle, Kent, around 1500, foreign voices

were breaking through the noise on several spots between 87.9 and 100.5MHz. This opening was beginning because next day, Simon Hamer reports hearing signals from Holland and Scandinavia.

Between 0145 and 0300 on June 19, Brian Renforth (Newcastle-Upon-Tyne), received signals from ILR Aire (Leeds) from Morley on 96.3MHz, Broadland (Gt. Yarmouth and Norwich) from Stoke Holy Cross on 102.4MHz and Invicta (Maidstone and Medway) from Bluebell Hill on 103.1MHz. He carefully rotated his home-brew indoor copper dipole to hear Invicta Radio, which was very strong, against his local relay of Metro Radio on a similar frequency.

Brian tells me that BBC Radios Cleveland, Humberside, Leeds, Newcastle and York merge between 1800 and midnight seven days per week as Radio North East Night Network and that Metro FM and TFM are now exclusively on v.h.f. while their medium wave outlets are used for GNR-Great North Radio.

He also heard some Dutch signals in the band on July 5. Early on the 12th, I found 5 French stations, 7 other continental stations, interfering "warbles" on 92.3, 93.7, 96 and 103.8MHz plus BBC Radios Bristol (95.5MHz), Kent (104.3MHz) and WM (95.6MHz) and ILR GWR for west Wiltshire on 102.6MHz.

**THE NEXT THREE DEADLINES ARE SEPTEMBER 18, OCTOBER 17 & NOVEMBER 20**

## TELEVISION

Ron Ham

Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

As I ended last month's column, around June 19, and began this one, the 1989 Sporadic-E season had begun properly a few days before. Additionally the atmospheric pressure was high at 30.4in (1029mb) and a tropo-opening was in progress. This all added up to an abundance of DX and by now our newcomers, who patiently awaited those "big openings" that the "old hands" talked about, must be satisfied and possibly wondering where on earth this sudden glut of pictures came from.

During the Sporadic-E openings I received the captions seen in Figs. 1 & 2, possibly from the USSR, any ideas? On May 26, David Glenday (Arbroath) logged an Estonian test pattern, Fig. 3.

Summer is the ideal time to think about a new antenna system or repairs and additions to your existing installation, whichever, its worth sending 75p to David Martin at Aerial Techniques, 11 Kent Road, Parkstone, Poole, Dorset BH12 2EH, for their latest catalogue. Whether you buy now or later it is a good reference material for the technical bookshelf. This A5-format book has five of its 29 pages devoted to illustrations of the DXers antenna requirements and the rest to descriptions of antennas, brackets, cables, distribution amplifiers masts and mast-fittings, etc., and a few special receivers suitable for DXing. I find that publications like this often produce ideas and/or solve outstanding problems.

### Band I

During the first half of June, Bob Brooks (Great Sutton) reported some period of Sporadic-E disturbance every day except for days 1, 4, 8, 9 and 29. While these events lasted he logged Breakfast TV from Italy and Spain, logos from Czechoslovakia (CST Praha), Norway (statue in Copenhagen) Spain (TVE Falcon Crest, Madrid and Teleradio), news from Finland, West Germany (ZDF), Italy (TGI) and the USSR, cartoons, films and general programmes from East Germany (DDK3), Portugal (RTP), Spain (Presto Justo), Sweden and the USSR, sport from Italy and Spain, test-cards from Belgium (BRT TV1 and RTBF3), Finland (YLE-TV1), Iceland (RUV Island), Italy (RAI), Norwegian regionals (Bagn, Gamlem, Hadsel, Hemnes, Melhus & Steigen), Poland (no ident on card), Spain (TVE), Sweden (Kanal 1 Sverige), Switzerland (PTT-SRG1), USSR (Eesti Tallin and Ueit) and Yugoslavia (JRT Ljubljana). Bob saw an Errol Flynn film from RAI on July 4 and *The Yellow Rose of Texas* from TVE1 on the 8th.

On the 12th, Mike Bennett (Slough) received pictures on Ch. R3 for the first time and is now using his scanner to give early warnings of DX

in this area. Mike noted Sporadic-E openings on eight days between the 12th and 27th when he saw *Dallas* from Portugal, cartoons and cycling from Hungary (MTV) and Italy, dancing and films from Spain, news from Hungary, Italy, Norway, Sweden and the USSR and test-cards from Czechoslovakia, Poland, Scandinavia, USSR and Yugoslavia. In July he logged the Norwegian regionals Gamlem, Hemnes, Melhus and Steigen on the 8th and films from Italy and Spain on the 10th.

John Woodcock (Basingstoke) found the period June 15 to 21 "excellent" for Band I DX when he received test-cards from Finland Fig. 4, Italy, Poland, Scandinavia and the USSR and added Iceland on the 27th. "At times during this period stations were coming and going at such strength it was difficult to sort them out!" said John.

Among the crop of idents seen by David Glenday was the TSS-UEIT test-card co-channelling with a programme on Ch. R1 and insignias from Czechoslovakia, Italy and Spain on the 8th, the captions BR-1, Grunten, Kepujzag and Nachrichten, plus a subtitled Sherlock Holmes film on the 10th, test-cards from Austria (ORF FS1) and Yugoslavia (Ljubljana) on the 11th and Poland (TVP) on Chs. R2

& 3, Portugal (RTP-1), Romania (TVR), Spain (TVE Madrid) and news from the USSR on the 12th.

David Smith (Chester) began TVDXing in 1988 when he discovered a suitable Hitachi receiver in a local secondhand shop. That evening, with a dipole on his bedroom curtain rail, he received pictures from Spain and the USSR. He now has a D100 converter and a home-brewed dipole and plans to install a rotatable antenna system for Bands I, III and u.h.f. I had the pleasure of meeting David and his wife when they visited the Chalk Pits Museum, (Amberley, Sussex), on July 8.

Among the items of interest seen by Neil Purling (Hull) were adverts from Spain and the Madrid clock caption on June 13 and 16, the Euro-elections and Mr Gorbachev in Bonn in the news from Spain (TVE1/2) on the 13th, news and sport from the USSR with the TACC COO6WAET (Tass Report) and CNOPT (sport) captions on the 12th and Poland (TVP) with the dt logo on the 16th, test-cards from Czechoslovakia (CST ISR-P), Poland, Spain (GTE) and the USSR (Optic 0249) on the 16th and idents next day from Czechoslovakia (PRAHA) and the Ukraine (UT).

Needless to say that Simon Hamer (New Radnor) and Edwina and Tony Mancini (Belper) logged almost all the stations previously mentioned. However, among Simon's highlights were Albania (RTSH), Austria (ORF) on Chs. E2A & E4, Czechoslovakia (Bratislava), Jordan (JTV) with "JTV



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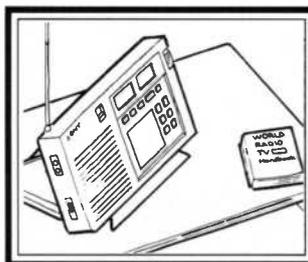
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# SEEN & HEARD

