REALISTIC PRO-2005 SCANNER REVIEWED

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The best VHF monitor there is. That is a fact! 108-176MHz plus LW/MW/FM broadcast. Covers main mariners, PMR etc. LCD display, memories scanning, lockout, priority etc. Suitable at sea but we are sure you'll like it so much you'll want to keep it to listen to offshore or to the seas.
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.

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 it with 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 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 re-launched 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

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 eastern France and us on the British end of the channel. 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 i.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, UK 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 enthusiasts, but the ratio of interests should be reasonably catered for. Please keep it that way.

The feature "Starting Out" is also valuable to an older 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 creating 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. It 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

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 working 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.

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, Grenethurst, Pinewood Road, High Wycombe, Bucks HP12 4DD.

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 7NO.

Aerial Techniques will send you a copy of their latest catalogue for 75p. The 29-page, A5, booklet represents
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/thyrists, opto-electronics 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) 826777.

**Newsletters**


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, Galashiels, and their address change to: Yvonne Blain, 6 Moorhead, Preston upon the Weald Moors, Telford, Shropshire TF6 6DL.

**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, 0.1Ω. Other features include npp 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 GMI0AMB. Tel: (0835) 22686.

August 27: The BARTG rally will be held at Sandown Park Racecourse, Esher, Surrey. Talk-in on S22 and SU22 by GBATG. 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, Coneyeage 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: G1YVS 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 Hall.
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 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: G4AVT. Tel: (0268) 43025 or Mrs D. Thompson. Tel: (0268) 552606.

*September 10: The Lincoln Harfest 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 book stand, special interest groups, lectures, Morse tests, refreshments & bar, talk-in station as well as Bring & Buy. Further details from: John Hardwick G44AL. 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: (0592) 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 G1JDJP. Tel: 091-388 5936.

October 1: The Blackwood Amateur Radio Rally will be held at the Oakdale Community Centre. 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) 243865.

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 9RW. Tel: (0388) 607500.

*October 15: ELOHEX89 in The Floral Hall, Hornsea, North Humberside. Doors open 11am, 10.30am for the disabled. Talk-in S22, trade stands, club display, 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 GOEYM. 30 Cotswood 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 dispatched 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 Shortwave 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 of home and overseas (by surface mail). Binders, each containing 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.

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

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Poole (0202) 676558. An answering machine will accept your order out of office hours.
Wimbledon & District ARS meet 2nd & 4th Fridays, 7.30pm in St. Andrews Church Hall, Herbert Rd, Wimbledon. Aug 25 is Up the Amazon G4XLM. G1SHV which may include a video and Sept 8 is The Polar Trek Communications by Michael Meerman G3PA3BHF. Nick Lawlor G3LJY. South Manchester RC meet Fridays, 8pm at Sale Moor Community Centre, Norris Rd, Sale. Aug 25 is Reflections & Videos of Radio by MR2SAL. Sept 1 is official, the 8th is Twenty Things About Bicycles That You Never Wanted to Know G0DMU, the 15th is Underwater Youtube, the 18th is Water. Geoff Milne G3UMI

Bedford & District ARC have their 2nd Visit to DTI Baddaboc on Sept 5 and Luton Airport on the 19th. Allens Club, Hurst Grove, Bedford, Bpm. Glen Loake G0GB1 on Bedfont Rd, Saxmundham. Loughton & District ARS have Aylmers Farm Planning Night on Sept 8. Autumn Aylmers Farm Field Day Briefing G0KLU, Sept 2-3 is SSB Field Day & Barbeque - Cheshunt Sailing Base, the 6th/20th are Natter Nights, the 13th is Logie Baird & TV GOBT and the 27th is Radio on Postage Stamps G3YQ. Roger G4CSS on Hoddesdon 464795.

Bedford & District ARC meet Wednesdays, 8pm in the Church Room, Church Lane, Womley, Herts. Aug 30 is SSB Field Day. Briefing 0208835. Sept 2-3 is SSB Field Day & Barbeque - Cheshunt Sailing Base, the 6th/20th are Natter Nights, the 13th is Logie Baird & TV GOBT and the 27th is Radio on Postage Stamps G3YQ. Roger G4CSS on Hoddesdon 464795.

Lunch & District ARS meet 1st & 3rd Mondays, 7.30pm at the Four Crosses, Marden Bridge. Sept 4 is a 50th Anniversary Dinner with the Officer, Ray Jones G0WVFM and the 18th is Members Demonstrate their Latest Acquisition or Project. Tony Rees on Bethesda 600963. Sept 13 is the Midland ARC have a Junk Sale on Sept 6, Wednesdays, 7.30pm at 119 Green Lane. Kevin Jones G4FFP on Derby 669157.

South Bristol ARC meet Wednesdays at the Whitelchuch Folkhouse, Bridge Farm House, East Dundy Rd, Aug 30 is a Progress Meeting - club library G0FG2 and a committee meeting, the 13th is Planning Evening for Bristol’s Rally 1990 and also a Committee meeting and the 20th is HF Activity evening - Club Strn. Len Baker G4RYK on Chichichurch 834282. Pembroke shire RS meet Mondays except Bank Holidays, 7.30pm at the Further Education Centre, Tower Hill. Haverfordwest. 1st Mondays are the AGM, 2nd are committee meetings, Martin Goodall G4ZWU on Haverfordwest 764009.

Cheilmsford ARC meet 1st Tuesdays, 7.30pm at Marconi College, Arbours Lane. Sept 5 is G4YTG - Aerials are not magic! Roy G3MPX on Chelmsford 369645 (home) or 363221 ext. 21.

Coventry ARS meet Fridays, 8pm at Baden Powell House, 121 St. Nicholas St. Radford. Aug 25 is A Girl’s Night Out and Other Equipment Tested, Sept 1/15 are Nights on the Air with Morse Tutor, the 3rd is Treasure Hunt & Barbecue (Sunday), the 8th is a Women’s Night out. Narrow Bandwidth TV, the 22nd is The Indoor Direction Finding Contest (Cup Qualifier) and the 24th is the RSGB National DF Contest. Jonathan Ward G4H0W on Coventry 610408.

Hastings Electronics & RC have their Summer Barbecue on Aug 26. 3rd Wednesdays, 7.45pm at Westhill Community Centre, Crayford Rd and Fridays, 7.30pm at Ashdown Farm Community Centre, Downe Close. Reg Kemp G3YFF at 7 Forwood Rise, Crowhurst, Battle, East Sussex TN33 9AH.

Cheshunt Race ARC meet Wednesdays, 8pm in the Church Room, Church Lane, Womley, Herts. Aug 30 is SSB Field Day. Briefing 0208835. Sept 2-3 is SSB Field Day & Barbeque - Cheshunt Sailing Base, the 6th/20th are Natter Nights, the 13th is Logie Baird & TV GOBT and the 27th is Radio on Postage Stamps G3YQ. Roger G4CSS on Hoddesdon 464795.

Dragon ARC meet 1st & 3rd Mondays, 7.30pm at the Four Crosses, Marden Bridge. Sept 4 is a 50th Anniversary Dinner with the Officer, Ray Jones G0WVFM and the 18th is Members Demonstrate their Latest Acquisition or Project. Tony Rees on Bethesda 600963. Sept 13 is The Midland ARC have a Junk Sale on Sept 6, Wednesdays, 7.30pm at 119 Green Lane. Kevin Jones G4FFP on Derby 669157.

Louth & district ARS have Aylmers Farm Planning Night on Sept 8. Autumn Aylmers Farm Field Day Briefing G0KLU, Sept 2-3 is SSB Field Day & Barbeque - Cheshunt Sailing Base, the 6th/20th are Natter Nights, the 13th is Logie Baird & TV GOBT and the 27th is Radio on Postage Stamps G3YQ. Roger G4CSS on Hoddesdon 464795.

Bedford & District ARC have their 2nd Visit to DTI Baddaboc on Sept 5 and Luton Airport on the 19th. Allens Club, Hurst Grove, Bedford, Bpm. Glen Loake G0GB1 on Bedfont Rd, Saxmundham. Loughton & District ARS have Aylmers Farm Planning Night on Sept 8. Autumn Aylmers Farm Field Day Briefing G0KLU, Sept 2-3 is SSB Field Day & Barbeque - Cheshunt Sailing Base, the 6th/20th are Natter Nights, the 13th is Logie Baird & TV GOBT and the 27th is Radio on Postage Stamps G3YQ. Roger G4CSS on Hoddesdon 464795.

Dunstable RC meet 2nd & 4th Mondays, 7.30pm at the Prince of Wales Public House, Whaddon Hill. Aug 25 is SGB Keyboard Evening. Sept 8 is the 50th Anniversary Dinner with the Officer, Ray Jones G0WVFM and the 18th is Members Demonstrate their Latest Acquisition or Project. Tony Rees on Bethesda 600963. Sept 13 is The Midland ARC have a Junk Sale on Sept 6, Wednesdays, 7.30pm at 119 Green Lane. Kevin Jones G4FFP on Derby 669157.

Shrewsbury RS meet Wednesdays, 7.30pm at The Recreation Centre, Chilton Road, but a Simple Receiver. Aug 25 is an Activity Evening. Chris Friell G4AUP on Ruislip 635522.

