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Speaker Mics.

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Speaker Mics.

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Additionally, the Watson Power Supplies team is available to assist with any questions or concerns you may have. They are experts in the field and have been trusted by customers for over 50 years. Whether you are looking for a new radio, a replacement part, or advice on how to improve your station, Watson Power Supplies is the place to go.
MAY 1999 CONTENTS

13 'FIRST TO LAST - ALMOST'!
David Hewitt G3RZE shares his personal experiences in operating [PI during the PW 14 MHz QRP Contest. From last to first - almost!

14 RADIO BASICS
Rob Mannion G3XFD begins the introduction of the next project in the 'Radio Basics' series - a special receiver 'from end' for 7 MHz by looking at tuning methods.

16 ALINCO DX-70TH REVIEW
Rob Mannion G3XFD reviews the Alinco DX-70TH transceiver in use with the remote mounting and operation kit. Including a very special offer for PW readers.

18 LOOKING AT...
Gordon King CAM brings you the next in his new series called "Looking At..." This month he takes a look at the mixer.

22 KENWOOD TH-D7 REVIEW
Kevin Nice G7TJC. Editor of sister magazine SW4L, brings you his opinions of the new TH-D7 handheld dual-band from Kenwood.

28 VHF CONTESTS - GETTING STARTED
Neil Taylor G4HLX, long suffering adjudicator of the Practical Wireless 144MHz QRP Contest, brings you some top tips for successfully competing in v.h.f. contests - and he should know!

32 HIGHLANDER ANTENNA REVIEW!
Richard Newton G0RSN reviews the Highlander Antenna, courtesy of Neil Breeze G3UXV and the Design Engineers at Kenwood.

35 CARRYING ON THE PRACTICAL WAY
This month the Rev. George Dobbs G3RIV guides you through the use of a DBM and explains how to use it in a direct conversion receiver project.

37 SEAMED FOR A LONGER LIFE!
Phil Cadman G7GCP takes a close look at a very old friend - the lead-acid battery - now commonly available in 'sealed' form. Phil thinks they're useful - read on and find out how you can use them to your advantage.

42 VALVE & VINTAGE
This month Ben Nock G4BXD is looking at tuning methods. And it may be a case of... "I spy with my little eye..."

47 ANTENNAS-IN-ACTION
This month Tex Swann G1TEX takes a look at CD-ROM's, books and your letters and projects.

52 ANTENNA WORKSHOP
Join John Heys and his 'Double Dipole DX Antenna': A simple design which gives three different radiation patterns at the turn of a switch to work that DX.

56 RadioScene

68 LEISURE

72 BOOK STORE

75 COMING NEXT MONTH

Editorial Note: Due to a lack of space this month, we're sorry to announce that the Modern Microwaves Article promised this month and the second part of the Panther Project for 144MHz has had to be held over. Our apologies.

Practical Wireless, May 1999
PROFESSIONAL ADVICE

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FT-2500M  2m Mobile Military spec

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ONE ONLY original cost £2000  
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Please mention Practical Wireless when replying to advertisements
Unfortunately, before I can begin my usual monthly 'chat' to readers I have to offer a profound apology. The apology goes to those of you who were unlucky enough to receive a truly 'mixed up' version of the April PW (no - that wasn't our 'April Fool' joke - you have to look elsewhere for that!) thanks to a problem at our printers.

The problem was due to a faulty collation of the various sections of the magazine which led to readers (as far as we know) from Leicestershire northwards to Scotland, the Isle of Man, and Northern Ireland, receiving issues with some pages missing and others repeated.

The collation problem on the faulty magazine begins after page 34 where the section with page 27 onwards (carrying 'Radio Basics', 'Reminiscences Of The Macroelectronic Era', 'Lisle Street - Radio's Memory Lane', 'Speakers & Headphones') are repeated. The faulty magazine doesn't appear to return to normal until page 51.

Please accept our sincere apologies for the problems. As we go to press on this issue we think that most of the faulty issues have been returned by 'Freepost' to us for replacement. However, if you have a wrongly collated copy please contact Jo Williams (PW News & Production Editor) at the Broadstone office on 01202 659610 and give your full details - where you purchased the magazine or your subscription number, etc., so that we can send you a replacement. Full details are needed so we can fully inform the printers who have (incidentally) been 'struck off' my Christmas card list!

It was a frustrating incident for everyone - both readers and staff and compensation is setting in! Thank you for your understanding and we hope it won't happen again!

Hearing Problems

The Rev. Hubert Makin G3FDC's 'cry from the heart' letter (see star letter page 6) regarding Radio Amateurs with hearing problems landed on the desk of someone who has been concerned about the issue for a long time - Me! Hubert's letter has provided me with the opportunity to raise the profile of the distressing problem of hearing problems and the enjoyment of our hobby. I've heard of it in the past but I now know how widespread the problem is because I've discussed it during recent 'Club Visits'.

I have a hearing problem myself (the result of an inflection brought about by a nitrogen narcosis - 'ark!' - in my sub-aqua diving days) which, although minor, requires a lot of concentration when listening to readers at rallies and shows. I have a small 'in the ear' hearing aid but it's virtually useless in crowded room situations, anywhere near transmitters and computers!

I've also learned how many other Radio Amateurs also suffer from Tinnitus (a continual 'ringing' or 'whistling' in the ear) in some form or other. More appears as a varying level of high pitched whistling and 'crackling'. Tragically, many Radio Amateurs who do suffer from this and other hearing problems are often forced away from the hobby.

However, although much can be done to help overcome some of the difficulties in hearing at equipment level (Gordon King G4VFY's article 'Speakers & Headphones' page 34 of the April issue is a good example) with carefull choice, we've often stuck with what's offered by manufacturers and broadcasters!

Bad Example

At this point I must mention the broadcasters, both radio and TV (that especially television), because they must surely be the worst example when it comes to treating the sound aspect of transmission. It must be mentioned because once Radio Amateurs are aware of the difficulties caused by the broadcasters we can learn from their mistakes, making sure we don't do the same!

The major problems with broadcast sound communications (despite TV and radio programmes being 'entertainment' they are still in the realms of 'communication') in broadcasting today, comes about from the broadcaster's attempts to achieve 'reality'. This usually means using microphones for each actor, with 'throat' or other 'contact' microphones often producing very poor 'nasal' sounds full of low frequencies and resonances because the need for 'reality' takes precedence over audio quality.

Programmes such as the UK ITV's 'Bill' police drama and many other 'outside action' programmes are often spoilt by very poor sound reproduction. News programmes are also affected in the same way when carelessly hidden microphones on 'outside broadcast' reporters muffle the sound. The list is endless and frustrating and I'm often very grateful that 'maltese' teletext subtitles are available although the computer software can often provide hilarious interpretations of the actual spoken words.

Despite TV sound being available in stereo nowadays, it still seems to be the poor relation to the picture. I say this because there are many times when it can be very poor - and no attempt (and no apologies for 'becoming') seems to be made when problems do occur with the sound. In fact I understand that separate 'sound control' desks have long since disappeared from TV studios. Perhaps that explains why the sound level increases so much when adverts are inserted by the local ITV contractor!

As I write this, I'm hoping that readers involved in broadcasting will take note - and pass the comments on to those who can do something about it. Perhaps someone who looks after the 'furry animal on a stick' (wind-screened microphone operator) may like to take note?

In the meantime I'm going to throw the debate open to readers and ask anyone who suffers from or has successfully overcome hearing problems so they can enjoy Amateur Radio to the full to write in to me.

For my own comfort and ease of use, I'll continue to try to use speakers and enclosure which provides the best reproduction in the audio range which I can hear easily. Perhaps someone will come up with an audio frequency shift device - similar to that used by divers breathing oxy-helium gas mixtures (the high pitched voices are caused by the vocal chords vibrating faster in the thinner gas) so that we can adjust the incoming frequencies to our comfort and best comprehension?

Finally on this topic, I'd like to mention (and I'm being practical and not sexist) how pleasant it was to work a German Amateur Radio station on 7MHz from my car during my lunch break at the London Show on Saturday 13th March.

The college club station was operated by Young Lady GYJL operators and their higher pitched voices really cut through the QRM. Perhaps all IX operators should be ladies?

Picketts Lock Hot Spot?

Whilst on the subject of the London Show I've got a question for readers. Did you find the Picketts Lock venue too hot on March 13 and 14th? Speaking for myself I thought that the ventilation - accompanied by the poor atmosphere provided by cigarette smokers and the 'Burger Bar' adjacent to the PW stand - made it very uncomfortable.

For many years I've asked the organisers - Radiosport - to do the decent thing and look after their customers by improving ventilation. All they've got to do is to have some doors open to provide fresh air and provided they position a security operative next to the door they're unlikely to lose out by the occasional visitor getting in 'horror of horrors' for free. So how about Radiosport - can you look after your customers a little better? They might even stay longer at the show if you do!

Irish Whiskey

I'm delighted to say that the Irish Authorities have granted me the callsign E9SW (ES9 Irish Whiskey?) for use whenever I'm in Ireland. I feel highly honoured that they've further extended the band of friendship in this way and you can be sure that I'll be delighted to work you during my "Flying Visit" to Dublin QRP Club station opening on Thursday April 8th and Friday 9th and during my holiday between 23rd of April and 1st of May.

Mandy Memories

I've received very many letters, telephone calls and cards following the death of Mandy my Labrador in February. Thank you everyone - what a wonderful Fellowship Amateur Radio is. You're a great bunch of people.

Rob G3XF D
Dose Of His Own Medicine?

Dear Sir

Regarding "Wind - Does It Affect Frequency?" (PW April) Never has so much hot air been expelled by one author over two pages Switch off your desk fan OM!

John Cunningham GM3JCC

Editor's comment: John GM3JCC's (I suspect) tongue in cheek' missive is to let us know that he hasn't been 'April Fools' by our latest (annual) joke against readers! We hope that everyone enjoyed this 'pseudo-technical' diversion! It also seems appropriate that John's letter is published as he was the originator of the 'April Fool' spoof ('Wireless Antennas' - Issuers and 'Bats in the belfry') in 1997!

Illegal Activities On The Amateur Bands

Dear Sir

I feel that I should respond to the Editor's comments in 'Keylines' in the March issue of PW concerning illegal operations. I'm doing so as the co-ordinator of RSGB's Amateur Radio Observation Service and have a direct interest in measures which might be taken to reduce or eliminate illegal activities and abusive/threatening operations on Amateur Band frequencies.

The RAOS has a Direct Interest in Measures which might be Taken to Reduce or Eliminate Illegal Activities and Abusive/Threatening Operations on Amateur Band Frequencies.

You may wish to know that the recently re-formed ARoS is served by a number of volunteer Observers who collect evidence of malpractices and non-observance of the 'rules' (RR00) which occur on Amateur Radio frequencies. Their activities are co-ordinated by me. The 'illegal' activities include: abuse of packet radio, repeaters, abuse on h.f. channels, etc.

However, I hasten to add at this point that neither I nor the Observers consider ourselves to be a 'Private Radio Police Force'. We operate under the oversight of Radio Society Of Great Britain's Licensing Advisory Committee and our main aim is to help and advise all Radio Amateurs - not just RSGB members - who are the victims of persons of ill-intent seeking to deny to others pleasure in their chosen hobby.

The method adopted is as follows: when cases of "abuse" are reported to ARoS, additional substantiated information and objective evidence is gathered by a number of Observers over a period of time. This is collated, assessed and analysed; and the 'dossier' is passed to the competent authorities for further action if this is warranted. This 'self-help' is as far as a 'non-executive' body can go.