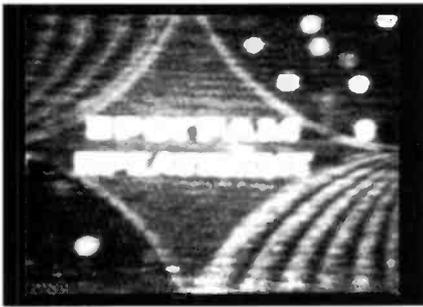


Fig.1. USSR

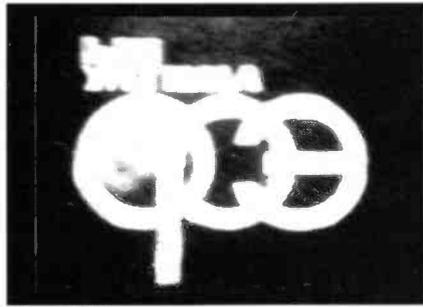


Fig.2. USSR

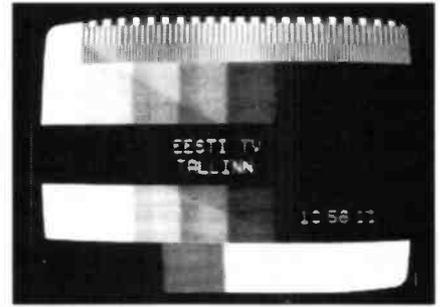


Fig.3. Estonia



Fig.4. Finland



Fig.5. Bhatinda



Fig.6. Denmark

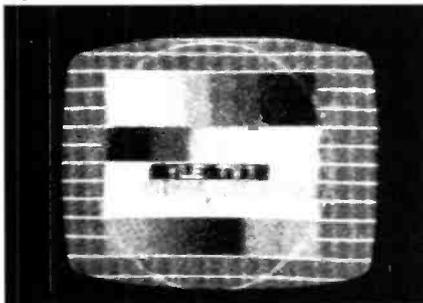


Fig.7. West Germany

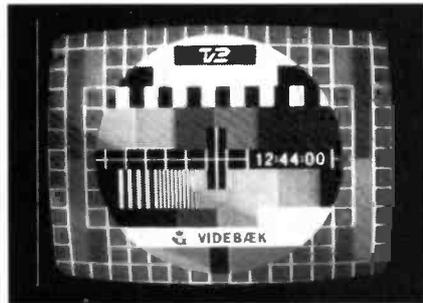


Fig.8. Denmark

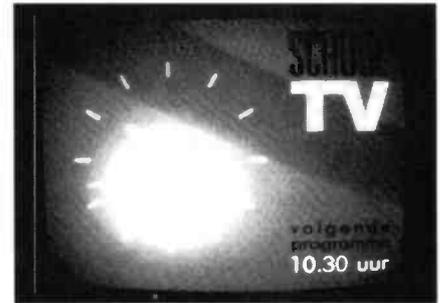


Fig.9. Holland

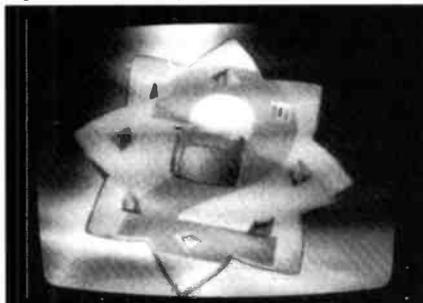


Fig.10. Holland

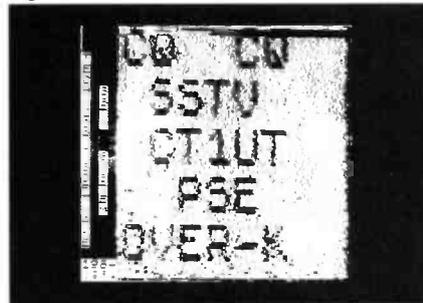


Fig.11. Portugal



Fig.12. Germany

Suweileh" on the test-card. Morocco (RTM) with Arabic scripts on their Ch. M4 in Band III and a coloured newscaster, possibly Nigeria, on Ch. E3. Edwina and Tony added arts and talks from Spain, folk-dancing from the USSR, horse-trials from West Germany, news (*Sumario*) from Portugal, the Norwegian regional Greipstad and sport from Czechoslovakia, Spain and Sweden.

While using a Plustron TVR5D with its rod antenna in my car at Sissingshurst Castle, Kent, at 1601 on July 4, I saw a sub-titled film around Ch. E3. There was a news programme, with a lady presenter and possibly the letter "B" at the top left of the screen, on Ch. R2, at 1816 on the 6th from a high spot in Ashdown Forest, Sussex. Around 1800 on the 5th, I received pictures and sound on Chs. R1 & 2 and, a very short burst of Sporadic-E at 0923 on July 8 produced

a strong coloured test card scribed Norge Bagn with a digital clock showing 1023. I first noticed signs of another Sporadic-E opening around Ch. E3 at midday on the 12th while parked at Handcross, Sussex and later from home, I logged pictures from Spain (TVE) on Chs. E3 & 4 and the USSR on Chs. R1, 2 & 3. The R3 station closed down at 2005 so I assume it was one of those Soviet stations situated 3 time zones ahead of the time in the UK.

## Tropospheric

Lt. Col. Rana Roy (Meerut) usually received pictures in Band III from Agra, Bhatinda, Jalandhar and Kasauli during early morning tropo-openings on March 12, 13, 17, 21, 23 and 31 and April 7, 8, 12, 13, 14, 16 and 18. Most were at good strength especially the signal from Bhatinda

TV, Fig. 5, at 0858 on April 16. He also logged Lahore TV from 2300 to 2355 on March 20, 0700 to 0845 on the 21st and April 6 and 8.

The variations in high atmospheric pressure and temperature, toward the end of May contributed to a number of tropospheric openings in the u.h.f. band. For example David Glenday, using a Philips receiver with Triax BB grid bowtie antenna and masthead pre-amplifier, found *The Flintstones* with Danish sub-titles, Fig. 6, on Ch. E40 at 1850 on May 19, cartoon characters appearing between adverts, Fig. 7, from West Germany's ZDF network, Ch. E30, at 1823 on May 20, the Danish test-card (TV2 Videbaek), Fig. 8, Ch. E40, at 1144 on May 22, Nederlands 3 clock caption, Fig. 9, "sitting on Chatton", Ch. E42, and Nederlands 2 logo, Fig. 10, Ch. E47, at 0919 and 1455 respectively on

May 23. David also received u.h.f. pictures from Belgium (BRT1), West Germany (ARD1, Cuxhaven, NDR3, "2.Prog.K24" and ZDF) and Holland (NED.2 & 3) on June 11, Denmark (TV2), West Germany and Holland on the 13th and the latter two on the 14th. Neil Purling received test-cards from Belgium (BRT TVI Wavre) and Denmark (Danmark Radio) in Band III on the 18th and 22nd respectively. In Edinburgh at 1300 on the 18th, George Garden heard the BBC weather presenter say that the weather was effecting television pictures in Scotland and that viewers may experience break up in their pictures from time to time. Off went George with his JVC and collection of antennas to his favourite DXing site high on Cairn O' Mounth and his efforts were rewarded with a strong colour picture, plus heavy co-channel lines, from Tyne Tees TV on Ch. 29

# SEEN & HEARD

(Bilsdale). He moved the JVC's sound selector to the European position and heard a strong foreign voice so he directed his wideband beam toward the continent and, for over an hour watched a BBC film in English, but with subtitles, from Nederland 3 on Ch. E30. George said that the weather map on the 18th showed a high of 1031mb (30.45in) over the UK.

At 0755 on the 18th, using a chimney mounted dipole feeding my D100 converter, I received test-cards in Band III, mostly in colour, from Belgium (BRT and later RTBF1), West Germany (WDR1 TV 11 and WDR1 LA 9) and Holland (PTT-NED1). Next a tune through the u.h.f. band and around 0915, I found the Danish TV2 test card from Tommerup and a strong Dutch (PTT NED1) test-card riding up on a "local" BBC 1 science programme. The ability to switch both the r.f. and i.f. stages of the D100 to narrow bandwidth enabled me to resolve the Tommerup signal against the "local" stations.

"The tropes have been excellent lately, I can't say I've ever seen tropes so active (in the north-east anyway) since 1976 when based in south Durham," wrote **Brian Renforth** (Newcastle-Upon-Tyne) on June 24. On the 18th he logged *Studio Sport*, possibly from Holland, Grampian TV from Durriss on Ch. 25, Yorkshire TV from Emley Moor on Ch. 47 and Denmark (TV2) on Ch. 35. Brian

## THE NEXT THREE DEADLINES ARE SEPTEMBER 18, OCTOBER 17 & NOVEMBER 20

watched a game show from TV2 on several spots in the u.h.f. band at 1720 on July 4 and reports that Danish test-cards were appearing at 0800 on the 5th and one TV2-Varde was interfering with BBC-1 from the Bilsdale on Ch. 33.

During that evening he received "very stable" pictures from Holland in Band III and tells me that BBC Newcastle's *Look North* presenter warned viewers about the co-channel interference during the programme at 1845. Denmark's u.h.f. signals were prominent again the next day when Brian saw *A Country Practice* with sub-titles, an old Herbert Lom film, TV2 "with an eye catching clock caption" and the TV2 Danmark Hedensted test-card. On the 22nd he logged test-cards from Norway and Sweden in Band III and Denmark on several spots in the u.h.f. band up to Ch. E56.

The Mancinis clocked up a first for them on the 18th when they logged strong u.h.f. colour test-cards from Holland (PTT NED 1, 2 & 3) and PTT Teletext in Band III. "The sheer pandemonium of tropospheric activity last week and throughout the weekend proved to be too much for me - loads of exotics resulted in me

doing almost 24-hour DXing for days on end," wrote David Glenday on the 21st. His u.h.f. highlights were continuous reception from Belgium, Denmark, East and West Germany and Holland including nine different Danish transmitters, loads of German relays of RTL+, SAT-1 and Tele 5 and the American and British Forces Networks.

"With regard to the period from 14th to 18th June, I had never seen TVDX coming in for such a consistently long period, in fact it was coming in so frequently, I gave up trying to log it and connected up our Philips video recorder," wrote David Smith, who enclosed a large interesting cutting from *The Daily Telegraph* of June 19 about the cause and some of the effects of this u.h.f. disturbance. **Keith Sylvester** (Stoke-on-Trent) using Amstrad and ITT colour receivers around 0730 on June 22, logged a number of u.h.f. pictures most likely from Central, Granada, HTV and S4C. Among the programmes being shown as he flipped channels were *Breakfast TV*, *Deputy Dawg*, TV AM's *Good Morning Britain*, a weather report with a young lady presenter and a BBC2 test-card. During a weak opening early on

July 12, I received negative pictures in Band III on Ch. C5, pictures of a fair and motoring on Ch. E8 and a Belgian test-card on Ch. E10. Bob Brooks watched the news from Ireland's RTE between 2100 and 2130 on July 11 and during this period Simon Hamer logged idents, programmes and test-cards in the v.h.f. and u.h.f. bands from Belgium (RTBF1 & RTBF Tele 21), Denmark (TV2 Danmark), France (TDF Canal+), East and West Germany (DFF1, ARD, NDR1&3, HR3, RB1, WDR1, WEST3 and ZDF) Holland, Ireland (RTE and Network 2), Luxembourg (RTL Plus on Ch. E7), Norway (NRK) and Sweden (SVT1 & 2)

## SSTV

**Ian Armstrong** RS92190 (Millom) using a Panasonic DR49 receiver, Sinclair Spectrum 48K computer with Technical Software's RX4 programme and an Alphacom 32 printer, copied his first slow scan television pictures from Portugal (CT1UT), Fig. 11, on 14MHz, at 1633 on June 11 and an unidentified face, possibly G or GW, on 7MHz, at 1239 on the 16th. Ian increased his score on July 9 when, on 14MHz, he received pictures from Germany (DF3IF, Fig. 12, DF4CI and DL6MCR) and Spain (EA2JO). Among the captions he saw were "COMPUTER COMMODORE" and "PSE KKK".