Torbay ARC meet Fridays, 7.30pm at the ECC Social Club, Highwey, Newton Abbot. Aug 25/Sept 1/15 are Club Nights, Aug 27 is Torbay Mobile Radio Rally at SCC Social Club, Brixham Rd, Paignton and Aug 29 is a Social Evening. Dave Davies G0BXX on Paignton 526762.

Yevoh ARC meet Wednesdays, 7.30pm at The Recreation Centre, Chilton Road, but a Simple Receiver. Aug 25 is an Activity Evening. Chris Friell G4AUP on Ruislip 635522.

Todmorden & District ARS have a Visit by Lowe Electronics on Sept 4. Queen Hotel, 8pm. Mrs E. Tyler G4PAC on Halifax 692038.

Wirral RS meet 2nd and 4th Wednesdays, 7.30pm at Ivy Farm, Arrow Park Rd, Birkenhead. Opposite Liverpool Cemetry Gates. Alec Seed G3FOO on 051-644 6094.

Dunstable Down ARC meet Fridays, 7.30pm at the Prince of Wales Public House, Whaddon Hill. Aug 25 is SGB Keyboard Evening. Sept 8 is the 50th Anniversary Dinner with the Officer, Ray Jones G0WVFM and the 18th is Members Demonstrate their Latest Acquisition or Project. Tony Kelsey-Stead G0COG on Luton 501015.

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

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

Plessey Chirchistch ARC meet 2nd & 4th Mondays, 7.30pm at the Clubhouse, rear of Plessey Sports & Social Club, Grange Rd, Somerford. Dennis G3BJR on Hichinbrooke 6296.

Bath & District ARC meet alternate Wednesdays, 8pm at the Clubhouse, rear of Plessey Sports & Social Club, Grange Rd, Somerford. Dennis G3BJR on Hichinbrooke 6296.

More Grassroots next issue.
FOR SALE Yaesu FRG-7 f.h. receiver, 0.5-30MHz gen coverage, digital display, good condx, good beginners RX, £50 o.n.o. Simon GM4MAI, M. Tel: Dumforton (0389) 61250.

FOR SALE Trio R 2000 receiver, VC10 converter 118-174MHz, XK3 antenna tuner, Revco disco antenna 30-500MHz, £485. Buyer collects or add £25 postage. Young. Tel: Lancaster (0524) E9305.

FOR SALE Realistic PRO-2003 a.m./f.m. scanner, 68-88, 108-136, 138-174, 410-512MHz. Fifty memories with discos antenna. £100. Mr S. Kell QAKEL, QTH. 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 7655 evenings.


FOR SALE Racal RA117, s.s. abdor, handbook £150. 144/430MHz converters, p. £25. 144/430/90MHz antennas, 40ft mast £200. Heathkit `scope £20. 26MHz Ham International £120. BBC B, d/d, teletext, RTTY, ROMS, software, manuals £300. T. R. Wiltshire. Tel: Reading (0734) 701163.

FOR SALE Dressler APA30 active antenna 50kHz-40MHz. Two months old, £75 o.n.o. for exchange w/s.w.i. 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: Angleyse (0407) 710405.

FOR SALE RX4 program and T/11 Interface for Spectrum+ decodes RTTY/Vorse/AMTOR/SSTV, with full instructions, also logbook program and frequency book, £35 or will sell with Spectrum+ for £100 o.n.o. the lot. S. M. Bryant. Tel: Farnham (0251) 253306.


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

FOR SALE Realistic PRO-2021, 200-channel, Realistic PRO-2008, 8-channel scanners, 68 to 512MHz w/gaps plus antenna £180 o.n.o. or exchange for compact general cover RX prefer digital readout. J. Bowditch, 21 East Wyol Rd, Wymouth, Dorset DT4 8RP. Tel: (0306) 775353.

FOR SALE ERA Microreader tutor/RS232 version (hard copy with printer) £95.00. J. P. Electronics FAX/SSTV program for Spectrum +3 inc drumsped generator £30.00. Sony AN1 active antenna £30.00 demo? Paul MacMichael. Tel: Warrington (0295) 724691.


Write out your advertisement in BLOCK CAPITALS - up to a maximum of 30 words plus 12 words for your address - and send it, together with your payment of £2.30, to Trading Post, Short Wave Magazine, Enefco House, The Quay, Poole, Dorset BH15 1PP. Advertisements will be published in the earliest available issue and SWM reserves the right to exclude any advertisement not complying with the rules. You must send the flash from this page, or your subscription number as proof of purchase of the magazine.

FOR SALE New Yaesu FRG-8800 (two months old) mint condition, boxed with manual, £600 o.n.o. Mr Harris, 11 Dovecote Green, Waybridge KT13 9NE.

FOR SALE Trio 9R-59 receiver + manual, working and includes parts for update, £40 o.n.o. Also National Panasonic DR26 0.5-30MHz, digital readout + b.f.o., £60.00 o.n.o. Mr N. Smith. Tel: Basingstoke (0269) 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, Westad Rd, Reading, Berks RG1 6ED.

FOR SALE Lowe HF-125 with a.m. f.m. detector fitted. Excellent condition, £290. Panasonic RF550L travel portable including NiCads, £45. Allan Smart, 50 Copson Street, Ibstock, Leicester LE6 1LB. Tel: (0530) 61341 evenings.


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 Edystone 9333, 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.

Advertisements for traders or for equipment which is illegal to possess, use or which cannot be licensed in the UK will not be accepted.
When you are ready to graduate to real listening
Look to Lowe

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 winnowing out the weakest rare amateur DX, or listening to Radio Ham in 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 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

R5000 £875 inc VAT (Carriage extra)
VC20 £167 inc VAT (Carriage extra)

FREE

Send £1 to cover the postage and we will send you, by return of post, your FREE copy of "THE LISTENER'S GUIDE" (2nd edition), a commonsense look at radio listening on the LF, MF and HF bands. Its unique style will, I am sure, result in a "good read" but underneath the humour lies a wealth of experience and expertise. You will also receive detailed leaflets on our range of receivers and a copy of our current price list.
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: band 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**

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**

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**

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**

Carr. £8 (Securicor) £249

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 section, 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.

Shops in GLASGOW Telephone 041-945 2626, DARLINGTON Telephone 0325 486121, CAMBRIDGE Telephone 0223 311230, BARRY Telephone 0446 721304, LONDON Telephone 01-429 3256, BOURNEMOUTH Telephone 0202 577760

All branches are closed all day Monday.
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.t.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 use to tailor the performance 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 £60. 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 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 H1100, Westflex 103 or Andrews LDF 450. Note that special connectors are required for some of these so check before buying.

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 very strong signals - for example if you are unfortunate enough to live close to a TV

SCANNING

Alan Gardener

New Products

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

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 shortens 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 available 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.

Short Wave Magazine September 1989
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 bandpass 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.

Frequency allocations 165.05-225MHz

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service</th>
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<tbody>
<tr>
<td>165.05</td>
<td>PMR “high” band base transmit paired with</td>
</tr>
<tr>
<td>168.25</td>
<td>Emergency services fixed links</td>
</tr>
<tr>
<td>168.95</td>
<td>PMR “high” band simplex</td>
</tr>
<tr>
<td>169.85</td>
<td>PMR “high” band mobile transmit paired with</td>
</tr>
<tr>
<td>173.05</td>
<td>Low power devices</td>
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<td>173.200</td>
<td>Low power telemetry &amp; telecontrol</td>
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<td>173.350</td>
<td>Radio-deaf aids, medical &amp; biological telemetry</td>
</tr>
<tr>
<td>173.800</td>
<td>Radio microphones</td>
</tr>
<tr>
<td>174.500</td>
<td>PMR simplex (not yet allocated) &amp; radio microphones</td>
</tr>
<tr>
<td>176.500</td>
<td>PMR base transmit (not yet allocated) paired with</td>
</tr>
<tr>
<td>183.500</td>
<td>PMR Simplex (not yet allocated) &amp; radio microphones</td>
</tr>
<tr>
<td>184.500</td>
<td>PMR mobile transmit (not yet allocated) paired with</td>
</tr>
<tr>
<td>191.500</td>
<td>PMR simplex (not yet allocated) &amp; radio microphones</td>
</tr>
<tr>
<td>192.500</td>
<td>PMR mobile transmit paired with</td>
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<td>199.500</td>
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<td>207.500</td>
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<tr>
<td>208.500</td>
<td>PMR base transmit (not yet allocated) paired with</td>
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<td>216.500</td>
<td>PMR mobile transmit (not yet allocated) paired with</td>
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<tr>
<td>223.500</td>
<td>PMR simplex (not yet allocated) &amp; radio microphones</td>
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<tr>
<td>225.000</td>
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</tbody>
</table>

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...
PMR “high” band - short term hire channels

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Mode</th>
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<td>169.0125MHz</td>
<td>simplex</td>
</tr>
<tr>
<td>169.1375MHz</td>
<td>simplex</td>
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<tr>
<td>169.1625MHz</td>
<td>simplex</td>
</tr>
<tr>
<td>169.1875MHz</td>
<td>simplex</td>
</tr>
<tr>
<td>169.4375MHz</td>
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</tr>
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<td>simplex</td>
</tr>
<tr>
<td>169.5375MHz</td>
<td>simplex</td>
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</tr>
<tr>
<td>169.6375MHz</td>
<td>simplex</td>
</tr>
<tr>
<td>169.7625MHz</td>
<td>simplex</td>
</tr>
<tr>
<td>167.2000MHz</td>
<td>Base Transmit</td>
</tr>
<tr>
<td></td>
<td>Paired</td>
</tr>
<tr>
<td>172.000MHz</td>
<td>Mobile Transmit</td>
</tr>
<tr>
<td></td>
<td>Duplex</td>
</tr>
</tbody>
</table>

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 interconnected 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 it 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

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, Caherhennessy, 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, Shortstown, 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 to the receiver’s whereabouts.