I like to think that we are the Amateur Radio equivalent of 'Neighbourhood Watch' with the Radio Communications Agency (RA) perhaps in the role of the Police Force. Our methods seem to work adequately. I would also not disagree if some were to say that we were doing the RA's job for them.

Indeed, we are doing what the RA would be expected to do if it had an unlimited budget in terms of finance and staff resources. However, as the Editor rightly pointed out in 'Keylines' - Amateur Radio is not at the top of the priority list for assignment of scarce resources.

I believe that if we demonstrate that we recognise when we have a problem, that we're trying to reduce or eliminate the malpractices abuses which form part of the problem, that we're prepared to do some of the initial investigatory and assessment work ourselves - and if we can present to the authorities the results of our investigations/research in a coherent, unambiguous, readable and objective

Practical Wireless, May 1999

Editor's comment: Hubert's letter has provided the final 'push' for me to write on this subject (something I've wanted to cover for a long time) because there are a large number of radio enthusiasts with some form of hearing problem. It's a subject which has - as G3FDC suggests been rather overlooked. Please see 'Keylines' for further comments on this distressing problem.
Rob & His Roberts

Dear Sir

I agree with much of what the Editor says in his review of the Roberts RC328 multi-band radio cassette receiver in the March 1999 issue of Practical Wireless. Inclusion with this issue of the "International College Prefix List 1999" is greatly appreciated (Thank you very much). I am now well into my 76th year and you will readily appreciate that for one such as I, to be able to listen, freely from my home, including those from amateur sources and to record these easily and at leisure, to include stereo transmissions from such as "Classic FM", has made life for me a much more enjoyable experience.

From my early days as a GPO Telegraphist, I have watched, almost at times in wonder, at the relentless and literally astonishing advancement of electronics and communications in general. Yes, truly, the RC328 is a fine piece of equipment, beautifully constructed and a joy to operate.

However, my particular receiver is not a Roberts RC328, but a Realistic ICF282. Identical in all aspects to the RC328, made in Taiwan and bearing the serial number 4073723228 which is one of the actual manufacturer. I purchased my ICF282 some two and a half months ago from the Tandy shop in Norwich at their normal catalogue price of £149.99 which is £70.01 less than you paid for the same thing elsewhere! Also, comparing the items advertised on pages 17 and 32 of your March issue, the Sangean AT-250 receiver priced at £329.95 is clearly identical to the Roberts R611 retailing at £299.

Since, in my opinion, the facts clearly speak for themselves, I do not propose to comment further except to say that many radio enthusiasts such as we - and I am a member of the Royal Signals ARS (No. 3820) - are apparently being induced to pay considerably more than necessary for identical equipment offered for sale under a different name.

Ronald Sims
Norwich

Dear Sir

Rob Mantion's review of the Roberts RC328 receiver was most interesting. It was good to see a licensed Radio Amateur broadening his horizons by listening to the broadcast bands. I wonder how many tunecasts with general coverage are sitting idle in Amateur Radio shops?

Two points he didn't mention in the review: the receiver 'mutes if you turn the rotary tuning too fast, which is not brilliant for band scanning. Also, the very annoying keyboard 'beep' - it would be better if this was an option that could be turned off, although I realise this is a useful facility for visually impaired listeners.

Finally, this receiver comes in several guises, you can pay in excess of £200! If you want a Roberts badge, but if you're willing to accept a Realistic or a Sangean, you could end up with a bargain at a much lower price.

Jonathan Kempster
Millton Keynes

Editor's comments: Very many readers wrote to me on this subject - all basically saying the same thing regarding the price and showing a great interest in the topic. However, a few (very fortunate) readers managed to buy the 'Realistic' version for less than £20 when the 'Tandy' shops recently changed hands following a 'take over' of the business. Finally, I'd like to remind Jonathan that I've often mentioned that general listening (particularly to the h.f. broadcast bands) has always been a very enjoyable feature of my radio activities and suitable comments are always included in my reviews of equipment with 'general coverage' included

Radiocommunications

Agency Response

Dear Sir

As a regular reader of the Practical Wireless Editorials and as one who cannot resist a challenge, what else could I do but pick up the invitation for a reaction from the Agency to the exchanges about interference to Amateur Radio due to illegal use on the 28MHz band?

I entirely support what the Editor says in his 'Keylines' Editorial (March PW) that Amateur Radio is allocated radio spectrum on the understanding that no protection can be given against interference within the band. The Agency has to devote most of its resources to dealing with interference caused to the emergency services and business users who depend on reliable communications in order to conduct their business successfully.

I believe that most Amateur Radio users recognize that these priorities are reasonable and that they pay a relatively modest licence fee for their unprotected usage of the radio spectrum. However, having said that, the Agency also understands how frustrating it is when illegal users spoil the enjoyment for others.

A sense of balance has to be struck which both reflects our necessary priorities but which still gives Radio Amateurs some expectation of official action to assist them. That sense of balance can, and does, lead us to take enforcement action against offenders who cause serious problems to the Amateur Radio service.

What we need is documented specific information about offenders which is why we have strongly supported the RSGB's Amateur Radio Observation Service (AROS) who, if they cannot resolve problems themselves, will send fully documented cases to the Agency for possible action. This approach both encourages the initial resolution of problems within the Amateur Radio community itself and helps us better target our own scarce resources.

The original thrust of the debate was about interference from overseas operators and I strongly endorse the Editor's view that the International Amateur Radio Union could have a role in the resolution of such problems and the Agency can also pass on detailed information at an official level to overseas administrations for possible investigation.

I hope that this reply is a helpful input to the debate.

Barry Maxwell
Director
Radiocommunications Agency
London.

Editor's comments: I'm beginning to believe that PW Editorials reach the places where others can't, following the response to the March 'Keylines'. I thank Dave Peters and Barry Maxwell for responding and I've no doubt that readers will be interested to learn that Dave is already preparing a full length article on AROS which we hope to publish later this year.
Remarkable Radio Receiver

Icom have just announced the release of their new radio receiver - the IC-R75. They say that it's a dedicated hf, 50MHz, all mode unit and that it "combines the latest receiver technology with a range of new features to ease operation and improve reception and signal quality ...".

There are a number of things which Icom say make the IC-R75 a "remarkable receiver". Twin Pass Band Tuning (PBT) filters help to assure high quality reception, it's extremely sensitive, a two level pre-amplifier, Selectable Automatic Gain Control (AGC) and noise blanker help to "capture and clean up" DX signals and the r.f. attenuator, Icom says, minimises interference from strong local stations.

Icom say that they have incorporated a number of other features so that this new radio receiver will suit a wide variety of applications - these include a bar-graph style, digital signal meter, 99 memory channels, two programmable scan edges and an internal clock with "on/off" timer functions. They tell us that a speech synthesiser can also be installed to announce the frequency, mode, signal strength and time.

Dale Blackman, Marketing Manager for Icom says: "This superb receiver is designed to suit a range of market sectors from the demanding "decoder" to the interested w.l. The IC-R75 incorporates Icom's leading edge technology and offers a range of features that make it exceptional in many ways ...". The IC-R75 costs only £699 including VAT. If you would like more information on this or any of Icom's products, you can contact them on (01227) 741741, Sea Street, Herne Bay, Kent CT6 8LD. Alternatively, you can visit their Web site at http://www.icomuk.co.uk.

We Have Moved!

The Practical Wireless News desk have received two new change of addresses in the last month - RK3KP - the Adventure Club, have changed their address. They can now be found at Donjayka str., 37, Moscow 117449, Russia. Any future correspondence with the Adventure Club should go through this address.

Closer to home though is Multicom 2000. They have informed us that from 25 February they will be based at Unit 4, 17-E Little End Road, Eaton Socon, Cambs PE19 3JH. Tel: (01480) 406774, FAX: (01480) 216456. They have requested that all letters and parcels should now be sent to this new address.

Super Scanner

Nevada have been in touch with PW to tell us about their excitement over the release of their new TRIDENT TRX-100XT ultra wide band scanner with computer interface. Nevada state that this new scanner continuously covers 100kHz-2200MHz and receives narrow f.m. (n.f.m.), wide f.m., t.w.d.m. and a.m. modes. They say that it is "pocketed with facilities ..." which includes a nine channel band scope display which will enable the Radio Amateur to monitor adjacent channels in manual, search and memory scan mode.

The TRX-100XT also has a built-in decoder, optional software and a control cable and Nevada state that it is possible to link the TRX-100XT to a computer for monitoring and control. Other facilities include a 16dB attenuator, turbo scan, auto power off and cloning. The TRIDENT TRX-100XT will sell for £199. For more information, contact Nevada on Tel: (01705) 698113, FAX: (01705) 699626, 189 London Road, North End, Portsmouth PO2 9AE.
Solder Site

Antex Electronics, producer of soldering equipment and accessories for schools and colleges, hobby electronics and product servicing world-wide, have announced the arrival of their brand new Web site which can be found at http://www.antex.co.uk

Antex state that this new Web site will contain all sorts of special features on soldering topics - from selecting products and accessories to techniques, problem solving and safety as well as technical tips, product information and price competitions.

Designed for use by visitors of all ages and soldering experience, the site also has its own search engine for easy access to information through drop-down menus or keywords, backed up with a glossary of soldering terms and "Frequently Asked Questions" (FAQ) section.

Ian Lockhart, Sales Manager, states that "The Web site will provide instant access to users or our products all over the world. We see it as an important educational tool as well as a promotional site for our products. As a dialogue builds with our customers, we will be able to add more information to help them produce better quality and safer soldering." If you're interested, why not take a look at the Web site for yourself?

Open Day!

Jeff Stanton of Waters & Stanton PLC (W&S) has written to PW to tell us all about their Annual Open Day which will be taking place on Sunday May 30 at their store and in the car park at Spa House, 22 Main Road, Hackley, Essex from 1000-1600.

He states that they will erect a huge marquee behind their store and use this opportunity to "...clear many products, samples, ex-service department equipment and general junk at ridiculously low prices". Jeff also tells us that because of extensive alterations to their warehouse and mail order department, "...a huge number of items will be up for grabs!" Branded equipment from Icom, Yaesu, Kenwood, Alinco and Watson will also be offered at specially low prices.

Double Trouble!

Maplin Electronics have sent news of the release of their new electronics catalogue on CDROM. Launched on the 1 March 1999, they claim that it is "...quite simply the latest, comprehensive and most widely used electronics catalogue in the UK!"

This new catalogue, Maplin states, brings you the "largest semiconductor range in the UK"; "a range of refreshing new products"; "good competitive prices" and much more! This "Spring/Summer" edition is available in paper form (order code CA19V: £3.99), as well as the double CDROM (order code CQ03D: £1.95).

Maplin say that with the March issue they have introduced a new section - "Optical" - Dave Whittle, Senior Product Group Manager, says that reason for this new section is "as a result of customer feedback, where the desire to locate optical products quickly was required".

The double CDROM comes with comprehensive search facilities which, Maplin say, makes product selection quick and efficient. Pictures, technical specification and pricing (in Sterling and in Euros) all appear on screen once you've located the item which you require.

Maplin tell us that the second part of the CDROM catalogue is a free copy of the McAfee anti-virus software, a free 30 day Internet trial with Demon including software and over 100 databases! Both catalogues are available mail order from Maplin Electronics through WH Smith or from one of Maplin's many stores around the country. Or, you could call Maplin's sales line on (01702) 554000 or visit their Web site at http://www.maplin.co.uk

Historical ARS

The PW News desk received an interesting press release from a new national Amateur Radio Society which has been set up. The Vintage & Military ARS say that they are a "non-profit making, democratic and specially formed" for the licensed Radio Amateur, short wave listener and others interested in old radio or com gear ...