## LONG MEDIUM & SHORT

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

Many listeners have enjoyed a little DXing away from home during the summer by using a small portable. For those who have to be on the move throughout the year most modern car radios, being both sensitive and selective, can provide an ideal means of checking the bands from new locations.

### Long Wave DX

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT).

In an interesting report, **Philip Rambaut** detailed reception during daylight and after dark in Macclesfield. He noticed that after dark the broadcasts from three additional stations became audible via sky wave paths: Motala 189, Azilal 207 and Minsk 281. He observed a marked increase in the strength of the signal from some stations. An unexpected reduction in signal strength was noted from Brasov 153, Donebach 153, Junglinster 234 and Burg 263 and the transmissions from Oslo 216 and Kalundborg 245 became inaudible.

While in Lytham St. Annes, **Neil Wheatley** noted that four additional stations became audible there after dark: Kaliningrad 171, Motala 189, DLF Munich 207 and Topolna 272kHz.

In London, **Phil Townsend** has been comparing the l.w. performance of his receivers and he found that his Panasonic RF-1680L portable is least affected by the local electrical interference which plagues him. Some general coverage receivers are distinctly "deaf" on this band, but the addition of a good l.w. to s.w. convertor ahead of the set can overcome this problem. Phil has been

using an SEM l.w. convertor to good effect with a Lowe SRX-30 receiver.

### MW Transatlantic DX

Reporting from Wakefield, **Mark Thompson** says, "Transatlantic DXing has improved this month although I failed to identify several stations. Radio Globo was the only

S.American station identified, but unknown stations on 1210 and 1440kHz were also heard, the latter was a very fast and excited DJ commentating in Portuguese on some (sports?) event!" Mark noted that most of the N.American stations became audible at first light and quickly faded before positive identification could be obtained. At

0209 one night he heard a new station on 1512kHz with the callsign WK\*U, where the \* appeared to be an "A". Mark would welcome any information on this station/callsign from other DXers.

"Not many signals from across the big pond at the moment" writes **Tim Shirley** (Bristol). Most of the broadcasts he heard also reached him around first light, they stemmed from stations near the east coast of Canada and the USA.

It's winter in S.Africa just now and the latest report from **Dick Moon** in George indicates that the conditions there are quite good for m.w. DXing. Listening around 0500, he picked up broadcasts from stations in Brazil, Uruguay and Venezuela, but there was no trace of signals from the Caribbean, the USA or Canada.

### Other MW DX

Listening at 0300, **Mark Thompson** heard the broadcasts from Jeddah, Saudi Arabia on 1512 (1000kW), a distance of about 3000km. Surprising as it may seem, their signals reached him at SIO 444. Perhaps even more surprising is the reception of the 2kW transmission from Bolzano, Italy on 1602 by **Max Wustrau** in Bedford. He rated the signal as 43344 at 2229.

The sky wave signals from four stations in N.Africa were picked up by Neil Wheatley in Lytham St. Annes, which is about 1680km away, they stemmed from Ain Beida, Algeria 531 (600/300kW); Sidi Bennour, Morocco 540 (600kW); also Alger, Algeria on 891 (600/300kW) and on 981 (600/300kW).

A holiday near Palma, Majorca enabled **Cyril Kellam** to check the

### LongWave DX Chart

Freq kHz	Station	Location	Time (UTC)	DXer
153	Bechar	Algeria	1000	F
153	DLF Donebach	Germany (W)	500	C,D,E,F,G,H,I*
153	Brasov	Romania	1200	E
162	Allouis	France	2000	C,D,E,G,H
171	Medi 1-Nadar	Morocco	2000	B,E*
171	Kaliningrad	USSR	1000	E,F*,H*
177	Oranienburg	Germany (E)	750	C,D,E,G,H
183	Saarlouis	Germany (W)	2000	C,D,E,G,H
189	Motala	Sweden	300	C,E*,H*
198	BBC Droitwich	UK	400	C,E,F,G,H
207	DLF Munich	Germany (W)	500	C,E,H*
207	Azilal	Morocco	800	E*
207	Kiev	Ukraine	500	F
216	Roumoules	Monaco	1400	C,D,E,G,H
216	Oslo	Norway	200	E
225	Konstantinow	Poland	2000	C,E,H
234	Junglinster	Luxembourg	2000	C,D,E,G,H
245	Kalundborg	Denmark	300	A,C,D,E,G,H
254	Tipaza	Algeria	1500	C,D,E,G,H
263	Burg (R.Volga)	Germany (E)	200	E,G,H
263	Moscow	USSR	2000	C,D
272	Topolna	Czechoslovakia	1500	C,E*,G,H*
281	Minsk	USSR	500	E*,F

Note: Entries marked \* were logged during darkness. All other entries were logged during daylight.

#### DXers:

A: Leo Barr, Sunderland.  
B: Cyril Kellam, Majorca.  
C: George Millmore, Wootton, 10W.  
D: Fred Pallant, Storrington.

E: Philip Rambaut, Macclesfield.  
F: Tim Shirley, Bristol.  
G: Phil Townsend, London.  
H: Neil Wheatley, Lytham St. Annes.

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## Local Radio DX Chart

Freq kHz	Station	ILR BBC	Power (kW)	DXer
585	R. Solway	B	2.00	G,J,L
603	Invicta Snd(Coast)	I	0.10	C,F,I,J,K,M
603	R. Gloucester	B	0.10	H,I,J,M
630	R. Bedfordshire	B	0.20	G,H,I,J,K,M
630	R. Cornwall	B	2.00	F,G
657	R. Clwyd	B	2.00	C,I,J,L,M
666	DevonAir R	I	0.34	B,C,F,M
666	R. York	B	0.80	C,I,J,L,M
729	BBC Essex	B	0.20	F,G,H,I,J,K,M
738	Hereford/Worcester	B	0.037	I,J,M
756	R. Cumbria	B	1.00	J,L
756	R. Shropshire	B	0.63	I,J,L,M
765	BBC Essex	B	0.50	F,I,J,K,M,N*
774	R. Kent	B	0.70	F,I,K,M
774	R. Leeds	B	0.50	J,L
774	Severn Sound	I	0.14	H,J
792	Chiltern R	I	0.27	F,H,I,J,K,M
801	R.Devon	B	2.00	F,G,H,I,J,M
828	2CR	I	0.27	B,F
828	R. WM	B	0.20	H,J
828	R. Aire	I	0.12	J
828	Chiltern R	I	0.20	B,I,J,K,M
837	R. Cumbria	B	1.50	J,L
837	R. Furness	B	1.00	L
837	R. Leicester	B	0.45	H,I,J,K,M
855	R. Devon	B	1.00	A
855	R. Lancashire	B	1.50	H,J,L
855	R. Norfolk	B	1.50	F,I,J,K,M
873	R. Norfolk	B	0.30	H,I,J,K,M
936	GWR (Brunel R.)	I	0.18	F,H,I,J,M
945	R.Trent (GEM-AM)	I	0.20	F,I,J,L,M
954	DevonAir R	I	0.32	F,J*
954	R. Wymern	I	0.16	H,I,J,M
990	Beacon R. (WABC)	I	0.09	J,M
990	R. Devon	B	1.00	B*,C,M
990	Hallam R	I	0.25	J,M
999	Red Rose R	I	0.80	J,L
999	R. Solent	B	1.00	C,F,I
999	R.Trent (GEM-AM)	I	0.25	J
1026	R. Cambridgeshire	B	0.50	C,J,K,M
1026	Downtown R	I	1.70	L
1026	R. Jersey	B	1.00	C,F,I
1035	R. Kent	B	0.50	F,I,K,M
1035	R. Sheffield	B	1.00	J
1107	R. Northampton	B	0.50	C,I,J,M
1116	R. Derby	B	1.20	J,L,M
1116	R. Guernsey	B	0.50	C,F,I,M
1152	BRMB (Xtra-AM)	I	3.00	A
1152	R. Broadland	I	0.83	B*,J,M
1152	LBC	I	23.50	F,I,K,M
1152	Piccadilly R	I	1.50	J,L
1161	R. Bedfordshire	B	0.10	J,M
1161	R. Sussex	B	1.00	F,I
1161	Viking Gold	I	0.35	J,M
1170	R. Orwell	I	0.28	M

band from a new location. During the evening he heard RTE-1 via Tullamore 567 (500kW), which he rated as SIO 433 at 2130.

## MW Local Radio DX

The key to success in this aspect of our hobby may lie in the use of a really good loop antenna, since the directional properties may then be used to separate stations which share the same frequency. **Darren Beasley** (Bridgwater) added two new ones to his growing list of DX: BBC Radio Devon via Plymouth 855 (1kW) and ILR BRMB via Langley Mill 1152 (3kW) by using a hexagon loop ahead of his Steepleton MBR7 portable. In Cambridge, **David Wratten** used a loop with his Philips D2999 portable to compile an interesting log for the chart.