Stephen Nichols 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

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

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.

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 & 14 MHz 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 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 bending 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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<tr>
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<th>Price</th>
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<tr>
<td>AIR-7</td>
<td>£229.95</td>
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<tr>
<td>PRO-80</td>
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<td>2001D</td>
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<td>£208.95</td>
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<tr>
<td>AN-1 antenna</td>
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<tr>
<td>AR900 handheld</td>
<td>£235.00</td>
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<tr>
<td>60-90 / 118-174 / 406-496 / 830-950 MHz</td>
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<tr>
<td>AOR 2002 base</td>
<td>£469.00</td>
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<tr>
<td>25-550 / 800-1300 MHz, 20 memories</td>
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<tr>
<td>AOR 3000 base</td>
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<tr>
<td>0-1-200 MHz, 400 ments, LSB/USB/CW/WFM/NFM/AM</td>
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<tr>
<td>STANDARD AX700 base</td>
<td>£499.00</td>
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<tr>
<td>50-905 MHz, 99 memories inc. FREE PSU</td>
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<tr>
<td>CHALLENGER BJ200 handheld</td>
<td>£199.00</td>
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<tr>
<td>26-30 / 60-88 / 115-174 / 210 / 260 / 410-520 MHz</td>
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<tr>
<td>COBRA SR925 base</td>
<td>£159.99</td>
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<tr>
<td>29-54 / 118-174 / 406-512 inc. FREE PSU</td>
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<tr>
<td>YUPITERU MVT-5000 handheld</td>
<td>£299.99</td>
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<tr>
<td>25-550 / 800-1300 MHz</td>
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<tr>
<td>ROYAL 1300 discone 25-1300 MHz</td>
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<td>ROYAL 700 discone 70-700 MHz</td>
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<td>SKYSCAN collinear 60-525 MHz</td>
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<td>BB1455 broadband mag-mount</td>
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<tr>
<td>Sandpiper mobile discone 60-500 MHz</td>
<td>£17.95</td>
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<tr>
<td>Gutter mount for SO239 fitting</td>
<td>£7.95</td>
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<tr>
<td>VHF/UHF Frequency Guide</td>
<td>£5.95</td>
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<td>VHF/UHF Aircard Guide</td>
<td>£4.95</td>
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<tr>
<td>Flight Routings Guide to Airline Flights</td>
<td>£4.00</td>
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<tr>
<td>HAS-1 mast mount antenna switch</td>
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BEARCAT SCANNERS

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<td>UBC 50XL 86-88 / 136-174 / 406-512 MHz</td>
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<tr>
<td>10 memories, channel review, including FREE charger worth £4.95</td>
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<tr>
<td>BC 55XLT 29-54 / 136-174 / 406-512 MHz</td>
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<td>10 memories, channel review, including FREE charger worth £4.95</td>
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<tr>
<td>BC 70XLT 29-54 / 136-174 / 406-512 MHz</td>
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<td>20 memories, full frequency display, with FREE car charger kit worth £4.50</td>
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<tr>
<td>BC 100XLT 29-54 / 118-174 / 406-512 MHz</td>
<td>£199.99</td>
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<tr>
<td>100 memories, airband, search, including FREE car charger kit worth £4.50</td>
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<tr>
<td>BC 200XLT 66-88 / 118-174 / 406-512 MHz</td>
<td>£229.99</td>
</tr>
<tr>
<td>200 memories, top of the range, including FREE car charger kit worth £4.50</td>
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- Six tuning steps
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<tr>
<td>9600 standard 60-905 MHz</td>
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<tr>
<td>9600 Mkl 60-905 MHz</td>
<td>£496.00</td>
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<tr>
<td>Standard to Mkl U/G</td>
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<tr>
<td>Standard to Mkv U/G</td>
<td>£149.00</td>
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<tr>
<td>Mkl to Mkv U/G</td>
<td>£129.00</td>
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<tr>
<td>Packs include PSU and ROYAL 1300!</td>
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RAYCOM COMMUNICATIONS SYSTEMS LIMITED
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 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 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 10kΩ 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 straightforward to construct, even though the i.c. has to be soldered in, this module gives 700mW of audio into an 8Ω 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.

Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>amperes</td>
</tr>
<tr>
<td>c.w.</td>
<td>continuous wave (Morse)</td>
</tr>
<tr>
<td>f.e.t.</td>
<td>field effect transistor</td>
</tr>
<tr>
<td>i.c.</td>
<td>integrated circuit</td>
</tr>
<tr>
<td>Mlz</td>
<td>milliamp</td>
</tr>
<tr>
<td>MHz</td>
<td>megahertz</td>
</tr>
<tr>
<td>mW</td>
<td>milliwatt</td>
</tr>
<tr>
<td>p.c.b.</td>
<td>printed circuit board</td>
</tr>
<tr>
<td>p.s.u.</td>
<td>power supply unit</td>
</tr>
<tr>
<td>QRP</td>
<td>low power</td>
</tr>
<tr>
<td>r.f.</td>
<td>radio frequency</td>
</tr>
<tr>
<td>s.a.e.</td>
<td>stamped addressed</td>
</tr>
<tr>
<td>s.s.b.</td>
<td>single side band</td>
</tr>
<tr>
<td>V</td>
<td>volts</td>
</tr>
<tr>
<td>v.f.o.</td>
<td>variable frequency</td>
</tr>
<tr>
<td>Ω</td>
<td>oscillator</td>
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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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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 B-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 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 Calculcutta, 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 1.448 MHz. 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 7.160 MHz.

However, there may be some problems on the horizon. Manoj 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 hook-up 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 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 Guiana, 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$
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 600kW 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 8000, 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 Looses 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 100kHz, but Venezuela has operated a time signal station on that channel too. This resulted in annoying pops 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.

<table>
<thead>
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<th>Abbreviations</th>
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<td>MHz</td>
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<td>UTC</td>
<td>Co-ordinated Universal Time (UTC)</td>
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*Short Wave Magazine September 1989*
World Service Slide Chart (April 1989 - September 1989)

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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 0.125λ. 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 high frequency 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 vary greatly for heights between 0.25λ and 0.625λ, being on average between 25 and 40 degrees. At a height of 0.75λ 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.

The vertical radiation pattern for a height of 0.5λ is shown in Fig. 8.3. There is little real difference between this and the pattern for a height of 0.625λ 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 0.5λ, and for which the back lobe is smaller.

Front-to-Back Ratio & 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 50Ω 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
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 0.1λ. With the parasitic element tuned to function as a reflector the spacing required for maximum directivity gain will be 0.15λ.

Front-to-Back Ratio

The tuning conditions for maximum front-to-back ratio do not give maximum directivity gain, and vice versa. 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 0.25λ. The director must be shortened to obtain the same effect with spacings of 0.1λ 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 front-to-back 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.

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>dB</th>
<th>dBD</th>
<th>h.f.</th>
<th>MHz</th>
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<th>u.h.f.</th>
<th>v.h.f.</th>
<th>v.s.w.r.</th>
<th>λ</th>
<th>Ω</th>
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<tr>
<td></td>
<td>decibel</td>
<td>gain relative to a half-wave dipole</td>
<td>high frequency</td>
<td>megahertz</td>
<td>radio frequency</td>
<td>ultra-high frequency</td>
<td>very high frequency</td>
<td>voltage standing wave ratio</td>
<td>wavelength</td>
<td>ohms</td>
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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".
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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, 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 poltest 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?
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 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 am band 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
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BEARCAT MARINE BAND H/HELDs

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<tr>
<th>Model</th>
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<td>(10 CH MEM.)</td>
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BEARCAT AM/FM H/HELDs

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<td>UBC 200XLT</td>
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<td>BJ1 Car Supply (Mk111 version only)</td>
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<td>BCA6 Mains Slow/Fast Charger</td>
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BEARCAT BASE/MOBILE

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SCANNING RECEIVERS

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<td>AOR 3000</td>
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<td>AOR 2002 Base with Full Coverage</td>
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<td>AOR 900 Handheld with 900 MHz</td>
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<td>SONY AIR 7 Airband/Handheld</td>
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<td>SONY PRO 80 Wideband</td>
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<td>SONY ANI Active Antenna</td>
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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, sidetone band 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 batteries that are used to provide permanent power to the receiver memory. The simple solution to this 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 unspeced factor 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 strongest 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.