This new society say that they will be concentrating on the preservation and operation of vintage commercial and home brew Amateur Radio communication equipment. They say that there will be a regular newsletter sent to all members with descriptive, informative and technical articles on old radio communications gear and a specialist exchange, for sale and wanted ads section.

Other things which you can expect as a member of this society include: an exchange between members of information about equipment restoration, modification, setting up and use; technical help, advice and assistance; the study of history, development and original use of vintage (especially ex-military) gear; a valuation service for vintage communication equipment; organised nets on the amateur bands for people wishing to set up and much more.

The first meeting will be taking place at Betchley Park on 29 May 1999.

For more information please contact Howard Aspinall G3XVJ (Hon. Secretary) at "Adare", Raikeswood Crescent, Skipton, North Yorkshire BD22 1ND, Tel: (01756) 793555, E-mail: u064.144@compuserve.com

Taking The 'Ham' Out Of Radio Today

Now for some news which you may already know about. We have had news from the RSGH that they will be changing the name of Ham Radio Today to simply Radio Today in an attempt to broaden the magazine's appeal. This change will take effect from the May edition.

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Digital Radio Has Arrived!
You may remember that way back in the news of the December 1998 edition of PW, I (Jo Williams) wrote about the digital revolution in radio - and mentioned the new Arcam Alpha 10 DRT. Well, this month I received a further press release from Arcam which announces the retail availability of the Alpha 10 DRT.

As from the 15 March 1999, you will be able to walk into one of the 100 Arcam hi-fi dealers and buy one! Arcam say that the Alpha 10 DRT is “the first home DRT [Digital Radio Tuner] to be developed and the first to go on retail sale”. They go on to say that it is a “stand-alone component” which is “easily added to any hi-fi system, much as one would add a new CD player”.

The Arcam Alpha 10 DRT retails at £800 and Arcam say that it is definitely worth it because once you’ve bought it “the music is free”. You will be able to receive radio stations as a “clear, clean sound”.

St George’s Special Event
News now from Bill Felton G3XZF who wrote to tell Practical Wireless all about a Special Event which the Wisbech Amateur Group are organising to commemorate St. Georges Day on 23 April 1999. It will take place from Peckover House (a Georgian House owned by the National Trust) at North Brink, Wisbech.

Bill says that they have applied for a G999 Special Event callsign and GB99SGD is a possibility. Although they haven’t had final confirmation as this copy of PW goes to press), Bill tells us that he feels certain that GB99SGD will be granted. They plan to be QRV on 3.5, 7, 14 and 18MHz, 144 and 50MHz is also likely. For further information on this Special Event please contact G3XZF (QTHR or Tel: (01945) 588102).

Rob’s Roving Again!
Rob Mannion G3XFD - our ‘roving Editor’ - is well and truly into his busy 1999 ‘Club Visit’ schedule and he has managed to visit some clubs several times in the past ten years, one of these is the Chester & District Radio Society - who have moved to a new venue since Rob’s last visit.

Rob arrived on Tuesday 23 February at the new village hall near Wavenan on the outskirts of Chester and was welcomed by Club Secretary Neil Foster GIONQ before enjoying the evening where he provided an update to his previous visit and recalled some of the “G3XFD Adventures in Journalism”.

The evening was wound off with a presentation of £25 for the Radio Amateur Invalid and Blind Club (RAIBC). Rob remarked: “I’ve never been in such an attractive little building as this”. He said that the wooden beamed and vaulted roof of the super hall is less than three years old. So, if you’re looking for an active and friendly club, Chester is the club for you!

There was a true ‘welcome in Wales’ waiting for Rob with GW9XFD (mum’t forget the GW bit!), when he eventually arrived in North Wales although storms, floods and even snows - to visit the Aberystwyth & District Amateur Radio Society on Thursday 4 March.

The ‘Welsh Welcome’ mat was very much in evidence and despite the weather there was a good turn-out of local Amateurs, s.w.l.s and students from the local University. In fact, Rob claims he had an audience including visitors from British Columbia in Canada and Germany!

Rob was welcomed by Katie Moore GW9XFD, who had extended the original invitation and the evening concluded with a lively ‘Question & Answer’ and a buffet meal. Rob says that any student attending the University can be sure of “a real welcome from the local amateurs” in the town.

The Silverthorn Club was next on the ‘Club Visit’ list. Based in Chingford in north east London, it’s a club with a long history. Thanks to the co-operation of the Silverthorn Club, Rob was able to incorporate a visit to one of the highest parts of Greater London, on Friday 12 March, while he was in the area for the London Show at nearby Picketts Lock.

The evening was a particularly successful event with a good attendance, wonderful atmosphere and a lot of lively ‘feedback’, followed by a well presented (and very tasty) buffet meal! Andrew Mawbray G0LWS led the welcome team and Rob left for his Hotel in Epping Forest with the memory of a precarious climb up the steep stairs to the Silverthorn Club station and clenching a £50 cheque donation for the RAIBC! Well done Silverthorns!
**"Last To First - Almost!"**

**PW 144MHz QRP Contest - The GW8ZRE/P Contribution!**

My interest in the Practical Wireless 144MHz QRP Contest began way back in 1984 whilst I was on holiday on the island of Jersey and working the callsign: G8VYTP. As a result of my enjoyment of this holiday, I visited Jersey again in 1985 and sent in an entry to the PW 144MHz QRP Contest myself, the result of which was 31 QSOs using a 5 1/2 whip antenna - this was to be the start of a very long career as a PW QRP contestant.

**Famous Home-Brew**

It was during 1988 that I constructed my now famous, home-brew HBIC7V antenna for portable operation from Cyrm-y-Brain, Llangollen in North Wales - 561m a.s.l. (10831 ft). This turned out to be a superb site with a good take off in all directions. My antenna was supported approximately three metres a.g.l. on a couple of aluminium poles which were taped together.

Although I was very successful at this position, the rain of North Wales took its toll on both QRP kit and QRP equipment so, in 1992, GW8ZRE/P moved to the warmer climate of Ibiza "EA" Spain. As my luck would have it, the Sunday of the contest brought heavy rain!

I had transported a kit HBIC7V antenna to Spain comfortably wrapped in a sun shade and the X-ray machine at Manchester airport soon detected the elements, cable and PL-259 plug. A further hand baggage search revealed transmitter and plastic cable ties! I recommend to other travelling QRPers that the guy rope pegs, it will fall away from yourself and your car.

Best Plans

The day arrives and even the best laid plans can go wrong. In 1998, the waterlogged grass and sheep droppings at my position defeated me on several occasions. Because of this, I suggest that you have an alternative site on stand-by as back-up.

On reaching the site, erect the mast carefully so that it remains vertical. In strong winds, the antenna will only point one way. If it falls down due to gales or even sheep pulling out the guy rope pegs, it will fall away from yourself and your car. In strong winds, the antenna will only point one way.

Charlie G0PZO suggested a rope attached to the beam with a brick at the other end - why didn't I think of this simple idea?

Anyone Can Enter

The simplicity of the PW contest means that anyone can enter, there are no high power stations and there is room for everyone on the band either on home or portable operation. I have worked many stations who say "I am not in the contest - only giving points away". I think that these stations should send in an entry.

For portable operation, I recommend that you take warm clothing, as the sun does not always shine and take a picnic or finger food that's easy to eat. As that sun does not always shine - and think that these stations should send in an entry.

I have worked many stations who say "I am not in the contest - only giving points away". In one contest, I needed a soldering iron to repair a PL-259 which broke, but I'd forgotten the gas and had to wedge the plug with solder to make a good connection.

The truth is, if you're not using a computer to score the contest, enter the serial numbers in your log before the competition day arrives as this will prevent errors if the QSO rate becomes hectic. A 'check log' listing the suffix and serial number of each call will help in rapid checking and will prevent duplicates.

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Over the years, stations get to know each other and friendly rivalry develops. At the end of the contest, Peter G1RJ/YK/P (winner of the PW 144MHz QRP Contest) and all PW entrants look forward to welcoming old and new stations to the 1999 contest. The number of entrants in some squares is low, so you could win a square certificate.

Please enter! But, most of all, enjoy yourself with fellow QRP stations! It's not the winning of the contest that counts - just the taking part!
Rob Mannion
G3XFD begins the introduction of the next project in the ‘Radio Basics’ series - a special receiver ‘front end’ for 7MHz by looking at tuning methods using variable capacitors and variable inductances. Appetite ‘whetted’? - read on!

Now that I’m starting the run up to the building of our next ‘Radio Basics’ project I have to find some space to introduce the less experienced readers to the tuning methods open to us as constructors. At the same time, bearing in mind that this column seems to attract both inexperienced, experienced and ‘dead keen’ constructors, I’m also going to describe and remind some of you of a nearly-forgotten method of tuning - ‘variable inductance’ or permeability tuning.

In fact, I’ll start off with the ‘nearly forgotten’ method because I know from the large number of enquiries that come my way - that many of you really enjoy making very simple receivers. And from my own experience I can tell you confidently that permeability tuning can provide an extremely simple tuning method, save you money, provide very fine tuning rates and take up very little space. So, why is it not used so much nowadays?

Car Radio Tuning
Up until relatively recent times, permeability or variable inductance tuning was in common use in car radio receivers. In fact, if you’ve bought one of the ‘Delco’ car radios I suggested for the ‘Radio Basics’ 3.5MHz to medium wave converter, Fig. 1, you’ll be able to look inside and see how the method is used professionally.

I’m in the process of building a 7MHz ‘front end’ for myself using ‘permeability’ tuning, employing the ceramic formers shown in Fig. 2. I’ve used the method before and it provides truly excellent ‘bandspreading’ and ease of alignment for a superheterodyne receiver - albeit at the cost of some mechanical complexity (perhaps the reason why it’s not so popular nowadays?). However, despite this problem it proves to be quite easy to ‘gang’ three or even four permeability tuning cores together, using a ‘yoke’ system.

Again, despite the mechanical complexity of a permeability tuning unit there are advantages. For instance, with the relatively narrow bands of frequencies needed for coverage of the amateur bands the correct ‘tracking’ (required for accurate production of the intermediate frequencies) for a superhet ‘front end’ the coil unit providing the local oscillator tuning can be mechanically advanced over the tuning range rather than being electronically ‘trimmed or padded’.

Years ago I even made up a four coil permeability unit to cover 7MHz, using ceramic formers. All cores were controlled by the position of the one ‘yoke’ and the position of each core within its own former could be adjusted by the thread I’d cut on the main ‘yoke’. With such an arrangement I was able (with one fine tuning control) to obtain accurate tuning of the tuned r.f. amplifier stage, the mixer, the local (receiver) oscillator and the v.f.o. for the associated transmitter. Even the c.w. ‘offset’ could be set by adjusting the v.f.o. core!

I know that more advanced constructors get ideas from ‘Radio Basics’ - so now I’ve sown

Fig. 1: A view inside the ‘Delco’ car radio which many readers used as a tuneable intermediate frequency receiver unit. The ‘permeability’ tuning unit and its mechanically linked pre-set tuning dominates most of the chassis (see text).
the idea (perhaps) I'll mention simpler uses for less experienced readers.

**Really Simple Tuning**

The ceramic coil formers can provide a really simple tuning method for absolute beginners and in fact many cheap 'vintage' crystal diode/detector receivers used this form of tuning. I've also seen the same method used by Prisoners of War because the coil was easier to make and holding prison camp guards used up too much tea, coffee and chocolate rations to get variable capacitors!