Sometimes it is more a matter of luck however, as **Sheila Hughes** discovered while listening in Morden to her favourite cookery programme broadcast by BBC Radio Cambridge on 1026. During these programmes a station had often been heard in the background, which Sheila thought might be Radio Jersey, but a positive ident had never been heard. This time she was lucky, for as the presenter

paused for breath it coincided with Radio Jersey's ident!

Writing from Co.Down, **Eddie McKeown** says he uses the LM&S charts when searching for new stations. He was surprised to hear BBC Radio Bristol via Mangotsfield (5kW) when tuning to 1548kHz, as he had expected to hear ILR Radio Forth.

## Short Wave DX

As expected, solar flares have caused sudden ionospheric disturbances and higher than average levels of background noise during some days recently, but in general reception has been good, especially on the higher frequency bands where exceptionally strong signals have been evident from some areas of the world.

The 25MHz (11m) broadcasts from Radio RSA in Johannesburg, S. Africa 25.790 (Eng to Europe 1400-1556) have been reaching the UK just like a local. The SIO 444 noted at 1450 by John Evans in Shawforth is a typical rating. The broadcasts from the Voice of the UAE in Abu Dhabi 25.900 (Ar 0800-1600) have also been reaching the UK well, **John Parry** (Northwich) rated them as 45554 at 0650.

Considerable variations in signal strength are being observed on the

Freq kHz	Station	ILR BBC	Power (kW)	DXer
1170	Signal R	I	0.20	J,L
1170	TFM Radio (GNR)	I	0.32	J
1170	Ocean Sound	I	0.12	C,F,I
1242	Invicta Sound(Coast)	I	0.32	F,I,J,K,M
1251	Saxon R	I	0.76	C,F,I,J,M
1260	GWR (Brunel R.)	I	1.60	C,F,I
1260	Marcher Sound	I	0.64	J,L
1260	Leicester (GEM-AM)	I	0.29	J,M
1260	R. York	B	0.50	J
1278	Pennine R	I	0.43	F,J
1305	R. Hallam	I	0.15	J,M
1305	Red Dragon R	I	0.20	F,I
1323	R. Bristol	B	0.63	J,M
1323	Southern Sound	I	0.50	F,I,J,M
1332	Hereward R	I	0.60	C,J,M
1332	Wiltshire Sound	B	?	C,F,I,J
1359	Essex R	I	0.28	I,J,K,M
1359	Mercia Snd(Xtra-AM)	I	0.27	J,M
1359	R. Solent	B	0.85	F
1368	R. Lincolnshire	B	2.00	J,M
1368	R. Sussex	B	0.50	F,I
1431	Essex Radio	I	0.35	I,J,K,M
1431	Radio 210	I	0.14	C,F,G*,I,M
1449	R. Cambridgeshire	B	0.15	F,J,M
1458	R. Cumbria	B	0.50	J
1458	R. Devon	B	2.00	F
1458	GLR	B	50.00	B*,D*,G,I,K,M
1458	R. Newcastle	B	2.00	J
1458	GMR	B	5.00	J,L,M
1458	Radio WM	B	5.00	B*
1476	County Sound Gold	I	0.50	B*,C,F,I,J,M
1485	R. Humberide	B	1.00	J,M
1485	R. Merseyside	B	1.20	J,L
1485	R. Oxford	B	0.50	M
1485	R. Sussex	B	1.00	F,M
1503	R. Stoke-on-Trent	B	1.00	C,F,J,L,M
1521	R. Mercury	I	0.64	C,F,I,M
1521	R. Nottingham	B	0.50	J,M
1530	R. Essex	B	0.15	F,I,K,M
1530	Pennine R	I	0.74	J,L
1530	R. Wymern	I	0.52	J,M
1548	R. Bristol	B	5.00	E*,F
1548	Capital Gold	I	97.50	D*,F,I,J*,K,M
1548	R. City	I	4.40	L
1548	R. Cleveland	B	1.00	J
1548	R. Forth	I	2.20	J*
1548	R. Hallam	I	0.74	J
1557	R. Lancashire	B	0.25	J,L
1557	Chiltern R	I	0.76	M
1557	Ocean Sound	I	0.50	C,F,I,J*
1584	R. Nottingham	B	1.00	C,F,J,M
1584	R. Shropshire	B	0.50	J
1584	R. Tay	I	0.21	J*
1602	R. Kent	B	0.25	F,I,J,K,M

Note: Entries marked \* were logged during darkness. All other entries were logged during daylight.

broadcasts from Radio Moscow, USSR 25.780 (Eng to ? 0500-1300). Whilst monitoring them in Prenton, **Kenneth Reece** found they varied from just audible to 55555. The broadcasts from Radio Yugoslavia, Belgrade 25.795 (Eng 1200-1230) were rated as 35322 at 1200 by **Roy Patrick** in Derby.

## DXers:

- A: Francis Hearne, while in Bristol.
- B: Sheila Hughes, Morden.
- C: Cyril Kellam, while in Majorca.
- D: Eddie McKeown, Co.Down.
- E: George Millmore, Wootton 1.0.W.
- F: Tim Shirley, Bristol.
- G: Mark Thompson, Wakefield.
- H: Phil Townsend, London.

The reception of the remainder of the broadcasts in this band is generally poor in the UK as they are intended for other areas, but the reports on them from overseas listeners make interesting reading! **Dick Moon** (S.Africa) rated the transmissions from Radio DW Cologne, W.Germany 25.740 as 55454; BBC via Daventry, UK 25.750 as 55555; Radio Moscow, USSR 25.780 as 55555; RFI via Issoudun, France 25.820 as 55454; Radio Denmark, Copenhagen 25.850 as 34333; BRT Brussels, Belgium 26.050 as 55555. In Quebec, **Alan Roberts** noted poor conditions during 12 days of the month, but he has been receiving all of the broadcasts quite well. In addition to the previous, he heard RTBF Belgium 25.645; RNI Oslo, Norway 25.730; Radio For Peace Int, Costa Rica 25.945; also during June 15/16, VOA on 26.040, rated as 25312. While in Majorca, Cyril Kellam logged RTB 25.645, Radio DW 25.740, BBC 25.750 and UAE 25.900 as SIO 444 and RFI 25.820 as SIO 343. Surprisingly the broadcasts from Radio Norway 25.730 and Radio Denmark 25.850 were inaudible.

The reception of long distance transmissions in the 21MHz (13m) band has generally been good. During the day there are a number of direct broadcasts to Europe and most of them travel over considerable distances to reach us. Those noted stemmed from Radio Japan via Yamata 21.500 (Eng, Jap 0700-0900), rated as 34443 at 0706 by **Kenneth Reece** while on holiday in Borth, Dyfed; Radio Japan via Moyabi, Gabon 21.690 (Eng, Jap 0700-0830), heard at 0708 by **Andy Cadier** in Folkestone; UAE Radio Dubai 21.605 (Ar, Eng 0615-1645) 45554 at 0712 by **John Parry**; Voice of Israel, Jerusalem 21.760 (Eng 1000-1030) 45444 at 1000 by **David Wratten**; Radio Pakistan, Islamabad 21.575 (Eng 1105-1120) 54444 at 1115 by **Chris Shorten** in Norwich; WCSN Scotts Corner, Maine



Fig. 1: Iceland QSL from Tim Shirley

# SEEN & HEARD

21.780 (Eng, Ger 1400-1600) SIO 544 at 1432 by **Alan Smith** in Northampton; WHRI South Bend, USA 21.840 (Eng 1500-1700) SIO 444 at 1505 by Philip Rambaut; Radio RSA Johannesburg, S.Africa 21.590 (Eng 1400-1556) SIO 434 at 1531 by **Ian Bond** (Wirral); Radio HCJB Quito, Ecuador 21.470 (Cz, Ger, Eng, Sw, Norw, Dan, Fr, Sp 1800-2230) 34222 at 1900 by Sheila Hughes; WCSN Scotts Corner, Maine 21.640 (Eng 1800-2000) 35333 at 1900 by Roy Patrick; RCI Montreal, Canada 21.675 (Eng 1800-2100), noted as "very clear" at 2030 by **Jim Cash** in Swanwick; Radio For Peace Int., Costa Rica 21.565 (Eng 1600-0000) 25233 at 2125 by **John Nash** in Brighton.

During the day there are many broadcasts in a variety of languages to other areas, some of which may be heard in the UK. Quite often Radio Australia's transmissions to the S.Pacific area via Shepparton 21.740 (Eng 2200-0730) have been audible in the UK. Listening at 0545, **David Edwardson** (Wallsend) rated them as 22442. In Bishops Stortford, **John Sadler** picked up their test transmission on 21.525 at 0800. Some of the more frequently heard broadcasts to other areas stem from Radio Norway Int., Oslo 21.705 (Norw, Eng\* to E.Australia, Far East 1000-1200 \*Sun Only), noted as "fair" at 1100 by Darren Beasley; Radio Sweden via Horby 21.610 (Eng to Australia, New Zealand 1400-1430) 54555 at 1400 by **Ken Whayman** in Bexleyheath; Radio Pakistan, Islamabad 21.740 (Eng to Middle East 1600-1630) SIO 454 at 1600 by **Kenneth Buck** in Edinburgh; WSHB Cypress Creek, USA 21.640 (Eng to Alaska, Greenland 2000-2200) 34333 at 2147 by **Leo Barr** in Sunderland.