Table 1: Unmodified 2001D

<table>
<thead>
<tr>
<th></th>
<th>Wide</th>
<th>Narrow</th>
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<tbody>
<tr>
<td></td>
<td>Specified</td>
<td>Measured</td>
</tr>
<tr>
<td>-6dB</td>
<td>11kHz</td>
<td>10.6kHz</td>
</tr>
<tr>
<td>-50dB</td>
<td>18kHz</td>
<td>16.6kHz</td>
</tr>
<tr>
<td>-60dB</td>
<td>17.9kHz</td>
<td>1.98</td>
</tr>
<tr>
<td>Shape factor</td>
<td>1:1.7</td>
<td>1:1.98</td>
</tr>
</tbody>
</table>

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

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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 retrofit 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.

<table>
<thead>
<tr>
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<th>Wide</th>
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<th>Narrow</th>
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<tbody>
<tr>
<td></td>
<td>Specified</td>
<td>Measured</td>
<td>Specified</td>
<td>Measured</td>
</tr>
<tr>
<td>-6dB</td>
<td>4.4kHz</td>
<td>4.2kHz</td>
<td>2.7kHz</td>
<td>2.95kHz</td>
</tr>
<tr>
<td>-50dB</td>
<td>10kHz</td>
<td>7.5kHz</td>
<td>5.0kHz</td>
<td>5.5kHz</td>
</tr>
<tr>
<td>-60dB</td>
<td>8.3kHz</td>
<td></td>
<td>6.4kHz</td>
<td></td>
</tr>
<tr>
<td>Shape factor</td>
<td>1.198</td>
<td>1.217</td>
<td></td>
<td>(very good)</td>
</tr>
</tbody>
</table>

Table 2: Modified 2001D

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

**Recommended Reading:**


**Abbreviations**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>a.m.</td>
<td>amplitude modulation</td>
</tr>
<tr>
<td>c.w.</td>
<td>continuous wave (Morse)</td>
</tr>
<tr>
<td>dB</td>
<td>decibel</td>
</tr>
<tr>
<td>f.m.</td>
<td>frequency modulation</td>
</tr>
<tr>
<td>i.f.</td>
<td>intermediate frequency</td>
</tr>
<tr>
<td>i.s.b.</td>
<td>independent sideband</td>
</tr>
<tr>
<td>kHz</td>
<td>kilohertz</td>
</tr>
<tr>
<td>l.s.b.</td>
<td>lower sideband</td>
</tr>
<tr>
<td>MHz</td>
<td>megahertz</td>
</tr>
<tr>
<td>p.c.b.</td>
<td>printed circuit board</td>
</tr>
<tr>
<td>s.s.b.</td>
<td>single sideband</td>
</tr>
<tr>
<td>u.s.b.</td>
<td>upper sideband</td>
</tr>
</tbody>
</table>

**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 19943, 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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Where does your hobby fit into the domestic bliss situation?

Outside or Inside?

There are two distinct types of OTH 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 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 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 louver 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 cupboard and even hallways intended for hanging coats in as a site for listening post. Some years ago, I read an article written by an

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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 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 1½ 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 an 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 careful, 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.

...HAVE A COMFORTABLE CHAIR...
One criticism I often hear is that, even though our skies are becoming ever more crowded, only pilots can file an airmass 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 (CHIRPS) 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 airmass between a Tristar and a Tu-154 near Lydd (62/89). This one made the media. Despite various rumours at the time, it appears that the aircraft were working two different controllers (I'll 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 control over its military flights. So much for 1992? On his flights, Tim shares my 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 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 telegraph 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.

And 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.
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-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 wired 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 1k2 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 setting 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 dissipated. This, of course, was useful when monitoring two-way channels as it stopped the scan restarting in-between. 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 i.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.

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<th>Specification</th>
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<td>Frequency</td>
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<td>Dimensions</td>
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<td>Weight</td>
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TATUNG HITECH
TMR7602
150kHz-30MHz (no gaps), BFO/SSB, 3 speed tuning, mains/battery, digital frequency display, stereo VHF, phone jack £99.99 checked/tested/carriage £8.00
Similar to Sony ICF2000D in size shape weight. This must be surely the very best value in radio anywhere! BBC "Worldservice" gave it top marks. Radio
Nederlands 4 marks out of 5! Please, oh please, do not confuse my model with any other lookalike.
Optional mains power supply FREE for September.

SATELLIT
GRUNDIG
400 +
500 +
600 +
THE 'MERCEDES' IN QUALITY RADIO IN STOCK NOW! THE NEW 500 IS A TRULY GREAT RADIO!

WORLD RADIO
SONY
AIR PRO 80
ICF2000D
ICF/7600DS/SW1E
ACTIVE AERIALS
AN-1 aerial now in stock (at last) first come/first served.

COMMUNICATIONS
PHILIPS
D2999 TABLE TOP RECEIVER
D2895 HANDY PORTABLE
D1835 12 BAND POCKET RADIO
THE PIONEERS IN SHORT WAVE ARE BACK AGAIN WITH A GREAT RANGE OF RADIOS. JUST READ THE REVIEWS ON THE D2999 AND SEE WHY!

ITC-R610
10 BAND RADIO
Mains/battery. This radio is much sought after by various broadcasting authorities. Real honest value for money at £44.95 + £4 carriage and truly a world-
receiver.

WE HAVE JUST OVER 20 DIFFERENT SHORT WAVE MODELS IN STOCK. WHY NOT CALL IN FOR A LOOK OR A DEMONSTRATION OF WHAT WE HAVE TO OFFER + OUR RANGE OF SCANNERS. LARA OUR DOG WILL NOT ASSIST YOU IN YOUR CHOICE, BUT WILL MAKE YOU VERY WELCOME. BUT ANITA IS VERY VERY ABLE IN DEMONSTRATING RADIOS (DESpite BEING A FEMALE! GENTLEMEN). IF YOU DON'T THINK MONEY CAN BUY HAPPINESS, YOU DON'T KNOW WHERE TO SHOP.

S.A.E. (ALL CORRESPONDENCE) OR CATALOGUE £1 + 50 PSP (IT'S HEAVY) LOTS AND LOTS OF INFO.

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0905-25740
WE'RE RIGHT BY THE CATHEDRAL BY THE NCP MULTI-STORREY CAR PARK.

ICOM
ICOM R71
General Coverage Receiver £855
FIRST CLASS SHORT WAVE RECEIVER. BUY THIS FOR £855 AND RECEIVE AN ARA FREE. WORTH £129. Also R7000 complete with ARA 900 £999.

ICOM R9000
100KHz-2GHZ £3,999
Inc ARA900+ARA30
Active Antenna

KENWOOD
TS680 HF + 6m inc Mike £895
R5000 £799
VC20 converter £160

STANDARD
AX700
PANADAPTOR DeLuxe £575.00

COMMUNICATIONS
PHILIPS
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STEERPLETONE
MBR7 Mk II EX STOCK
AIR, MARINE, POLICE, FIRE, HAMs, P.S.T., PLUS OTHER STEERPLETONE PORTABLES.

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SONY
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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.

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>Description</th>
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<tbody>
<tr>
<td>a.c.</td>
<td>alternating current</td>
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<td>a.m.</td>
<td>amplitude modulation</td>
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<td>dB</td>
<td>decibel</td>
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<tr>
<td>d.c.</td>
<td>direct current</td>
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<tr>
<td>f.m.</td>
<td>frequency modulation</td>
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<tr>
<td>Hz</td>
<td>hertz</td>
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<tr>
<td>i.f.</td>
<td>intermediate frequency</td>
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<tr>
<td>kg</td>
<td>kilogram</td>
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<tr>
<td>kHz</td>
<td>kilohertz</td>
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<td>l.e.d.</td>
<td>light emitting diode</td>
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<tr>
<td>MHz</td>
<td>megahertz</td>
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<tr>
<td>mm</td>
<td>millimetre</td>
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<tr>
<td>mV</td>
<td>millivolt</td>
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<tr>
<td>n.b.f.m.</td>
<td>narrow band frequency</td>
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<tr>
<td>S/N</td>
<td>signal to noise ratio</td>
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<tr>
<td>u.h.f.</td>
<td>ultra high frequency</td>
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<tr>
<td>V</td>
<td>volt</td>
</tr>
<tr>
<td>v.h.f.</td>
<td>very high frequency</td>
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<tr>
<td>w.b.f.m.</td>
<td>wide band frequency</td>
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<td>µV</td>
<td>microvolt</td>
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<td>Ω</td>
<td>ohm</td>
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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.

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**Practical Wireless**

SEPTEMBER 1989 ISSUE

**REVIEWED**

The Lake Electronics 3.5MHz c.w. Transceiver Kit

**SPECIAL OFFER**

Miniature v.h.f./u.h.f. Mobvile Antennas & Mounts

**BOOK OFFER**

Filter Handbook by Stefan Niewiadomski

PLUS

Your Favourite Regular Articles

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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 (SW/M 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 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 T1 via a coil, L2. Since L2 is pile wound on the same former as L1, voltage feedback will be applied to the base of T1. 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 off the automatic gain control (a.g.c.) on and control the 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!
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 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 capacitor in each stage (R12-13), so that the resonant frequency of each section may be accurately set up.

![Fig. 3: An active c.w. filter.](image-url)
REVCO

WHEN QUALITY COUNTS

REVCON

The UK's favourite discone composed of traditional British quality engineering.