To use the ceramic former and core unit as a tuner the 'slug' and its screw-thread should be mounted inside the ceramic unit in the same fashion as a piston (or bicycle pump). With the whole assembly fixed at the base with a suitable nut, the coil is wound over the coil former between the terminating clips.

Fig. 4: This photograph shows a 200 + 300pF variable capacitor (top left, reference Type 2) with slow motion drive suitable for general coverage tuning, a 250+250pF and 20 + 20 +20pF unit (left, lower, reference Type 3), with slow-motion drive suitable for many projects. On the lower right a 10 + 10 + 20pF variable capacitor (reference Type 4) is shown, suitable for 'bandspread' operation.

Use your "Tiny Dipper" or other dip-meter to resonate the coil roughly to the band you require. This is best achieved by using a capacitor of 200pF or so (you can experiment - one of the advantages of having access to a dip-meter!) to 'set' the frequency and you can then tune the assembly by gently pushing or pulling the threaded rod.

Incidentally, you can also (for experimental purposes) try using small lengths of ferrite rod material to achieve the same results. Form a paper-tube round a rod so that it can slide in and out (trombone style) for tuning. And although it's difficult to hold (unless you can successfully drill a hole to insert a screw thread which is then anchored with epoxy resin adhesive) it makes a worthwhile teaching aid or experiment.

The ferrite rod/variable inductance/permeability tuning is an effective way of making simple receivers. To use it instead of a variable capacitor just replace the existing variable tuning capacitor in the simple receiver circuit with the coil and the (previously mentioned) resonating capacitor and tune 'trombone' style. It's an ideal project for a school group or radio club as I know from experience!

Finally on this topic - as I know there are many keen innovators and avid 'what can I do with this old radio chassis' types amongst our readers - why not partially dismantle an old long and medium wave car radio permeability tuning unit and rewind it for use on the lower short wave bands? If you do - let me know how you get on.

**Variable Choice**

Now we come to a variable choice - or a choice of variable capacitors for the next and forthcoming projects. They're all available from the same source and it's important that you quote the correct reference when you order.

The variable capacitors to be featured in forthcoming projects will include Type 1, 3 and 4. Type 4 will prove to be very useful for a 28MHz narrow band fm. receiver project later on in the series. However, my advice is that you order a selection of the various capacitors because they'll always be useful.

I'll always provide a reference to the types the various projects can use. And it's my intention to enable you to use either type 1 or type 3 in the 7MHz project. So, until next time, when I hope to present the circuit and other information... get busy. If you're not built, bought or borrowed a dip meter yet - you're still time to get organised!

**Component Suppliers**

**Ceramic coil formers**:

The high quality (ceramic) variable inductor units (Fig. 2) are available from Robin Sykes G3NFV of Syon Trading for £1.20 each plus 75p P&P. (P&P quoted is for three ceramic units, suitable for a 'three gang' tuning assembly - r.f., mixer, and oscillator). They are of superb quality with silver-plated ends and wire attachment collars. Very rare (Robin has a limited supply) and once they've gone I don't suppose we shall see them like again! Orders direct to: Syon Trading, 16 The Ridgeway, Fetcham, Leatherhead, Surrey KT22 8AZ. Tel: (01372) 372587, FAX (01372) 361421.

**Variable capacitors**: The selection of variable capacitor units suitable for projects already published in "Radio Basics" or for the latest (7MHz 'front end') project are all available direct from John Birkett in Lincoln. When ordering please quote the PW reference number shown alongside. Prices are: Types 1, 2, 3, 5, 6, 7, 8 cost £3.50 each. Type 4 costs £2.50. The cost of P&P is £2 for orders under £10, with orders over £10 being sent post free. Orders direct to: J. Birkett, 25 The Strait, Lincoln LN2 1JF. Tel: (01522) 520767.
Second Helping - With An Extra!

The Alinco DX-70TH & EDS-4 Combination

Rob Mannion
G3XFD describes the success he's had since buying a second Alinco DX-70TH which is used in conjunction with a front panel remote control panel kit. Rob says the extension cable adds even more to this versatile little transceiver and to help you share his success, Rob's also arranged a very special offer for readers!

Following requests from PW readers I've worked on the bands to send them photocopies of the original review of the Alinco DX-70, I was rather shocked to see it was published in August 1995. Time flies by doesn't it? In the past four years or so I've had an enormous amount of enjoyment with my supremely versatile DX-70. In fact I've now just bought myself another DX-70, this time it's the latest TH model.

The new transceiver is now my 'main station' and my original DX-70 is available for use in my car permanently and is operated in conjunction with the MFJ-945E mobile antenna tuner I described last month (April). The whole assembly can be removed from my car in seconds - so security is not a problem and the remote control extension cable kit enables me to place the front panel just where I need it - adjacent to my left hand on the central console of my Peugeot 405 estate car.

The EDS-4 Cable Kit

The Alinco EDS-4 front panel remote control cable kit enables the operator to remotely site the DX-70TH (or the original DX-70) away from prying eyes. Although the cable, Fig. 1, is only 1.5 metres long, it has proved to be adequate for a range of vehicles and I've tried it in a neighbour's 'People Mover' (MPV) type of vehicle, a van and a motor caravan quite successfully.

During the time I've been the Editor of PW, very few remotely operable h.f. transceivers have been reviewed. However, those that have come our way were provided with microphone sockets on the de-mountable, remotely operated front panel. Unusually, the DX-70 EDS-4 kit and presentation ends up with the microphone remaining in its original position on the transceiver main body.

When I first saw the unusual method adopted by Alinco regarding the placing of the microphone, I was (to be truthful) a little dismayed. However, I'm now a real 'convert' as I've actually found it to be an excellent idea!

The advantages of having the microphone still connected to the main chassis are numerous. The first is that you don't need to mount the microphone on the vehicle console and the second is that there's the minimum of cabling cluttering up the vehicle. The third (if you're actually intending to operate 'on the move' is that any voice operated transmit/receiving (VOX) unit or other switching does not have to trail its way to the front panel unit.

Finally, and this was particularly relevant because of the way I've arranged my front panel fixing in my car - by not having the weight of the microphone and its lead on the detached front panel - the operator can use a variety of lightweight fixing methods (Velcro, etc.). (More about this later).

Permanent Connection

At this point I have to say that I regard the connection of the EDS-4 cable kit to be a permanent installation rather than an 'in' one day and 'out' the next system. I say this because the plug and socket system adopted by Alinco would not (in my opinion) stand up to every-day installation and removal.

Regular readers may actually remember (in my original review published in the August 1995 PW) that I had definite reservations on the reliability of the front panel to main board connections (see Fig. 2). However, after four years of continual use, the system has proved me wrong! It has been very reliable and even when the front panel (on my original rig) has been removed it has been trouble free.

Despite the cabling proving reliable in practice I would still recommend that anyone using the EDS-4 kit to keep it connected. It will make the transceiver much more versatile at home and in the car. (I've even used my rig with the control panel on my computer keyboard!).

Fig. 2: The Alinco DX-70 (details same for the DX-70TH models) front panel detached, illustrating cable connections. The cable cover boxes (lower centre) are secured over the cable entry-exit points and are secured by (supplied) screws. The (front panel) cover box also provides a good mounting point for various methods of attaching the unit operationally (see text).

Fig. 1: The EDS-4 1.5m front panel remote control cable kit shown as fitted to an Alinco DX-70TH. (See text for comments on the microphone socket).
Keep it safe!

When fitted, the cable harness protecting cover (lower centre in Fig 2, with the ‘Alinco’ logo) is attached using the supplied self-tapping screws. It then provides protection, a small amount of ‘stand-off’ and can also be used to mount one half of a ‘Velcro’ fastener.

For use in my car I decided to mount the DX-70’s front panel remotely by taking advantage of two useful narrow slots left by the small gaps for the ‘security’ cover for the fitted car radio and the (now removed of course) ash-tray. The slots (with the covering flaps in the ‘closed’ position) leave enough of a gap to allow a thin section of p.c.b. material to be ‘posted’ through the slot - thus holding the control panel in place.

The simple ‘posting’ method has proved remarkably reliable in practice. I cut a 30mm wide piece of p.c.b. material (long enough to run almost the whole length of the top of the cable covering box), attaching it with self-tapping screws. Next I covered the p.c.b. material with a thin layer of black insulation tape before ‘posting’ it into the slot.

In practice, I tend to leave the control panel in place until I want to take the rig out of the car for security reasons. However, because of my large knees there’s never much room left when I get into a car! It’s useful to slide the DX-70 control panel to the left when driving, and placing it nearer when I’m operating. Altogether a very comfortable and practical arrangement!

The remote control cable runs to the transceiver which, in my car, is located behind my seat and between the rear passenger footwells. It fits very snugly indeed and is kept in place by miniature ‘stretchy’ rubber cable ties like those used on bicycle and motorbike parcel holders.

Although I’ve made myself a small extension speaker system (to place on the passenger seat), the built-in speaker on the DX-70 works very well indeed in that position. It would only become ‘muffled’ if the rig was placed under a seat for security purposes.

The microphone lead (still connected to the transceiver’s main body) proved to be long enough for comfortable operation in my car. However, if a longer microphone lead is required in a certain vehicle - there’s an Alinco accessory available or you can make one up for yourself (I’m going to make up a single headphone/microphone unit with separate P.L as this seems a very convenient method of operating - especially if you’ve only one arm!).

Table Unit

Another idea I’ve provided for myself is a little table unit (rather crude because I’m not a carpenter!), which stands astride the gap between the driver’s and front passenger seat. It’s made from surplus floor board off-cuts and I sprayed it with matt black paint.

In use, the table sits astride and rests on top of the handbrake unit, providing a very firm and convenient mounting base for a Morse key and ‘tuning up’ switch. There’s also enough room for a mug of tea! (Morse tea Sir?). The whole G3XPD/P station is very comfortable to use and I’m thinking of making my main station just as user friendly!

On The Air

I’m absolutely delighted with my ‘portable’ Amateur Radio station using the Alinco DX-70/EDS-4 combination and it’s proving to be a very worthwhile investment. On long journeys to and from ‘Club Visits’ I can be ‘on the air’ within a minute or so of stopping for a break. In conjunction with the Pro-AM mobile antennas I use, yet another dimension to our marvellous hobby has come my way.

I’ve already worked quite a few readers using DX-70s as news of their versatility spreads and I’m looking forward to working you on the bands too!

I’m pleased to say that the chances of our working ‘DX-70 to DX-70’ have increased because we’ve been able to arrange a ‘Special Offer’ so that readers can join in the fun. The special offer price includes a brand new DX-70TH, a Free EDS-4 remote front panel control cable kit PLUS a FREE one year subscription to PW.

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The mixer is the heart of all latter-day superheterodyne (superhet for short) receivers. In the early days, before the advent of the superhet, most radio sets were tuned radio frequency (t.r.f.) - so-called because the antenna signal was amplified by several variably tuned r.f. stages before being applied to the detector. With careful design and inter-stage screening to maintain stability they worked well at broadcast and short wave frequencies.

Tuning on the t.r.f. was accommodated by several (depending on the number of r.f. stages) tuning capacitors ganged to a common shaft. The requirement for optimum sensitivity and selectivity was for the tuning of all the circuits to correspond over each waveband, which called for careful tuned circuit design and alignment. The tuning problems were diminished by the coming of the superhet receiver because here much of the pre-detector amplification and selectivity are achieved at a fixed frequency - called the 'intermediate-frequency' (i.f.), regardless of the frequency of the incoming signal.