Good long distance reception has also been noted in the 17MHz (16m) band. Radio New Zealand's broadcasts to Pacific areas from Wellington 17.705 (Eng 2345-0145; 0145-0330\*; 0330-0730; \*Sat/Sun only) have been reaching the UK during some mornings! Listening at 0500, Chris Shorten logged them as 33333. Some of the broadcasts from Radio Australia have also been received here during the early morning. Their transmission to S.Asia via Carnarvon 17.715 (Eng 0100-0915) was rated as SIO 433 by Alan Smith at 0550. Their station in Darwin beams to E.Asia on 17.750 (Eng, Chin, Fr 0100-0800) and David Edwardson rated this transmission as 34443 at 0502. Listeners in the C.Pacific area and W.USA are served via Shepparton on 17.795 (Eng 2200-0800), which Kenneth Reece logged as 34323 at 0411 while in Borth.

Broadcasts from a number of distant places to other areas were also logged in the UK: Radio Japan via Yamata 17.765 (Eng, Jap to Asia, Pacific, USA 0500-0700), noted as 44444 at 0530 by Sheila Hughes; BBC via Mahe, Seychelles 17.885 (Eng to W, C and S.Africa 0500-0630) 23332 at 0533 by Kenneth Reece in Prenton; Africa No.1., Gabon 17.630 Fr to W.Africa 0800-1600), heard at 1250 by Andy Cadier; WSHB Cypress Creek, USA 17.555 (Eng to Cent.USA 1400-1600) 43434 at 1600 by **Bill Griffith** in London; Radio Cairo via Abu Zaabal, Egypt 17.670 (Ar to N.Africa 1300-1900) SIO 454 at 1702 by Kenneth

## Tropical Band Chart

Freq	Station	Country	UTC	DXer
2.560	Xinjiang	China	2330	K
3.200	TWR	Swaziland	0400	M
3.215	R.Orange	S.Africa	0430	K
3.230	ELWA Monrovia	Liberia	2055	G,H
3.255	BBC via Maseru	Lesotho	1840	K
3.270	SWABC 1, Namibia	S.W.Africa	2100	H,M
3.320	R.Orion	S.Africa	0100	M
3.325	FRCN Lagos	Nigeria	2055	H
3.330	R.Kigali	Rwanda	2050	E,G
3.365	GBC Radio 2	Ghana	2100	D,G,H,J,M
3.905	AIR Delhi	India	0030	K
3.909	R.Beijing	China	0600	K
3.915	BBC Kranji	Singapore	2000	M
3.955	BBC Daventry	England	0602	J*
3.960	R.L. Munich	W.Germany	0327	J
3.965	RFI Paris	France	0100	F,J
3.980	VOA Munich	W.Germany	0337	J
3.985	R.Beijing, China	via SRI Berne	2115	B,D,G,L
3.995	OW Cologne (Julich)	W.Germany	0338	J
4.080	R.Ulan Bator	Mongolia	2300	M
4.220	PBS Xinjiang	China	2225	C
4.500	Xinjiang	China	2225	C,M
4.735	Xinjiang	China	2225	C
4.755	Caracol Neiva	Colombia	0425	J
4.780	ELWA Monrovia	Liberia	2030	C,G,H,M
4.765	R.Moscow	via Cuba	0535	J
4.770	FRCN Kaduna	Nigeria	2105	H,I,M
4.785	RTM Bamako	Mali	2110	H
4.785	R.Baku	USSR	1915	M
4.790	TWR Manzini	Swaziland	1900	M
4.795	R.Douala	Cameroon	2030	G,H
4.800	LNBS Lesotho	Maseru	2005	H,I
4.805	R.Nac.Amazonas	Brazil	0050	D
4.815	R.diff TV Burkina	Duagadougou	2030	H,I,J
4.820	E.Prov.Huila	Angola	2257	J
4.820	R.Botswana	Botswana	2010	G,M
4.825	R.Ashkhabad	USSR	2030	H
4.830	Gaborone	Botswana	2100	H
4.830	Africa No.1	Gabon	2050	E,H,J*,M
4.830	R.Tachira	Venezuela	0104	C,J,M
4.835	RTM Bamako	Mali	2020	E,H,I,M
4.845	R.Nacional, Manus	Brazil	0543	J
4.845	RTM Kuala Lumpur	Malaysia	2104	G
4.845	ORTM Nouakchott	Mauritania	2010	H,M
4.850	R.Yaounde	Cameroon	2000	E,G,H,J*,M
4.850	R.Columbia Pt	Costa Rica	2309	J

### DXers:

A: Andy Cadier, Folkestone.  
B: Jim Cash, Swanwick.  
C: David Edwardson, Wallsend.  
D: Bill Griffith, London.

E: Sheila Hughes, Morden.  
F: Eddie McKeown, Co.Down.  
G: John Nash, Brighton.  
H: Fred Pallant, Storrington.  
I: Richard Radford-Reynolds, Guildford.

J: Kenneth Reece, Prenton  
J\*: Kenneth Reece, Borth, Dyfed.  
K: Tim Shirley, Bristol.  
L: Chris Shorten, Norwich.  
M: Jim Willett, Grimby.

Buck; Radio Oman via Thumrait 17.735 (Ar to N.Africa, Middle East 1700-2130) 33333 at 2120 by John Nash; VOA via Tinang, Philippines 17.735 (Eng 2200-0100) 44444 at 2207 by **Richard Radford-Reynolds** in Guildford; Voice of Turkey, Ankara 17.760 (Eng, Tur to SE. Asia, Australia 2300-0450) 24333 at 0320 by David Wratten.

There are many broadcasts to Europe in this band, but few were mentioned in the reports. Those noted stemmed from RBI Berlin, GDR 17.775 (Ger, Eng, Fr, Ar 1130-1500), rated as SIO 222 at 1300 by John Sadler; Voice of Israel, Jerusalem 17.590 (Eng 1900-1930) 55444 at 1900 by Ken Whayman; also on 17.575 (Eng 2130-2200) SIO 433 at 2135 by **Alf Gray** in Birmingham; Radio HCJB Quito, Ecuador 17.790 (Cz, Ger, Sw, Norw, Dan, Fr, Eng, Sp 1800-2230) 34434 at 2150 by Leo Barr.

Long distance paths have often been open in the 15MHz (19m) band and a number of interesting broadcasts have been logged in the UK. During most days the broadcasts from Radio Australia have been reaching the UK at remarkable strength despite the fact that they are beamed to other areas. Their transmissions to C.Asia via Darwin 15.170 (Chin 2200-0000) were rated as 55555 at 2200 by Richard Radford-Reynolds! Listening at 1700, Tim Shirley picked up their broadcast to

SE. Asia on 15.245 (Eng 1700-1830) and noted it as SIO 444. While in Borth, Kenneth Reece logged their transmission to the C.Pacific area via Shepparton 15.160 (Eng 2100-0700) as 23422 at 0545. Their broadcast to E.Asia via Carnarvon 15.395 (Eng, Chin 0100-0900) was rated as SIO 212 at 0808 by Philip Rambaut. While in Majorca, Cyril Kellam listened to their broadcast to the C.Pacific area via Shepparton 15.240 (Eng 2100-0730) at 0615 and noted SIO 444 in his log.

The latest reports from listeners in the UK included broadcasts to other areas: Radio Kuwait, Sulaibiyah 15.345 (Ar, Eng to SE.Asia, Australia 0200-0800), noted as 44444 at 0500 by Sheila Hughes; Radio Bucharest,

Romania 15.340 (Eng to Africa 0530-0600), rated as "fair" at 0536 by Jim Cash; Voice of Malaysia, Kuala Lumpur 15.295 (Eng, Mal to SE.Asia, Australia 0555-1025) 35543 at 0822 by David Edwardson; Radio Finland via Pori 15.400 (Eng, Fin, Sw to USA 1100-1400) 32333 at 1352 by Leo Barr; Radio DW via Wertachtal, W.Germany 15.595 (Ur, Hi, Eng to S.Asia 1430-1650) 22422 at 1640 by Ken Whayman; VOA via Monrovia, Liberia 15.600 (Eng 1600-2200) 34553 at 2010 by John Parry; KUSW Salt Lake City, USA 15.650 (Eng to Alaska, Greenland 1600-2200) 34443 at 2126 by John Nash; Radio Kuwait, Sulaibiyah 15.495 (Ar to N.Africa 0200-2300) 55333 at 2233 by Max Wustrau;

Abbrv	Language	Abbrv	Language
Alb	Albanian	It	Italian
Ar	Arabic	Jap	Japanese
Bul	Bulgarian	Norw	Norwegian
Chin	Chinese	Poi	Polish
Cz	Czechoslovakian	Port	Portuguese
Dan	Danish	Rom	Romanian
Du	Dutch	Russ	Russian
Eng	English	Si	Sinhala
Far	Farsi	Sp	Spanish
Fin	Finnish	Sw	Swedish
Fr	French	Tur	Turkish
Ger	German	Uk	Ukrainian
Gr	Greek	Ur	Urdu
Ha	Hausa	Viet	Vietnamese
Hi	Hindi	Yu	Yugoslavian
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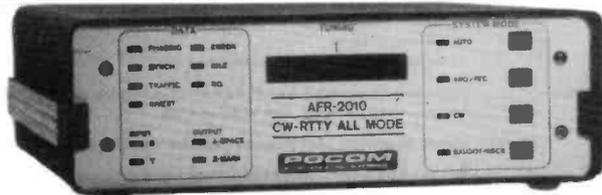
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# SEEN & HEARD