REVCO works well without exaggerated advertising claims. It is designed to cover 50 to 300 MHz, and thousands of satisfied users will testify to its efficiency. Unlike some manufacturers we do not claim a wider frequency coverage, and we do not quote inflated figures for gain. A gain figure is meaningless unless the reference point is stated.

Optional vertical whip feature: It is possible to fit a vertical whip to the discone. We do not want to give you the "hard sell" where this vertical element is concerned, but there is some evidence that it may improve the performance of the discone. This is why we make it an optional feature.

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

Because the REVCO 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.

WIDE-BAND PRE-AMPLIFIERS

The problem with omni-directional wide-band antennas is their lack of gain.

The basic specification of the products is similar: coverage 20MHz-1GHz, at 1GHz minimum gain 13dB, noise factor 5.5dB. Choose from a masthead version PA3 or a standard die-cast box-type PA3B. 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 power is provided for the PA3B, as any 9-15V DC source is suitable (current requirement about 25mA). The PA3B 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 PA3A has BNC sockets and is designated "PA3A/B"; available at special order only. ("PA3B/B" is a more versatile antenna) Designated "PA3/S". A special feature of the PA3A series is a high-pass filter to attenuate frequencies below 20MHz. High-power HF & MF broadcast stations can be very troublesome.

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

Revco Electronics Ltd, Old Station Yard, South Brent, S Devon TQ109 AL Tel: 0364 73394 Fax: 0364 72007

RADC

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 dipole to maximise bandwidth and minimise interaction. The RADC can be set up for a range of frequencies from 2MHz to 300MHz, 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 FRN business, the RADC can be customised for your needs.

Aircraft listening enthusiasts can specify VHF & UHF Airband coverage. What a versatile antenna! Design and engineering excellence from REVCO!

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 few design problems at 500MHz and above. 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 is a few facts which you should know:

Couppling efficiency: Apart from the question of effective power transfer to the outside world, you don't want too much RF fluctuating 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 retic fit is available.

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

Ease of re-assembly: 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.

ICS

ICS Electronics Ltd

Weather Facsimile Receive Systems

FAX-1 Weather Map Demodulator

Complete Weather Map/ RTTY/ Navtex receive system. Includes demodulator, power supply, computer printer and cables. Plug into the broadcast output of any HF SSB communications receiver. Receives weather maps; retransmitted satellite pictures; press photos and amateurs at a fraction of the price of competitive systems.

FAXPACK: £399.95 inc. VAT plus £9.50 Securecour delivery
HF-225 Receiver: £395.00 inc. VAT plus £4.00 p+p

MET-1 Weather Satellite Receiver

Complete Meteosat geostationary weather satellite receive system. Receives Infra Red and Visible cloud cover pictures of Europe every half-hour, broadcast with SSB, AM, HF, FM, receiver, power supply, manuals and software. Plug into any 1.0 Megabyte Amiga or Atari computer. Superb results - just like on the TV weather forecast.

MET-1 System: £799.80 inc. VAT plus £17.00 p+p
Please specify Amiga or Atari software.

ICS Electronics Ltd. Unit V, Rudford Industrial Estate, Arundel, West Sussex BN18 0BD
Telephone: 0800 525142 (Orders) 0903 731101 (Enquiries) Facsimile: 0903 731105
Over the past few issues I've been trying to instil a proper perspective about propagation. Now it is time to crack open a few myths about receiving.

First, there were some receivers about in the twenties and thirties which could “inhale” all the DX that arrived, and was even capable of covering the broadcast - bands up to 30MHz. So, what's so good about the current price of DX? Let me put it this way.

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-military surplus receiver. Now the home-brewed receiver or the ex-surplus one could be modified nearer to the present day needs, as many of 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 a DX’er, and vice-versa. So while the BC listener wants a wide-pass band still for his a.m. reception. I might only ever listen to the amateur bands, and the BC to wrong side maine unwanted? Joe Blow down the road is a BC listener and never listens to amateur bands for him s.o. or c.w. is useless; Jack Jones up the road is an ex-seagoing operator who listens only to s.o. and c.w. at 100watts, the BC no s.o. or the amateur /MM nets on s.s.b. He listens to no other frequencies. Each ideally wants a receiver tailored to his needs.

Thus, all those years ago, in general, a.s.w. or licensed amateur built surplus receivers, I tried to point out with no thought of selling. Since the first recorded all-continent contacts occurred in the 1930s, radio operators soon learned that the antennas, receiver antenna beam design, and the receiver itself were not as sensitive as one might think. Far too many amateur operators learned the hard way that beam antennas and beams usually only yield around 25 watts. On the BC bands, ten kilowatts was a "Biggie". Not a tune around if you had a modern receiver, it can’t be more sensitive, since the limit in that direction is frequency and signal sensitivity. We need more, all on but - usually - 28MHz. On the other hand transmitter levels have increased enormously, between higher power and high gain arrays. Modern receivers, both for commercial and amateur radio, so a new problem is listening to weak signals, sometimes alongside 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, so that the competitors and at a given level must be priced competitively. The “ características” with push - buttons and “memories” will be made to provide functions which on the other hand are controlled 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 wanderlies). The older receiver if of valved design usually took a long time to warm up and was also more prone to the wobbles, while a tap on the case might be enough to cure the problem. The modern receiver is better in all these aspects, and it draws far less power, so much that it can usually be battery-powered for a day in the hills.

However, against this, it is difficult to modify and a mod reduces the performance of the DX sections as well as those of the s.s.b.needs. For example, if the receiver does not have an adjustable s.s.b., it will not work with all the DX stations.

To sum up: if you, dear reader, are seriously off -put from our hobby by the price of new gear, you may have a few solutions.

For those of course I am, as ever, indebted to DX News Sheet, a weekly offering of hints from the DX stations edited by G4DYO; the DX Bulletin from Chad Harris VP2ML; and QST (Canada). The magazines are a mine of letters, and of course my ears! Of course I am not aware of the whole of the DX network, but I do read the reports of people in the areas.

However, while the weekly sheets provide a great deal of information about the DX stations, and the DX operators as well, it is not always possible to receive the reports of the DX stations in a clear picture of what we are dealing with. So, in this case, it can't be followed, whatever the DX stations or DX operators. By the way, a DX station appears on the bands, several of you report it, but I do not hear it. Between all your letters it is possible to build up a clear picture of what happened, so when we send out the list, the DX stations are noted.

For those of you who have heard of DX, you may have noticed that there are certain DX operators who have a DX station on the bands, and these DX stations are described by the DX operators. They have been noted in the DX reports.

Letters

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

For example, the Drake receiver is quite simple in design, and it has been proved to be sturdy and reliable. It is a good receiver for the amateur and the DX enthusiast.

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I'm afraid I must start this week with an apology to all those readers that have had to look to various frequency lists and reply to technical queries. I have been inundated with correspondence which covers such a wide range of topics like decorating etc. mean that I have fallen behind. Having said that I am afraid I must 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 Olivetti M24 (IBM clone) to his Kenwood R-2000 receiver with the object of being able to decode ARQ/RTTY via 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 the 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 leads which are pretty basic. From the point of view of interfacing with the receiver an audio output is all that is required.

Incidently, I shouldn't worry too much about ASCII, as this code is very little used on h.f. If anyone 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 RTTY converter. This ingenious device takes a high speed 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 portable which can be very useful if you have limited accommodation for a shack. One of its other virtues is that it has an in-built audio decorder which helps to take a lot of the confusion out of identifying a new transmission. Incidentally, the receiver used by Bryan's shack is a Kenwood R-5000.

BARTG Changes

Pat and John Beedie who have been responsible for membership, correspondence 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
Ann Reynolds G6ZTF
169 Bell Green Road,
Coventry.
Wares CV6 7GW

Components and Software
Trevor G3JSI
147 Borden Lane,
Sittingbourne
Kent ME10 1BY

Publications
Peter Addams G6LZB
464 Whippendell Road,
Watford,
Herts WD1 1PT

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 to Peter Starling, Saffron Walden 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-lockelet 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 suggests it gives all the press stations and frequencies indexed by time of day. So if, for example, you sit down in your shack to monitor some press station at 8.30pm 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. Stations vary from Monday to Saturday and the text is usually rather dry with reports of political speeches by Americans.

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

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 to Peter Starling, Saffron Walden. He 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-lockelet integrated circuit. The receiver is the popular Lowe HF-125 which is fed with a 16m long wire antenna.

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. Hawkins, 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 Hawkins 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.

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transmitted character. I suspect the problem Mr Hawkins is encountering here is incorrect settings on his decoder for the type of signal he is receiving. It is a fact that some decoders can resolve 50 baud RTTY whilst actually set for 45.5 baud. The resultant text contains a much higher number of errors but is often still readable - a point worth watching.

Still on the subject of the Microreader, Mr H. Stevens, Aylesbury has written outlining the procedures he uses with his Microreader to resolve an unknown station. Although the procedure is based around the Microreader, the same techniques can be used with most decoding systems.