The block diagram in Fig. 1 illustrates the clever thinking behind the superhet scheme. Input signal (f1), which can be direct from the antenna but is usually amplified by an r.f. stage, is fed to a stage called the mixer (sometimes known as the frequency changer or frequency converter). This is also fed with a second signal (fo) from a stage called the local oscillator. The local oscillator is, in reality, a modulator the two input signals are the 'carrier' and 'local oscillator frequency' (fo), regardless of the frequency of the incoming signal. The i.f. amplifier, f1, fo, then feeds to the detector amplification channel for further amplification.

The input signals are converted into new frequencies or 'intermediate frequencies' at the mixer, whose signal is then fed to the i.f. amplifier channel for amplification. The input signals are converted into new frequencies or 'intermediate frequencies' at the mixer, whose signal is then fed to the i.f. amplifier channel for amplification. The i.f. can be the sum or the difference frequency and it carries exactly the same modulation as either of the two originating frequencies. Hence the modulation on fo is transferred to the i.f. signal.

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A Rig For All Reasons

The Kenwood TH-D7

Much enthusiasm was the feeling that stayed with me after attending the Kenwood pre-launch day (on behalf of PW and SWM) for the new TH-D7 dual-band hand-held transceiver - with bells and whistles. So much so, that I pestered Rob G3XFD until he agreed to let me review it when the sample was shipped to the magazine. Well, that was a couple of months ago and my enthusiasm for what the radio offers hasn't dampened at all.

Indeed, this 144 and 430MHz hand-held has stacks of features on offer. I'm sure that with this radio, which is competitively priced, Kenwood have a winner. You see, you don't just get a radio for your money - there's also a TNC which operates at both 1200 and 9600bps built-in to this mighty package.

That's not all, you can connect your GPS receiver - just so long as its data output conforms to NMEA (National Marine Electronics Association) standards - to the TH-D7 and enjoy the benefits of Automatic Packet Reporting System (APRS). Plus, the recently launched Visual Communicator the VC-H1 from Kenwood plugs straight in - and you're ready for action.

So, there you have it - an instant APRS, Packet and SSTV station and all portable at that! There is, therefore, no shortage of roles for the TH-D7 to take in its stride.

In The Palm

After a brief introduction to what this new Kenwood can do, let's have a look at how it shapes up in the palm of your hand. The set weighs in at 340g with the standard PB-38 battery installed, a mere 60g heavier than my faithful friend the 430MHz hand-held TH-42. Not only is there very little difference in mass, but the volumes of both rigs is very close too.

The TH-D7 is 122mm tall with the concentric rotary control adding a further 20mm.

Power Source

The main power source for a hand-held such as the TH-D7 is, of course, its internal battery. NiCad is the order of the day with this model, the standard PB-38 is a 6V 650mAH unit - the optional high voltage replacement being the PB-39 - a 9.6V 600mAH battery for higher transmit power.

Shipped with the TH-D7 is Kenwood's BC-17 trickle charger (like the one supplied with my TH-421 which is a moulded plug affair supplying a nominal 13.8V to allow a PB-38 to charge in about 14 hours. First on my shopping list would be the rapid charger. It's not possible to operate the transceiver with the charger connected. You can power the TH-D7 from an external source, such as a vehicle supply or a mains p.s.u. and accessory leads are available from Kenwood. There's internal regulation within the transceiver allowing quite a range of input voltages. The transceiver will warn you by beeping and with a display message if you exceed a maximum of around 16V.

Directions From Space

If you're fortunate enough to own a GPS receiver, the TH-D7 will allow you to get up and running with APRS and get directions from space! Although this type of activity is huge in the USA (correct me if I'm wrong), it's somewhat sparse here in the UK.

Being one of the many unfortunates who do not own a GPS receiver but would very much like to, I was left having to beg the loan of a Garmin GPSIII from Waters and Stanton (thanks Jeff!). Kenwood supply a lead for use with GPS receivers, but it only has a connector on the transceiver end of the lead! (Kenwood state that this is due to the many different types of GPS systems there are in use). Obtaining a plug suitable for the GPSIII can be less than easy, but there
Quite a combination! (See text).

are ways. Having made up the interconnecting hardware, we go onto using the set-up.

With an APRS station based on the TH-D7, you can beacon your whereabouts for other stations and have the radio work out distance and heading of remote stations with a similar set-up. With the addition of a computer (DOS, Mac or Windows software is available for them all), it's possible to plot the track of those same remote stations on a map to illustrate their movements.

To utilise the GPS and APRS functionality of the TH-D7, you must configure the radio with some key parameters. These are - the presence of a suitable GPS receiver, your callsign and your position - the latter is automatic with the GPS unit functioning.

Without a GPS connected, you have to manually enter your latitude and longitude in degrees and minutes. Upon entering a valid location, the TH-D7 displays the locator code for your position. This is very handy - a nice little touch.

If this radio was used by RAYNET members or similar, then it would provide an excellent way to automatically track the location of all the team members. Control could monitor the movements and locations of all suitably equipped stations, either via a PC or directly via the TH-D7 itself, as it can store data from up to 40 stations in memory.

Picture This

Another terrific feature which could be a life saver for RAYNET and other emergency service users of the professional version of the TH-D7, is the set interaction with the visual communicator.

Imagine an injured member of the public needing more than the attention of the trained first aider at the scene. Point the VC-H1's camera at the injury, hit the 'send' key and off goes the SSTV image in a matter of tens of seconds with fast f.m. mode. The trained medic at the other end of the radio link can quickly pass instructions by return - useful indeed.

But there then are less critical uses for this kind of set-up. For instance, you can keep friends and family entertained as you explore the terrain around you - as long as they're licensed of course.

Visual Communicator

Pressing that all important power button first, brings up a welcome message on the easy to read, wide angle liquid crystal display (l.c.d.). It's possible to program this message to cater to your own taste. Perhaps your own callsign lest you forget! A confirming 'di dit' is emitted from the speaker to confirm that the transceiver is functioning. A similar pair of beeps are sounded as the set powers itself off in response to a second depression of the power key.

Once on and ready for action, the TH-D7 is a joy to use. It retains the same character of its recent predecessors in that v.f.o. and memory functions work in the same manner. (I must admit, here, to thinking along the same lines as the team or individual at Kenwood that planned the way the software works. So I am biased on this point).

A new feature with this radio is the silver, four-way 'paddle' button at the top left of the keypad for navigation around the menu functions, accessing and entering data and controlling the various parameters of the TH-D7. In a very short time, you're left wondering why your previous transceiver didn't have this capability.

Speaking of the keypad, it comprises a four by four grid plus two additional slightly larger buttons for selecting active bands and invoking the radio's menu control system. All of the 18 keys are dual and some have three functions assigned.

For low light conditions, the keypad is illuminated along with the display. This lighting is invoked by pressing the 'lamp' button which lives adjacent to the dual function 'monitor/sql' button, both of which nestle comfortably below the much larger 'p.t.t.' key on the left hand side of the TH-D7. I found these controls equally easy to operate which ever hand I held the radio in.

Fig. 2: Kevin GT7ZC used the Garmin GPSIII unit with the TH-D7 (see text).
Specifications

Not being in a position to use calibrated and certified test equipment, there are no actual user measurements featured in this review of the TH-D7. But then, I'm not aware of any other UK magazine that uses a certified set-up for any measurements. So, I've provided the manufacturer's specifications for those who are interested in the figures.

General

Frequency Range: 144-146MHz/430-440MHz.
Mode: F3E (f.m.), F1D (g.m.s.k.), F2D (f.s.k.).
Operating Temp Range: -20° to +60°C.
Supply Voltages: 5.5 to 16V nominal 13.8V via d.c. In socket.
4.5 to 15V nominal 6V at battery terminals.
Frequency Stability: <10ppm -10° to +50°C.
<15ppm -20° to +60°C.
Microphone Impedance: 2kΩ.
Antenna Impedance: 50Ω.

Transmitter

Power Output: H (13.8V): 6W.
H (8.6V): -5W.
H (6.0V): -2.5W.
L (6.0V): -0.5W.
EL (6.0V): -0.05W.
Modulation Method: Resistance.
Maximum Deviation: <5kHz.
Spurious Emissions: <60dB at High power setting.

Receiver

Architecture: Dual conversion superhet.
First i.f.: 38.85MHz.
Second i.f.: 450kHz.
Squelch Sensitivity: <0.1μV.
Selectivity: 60Hz - 1kMHz: 40dB - 30kHz.
Audio Output: >450mW @ 8.6V (battery); >300mW @ 6V battery. 10% dist into 8Ω load.

I have a preference when operating this type of rig to hold it in my left hand, thus placing the p.t.t. button under my left thumb. This allows the easier use of my right hand for keypad and rotary control fiddling. Though, as I'm right-handed, I guess this is to be expected. I've not really analysed this before but I've just noticed that I place my little finger under the bottom of the rig to allow it to sit low in my hand. This allows more comfortable access to the four-way paddle and the aforementioned buttons under the p.t.t. pad.

The remaining controls live, as you might expect (well you've seen the pictures by now) on the top of the TH-D7. A dual concentric control provides channel selection via a rotary encoder and master volume control. In conjunction with the 'sql' key the squelch threshold is also set by using the rotary control. The TH-D7 does not appear to have the best battery condition monitoring around, as when the charge is about all used up, the TH-D7 is far from graceful in giving up the ghost. Instead, it seems to get trapped in a strange hysteresis loop, beeping and flashing its l.e.d. per band. This arrangement sure is not to be expected. Tye not to worry though, you'll be well in time for the APRS beacon mode.

There's one i.e.d. per band.

The TH-D7 is approximately 40mm longer than the single band one fitted to my 430MHz shack are BNC too.

The antenna connector used by Kenwood for this radio is an SMA type - a wise choice from an r.f. point of view, but I've no SMA connectors in my shack! My TH-42 uses a BNC, which I personally prefer as all the interconnections below 1GHz in my shack are BNC too.

Antenna supplied with the TH-D7 is approximately 40mm longer than the single band one fitted to my 430MHz radio. It appears - and indeed must be - base loaded. It proved itself to be effective, as the usual signals at my QTH were available at a 'normal' level.

Sited between the antenna and the transmitter are the two bi-colour i.e.d.a which illuminate green when the squelch is opened and red when the receiver is keyed. This can be done either manually, by use of the p.t.t. key, or automatically under the TH-D7's own control due to, let's say, APRS beacon mode for instance.

There's one.

...and the two hi - lo rotary controls that you'd be more likely to find on a mobile or base station. By the same token, you only get the one 'S'-meter and antenna socket.

The antenna connector used by Kenwood for this radio is an SMA type - a wise choice from an r.f. point of view, but I've no SMA connectors in my shack! My TH-42 uses a BNC, which I personally prefer as all the interconnections below 1GHz in my shack are BNC too.

The antenna supplied with the TH-D7 is approximately 40mm longer than the single band one fitted to my 430MHz radio. It appears - and indeed must be - base loaded. It proved itself to be effective, as the usual signals at my QTH were available at a 'normal' level.

Fig. 3: The standard 'fitted' battery is a 6V 650mAH unit.

The UC-H1 - Visual Communicator

Kevin G7TZC takes a look at the VC-H1 and says that it promises to cause an explosion in SSTV operation. Not from fixed installations but on the move!

It's a long time ago when I first dabbled in SSTV, much longer than I care to think about. The set-up then was based on a photo multiplier tube, a lash-up home brew voltmeter multiplier type e.h.t., power supply and the lab oscilloscope for display purposes. Well, that was the theory anyway.

The school electronics club, of which I was a member, never really got things going - with the project being abandoned before completion - but I'm convinced that it would have worked if exams hadn't got in the way. That was over 30 years ago and boy, haven't things changed?