## Medium Wave DX Chart

Freq kHz	Station	Country	Power (kW)	DXer
531	Ain Beida	Algeria	600	E*,I*
531	Leipzig	Germany (E)	100	J*
540	BRT-2 Wavre	Belgium	150/50	E*,F,H
540	Soit	Hungary	2000	F*
540	Sidi Bennour	Morocco	600	I*
549	DLF Beyreuth	Germany (W)	200	E*,H
567	RTE-1 Tullamore	S.Ireland	500	B,C*,E*,H
576	Stuttgart	Germany (W)	300	E*
585	FIP Paris	France	8	E*
585	RNE-1 Madrid	Spain	200	J*
594	HRF Frankfurt	Germany (W)	400	E*,F,J*
603	BBC-R4 Newcastle	UK	2	E*
612	RTE-2 Athlone	S.Ireland	100	E*,J*
621	RTBF-1 Wavre	Belgium	300	E*,H
621	RNE-1 Santa Cruz	Tenerife	100	J*
630	Vigra	Norway	100	F*
639	La Coruna	Spain	100	E*
648	BBC Orfordness	UK	500	E*
657	Napoli	Italy	120	J*
657	BBC-Wales Wrexham	UK	2	E*
666	Bodenseesender	Germany (W)	300/180	J*
675	Marseille	France	600	J*
675	Hilversum-3 Lopic	Holland	120	E*,H
711	Rennes 1	France	300	E*
711	Heidelberg	Germany (W)	5	J*
720	BBC-R4 Lots Rd London	UK	0.5	E*,H
729	Oviedo	Spain	50	J*
738	Paris	France	4	E*
796	Poznan	Poland	300	F
747	Hilversum-2 Flevo	Holland	400	E*,H,J*
756	BBC-R4 Redruth	UK	2	E*
783	Burg	Germany (E)	1000	E*
810	BBC-Scot.Westerglen	UK	100	E*
837	Las Palmas	Gran Canaria	10	E*
846	Rome	Italy	540	E*
855	Murcia	Spain	125	E*
864	Paris	France	300	E*
873	AFN Frankfurt	Germany (W)	150	B*,D*
882	BBC-Wales Washford	UK	70	E*,H
891	Algiers	Algeria	600/300	E*,I*

Freq kHz	Station	Country	Power (kW)	DXer
927	BRT-1 Wolvertem	Belgium	300	E*,H
972	NDR/WDR Hamburg	Germany (W)	300	E*
981	Alger	Algeria	600/300	I*
1008	Hilversum-5 Flevo	Holland	400	B,E*,H
1017	Wolfsheim	Germany (W)	600	E*
1035	Prog.3 Lisbon	Portugal	120	I*
1071	Brest	France	20	E*
1107	AFN via Munich	Germany (W)	40	B
1125	La Louviere	Belgium	20	E*
1125	Zagreb	Yugoslavia	200	E*
1143	Kaliningrad	USSR	150	B*
1179	Solvesborg	Sweden	600	B*
1188	Kuurne	Belgium	5	E*
1197	BBC-R3 Bournemouth	UK	0.5	E*
1215	BBC-R3 Moorside Edge	UK	100	E*
1224	Vidin	Bulgaria	500	E*
1233	Liege	Belgium	5	E*
1269	Neuminsten	Germany (W)	600	B*
1278	RTE-2 Dublin/Cork	S.Ireland	10	B*
1287	Litomyšl/Liblice	Czechoslovakia	300/200	B*
1296	BBC Orfordness	UK	500	E*,H
1314	Kvitsoy	Norway	1200	E*
1341	BBC-Ulster Lisnagarvey	N.Ireland	100	A*,E*
1350	Nancy/Nice	France	100	E*
1359	RBI Berlin	Germany (E)	250/100	B
1368	Manx Radio, Foxdale	I.O.M 20	D*,G	
1386	Kaunas	USSR	1000	B*,E*
1395	R.Tirana via Lushnje	Albania	1000	B*,D*,E*
1422	Saarbrücken	Germany (W)	1200/600	E*
1431	Odessa	USSR	400	B*
1440	Marnach	Luxembourg	1200	B*,E*
1467	TWR Monte Carlo	Monaco	1000/400	B*,I*
1503	Stargard	Poland	300	B*
1503	Pamplona	Spain	2	J*
1512	BRT Wolvertem	Belgium	600	B*,E*,H
1512	Jeddah	Saudi Arabia	1000	G*
1539	DLF Mainflingen	Germany (W)	700	J*
1584	Bautzen	Germany (E)	1	J*
1593	Langenberg	Germany (W)	400/800	J*
1602	Bolzano	Italy	2	J*

Note: Entries marked \* were logged during darkness. All other entries were logged during daylight.

Radio HCJB Quito, Ecuador 15.155 (Fr, Eng to USA 0000-0300) 43343 at 0230 by Chris Shorten.

Some of the many broadcasts to Europe were mentioned too: UAE Radio Dubai 15.435 (Ar, Eng 0615-1645), noted as "good" at 1636 by Darren Beasley; RNB Brasilia, Brazil 15.265 (Eng, Ger 1800-1950) SIO 433 at 1930 by Alan Smith; WWCR Nashville, USA 15.690 (Eng 1700-0200) SIO 555 at 2020 by John Coulter in Winchester; Voice of Vietnam, Hanoi 15.010 (Eng, Russ, Viet, Fr, Sp 1600-2130) SIO 444 at 2030 by Alf Gray; UAE Radio Dubai 15.300 (Ar, Eng 1700-2100) SIO 444 at 2030 by Kenneth Buck; WCSN Scotts Corner, Maine 15.390 (Eng 2000-2200), heard at 2100 by John Sadler; Radio Korea, Seoul 15.575 (Ar, It, Eng, Sp, Port, Ger 1645-2300) 54434 at 2130 by Derek Carter in Cambridge; RAE Buenos Aires, Argentina 15.345 (Ar, Ger, Fr, It, Sp, Eng 1700-2300) 32332 at 2205 by David Wratten; WINB Red Lion, USA 15.185 (Eng 2003-2245) 35333 at 2236 by Roy Patrick.

There is plenty to interest the listener in the 13MHz (22m) band including WSHB Cypress Creek, USA 13.760 (relays WCSN in Eng to C.America 0200-0600), rated as 44444 at 0331 by Kenneth Reece; Radio Jordan, Amman 13.655 (Eng to Europe, USA 0530-1315), rated as SIO 444 at 1045 by Philip Rambaut; SRI via Schwarzenburg, Switzerland 13.635 (Eng, Fr, Ger, It to E.Asia 1045-1300) 54444 at 1100 by Ken Whayman; Radio Austria Int. via Moosbrunn 13.730 (Ger, Fr, Eng, Sp to Europe 0400-1700) SIO 455 at 1440 by Kenneth Buck; KSDA Guam, Pacific 13.720 (Chin to C.Asia 2000-2100) SIO 433 at 2010 by Alan Smith; Radio

Nederlands via Flevo 13.700 (Eng to W.Africa 2030-2125) 43333 at 2100 by Chris Shorten; Radio Baghdad, Iraq 13.660 (Fr, Ger, Eng to Europe 1800-2200) 55545 at 2145 by John Nash; WHRI South Bend, USA 13.760 (Eng to Alaska, Greenland, W.Europe 1700-0000) SIO 222 at 2201 by Julian Wood in Buckie; Voice of the UAE Abu Dhabi 13.605 (Eng 2200-0000) 45444 at 2230 by David Wratten; WRNO New Orleans, USA 13.720 (Eng to USA, C.America, Europe 2100-0000) 32232 at 2253 by Leo Barr.

The 11MHz (25m) band was chosen by Radio Australia as being one of the most suitable for direct broadcasts to Europe and the latest reports indicate generally good reception here. Listening at 0600, Chris Shorten rated their transmission via Shepparton 11.910 (Eng to S.Pacific, Europe 0400-0630) as 44444.

This band is popular with many broadcasters, so there is plenty to interest the listener! Some of the transmissions to Europe stem from Radio Netherlands via Flevo 11.935 (Du 0700-0825), rated as 55555 at 0713 by David Edwardson; Radio Portugal, Lisbon 11.800 (Port 0600-1100) 54555 at 0810 by Bill Griffith; Voice of Greece via Kavala 11.645 (Gr, Eng 1200-1250) 45344 at 1237 by John Nash; Radio Cairo, Egypt 12.050 (Ar 1530-2350) SIO 454 at 1650 by Kenneth Buck; UAE Radio Dubai 11.790 (Eng, Ar 1630-?), heard at 1700 by John Sadler; Radio Kuwait, Sulaibiyah 11.665 (Eng 1800-2100) SIO 344 at 2045 by Tim Swain in Wilmslow; Radio Japan via Moyabi, Gabon 11.800 (Eng, Jap 2100-0000) 33333 at 2100 by Eddie McKeown; Voice of Israel, Jerusalem 11.605 (Eng 2130-2200) 54444 at 2135 by David Wratten; AIR via Aligarh,

India 11.620 (Eng 1845-2230), heard at 2215 by Francis Hearne in Bristol; Radio Beijing, China 11.500 (Eng 2000-2215) 32222 at 2200 by Derek Carter.