If you are monitoring in the amateur bands life is very easy as with a few exceptions everyone uses 45 baud. 170Hz shift. The only adjustment you may have to make is to invert the signal, either with a reverse switch or by changing from u.s.b. to i.s.b. or vice versa. The problem area is commercial RTTY signals where a number of combinations are much greater. The secret here is to follow a logical order to establish the mode in use. The best starting settings are 15 baud, 425Hz shift, normal which on the Microreader is the second "auto" switch position. If this fails then try inverting the signal using the method I described earlier. If the signal is still garbled try changing to 75 baud, 850Hz shift and again invert the signal.

Letters

G. Tyerman writes from Acomb to tell me that he recently retired and has bought a Maplin weather satellite receiver and decoder to take up the hobby. He asked for information on satellite pass times so I sent him a list for a few days in advance.

This is of interest to many other readers who may have only recently started listening in to the weather satellites so I thought that some further notes might be useful.

We can hear many different types of satellites in the frequency band 136 to 138MHz being transmitted from spacecraft in very different types of orbit, see also the later section on satellite signals. They may appear to come at random times of the day and night but if you keep records of those times and frequencies then patterns quickly emerge.

The American satellites, NOAAs 9, 10 and 11 which are in an orbit which not only take them close to the poles on every pass but their orbits are carefully adjusted so that they keep pace with the sun. So they always pass over any particular area at about the same time each day, just like the sun does.

In Britain, NOAA 11 passes over us during the mid-day period, so you will always hear passes between 1100UTC and about 1500UTC when NOAA 11 is travelling northbound. Similarly, some 12 hours later it will be heard travelling southbound around the middle of the night. Each day it passes over us a few minutes earlier than the previous day and at a different elevation.

Satellite Signals

Leaving the scanners running to see what other transmissions are going on can be intriguing. I have logged a number of signals heard regularly, some of which I am sure are satellites and others that I think are simply interference.

To identify a signal as a satellite requires some effort over a number of days. I have been hearing a signal on 136.23MHz transmitting quite regularly since June. It has a recognizable sound consisting of a few tones and never seems to get very strong so I suspect that it is not a pairing of satellite signals. It always have at least one high elevation pass per day as well as the lower elevation passes.

Have any other listeners also heard this signal I wonder?

Ariel 6

Another signal heard regularly in the 136 to 138MHz band that is of our old Arnell 6 (also known as UK6), on 137.55MHz. This last all-British scientific satellite is still transmitting data and after 10 years after a group of us were commanding it. We had three teams of satellite operators including mine and collected both live and recorded data over a long period. It had several transmission modes and I must admit that when listening to it now, I can’t recognise which mode it is using. After a period of some weeks absence I heard it transmitting again at 2103UTC on July 8.

We have also picked up transmissions on 137.06MHz but in this case I located the source as being the computer on which I write this column.

Interesting signals have recently been heard on 137.44MHz at 2124UTC on July 15 and on 136.50MHz at 1420UTC and 1602UTC. You can see that the difference between the times of these last two transmissions is about 100 minutes which is the time between two passes of the average satellite. These observations are rather tentative but I will be interested to hear from anyone who can shed light on the possible identity of the signals. Both signals sounded like a carrier without any modulating signal.

Russian Communications System

Listeners to the satellite bands and nearby frequencies may hear a series of signals on 150.00, 149.91, 149.94, 149.97 and 150.02MHz. These are part of the Russian Telskada communications and military systems which are spaced around the globe. You don’t have to wait very long before a signal comes up on one of those frequencies.

Finally, a regular signal heard daily in this band is on 136.65MHz and sounds rather pleasant, consisting of a series of warbling tones. I have made many enquiries several months ago because I had been logging it so frequently and my suspicion that it might be 1984-8530A known as Transit was confirmed by Geoffrey Falworth.

Kepler Elements

Many readers decide to take me up on my offer to supply a complete set of weather satellite Kepler elements so I will repeat the offer that I will forward the latest data that I have if you send me an s.a.e.
RX-8 for the BBC Computer

Receives screen and printer FAX charts & photos, and VHF PACKET. Colour SSTV, RTTY, AMTOR, CW, ASCII, UoSAT 1 & 2.

Receive them all with every possible feature, superb performance and ease of use. Full printer and disc support.

The best receive system ever. Complete system of EPROM, hardware interface with 2 demodulators and tuning display, comprehensive handbook and all connecting leads, only £259. FREE Klingenfuss Utility Guide for 1st 50 purchasers. DISCOUNT for RX-4 users. We can’t begin to list all the features here so send for full information.

RX-4 RTTY/CW/SSTV/AMTOR RECEIVE

Performance, features and ease of use make this still a best-seller. Text and picture store, disc and printer support.

Needs TIF1 interface. BBC, CBM64 tape £25, disc £27. VIC20 tape £25. SPECTRUM tape £40, + 3 disc £42 inc adapter board (needs TIF1 also) or software-only version £25.

TIF 1 INTERFACE Optimum HF and VHF performance with our software. 4-pole filtering and computer noise isolation for excellent reception. Kit £20, ready-made, boxed with all connections £40. Available only with software.

Also MORSE TUTOR £8, LOGBOOK £8, RAE MATHS £9 for BBC, CBM64, VIC20 and SPECTRUM. BBC LOCATOR with UK, Europe, World maps £10. All available on disc £2 extra.

technical software

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

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Special receiver type GP040A. Battery/mains covering 133KHz-33MHz.

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Dymar 25W. 16 channel FM 80-110MHz £15.00 (carr. £3.00).

ACCESS AND BARCLAY CARDS

ACCEPTED.

BEARCAT OWNERS!

Spare Battery Packs, BP205/BP200 for the 100XLT and 200XLT are now available and in stock - at last! The only difference between the two being that of colour.

NEW VHF Frequency List now available ????????? £3.00

Latest UHF Frequency List ?????? £2.00

Also available leather carry cases CS900 for the AOR900(UK) - nice protective cases, keeps your new receiver in tip top condition.

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ACCESS AND BARCLAY CARDS

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

Sat
Met 2/16 Met 2/18
Epoch 1989 165.0895 1989 165.0865
Decay 24 24
Inc 82.56 82.52
RAAN 271.99 161.7
Ecc 0.001 0.001
Argp 201.14 324.76
MA 156.93 35.21
MM 13.8348 13.83805
Rev 9208 1465

George Garden

DXing,

and use

weather

Don’t forget,

transmitting

such

wrote

comers,

and

been made since you last

Rev 9208 1465 MM ArgP Decay 2.2e-6 1.2e-6

periods

any infra-red pictures.

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

Meteor 3, currently a back-up for the

recently operational Meteor 4

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 fully

collecting quality 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

until 0758 UTC 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.

Fig. 2

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

Meteorosat pictures where NOAA

pictures should have been, and

apparent discrepancies in the

timetable. Fortunately the GOES

satellite transmits its own timetable

each day at 1055 UTC so I recorded

it the next day and day that

evening to write it all out.

The schedule had been revised on

June 19 and now includes the

broadcast of 61 Meteorosat 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

Richardson.

Pictures

I have produced two pictures for this

issue after a fair amount of image

adjustment. I fed a live Meteorosat

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 if 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

Meteorosat 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

GJOR, MIR can still be tracked by

monitoring 160.000 MHz 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

molecular weight per day show it to have increased:

Day of year 170

DOY 181

DOY 190

DOY 195

Please send in your reports and

include any pictures when possible

together with details of your

equipment. All pictures will be

returned.

THE NEXT THREE DEADLINES ARE

SEPTEMBER 18, OCTOBER 17 &

NOVEMBER 20

Ron Ham

Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

BAND II DX

Tropospheric

While the barometer was around

1025mb (30.3in) on May 5, P.R.

Guruprasad (Molepole, Botswana) using a Sony ICF-7600DA with its

own rod antenna, received signals between 1605 and 1612 from Radios

RSA (105.2 MHz) and Tswana (87.9 MHz) and possibly Radio Lesotho on

88.8 MHz. 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 105.2 MHz. He then heard the bi-lingual station on

95.1MHz at 0630 on the 27th, broadcasting news and a commercial.

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 fm. broadcast stations

between 56 and 73MHz during the

early evenings of June 3 and 11

and Italian television sound (Ch. 1c

87.75MHz) between 2300 and 2350

on the 10th. Also on the 10th, Barry

Bowman (Prestwick) 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

Yougoslavia (Radio Zagreb). Although

these openings seem rather

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a few first-timers to your log.
This time the weather was cloudy and foggy and the pressure fell during the day from 1022.5mb (30.2 in) to 1020.3mb (29.9 in). All day I logged Radio Tsawana's 3kW transmitter at Zeerust and a number of unidentified stations, some carrying the same programmes, on several spots on the band throughout the day. The pressure was up and down again over a 10-day period. (Oddly, both radio stations 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.

George then TVDX'd on Cairn O'Mount, on June 18, George Garden checked Band II and added BBC Radios Derby and York and IRLs 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, at a mere 400m 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 keeping an eye on 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. 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 absence of DX and by now our newcomers, who patiently awaited those "big openings", had become unconverted 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.

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 new or later it is a good reference material for the technical bookshelf. This A5-form 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 centre amplifiers mast and mast-fittings, etc. and a few special receivers suitable for DXing. David finds that publications like this often produce good ideas and/or solve outstanding problems.