Pocket SSTV

Just think about it - SSTV on the move, what a terrific idea! Well it's one that's been implemented in a convenient handheld package by Kenwood with there exciting VC-H1 product. I took the opportunity, whilst spending some time getting to know the TH-D7, to have an extended play with the 'Visual Communicator'.

Essentially a charged coupled device array (c.c.d.) camera and a passive i.e.d. colour display snuggly packaged with all the required control electronics, the battery powered VC-H1 makes a brilliant accessory for the hand portable user.

For the guys at RAYNET it is, in my opinion, an absolute must. Just imagine that there's a sponsored run, for example and one of the competitors falls and injures themselves. The RAYNET man on the spot can capture the injury and relay it back to control and beyond for expert examination, all with the push of a button or two. In this...
display with spurs of received audio being emitted from the sets speaker - which, incidentally, performs well under normal conditions.

I guess that the above behaviour is no real major problem - and it is the same as... you've guessed it, my TH-42. I must say that I'm a happier with a more controlled power off routine though. The battery life is pretty good though, I found myself expecting the set to power down ages before the battery was finally exhausted.

**Pocket Packet**

The TH-D7 can be the basis for an amazing portable v.h.f./u.h.f. station. Adding the likes of one of the many palm-top PCs would provide a terrific Packet station that would literally slip into your pocket. If you're a seasoned DX chaser who makes use of the Packet DX cluster network, then you don't need a PC to utilise the TH-D7.

The radio can display call, frequency and time information and it will store a list of up to ten bulletins. With the TH-D7 configured this way you can't send DX cluster information, but what a useful feature this is!

**Conclusion**

As I said at the beginning of this review, what an amazing package Kenwood have produced with the TH-D7! It could truly be all things to all men (and to be PC, all women too!). I was enthusiastic at the beginning, that enthusiasm has grown as I spent time unlocking the secrets of this little action-packed dual-band rig.

Many thanks go to Dave Wilkins at Kenwood UK, Kenwood House, Dwight Road, Watford, Herts WD1 8E8, (01923) 816444, for the loan of the transceiver which retails at £319.95 and the VC-H1 Visual communicator which retails at £309. How am I going to afford them? PW

---

**Using The VC-H1**

Using The VC-H1 is an activity which certainly adds appeal to SSTV operation, bringing the mode into a new dimension. The VC-H1 is a digital stills camera, monitor, monitor/demodulator, frame store, control and management facilities.

The VC-H1 only has room for ten stored images internally. It's possible with both the visual communicator alone to add annotation to images.

The VC-H1 is a 'cinch' to operate - really! Once you've loaded your four alkaline AA size cells or connected a suitable 6V battery and figured out the interconnections - there are a few available. There's the transceiver interconnecting lead, the computer lead and possibly a video lead too. Then you're off.

Most likely, for portable operation, you'll only need the transceiver interconnecting lead. Though in the shack it's another matter. While I remember, the VC-H1 is not solely for v.h.f. and u.h.f. operation, so it can easily be coupled up to your h.f. rig too. Modes provided by the VC-H1 are as follows - Martin M1 and M2, Robot 36 and 72, AVT30, AVT74, Scottie S1 and S2. When used with the TH-D7 or similar v.h.f./u.h.f. station, Fast FM mode is also available for pretty quick (about 15 seconds per frame) picture transmission.

There are only a few controls, six buttons and slide switch for power. Mode of operation is set by holding different configurations of buttons at power on. All the functions that are controlled by these buttons are also remotely operated by interconnection - via a serial port - and use of a PC and the VC-H1 Control Terminal software which provides additional image storage and management facilities.

The VC-H1 only has room for ten stored images internally. It's possible with both the visual communicator alone to add annotation to images, such as your callsign, but the Terminal software allows more advanced addition of text to both images received and those to be sent.

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"The TH-D7 can be the basis for an amazing portable v.h.f./u.h.f. station."

"The VC-H1 is a 'cinch' to operate - really!"
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Have you ever thought of entering a v.h.f. contest? If it seems a bit daunting, it needn’t be. Getting started can be really straightforward and a lot of fun. There’s the excitement of the competitive spirit, the friendly trial of your equipment and operating skills against others - but there’s also a lot more! You can expect some contacts over much greater distances than you usually achieve, thanks to many stations operating from good v.h.f. sites far away. You should make a large number of QSOs, including some in regions, squares or counties that are normally hard to find.

If you have chosen to go portable, then there’s the pleasure of a day in the great outdoors. Finally, there’s the satisfaction of seeing your call sign in the results listings. Oh yes, and, of course, there’s just the sheer delight of playing with radios all day long!  

Ideal Event?
The Practical Wireless 144MHz QRP Contest is an ideal event for your first go at v.h.f. contesting. The rules are simple, the log-keeping and scoring straightforward and the 3W transmitter power limit makes it easy to compete effectively even with simple equipment.

Year after year we receive reports from first-time entrants who are amazed by the DX they have achieved with their simple station. Also, after your first experience of a v.h.f. contest, you might like to move on to operate in some of the many v.h.f./u.h.f. contests organised by the RSGR.

Preparation Essential
The first thing to stress about entering a v.h.f. contest is that preparation is essential. Planning is the key to success and it starts with taking stock of what you will need - in terms of radio equipment and other requirements.

Right at the start you must decide if you are going to ‘go-it-alone’ as a single operator, or get together with some friends to form a group. There’s a lot to be said for this, in terms of pooling of resources such as equipment and antennas and sharing of the work on the day - not only operating the station, but getting everything set up and running.

A very important decision to be made as early as possible is the choice of a site at which to set up the station and operate. You might prefer to use your existing base station at your home, but the real fun of a QRP contest is really only to be had by going to a good portable site. If you’ve never tried it before, you’ll be amazed at how much more you can hear and work from a hilltop site.

What makes a good v.h.f. site? It’s not only sheer height above sea level, but the quality of the ‘take-off’ or how the land falls off around the site. Ideally you want a good take-off in all directions - certainly in the directions that you expect most contacts to be made. If you’re trying to choose between several alternative sites, it’s well worth visiting them, armed with a v.h.f. receiver and comparing the relative signal strengths of distant beacons and repeaters.

There are two more very important aspects of selecting a site. The first is that you must obtain any necessary permission from whoever owns the land. Do not leave this until the last moment. It’s usually easy enough, if you make a courteous request explaining clearly what you wish to do.

Secondly, do what you can to make sure that there’s not another group also planning to use the same site, or one very close by. Asking around at the local club and checking with local known v.h.f. enthusiasts, should help here - and it’s wise to have an alternative site in mind, just in case you do arrive at your chosen location on the day of the contest to find another group already set up there - you wouldn’t be the first to encounter this problem!

The Equipment
Now let’s turn to the equipment you’ll be needing. Almost all v.h.f. contest activity is in s.s.b., so basically you need a suitable s.s.b. transceiver. If you’re operating in an area where local f.m. activity is high, you might be able to pick up some extra contacts on this mode, but you should definitely expect to spend most of the day and achieve all your long-distance contacts, on s.s.b.

The c.w. mode is also very well suited to QRP operation, so if you’re proficient at Morse then take your key along. (Although in the past, the amount of c.w. activity during the PW QRP contest has been disappointingly low).
In the PW QRP contest, the limit on the output power of your transmitter is 3W, so if you use a transceiver capable of more than this, you must find some way of reducing the power to this level. On many modern transceivers there's a control to adjust the output power and all you need to do is find a reliable means of measuring 3W. More advice on this will be published with the contest rules next month.

When using low power, it's even more important than usual to make best use of every fraction of a watt available to you. This means having low-loss antenna feeder and an antenna with the biggest gain that you can muster. However, don't choose an array that's so enormous that it will be impossible to get up on the mast, bearing in mind that the weather will probably conspire to make this as difficult as it can at the critical moment!

A high wind not only makes antenna erection troublesome, it can also make it impossible to keep the beam pointing in the direction that you want. So you should think about a means of anchoring the mast in place, especially if you are making use of the traditional 'armstrong' method of rotation.

It's probably even more important to consider the efficiency of the receive side of your station. To work your further distances and all those remote squares, you need to pull in the weakest signals.

One way you might be tempted to try to increase your receiver's sensitivity is to use a pre-amplifier. But be very cautious about this. A high-gain pre-amplifier is certain to worsen the strong-signal performance of your receiver and, in a contest (even a QRP one), there are likely to be quite a few strong signals around, which could leave you suffering from the effects of overload and intermodulation.

The one place that a receive pre-amplifier really can help is at the mast head, ahead of the antenna feeder. By almost eliminating the feeder loss from the system noise figure, you can noticeably improve the readability of weak signals above the noise.

If you do use a pre-amplifier anywhere in your system, make sure that you have a quick and easy way of switching it right out of circuit if you encounter strong-signal problems. These may manifest themselves in a number of ways, for example received signals (not necessarily the strong ones) may become distorted, intermodulated with others, or the receiver noise floor may seem to rise and fall erratically. A better solution, featured on some modern transceivers, is the ability to switch off the receiver's own r.f. stage when using an external mast-head pre-amplifier.

A QRP station shouldn't need a lot of power to run it, so when portable you may be able to power your station by a battery of some sort - a lead-acid accumulator of the car type, for example received signals (not necessarily the strong ones) may become distorted, intermodulated with others, or the receiver noise floor may seem to rise and fall erratically. A better solution, featured on some modern transceivers, is the ability to switch off the receiver's own r.f. stage when using an external mast-head pre-amplifier.

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operators prefer to write the entries themselves, although if you have a group of people, you could have a second person as log-keeper. If so, then both operator and logger really need to concentrate - both should use headphones.

Another important job, if using a manually written log, is keeping the 'checklog'. This is a record, kept up-to-date throughout the contest, of all stations worked in alphabetical order, usually of the part of the callsign after the prefix (e.g. G3XPD goes under 'G'). A large sheet of paper ruled into 26 columns is suitable for this (though you won't get many under 'Q').

The person keeping this 'checklog' constantly checks to see if the station calling has been worked before, avoiding wasted time and duplicates. Of course, a computer log does this automatically, but I defy any operator to type in a callsign for checking as quickly as an alert 'checklogger' can cast his or her eye down the appropriate column in a manual system!

As well as this list of stations worked, you'll want to keep a record of locator squares worked. Because in the PW QRP Contest, your score is multiplied by the number of large locator squares leg, you work - every new one worked is very valuable to you.

A small map showing the squares, which you can shade in with a highlighter as you work them, not only shows how many you have so far, but also gives a clear indication of the directions in which you need to try to pick up some more. Useful information when deciding which way to point the antenna next.

**Your First Contest**

In your first contest, you're likely to want to spend as much time tuning the band and answering other stations' CQ calls, as you do sitting on one frequency calling CQ yourself.

When you do call CQ yourself, picking a 'good' frequency is surprisingly important. It may sound nice and clear where you are, but on the other side of country, where you're hoping to reach, other stations may be audible. You don't hear them because of the beam heading that you and the competing station have set.

When one or both of you moves the antenna you suddenly realise that you've been sharing the frequency. There's nothing to be gained by being obstinate in this situation - one of you is going to have to move! On the other hand, you sometimes get a feeling that you have a good spot on the band to yourself, particularly if you get a string of calls from far afield and it's well worth hanging on to it as long as you can.

After the day is all over, there remains one further essential job to be done - preparing the log for submission as a contest entry. You'll have two weeks in which to get this complete and in the post. This is where a computer might come in handy, although hand-written logs are perfectly acceptable, if clearly written.