Many of the broadcasts to other areas may be heard during the day or at night. They include KVOH Rancho Simi, California 11.960 (Eng to C.America 0400-0800), noted as 2433 at 0440 by Kenneth Reece while in Borth; KLNS Anchor Point, Alaska 11.715 (Eng to Asia 0800-0900) 22222 at 0800 by Sheila Hughes; Radio Tirana Lushnje, Albania 11.855 (Eng to ?, 1030-1057) SIO 544 at 1046 by Philip Rambaut; Radio Austria Int., Vienna 11.780 (Ger, Eng to SE. Asia 1400-1700) SIO 434 at 1442 by Ian Bond; VOA via Tinang, Philippines 11.965 (Chin to C.Asia 1100-1600) SIO 322 at 1520 by Alan Smith; SLBC Colombo, Sri Lanka 11.800 (Si, Eng, Ur to Middle East 1645-?) 33233 at 1910 by Leo Barr; Radio Finland via Pori 11.945 (? to Far East, Japan 2000-2230) SIO 433 at 2100 by Alf Gray.

A number of broadcasters use the 9MHz (31m) band to reach listeners in Europe. They include WHRI South Bend, USA 9.620 (0600-0800), rated as 32332 at 0600 by Sheila Hughes; Radio Australia via Shepparton 9.655 (Eng 0700-1030) 34333 at 0950 by Max Wustrau; TWR Monte Carlo, Monaco 9.480 (Eng 0830-1130) 55555 at 0930 by Bill Griffith; Radio Jordan, Amman 9.560 (Eng 1420-2200), heard nightly by Roy Patrick; RBI Berlin, GDR 9.730 (Ger, Fr, Eng, It, Sp 1445-2245), logged at 1800 by John Sadler; Voice of Greece via Kavala 9.425 (Gr 1700-2000) SIO 455 at 1825 by Kenneth Buck; VOIRI Tehran, Iran 9.022 (Russ, Far, Tur, Ger, Fr, Eng, Sp, Ar 1530-2230) 44444 at 1930 by David Wratten; Radio Budapest, Hungary

### DXers:

- A: Francis Hearne, while in Bristol.
- B: Sheila Hughes, Morden.
- C: Cyril Kellam, while in Majorca.
- D: Eddie McKeown, Co.Down.
- E: George Millmore, Wootton I.O.W.
- F: Tim Shirley, Bristol.
- G: Mark Thompson, Wakefield.
- H: Phil Townsend, London.

9.835 (Hung, Eng, Ger 1800-2200) 54554 at 2000 by Ken Whayman; Radio Peace and Progress, USSR 9.820 (Eng, Ger 2100-2159) SIO 222 at 2100 by Julian Wood; Port Radio Beijing, China 9.820 (Eng 2000-2125) 31443 at 2124 by Richard Radford-Reynolds; Radio Tirana via Lushnje, Albania 9.480 (Fr, Russ, Eng, 1800-2300) 55455 at 2130 by Eddie McKeown; Voice of Turkey, Ankara 9.825 Ger, Eng, Fr 2000-2300) 33323 at 2210 by Leo Barr.

Some of the broadcasts to other areas can also be heard in the UK. Those noted stemmed from the BBC via Antigua, W.Indies 9.510 (Eng to C.America, USA 0430-0545) 34433 at 0516 by Kenneth Reece; Radio Polonia, Warsaw 9.525 (Eng, Sp, Fr, Ar to W.Africa 1230-1455) 43443 at 1230 by John Nash; Radio Australia via Shepparton 9.580 (Eng to S.Pacific 0800-2030) 43333 at 1800 by Chris Shorten; SRI via Schwarzenburg, Switzerland 9.885 (Ar, Eng, Ger, Fr to Africa 1715-2000), heard at 1830 by Alf Gray; via Shepparton 9.620 (Eng to E.Asia, W.Pacific 2000-2130) SIO 534 at 2000 by Alan Smith; Radio Yugoslavia, Belgrade 9.620 (Eng to S.Africa 2100-2145), heard at 2115 by Francis Hearne; BBC via Kranji, Singapore 9.570 (Eng to Australia, SE. Asia 2000-0030) SIO 111 at 2145 by Philip Rambaut.

Throughout the day and night the

# SEEN & HEARD

## Equipment Used

Leo Barr: Matsui MR-4099 + internal antenna.  
 Darren Beasley: Steepletone MBR-7 + 20m random wire.  
 Kenneth Buck: Home-built superhet + random wire.  
 Andy Cadier: Saisho SW-500 portable + 25m random wire.  
 Derek Carter: Matsui MR-4099 + random wire.  
 Jim Cash: Sony ICF-2001D.  
 David Edwardson: Trio R-600 + 22m trap dipole  
 John Evans: Racal RA17L + 40m random wire.  
 Bill Griffith: Matsui MR-4099 + Sony AN-1 active antenna.  
 Sheila Hughes: Panasonic DR48 + 15m inverted L.  
 Cyril Kellam: Sony ICF-7600DS + built-in whip.  
 Eddie McKeown: Tatung TMR-7602 portable.  
 George Millmore: Tatung TMR-7602 portable.  
 John Nash: Kenwood R-5000 + random wire.  
 Fred Pallant: Trio R-2000 + random wire in loft.  
 Roy Patrick: Lowe HF-125 + 20m wire.  
 Richard Radford-Reynolds; Sangean ATS-803A + 15m vertical.  
 Philip Rambaut: Int. Marine Radio R-700M + random wire.  
 Kenneth Reece: Trio R-2000 + random wire while in Borth.  
 John Sadler: DX-100L + s.w. loop.  
 Tim Shirley: Trio R-600 + random wire.  
 Alan Smith: Matsui MR-4099.  
 Tim Swain: Ex RAF R-1155B + 40m random wire.  
 Darran Taplin: Marconi Marine "Seaguide" + loop while in Chessington.  
 Mark Thompson: JRC NRD-525 + 1m loop or 20m random wire.  
 Phil Townsend: Panasonic RF-1680L portable.  
 Ken Whayman: Panasonic RF-2200 + 10m sloper.  
 Neil Wheatley: Sangean ATS-803 + built-in antennas.  
 Jim Willett: Trio 9R-59DS + V dipole.  
 Julian Wood: Trio R-2000 + random wire.  
 David Wratten: Trio R-2000 + 30m random wire.  
 Max Wustrau: Datong PC-1 converter + FDK-750 2m transceiver.

congested **7MHz (41m)** band carries many broadcasts to Europe. They include WYFR via Okeechobee, Florida 7.355 (Russ, Ger, Eng, Sp 0400-0730) 44444 at 0620 by Sheila Hughes; Radio Prague, Czechoslovakia 7.345 (Eng, Ar, Fr, Sp, Port 1500-2125) 45544 at 1530 by John Nash; RBL via Konigswusterhausen, GDR 7.185 (Fr, Ger, Sw, Dan, Port 1445-2245) 55444 at 1535 by Max Wustrau; Radio Australia via Carnarvon 7.205 (Eng 1430-2030) SIO 434 at 1745 by Alan Smith; Vatican Radio, Rome 7.250 (It, Sp, Port, Fr, Eng, Ger, Pol, Rom, Bul, Alb, Yu, Hung, Cz, Ar 1330-2200) 34433 at 1840 by Leo Barr; RCI Montreal via Daventry, UK 7.235 (Fr,

Eng, Ger, Hung, Cz, Uk 1700-2030) 55555 at 1852 by David Edwardson; Radio Peace and Progress, Moscow 7.340 (Eng, Ger 2100-2159) SIO 555 at 2125 by Tim Swain; Radio Polonia, Warsaw 7.125 (Ger, Fr, Eng 2100-2355), heard at 2245 by Francis Hearne; WHRI South Bend, USA 7.365 (Eng 0000-0600) 54354 at 0120 by Eddie McKeown.

While monitoring the band, Kenneth Reece logged the BBC via Ascension Island 7.105 (Eng, Fr, Hato C. Africa 0400-0600) as 45434 at 0530; Bill Griffith picked up the Voice of

**THE NEXT THREE DEADLINES ARE  
 SEPTEMBER 18, OCTOBER 17 & NOVEMBER 20**

## Transatlantic DX Chart

Freq kHz	Station	Location	Time (UTC)	DXer
<b>USA</b>				
660	WFAN	New York, NY	0200	B
890	WLS	Chicago, IL	0400	B
1010	WINS	New York, NY	0300	B
<b>Canada</b>				
680	CIYQ	Grandfalls, NF	0157	C
930	CJYQ	St. John's, NF	0130	B, C
<b>South America</b>				
850	R.Carve	Uruguay	0510	A
950	R.Vision	Caracas, Venezuela	0523	A
1130	R.Nacional	Rio, Brazil	0518	A
1220	R.Globo	Rio, Brazil	0130	C
1260	R.Mulher	Sao Paulo, Brazil	0540	A

Nigeria, Lagos 7.255 (Eng, Fr, Ha to Africa 0500-2200) 44444 at 1800; Derek Carter rated Radio Vilnius, Lithuania 7.400 (Eng to USA 2300-2330) as 43333 at 2300; Ken Whayman noted Radio Kiev, Ukraine 7.400 (Eng 2330-2359) 54544 at 2330.