As the solar activity was high, I calculated that the sunspots were becoming more active and that the days ahead would show increased solar flares and increased solar radio emissions. Among the crop of idents received by David Glenday was the TSS-UEIT test card. The TSS-UEIT test card is being channelled with a programme on Ch. R1 and insinuates from Czechoslovakia, Italy and Spain on the 8th, the captions BR-1, Grunten, Kepujasg and Nachrichten, plus a sub-titled 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 75p bet on the rail, he received pictures from Spain and the USSR. He now has a D100 computer running the "warbles" on 92.3, 93.7, 96 and 103.8MHz plus BBC Radios Bristol (95.5MHz), Kent (104.3MHz) and WM (95.6MHz) and IRL GWR for west Wiltshire on 102.6MHz.

**TELEVISION**

**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 London to Spain and Italy, logos from Czechoslovakia (CST Praha), Norway (statue in Copenhagen) Spain (TVE Falcon Crest, Madrid and Teleradio), news from Finland, West Germany (ZDF), Italy (TG1) and the USSR, cartoons, films and general programmes from East Germany (DZDK), Portugal (IRTP), 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 regions (Bagn, Gamleham, Hadsel, Hermes, Melhus & Steigen), Poland (no ident on card), Spain (TVE), Sweden (Kanal 5), Sverige, Switzerland (PTT-SRG1), USSR (East Tallinn and Ueti) and Yugoslavia (LRT 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 regions Gamleham, Hermes, 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 insinuates from Czechoslovakia, Italy and Spain on the 8th, the captions BR-1, Grunten, Kepujasg and Nachrichten, plus a sub-titled 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.

**Fig. 1**

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

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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. E2. Edwina and Tony added arts and talks from Spain, folk-dancing from the USSR, horse-trials from West Germany, newscaster from Portugal, the Norwegian regional station closed down and sport from Czechoslovakia, Spain and Sweden.

While using a Piontron TV500 with its rod antenna in my car at Sissinghurst Castle, Kent, at 1801 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 (TVV Videbaek), Fig. 8, Ch. E40, at 1144 on May 22, Nederlands 3 clock caption, Fig. 9, "sitting on Chaton", 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, 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 19th and 22nd respectively. In Edinburgh at 1300 on the 16th, 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. Of 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.
THE NEXT THREE DEADLINES ARE SEPTEMBER 18, OCTOBER 17 & NOVEMBER 20

July 12, I received negative pictures in Band III on Ch. C5, pictures of a far and motoring on Ch. E8 and a Belgian test-card on Ch. F1. Very fast DXing was the order of the day, as D100 converter, I received test-cards in Belgium (RTBF1 & RTBF Tele 2), Denmark (TV2, Denmark), France (TDF Canal+), East and West Germany (DFF1, ARD, NDR1&2, HR3, RB1, WDR1, WEST3 and ZDF), Holland, Ireland (RTÉ and Network 2), Luxembourg (RTL Plus on Ch. E7), Norway (NRK) and Sweden (SVT1 & 2).

STV
Ians Armstrong RS92190 (Millom) using a Panasonic DR 449 receiver, Sinclair Spectrum48k computer, Technical Software's RX4 programme and an Alphacom 32 printer, copied his first scan television identification (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 a Danish batch of German, Danish, Norwegian, and Dutch signals around 0330. At 0630 and 0830 he obtained test-cards. At 0930 he saw "COMPUTER COMMODORE" and "PSE KKK".

MW Transatlantic DX

S American station identified, but unknown stations on 1210 and 1440kHz were also heard, the latter was identified by fast and excited DXer commenting 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 1511kHz, 200, where the \( \text{A} \) 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" says Tim Shorrock (Bristol). Most of the signals he broadcasts he had also heard them around first light, they stemmed from stations around 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 there are quite good for m. 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 Botswana, where it was observed at 1602 by Max Wustra in Bedford. He rated the signal as 43344 at 2229.

The DXOB 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); Sid Bennour, Morocco 540 (600kW); also Algeria, on 981 (450/300kW) and on 981 (600/300kW). A holiday near Palma, Majorca enabled Cyril Kellam to check the.
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- Continuously coverage receiver. 25MHz-200MHz, FM/AM/SSB modes. Direct frequency entry.
- 99 memories, scanning, remote control option.

**ICF-7000D**

- £899.00
- Continuously coverage receiver. 25MHz-200MHz, FM/AM/SSB modes. Direct frequency entry.
- 99 memories, scanning, remote control option.

**ICF-7000D**

- £899.00
- Continuously coverage receiver. 25MHz-200MHz, FM/AM/SSB modes. Direct frequency entry.
- 99 memories, scanning, remote control option.

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A lightweight but tough little monitor receiver 141.00-179.99MHz with accessory

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Coverage is continuous from 25MHz to 100MHz and operating modes are AM, USB, LSB and CW with an optional FM and synchronous AM board. A comprehensive range at hand.}

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band from a new location. During the evening he heard RTE-1 via Tallamore 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) being a hexagonal loop ahead of his Steepleton M887 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 than anything else, as Sheila Hughes discovered while listening in Morden to her favourite cookery programme being broadcast by BBC Radio Cambridgeshire on 1026. During these programmes a station had often been heard in the background, which Sheila thought might be Radio Jersey, but a positive identity 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 LMS 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. One of the 25kHz (11m) transmissions from Radio RSA in Johannesburg, S Africa 25.790 (Eng to Europe 1400-1500) have been reaching the UK just as a local. The SIO 444 heard 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 Perry (Northwich) rated them as 4550 at 0950.

Considerable variations in signal strength are being observed on the broadcasts from Radio Moscow, USSR 25.780 (Eng to 7 0500-1300). Whilst monitoring them in Prenton, Kenneth Reece found they varied from just audible to 5555. The broadcasts from Radio Yugoslavia, Belgrade 25.795 (Eng 1200-1230) were rated as 35322 at 1200 by Roy Patrick in Derby.

The reception of the remainder of the Persian Gulf 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 55445; BBC via Daventry, UK 25.750 as 55555; Radio Moscow, USSR 25.780 as 55555, RFI via Issoudun, France 25.820 as 55445; 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, RFI Oslo, Norway 25.750, Radio Peace Int. Costa Rica 25.945, also during June 15/16, VOA on 26.040, rated as 25312. While in Majorca, Cyril Kellerman 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 it seems the transmissions in this band from Radio Norway 25.730 and Radio Denmark 25.850 were insuble.

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 Bonn, DYed; Radio Japan via Miyavi, Gabon 21.690 (Eng, Jap 0700-0830), heard at 0708 by Andy Cadler in Folkestone; UAE Radio Dubai 21.605 (Ar, Eng 0615-1645) 45554 at 0712 by John Perry; 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
21.790 (Eng, Ger 1400-1600) SIO 544 at 1432 by Alan Smith in Hampshire. 22.670 (Eng, South Bond, USA, 21.840 (Eng 1500-1700) SIO 444 at 1505 by Philip Rambaut; Radio RSA Jacksonville 15.640 (Eng 1400-1556) SIO 434 at 1531 by Ian Bond (Wrrrd); Radio HCJB Quito, Ecuador 21.470 (Cz, Ger, Eng, Sw, Nl, Dn, Sp, English 2000-2330) 34223 at 1900 by Sheila Hughes; WCSN Scots Corner, Maine 21.640 (Eng 1400-2000) 35333 noted as "very clear" at 2030 by Jim Carlin in Swansea; Ria Casablanca 3 (Int) 21.569 (Eng 1600-0000) 25233 at 2125 by John Nash in Brighton.

Radio broadcasts are many 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 South Pacific area via Shepparton 21.740 (Eng 2200-0730) have been audible in the UK during some mornings. Listening at 0500, Chris Shorten logged them as 34333, logged them as 22422, Bishops Stortford, John S-Witherby and others heard their transmission at 21.520 at 0800. Many of the more frequently heard broadcasts to other areas stem from Radio Norway Int, Oslo 21.705 (Norw, Eng* to E.Africa, Far East 1000-1200 "Sun Only", noted as "fair" at 1100 by John Carlin in Swansea; Radio Sweden via Hoby 21.610 (Eng to Australia, New Zealand 1400-1430) 54444 at 1300 by Ken Whayman in Bexleyheath; Radio Pakistan, Islamabad 21.740 (Eng to Middle East 1700-2000) 34444 at 1600 by Kenneth Buck in Edinburgh; WSBY Cypress Creek, USA 21.640 (Eng to Alaska, Green Template 2200-2300) 34333 at 2147 by Leo Barr in Sunderland.

Good long distance reception has also been noted in the 17MHz (16m) band. Radio Australia's New Zealand's broadcasts to Pacific areas from Wellington 17.715 (Eng 2345-0145; 0145-0330; 0330-0730; *SatSun only; Via Trans Pacific, Australia to the UK during some mornings! Listening at 0500, Chris Shorten logged them as 35333 as heard in the UK. The transmissions from Radio Australia have also been received here during the early morning. Their transmission to S.Africa via Port Kembla 15.055 (Eng 0530-0550) was noted as SIO 433 by Alan Smith at 0500. Their station in Darwin beams to E.Africa on 17.750 (Eng, Ch, Fr 0100-0800) and David Edwardson reported this transmission as 34444 at 0502. Listeners in the C.Pacific area and W USA are served via Shepparton on 17.795 (Eng 2200-0800), which Kenneth LEEH reported as 34333 at 0411 while in Bots in 0700.