It's particularly important to find and mark any duplicate contacts and to highlight the first contact in each square being claimed as a multiplier. All required covering information must also be given - read the rules one more time before sending off your entry. A cover sheet form, as well as a log sheet, can be downloaded from the contest Web site: [http://home.neil.org/contest](http://home.neil.org/contest) to help with this, although any A4 sheets may be used.

The full rules for this year's PW QRP Contest will be published in Practical Wireless next month. But if you're thinking of having a go for the first time in this event, don't wait until then - now is the time to start your planning and preparation. Then you'll be ready to join the hundreds of operators over the years who have found that entering the contest can be a lot of fun, rewarding and fill the log book with lots of good contacts. I look forward to welcoming your log as an entry and even maybe working you on that sunny Sunday in June!
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All Band SA-10 4502 COAX FEED

SAS -2 will operate from 150m - 10m. It can be installed as a flat top, sloper, or inverted "V". The top is 135ft/41.15m of heavy duty stranded copper wire, with low loss and a centre fed with 100ft/30.48m of 4502 heavy duty twin ribbon feeder. This antenna will work well from the balanced line output of your antenna tuner.

All Band (Limited Space) SAS-2 4502 COAX FEED

SAS-2 operates on all bands 160m 10m. It can be installed as a flat top, sloper, or inverted "V". The top is 135ft/41.15m of heavy duty stranded copper wire, with low loss and a centre fed with 100ft/30.48m of 4502 heavy duty twin ribbon feeder. This antenna will work well from the balanced line output of your antenna tuner.

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Richard Newton G0RSN reviews the Australian made Highlander Antenna from Talkabout Antennas and tells us all about just how impressed he was with it's aesthetics, design and performance! Read on to find out more.

The Highlander arrived and I eagerly unpacked it and, although I realise aesthetics are a very personal thing, I have to say that when I unpacked the Highlander I was very impressed. The antenna looks wonderful. Right away it gives the impression of sheer quality, if anything looks like it should work, the Highlander does.

The literature explains a little about the background of the Highlander. It claims that it (and other antennas in the Talkabout collection) have been developed over a 16-year period. It also states that along with its Talkabout cousins, it's apparently in use all over Australia by "... government departments and private companies, for transmission of r.f. signals over a long distance".

The antenna for review was 1.67m in length with the tuning stub fully extended. The supplied spring added a further 111mm. This made the whole thing a little short of two metres. It covers the 3.5, 7, 14, 18, 21, 24, 28 and 50MHz amateur bands. With a power rating of 300W it will cope with most (sensible) mobile or portable set-ups.

Pitted with 5/8in. UNF thread screw mounts, the antenna is constructed of fibre glass with pre-tuned copper helical windings. This is then covered in a smooth epoxy resin coating, all of which helps to give the entire antenna both strength and durability.

'Wander Lead'

The Highlander antenna supplied for the review was finished in an attractive deep blue (I'm not sure whether there's a choice of colour!). The base and top end containing the tuning stub are made of solid brass and different bands are selected by using a supplied 'wander lead' which plugs into tapping points along the antenna. These all point downwards so that rain will run off (and not into) the connection. (See Fig. 1).

The tapping points are labelled by prominent engraving of the band (in metres) next to the socket. No expense spared here either - the 'wander lead' connections are superior banana type plugs, they're gold plated and make a good solid connection into the gold plated sockets. (This antenna just oozes quality).

The antennas are actually handmade by Terry Ventoura. In his literature, Paul describes Terry as a craftsman, if you could see the quality of this man's work you might say that this is an understatement. The brass fittings are lightly brushed. The tuning stub is held in place by a tapered thread divided into quarters and tightened by a tapped brass cap. This brass cap is finished in a deep diamond shape knurling for part of its body. The antenna is quite large in comparison to a wire (red) whip, it measures approximately 22mm at the widest point and this tapers down to the thinnest point (not including the tuning stub) of approximately 8mm.

The only way that I could measure the weight was with the help of my wife, Diane. I borrowed her trusted Salter kitchen scales. You try balancing an h.f. mobile antenna on a pair of kitchen scales! It took some time but the Highlander weighed in at approximately 500g.

Careful Thought

The Highlander was obviously going to need careful thought in the way that it was mounted. An h.f. mobile antenna shouldn't really be mounted on a magnetic mount, as this does not offer a proper d.c. earth and in the case of the Highlander, a magnetic mount would never hold it.

Paul Bevers had kindly sent me a mounting spring for use with the Highlander. This was going to prove invaluable. The tapping points are made of solid brass and different hands are selected by using a supplied 'wander lead' which plugs into tapping points along the antenna. These all point downwards so that rain will run off (and not into) the connection.

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Fig 1: Different bands are selected by using a supplied 'wander lead' which plugs into tapping points along the antenna. This picture shows the set-up where it is all point downwards so that rain will run off (and not into) the connection.
During the time I had the Highlander I had also a 50MHz fm. mobile to review. I decided to try out the antenna on 50MHz. I set the radio up in the car and put an s.w.r bridge-in circuit. I did not adjust the tuning stub, which was about half way out. I plugged the 'wander load' into the 6m (60MHz) position and got a reading of 1.3:1. It was as simple as that.

I used the Highlander on 50MHz on the Boxing Day journey up to my parents. My first contact was with Terry G7VJL. As we drove out onto the local dual carriageway the spring started to come into its own. It was a very windy day, in fact gale force winds had been forecast, we were also travelling at about 112kph on the dual carriageway. The Highlander was going all over the place... its weight and substantial body meant that it was being noticeably buffeted.

**Performance**

I didn't think that an h.f. contact would have suffered too much because of this buffeting, certainly not as much as the contact with Terry did. You can imagine what the s.w.r was doing on 50MHz as the Highlander became (nearly) horizontally polarised! An old established way of preventing this is strong fishing line. I've known of operators who use a couple of lengths of strong line to anchor the top of the antenna (so the antenna stays vertical) to the back of the vehicle. Do not be tempted to take the spring out of the equation, if the antenna doesn't have 'give' then there is a strong possibility it will break.

Later on in the journey we were on A class roads, so our speed dropped. Under these conditions, I had much more solid contacts on 50MHz. The first was with Dave G4JXK in Barrington near Linnister. I was mobile in his area and we managed about 14km before he lost me. I then contacted my brother, William G7GMZ. This was a 27km contact and was 'solid' copy all the way in.

The Highlander showed promise but I was eager to try it on h.f. I'm between h.f. mobile radios at the moment, having recently sold my beloved Icom IC-706 Mk1 to my brother, William.

So, on the day after Boxing Day, William and I set off to A358 near Taunton in Somerset. I was mobile to review and is available from stock. Non-engraved antennas are readily available from stock.

**The Real Test!**

Let's face it... ease of tuning and a good s.w.r are not necessarily the sign of a good antenna so, it was time to put the Highlander to the real test.

For the tests we used William's (can you hear the grunted teeth) IC-706 Mk1, set on output power 7, this equates to approximately 7W from the radio - we didn't use the pre-amplifier.

It being Sunday, I tuned the 18MHz band. This is such a pleasant band and we soon heard Tibor OM1SKM. Tibor was a good solid 5 and 3 signal and gave us a 5 and 5 report! Unfortunately, Tibor did not give us his exact location but the former Czechoslovakia was not bad for a start.

We then heard an almost perfect pile up, again on 18MHz. The station with all the interest was TF3AO. I called "stroke mobile, stroke mobile!" I thought my efforts were in vain - not so! Seli TF3AO gave us a 5 and 6 report from his station in Reykjavik, Iceland! This was a distance of approximately 1785km. So the Highlander smashed its first pile up.

Our next chat was with Alex IKSVP near to Florence in Italy, a distance of about 1385km. Alex was a 5-6 to 5-5 signal with us, he gave us a 5 and 9 plus report. Not on the heels of this success was Adam SP1ZQF from Bialegrod in Poland, this was a trip of about 1340km. Adam gave us a 5 and 7 report, we gave him 5 and 2 with QSB. I think the wind has worsened! My Dad, John G8EAM, then gave us a shout on 145MHz to tell us our lunch was nearly ready. We started the drive down the hill - I couldn't resist a final contact and managed a chat with Jon EABARC from the Castellon region on the far side of Spain on the Mediterranean coast. Reports were 5 and 7 both ways and this time we were moving mobile!

A few days later, whilst returning home, I decided to try out my old favourite band for h.f. mobile working - 7MHz. I heard a romping signal from GMMQIH in Buckle, near Elgin in Moray, Scotland. Unfortunately, I missed the chance to make a contact with him and I missed his name, but he was a cracking signal as I was driving home along the A958 near Taunton in Somerset. A little bit further along the road I heard Bob L399X from Wilts in Luxembourg. This was a distance of about 650km. Bob gave me a 5 and 9 report and I was also able to give him the same.

**A Lot Of Fun**

I had a lot of fun with the Highlander. I would happily take this lovely antenna mobile or even portable when I go camping with the family. It's extremely well-made. As I said, aesthetics are a personal thing, beauty is in the eye of the beholder as they say: in my opinion the Highlander looks great and works even better but remember, you do have to mount it correctly due to its size.

As a terribly ostentatious final touch The Talkabout Antenna Company can make your antenna to order and will engrave your name or your call sign onto your antenna. The one I reviewed was redolent in the words "Practical Wireless".

Non-engraved antennas are readily available from stock.

**My thanks go to Paul Beavers of Talkabout Antenna Co., Hill Farm Granary, Lower Somersham, Ipswich, Suffolk, Tel: (01473) 658999, FAX: (01473) 658090, for the loan of the Highlander antenna. They can supply the antenna for £175 plus £5 P&P. PW**
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The 3CX1500A7 (8877) is the most robust valve in amateur radio use and is now in the CHALLENGER II.

The 8877 has an anode dissipation of 1500W and a grid dissipation of 25W which makes it incomparable in HF linear amplifiers.
The CHALLENGER II has a 9-position bandswitch for 10-160m including the WARC bands. It features a superb toroidal transformer, internal Papst blower, wide-spaced tune and load capacitors and many other features.

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Real quality at introductory price £2095
Carrying on the Practical Way

In the last two articles in this series, I have described a Universal VXO (Variable Frequency Oscillator) and a passive DBM (Double Balanced Mixer). Both are very useful modules for a variety of applications. For example, the VXO could be used as the frequency source for a transmitter, a receiver or even a complete transceiver. The double balanced mixer could serve as a first or second mixer in a receiver or as a balanced modulator in a single sideband suppressed carrier (s.s.b.) transmitter.

This month I'm offering the simplest application to combine the two modules ... a direct conversion (DC) receiver for the 7MHz amateur band.

Good Dynamic Range

A passive DBM offers a good dynamic range (strong signal handling capability) when used as a mixer for a direct conversion receiver. Additionally, the 7MHz allocation is a very popular amateur band, especially for QRP operation. It also happens that 7MHz is a band which needs a healthy mixer on the front end of a receiver. Many of the simple direct conversion receivers used by home constructors on 7MHz crumple under the pressure of the strong broadcast signals located just above our allocation on the 41m broadcast band. The 7MHz band in the middle of the evening, in Europe anyway, is a good test for any receiver!

A short description can explain a simple direct conversion receiver concept I see block diagram in Fig. 1. The signal from the antenna is filtered by a band-pass filter and fed into the DBM. The signal from the Universal VXO, tuning a portion of the 7MHz band, is also fed into the DBM.

The two signals mix to give a resultant audio signal. The addition and subtraction of the signals results in both upper and lower sideband audio signals. It's therefore possible to hear the desired station either side a 'zero beat' point. This is an inherent problem with simple direct conversion receivers. Although it has the advantage of being able to choose the sideband which is least affected by interference.