Some interesting broadcasts were also heard in the **6MHz (49m)** band. They stemmed from the BBC via Ascension Island 6.005 (Eng to Africa 0300-0700), rated as 22432 at 0500 by Kenneth Reece while in Borth; BBC via Daventry, UK 5.975 (Eng to Europe, N. Africa 1030-1500) SIO 444 at 1040 by Cyril Kellam while in Majorca; Radio Netherlands via Flevo 5.955 (Du, Eng to Europe 1030-1225) 55555 at 1130 by Ken Whayman; RBL Berlin GDR 6.115 (Ger, Eng, Fr, It, Sw, Dan to Europe 0530-2000) 35343 at 1315 by John Nash; BRT via Wavre, Belgium 5.910 (Du, Eng, Fr, Ger, Sp to Europe 1700-2130) 44444 at 1730 by Sheila Hughes; Radio Australia via Shepparton 6.080 (Eng to W. Pacific 0800-2000) 42232 at 1800 by Chris Shorten; Radio Luxembourg via Junglinster 6.090 (Ger, Eng to Europe 0600-0300) 55555 at 1900 by Bill

## DXers:

A: Dick Moon, George, Rep. S. Africa.  
 B: Tim Shirley, Bristol.  
 C: Mark Thompson, Wakefield.

Griffith; VOIRI Tehran, Iran 6.030 (Far, Sp to S. Europe, C. America 1900-0230) 42442 at 1937 by David Wratten; King of Hope, Lebanon 6.280 (Russ, Uk, Fr, Eng to Middle East SE. Europe 1430-2300) SIO 333 at 2030 by John Evans; Radio Prague, Czechoslovakia 6.055 (Ger, It, Fr, Cz, Eng to Europe 1700-0057), heard at 2230 by Francis Hearne; BBC via Antigua, W. Indies 5.975 (Eng to C. America 0430-0730) SIO 544 at 0525 by Alan Smith.

## Station Addresses

Radio Atlantic (CFNB) Ltd, 125 Hanwell Road, PO Box 217, Fredericton, N.B., E3B 4Z4, Canada.  
 BBC Essex, PO Box 765, 198 New London Road, Chelmsford CM2 9AB.  
 Radio Beijing, Foreign Language Department, 2 Fuxingmenwai Street, Beijing, P. R. China.  
 Adventist World Radio (Europe), C.P. 2590, P-1114 Lisboa, Portugal.  
 Radio Station "Peace and Progress", Moscow, USSR.  
 Radio Tanzania, Ministry of Information, PO Box 9191, Dar es Salaam, Tanzania.

## A RECEIVING STATION FOR THE FAMILY MAN

30

spot for a Great Circle map or map of the world. The use of lighting such as a fluorescent fitting is not advised as it can cause a great deal of QRM, so it is best to use ordinary incandescent lighting. If your budget can run to it, then the use of an Anglepoise lamp will be one of the best purchases you can make. It is effective as it can be swivelled to any point where the light is needed. Most types are used with an ordinary domestic 60W pearl lamp. You will need a light that will not cause sharp shadows or glare.

If heating is necessary, then we must use some safe form of heating such as an electric convector or fan heater. It is worth bearing in mind that any form of thermostatically controlled heating is likely to cause QRM, as no doubt you will have noticed if your station is located near a central heating boiler. The ultimate form of heating is if you can locate your station near a central heating radiator.

Those people who spend some of their time in the constructional side of the hobby might consider, if space allows, a bench extension fitted with a few extra

sockets to accommodate soldering irons, power supplies and other test equipment. A small portable vice is also a worthwhile investment.

### Safety's Sake

I must stress that, for safety's sake, all electrical wiring must conform to the latest IEE regulation and that it is a good idea to fit a master isolator switch and to use suitable circuit breakers; make sure the rest of the family know where these are located. When fitting any wiring or accessories, never be afraid to seek proper professional advice. Remember what the electrician said to the apprentice when asked if people get electrocuted often he replied, "No, only once".

Once you have established your receiving station to everyone's satisfaction, hopefully you will now have your own haven away from the noise and hubbub of the family; somewhere where you can relax and a place where you can listen at any time of the day or night. Remember when you are putting forward your case to your partner, do stress the

fact that all your gear can be shut away quickly and tidily and they will always know where you are, and hopefully keeping out of mischief! The very fact that you can listen at any time with the minimum of fuss and effort is, in itself, an incentive to listen that you have never had before. Having some thoughts about the idea of setting up a comfortable, albeit, small area for your radio activities will add to the enjoyment of your hobby and will pay dividends in the future.

### Enjoyment

In the four years since I have had my own "radio room", my enjoyment of the hobby has increased many fold. I have been able to diversify my interests into small construction work, medium wave DXing, and the room has been sufficiently quiet for me to even use a crystal receiver on the short waves. I've also found enough space to house my growing collection of vintage wireless books and magazines. So get your pencil and paper out and start thinking about how to build the "receiving station for the family man" □

# CLANDESTINE RADIO

There is nothing new under the sun and pirate radio stations are no exception, as this tale shows.

I grew up in a pleasant north Belfast suburb during the Traditional Jazz Revival of the Fifties. Almost without exception my friends were keen on jazz. Most also played cricket or rugby or went sailing but jazz was their *raison d'être*. Unlikely as it might seem this love of jazz led a few of them to take an interest in short wave radio.

One of the bunch had been a keen radio constructor for years. He spent his pocket money in Junkie McDonald's Government Surplus shop in Winetavern Street and relied on his trumpet playing to finance the necessary intake of Bulmers and the pursuit of young ladies in tennis shorts. His father, believing (mistakenly) that it would keep him out of mischief, provided an excellent garden shed where he could fiddle with his wireless.

## Wet Evenings

On wet evenings the rest of the gang started dropping in to his workshop and after a few months it became a well furnished and comfortable meeting place. Construction projects were confined to the bench and half stripped radios neatly stacked beneath it. The light of a bare bulb was softened with lampshade, fashioned from a grapefruit tin. A set of real leather car seats appeared from somewhere and these enabled the boys, when the occasion arose, to support in comfort the superimposed load of student nurses. Bear mats and ashtrays liberated from taverns far and near decorated the walls and a fine old all-wave radiogram, displaced from someone's living room by a new television set, took a wrong turning on its way to a jumble sale and found itself a snug corner. To us the dull yellowish glow of its tuning dial was far more homely than a real coal fire.

## Leather Seats

What with the leather seats, jazz records, and the warmth of a Valor *Perfection* paraffin stove, life was pretty good, however, lest it be thought that radio took a back seat, our intrepid constructor built several fine short wave receivers and in no time at all he had the old radiogram sounding like new. News broadcasts from the far corners of the

globe enabled us to give the impression of some interest in current affairs, and when the space age dawned we were there, listening direct to the "bleep-bleep" of the first artificial satellite, *Sputnik 1*, spell bound, as it passed overhead.

Contentment never lasts long and general dissatisfaction with the BBC's meagre jazz coverage led us to look farther afield. On the 31 metre band we soon found the Voice of America's *Jazz Hour*, "from Washington DC, each evening Monday through Saturday..." This was enough to persuade the three young musicians to take up short wave listening. Sadly, however, other jazz stations were harder to find.

## Silly Idea

"What about building our own wee jazz station" some idiot suggested to the genius with the soldering iron, silhouetted against his Anglepoise. "Last night" he went on "Pearl and Mac had to baby-sit so they missed the new Chris Barber record which Sam had brought down, and then there was the time John had 'flu..." It was a silly idea but a challenge had been issued and we all knew it.

A strange assortment of bits and pieces, some with Battle of Britain service, concealed themselves in the radiogram's spacious cabinet and from it, out into the hedge, ran a length of second-hand TV cable. The cable led to a noble poplar in the corner of the garden where a volunteer, with total disregard for his own safety, had climbed to a height of forty feet and tied a small antenna between its branches. After all, if the BBC wasn't going to use the Divis TV Sound Channel in the wee small hours why should we let it go to waste?

## Jazz Lovers

Success came quickly. Over about three square miles of suburban Belfast young baby-sitters, student nurses and other assorted jazz lovers knew that about half an hour after the National Anthem proclaimed the end of the television

broadcasting for the day they might, with a bit of luck, hear an hour or so's jazz. Only the elite who actually visited that garden shed near Mullaghmore Park could have requests played. Young ladies were very keen to join the elite and the elite grew a trifle cocky.

## Rousing Strains

The Utopian state of affairs lasted through the summer and autumn of 1958. The father of that keen radio constructor knew that his son sat up late in his radio shed and he also knew that friends visited him, but he had not the vaguest idea of the scale of operation because the garden was long and accessible from the rear.

This hard-working individual (if he wasn't out at a Labour Party meeting) usually dozed in front of his TV until awakened by the *National Anthem*, where upon he jumped up, switched off and went to bed.

Unfortunately one night he slept through the *National Anthem*. Half an hour later however he was rudely awakened by the rousing strains of Humphrey Littleton's *King Porter Stomp*. Now perhaps a mile or more away, on Shore Road, reception was not always the best but at less than a hundred yards the little station provided most impressive signal.

The puzzled gentlemen, although a jazz enthusiast, recognised the tune, but it took a couple of minutes to recall where he had heard it before. Then, wide awake, he was down the garden in a flash. Throwing open the door of the cozy little shack he exposed those inside to the chill of the autumn night as the last notes of *King Porter Stomp* died away.

## Muggsy Spanier

"What's going on?" he barked. The figure at the bench sat motionless. A joker in the darkest corner of the hut, slipping a young lady in blue from his knee said, "Another Humph and then maybe a Muggsy Spanier. Have you a request?" He had! Using well chosen, unambiguous, phrases he requested the immediate shut down of what was probably the only pure jazz, no-announcements, v.h.f. pirate radio station in the world. It was non-profit making too. Which just goes to show, piracy doesn't pay! □

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