Broadcasts from a number of distances to other areas were heard via the UK. Radio Japan via Yamata 17.765 (Eng, Jap to Asia, Pacific, USA 0500-0700), noted as 44444 at 0536 by Sheila Hughes; BBC via Trans Pacific S.Africa 17.885 (Eng, Ch, Fr, W, C and S.Africa 0500-0630) 23333 at 0533 by Kenneth LEEH in Pretoria; Africa No.1, Gabon 16.730 Fr to W.Africa 0800-1600, heard at 1250 by Andy Cadier; WSBY Cypress Creek, USA 17.559 (Eng to Cent USA 1400-1500) 23333 at 1500 by Bill Gregory in London; Radio Cairo via Abuu Baalab, Egypt 17.670 (Ar to N.Africa 1300-1900) SIO 444 at 1702 by Kenneth Buck; Radio Oman via Thur Salt 17.735 (Ar to N.Africa, Middle East 1700-2130) 33333 at 2120 by John Rambaut; Radio Malaysia via Timor 17.735 (Eng 2200-0100) 44444 at 2207 by Richard Radford-Reynolds in Hong Kong; Radio Egypt 17.760 (Eng, Tur to Asia, SE.Asia, China 2030-0450) 24333 at 0320 by David W. H. Reynolds! Listening at 0300.

There are many broadcasts to Europe in this band, but few were mentioned in the reports. Those noted steamed them as RBB Berlin, 17.775 (Ger, Eng, Fr, Ar 1130-1500), mentioned as SIO 222 at 1300 by John Sadler; Voice of Israel, Jerusalem 15.990 (Eng 1900-0425) 55444 at 1900 by Ken Whayman; also on 17.575 (Eng 2130- 2200) SIO 433 at 2135 by Al Fraz in Baghdad; Radio HCJB Quito, Ecuador 17.790 (Cz, Ger, Sw, Dn, Fr, Sp 1800-2330) 34444 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 heard in the UK. During most days the broadcasts from Radio Australia have been difficult as listening the UK at remarkable strength despite the fact that they are beamed to other areas. Their transmissions to C.Africa via Darwin 15.170 (Cz, Ger, Sw 2200-0100) were noted as 55555 at 2200 by Richard Radford-Reynolds! Listening at 1700, Tim Shirley picked up their broadcast to SE.Africa on 15.245 (Eng 1700-1830) and noted it as SIO 444. While in Borth, Kenneth LEEH logged their transmission to the C.Pacific area via Shepparton 15.160 (Eng 2000-0700) as 23422 at 0545. Their broadcast to the C.Pacific area via Vanuatu 15.230 (Eng, Fr, Sp 0100-0900) was noted 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 2000-0700) at 0615 and noted SIO 444 in his log. The last report from listeners in the UK included broadcasts to other areas: Radio Kuwait, Sulabiyah 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 0530-0615) noted 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 Port Kembla 15.230 (Eng, Fr, Sp, English 1100-1400) 32333 at 1352 by Leo Barr; Radio DW via Wachtal, W Germany 15.595 (Ur, Hi, Eng to S.Africa 1430-1610) 24422 at 1640 by Ken Whayman; VOA via Morocco, Liberia 15.055 (Eng 1600-2200) 34553 at 2010 by John Parry; KUSW Salt Lake City, USA 15.650 (Eng to Alaska, Green Template 1600-2200) 34444 at 2126 by John Nash; Radio Kuwait, Sulabiyah 15.495 (Ar to N.Africa 0200- 2300) 53333 at 2323 by Max Wustrau;
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Intelligent Frequency-Controller for ICOM R-70/JRC NRD-515

Nonvolatile memory for 100 complete operation settings — all functions can be programmed from the keyboard — versatile timer functions (on/off); 6 outputs can be switched separately — automatic memory channel and frequency scan modes with freely definable parameters — frequency offset mode for converter usage — alphanumeric liquid crystal display — intelligent selftest functions — 8KByte user ram, 16KByte operating program — low power consumption 8 Bit CMOS CPU — easy software adaption for future modifications — developed and manufactured in Switzerland by Poly-Electronic.

The efficient monitoring of the complete SW-range calls for the use of modern receivers which should offer a large amount of operating comfort. Recently good receivers such as the popular ICOM R-70 and the JRC NRD-515 have become available on the market, but they lack the optimal microprocessor-supported operating possibilities. These requirements are fulfilled by the intelligent programmable frequency controller POCOM PFC-100 from Poly-Electronic.

The use of up-to-date circuit technology contributes to the class of this innovation which meets the highest demands of all active SW-listeners. Together with one of the two receivers (ICOM/JRC) the PFC-100 permits an unsurpassed degree of operational ease due to the consequent use of a microprocessor and comfortable software.

Large S.A.E. for details

Price to be announced

Dewsbury Electronics offer a full range of Kenwood Equipment always in stock.
Radio HCJB Quito, Ecuador 15.155 (Eng to USA 0500-10.300) 43333 at 0230 by Chris Shorten.

Some of the many broadcasts to Europe were mentioned too: UAE Radio Dubaï 15.435 (Ar, Eng 10.165-1645), noted as "good" at 1636 by Darren Beasley; RNB Brasilia, Brazil 15.25 (Eng to USA 1900-2100) 43333 at 1930 by Alan Smith; WWC Nashville, USA 15.690 (Eng 1700-2000) by John Whayman; in Winchester; Voice of Yemen, Hanoi 0200) SIC 1045 at 2100 by Alan Smith; WWC Nashville, USA 15.690 (Eng 1700-2000) by John Whayman; in Winchester; Voice of Yemen, Nashville, Tennessee 1000) SIC 2100 by Kenneth Buck.

Many of the broadcasts to other areas may be heard during the day or at night. They include KVHO Ranchi Simi, California 11.960 (Eng to USA 0400-0800), noted at 0440 by Kenneth Reese while in Boca; KLS Anchor Point, Alaska 11.700 (Eng to USA 0800-1100) at 0800 by Sheila Hughes; Radio Tirana Lungush, Albania 11.855 (Eng to 7, 1030-1050) SIC 544 at 1046 by John Whayman; Radio Australia to Europe 11.780 (Eng, Ger to SE Asia 1400-1700) SIC 434 at 1432 by Ian Bond; VOI via Tinang, Philippines 11.965 (Chin to C Asia 1100-1600) SIC 322 at 1520 by Alan Smith; SLBC Colombo, Sri Lanka 1100 (Eng, Ur to Middle East 1645-7) 33233 at 1910 by Leo Barr; Radio Finland via Pont 11.945 (7 to Far East, Japan 2000-2230) SIC 433 at 2100 by Alf Gray.

A number of broadcasts used the 9MHz (31m) band to reach listeners in Europe. They include WHRI South Arabia 9.855 (Eng, 0800-0900), rated as 33233 at 0600 by Sheila Hughes; Radio Australia via Shepparton 9.655 (Eng 0700-1030) 33233 at 0900 by Max Wustrau; TVR Monte Carlo, Monaco 9.480 (Eng 0830-1130) 55555 by Mark Thompson, his entries were logged during daylight.

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 0340-0545) 34433 at 0516 by Kenneth Reese; Radio Polonia, Warsaw 9.525 (Eng, Sp, Fr to W Europe 1245-1455) 34433 at 1230 by John Whayman; Radio Australia via Shepparton 9.580 (Eng to C America, USA 0700-2030) 43333 at 1900 by Chris Shorten; SRI via Schwarzwurz, Switzerland 9.985 (Ar, Eng, Fr to C America 1715-2000), heard at 1630 by Alf Gray; via Shepparton 9.620 (Eng to E Asia, W Pacific 2010-2310) SIC 534 at 2000 by Alan Smith; Radio Yugoslavia, Belgrade 9.620 (Eng to C America-South 2145-2150), heard at 2115 by Francis Hearne; BBC via Kranji, Singapore 9.570 (Eng to Australia, SE Asia 0000-0300) SIC 111 at 2145 by Philip Rambaut.

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

### Medium Wave DX Chart

<table>
<thead>
<tr>
<th>Freq</th>
<th>Station</th>
<th>Country</th>
<th>Power (kW)</th>
<th>DXar</th>
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<td>BE</td>
<td>100</td>
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<td>WA</td>
<td>120/200</td>
<td>E,F</td>
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<td>HR</td>
<td>200</td>
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<td>Alger</td>
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<td>E</td>
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</table>

Note: DX chart **medium wave** 1969

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Medium Wave DX Chart from Short Wave Magazine 1969.
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 well known 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 before you can. So get your pencil and paper out and start thinking about how to build the “receiving station for the family man.”

30°E
A RECEIVING STATION FOR THE FAMILY MAN

Do not hallucinate.
There is nothing new under the sun and pirate radio stations are no exception, as this tale shows.

CLANDESTINE RADIO

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 Wine tavern 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 lambswool, 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 I, 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 ‘flup...” 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 new Millaghmore 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, whereupon 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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