A DBM offers no gain to the signal, in fact there is an insertion loss and the total gain of the receiver is derived from the audio stages. The usual requirement is an audio pre-amplifier to drive audio output stages or an audio amplifier integrated circuit (i.c.).

The selectivity of the receiver relies entirely on the band-pass filter. However, it's also possible to add signal filtering at the audio frequencies. For simplicity, that's not shown this month, but I have plans to include a suitable audio filter in this column at a later date.

Band Pass Filter

The circuit of the band-pass filter is shown in Fig. 2. It follows a frequently used convention of two tuned circuits loosely top coupled by a capacitor C3. The value of C3 is small and has been chosen to couple the signals between the tuned circuits without causing interaction between the tuned circuits and producing a 'humpy' response. If the tuned circuits are 'over-coupled' there will be two peak tuning frequencies with a null between them.

The tuned circuits, L1 plus C1 and L2 Plus C2, are made from two off-the-shelf Toko coils with fixed capacitors. The Toko coils are tuneable with a iron dust core. Take care when adjusting the Toko coils. A proper plastic trimming tool is ideal. A metal screwdriver blade can easily damage the cores and will affect the tuning adjustment.

The low impedance link windings on the Toko coils are used to provide 50Ω input and output to suit a typical Amateur Radio antenna and the DBM.

Audio Pre-Amplifier

The necessary audio pre-amplifier is shown in Fig. 3. It's a circuit I have used for several months - after his usual (appropriate quotation) the Rev. George Dobbs G3RJV describes how you can use the double-balanced-mixer in a direct conversion receiver.
applications in the past, I picked it up from Denton Bramwell K7OJW who published it in a QRP magazine several years ago and it has become one of my favourites.

Denton’s circuit works well and is stable and will accept a whole variety of transistors. In practice I’ve found there’s great advantage in using low noise npn types and I’ve had good success with the BC338 and the 2N3565.

The termination of the DBM and the coupling into the audio stages is important and I have offered three alternatives. These alternatives assume that the output port of the DBM is decoupled with a 0.1µF capacitor as shown in the diagram in the last issue. The easiest, if not the crudest, alternative is shown in Fig. 2 itself. The output of the DBM is terminated with a 10kΩ resistor at the input of the pre-amplifier, which feeds directly into the pre-amplifier stages. This is the simplest method and works very well, although the termination of the DBM is far from perfect.

Another alternative method, which incorporates a simple audio filter, is shown in Fig. 4. In effect, it’s a tuned circuit at the desired audio frequency. For c.w. reception this is typically about 800Hz. (The filter parts, L1 and C1 need to resonate around this frequency.) A variety of combinations could be used but an easy off-the-shelf version is available by using a Toko 10R8 fixed inductor of 82mH and a capacitor of 0.47µF. The output is then fed to C2 of Fig. 3. This arrangement works well for both c.w. and s.s.b. signals and reduces the audio bandwidth enough to improve the signals.

The only problem I found was the tendency for the receiver to become microphonic. This happens because a large inductor on the front of an audio pre-amplifier and power amplifier can become a sensitive pickup and tapping the chassis may give loud ‘pings’ in the audio output.

A third alternative is shown in Fig. 5. Here the DBM is better terminated with a 1nF capacitor and a 51Ω resistor. To match this low impedance to the audio pre-amplifier, I’ve used an LT700 output transformer.

The LT700 transformer is designed for use in the common push-pull output stages used in cheap p.m. receivers. An output transformer gleaned from such a radio would probably work just as well.

There is even an attempt to tune the transformer output to audio frequencies by adding the two 0.1µF capacitors across the larger winding. However, I found that this method gave greater losses than the other two.

Output Stages

Almost any audio amplifier can be used for the output stages (my first tests were done with an MFJ-382 Amplifier Loudspeaker). But if in doubt, you’ll find that I’ve described several suitable amplifiers in previous projects, all you have to do is look back in PW.

Editorial note: By pure coincidence both George and I presented differing ‘add on’ audio amplifier projects in the June 1998 issue. The ‘Radio Basics’ project is shown on page 16 and the ‘Practical Way’ projects are on pages 57 and 58. Editor:

Just to complete the receiver, I added the LM380 audio amplifier shown in Fig. 6. This provides just about enough gain, although there’s not really enough for comfortable loudspeaker reception but plenty to drive portable cassette player headphones.

Prototype Style

As with most of my prototypes, the boards were built ‘ugly’ style. I find ugly construction suits simple one-off projects.

The low pass filter was however, built on a piece of scrap piece of copper laminated board intended for p.c.b. use. I drilled the holes to suit to pins and reamed out the holes that carry connections. The grounded pins are soldered direct to the copper board and the capacitors and input and output leads are soldered to pins at the reamed out holes.

The receiver copes very well on 7MHz ... even at the worst times in the evening. And when you build your version I suggest you (please!) do spend some time peaking the signals with the band-pass filter and use an antenna matched to 50Ω. I wish you good building and successful listening!
Sealed For A Longer Life

Sealed lead-acid batteries - or valve regulated lead acid (VRLA) batteries, to give them their modern name - are used when and wherever safe, low-maintenance secondary batteries are required. Although they share a similar chemistry to their wet lead-acid counterparts, they need somewhat more care in their use, particularly with regard to recharging.

The batteries are available either as single cells or, more usually, as groups of cells in a single housing. Each cell has a nominal voltage of 2V and batteries are commonly available in 6V and 12V versions.

Two Main Types

There are two main types of VRLA batteries - one type uses an acid gel, the other uses a liquid acid which is held in a retentive separator. For most applications, the difference isn't important and for amateur uses, both types can be treated the same.

Both types of battery are sealed but have vents to allow the release of any excess gas produced through misuse. During normal recharging any oxygen and hydrogen produced is recombined internally. Consequently, neither type of cell needs topping-up with de-ionised water.

There are two main applications for VRLA batteries - standby (float) use and cyclic use. Cyclic use is when a battery is repeatedly recharged and discharged throughout its life. Standby use is when a battery is only used for back-up operation and so spends almost all its life being trickle-charged. Many VRLA batteries are suitable for both types of use, whilst others are specifically designed either for cyclic use or for standby use.

Any Position

In practice, VRLA batteries can be used in any position, but common sense suggests that they be used with their terminals uppermost whenever possible. Using them on their side usually presents no problem but upside-down is not a good idea.

Most VRLA batteries are designed to work best at temperatures around 20°C to 25°C. Batteries used at higher temperatures will show improved performance but will have a shorter life. At lower temperatures, battery life is extended but performance suffers. So, keep them cool, but not cold, and keep them well ventilated.

It's important to know that VRLA batteries have a very low internal resistance. A large and potentially dangerous current can flow if a battery is accidentally short circuited. Therefore, it's advisable to place a fuse in series with each battery, preferably close to one of the battery terminals. (Under no circumstances should a VRLA battery be used without a fuse somewhere in circuit).

Sources

The VRLA batteries can be obtained from Maplin, RS Components (Electrovalue) and other industrial electrical retailers. Whilst they're significantly more expensive than their automotive (wet lead-acid) counterparts, their cost is offset by the fact that they are maintenance-free and sealed. As such, they are safe for indoor use whereas car batteries, in my opinion, are most definitely not.

Occasionally, new batteries appear on the surplus market. These are an excellent buy providing they have been stored correctly and are of recent manufacture. More abundant are those batteries which have been removed from equipment, usually as part of normal preventative maintenance procedures.

(To explain - VRLA batteries are extensively used in fire and security alarms for backup in case of mains failure. These batteries have design lifetimes in the order of five years under standby conditions. They should, therefore, be replaced after four to five years.)

Whilst many of the 'life-expired' batteries are immediately recycled some find their way onto the amateur market and most can still give useful service. As it's impossible to tell the condition of these batteries before purchase you have to take 'pot luck'. However, never buy a battery which has a bulge or any other physical defect.

Constant Voltage - Current Limited

In practice, VRLA cells and batteries should always be recharged from a constant voltage, current limited supply, see Fig. 1 (a & b). On no account should you use a normal car-battery charger. Neither should you use a constant current charger. Such chargers will damage the battery. The recharge curves shown in Fig. 2 (Courtesy of Yuasa Battery Sales [UK] Limited) are specific to:

Fig. 2: The graph illustrates the re-charging curves associated with VRLA cells. The curves are specific to the NP range manufactured by Yuasa UK who also kindly supplied the Information.

Continued on Page 40...
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for a 12V battery. Table 1 details these and the higher cyclic, recharge voltages.

<table>
<thead>
<tr>
<th>Use</th>
<th>Standby</th>
<th>Cyclic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2V Single cell</td>
<td>2.25 - 2.3V</td>
<td>2.4 - 2.5V</td>
</tr>
<tr>
<td>6V Battery</td>
<td>6.75 - 6.9V</td>
<td>7.2 - 7.5V</td>
</tr>
<tr>
<td>12V Battery</td>
<td>13.5 - 13.8V</td>
<td>14.4 - 15.0V</td>
</tr>
</tbody>
</table>

Table 1.

Yuasa’s NP range but can be taken as representative of most VRLA batteries. For standby use, the recharge voltage should be in the range 2.25 to 2.3V per cell. That’s 6.75 to 6.9V for a 6V battery and 13.5 to 13.8V for a 12V battery.

Main Problems

There are two main problems that VRLA batteries can suffer from - loss of electrolyte and sulphation. Loss of electrolyte is irreversible but sulphation - the build up of lead sulphate crystals which occurs when batteries are stored in a discharged state - can sometimes be reversed.

If a battery appears high resistance you can try charging it from a much higher voltage than usual for up to 12 hours providing you limit the current to C/10 and don’t leave it unattended. Remove it from charge immediately if any part of the battery gets hot.

Battery Capacity

All VRLA batteries have their capacity given in ampere-hours (Ah). This capacity is obtained by discharging the battery at a constant current until its voltage falls below some specified value. The time taken (in hours) is then multiplied by the discharge current (in amps). The letter ‘C’ that appears in graphs and equations is numerically equal to the capacity of the battery in ampere-hours.

The capacity of a battery varies depending on the discharge time, see Fig. 3. Because of this, battery manufacturers quote a discharge time in connection with battery capacity, typically either 10 or 20 hours. Battery capacity also depends on temperature and so that’s often quoted as well. Graph 2 applies specifically to Yuasa’s popular NP range but all VRLA batteries follow similar discharge curves.

As an example, take a 12V, 6Ah battery and discharge it at a current of 0.05CA (top curve). Read ‘0.05CA’ as: 0.05 x C, amps. In this case, ‘C’ is equal to 6. Therefore, 0.05CA is equal to: 0.05 x 6 = 0.3A. The 0.05CA curve meets the dotted line (the fully discharged point) at 20 hours. This confirms the capacity as 0.3A x 20h = 6Ah (at the quoted 20 hour rate).

Now increase the discharge current to 0.2CA; that’s 0.2 x 6 = 1.2A. On the graph the 0.2CA curve meets the dotted line at 4 hours. The time the capacity is 1.2 x 4 = 4.8A - only 80% of the 20h capacity. Because capacity falls as the discharge rate increases it’s always worth paralleling batteries - as long as they’re of the same type and in similar condition - to reduce the load on each individual battery. That way you’ll get maximum capacity from them.

Batteries can be recharged in parallel too. However, make sure they’re in a similar state of charge before connecting them up.

Disposal of Batteries

The manufacturers recommend returning scrap batteries to the point of sale for disposal. In many cases this will be awkward if not impossible. However, this is no excuse for chucking them in the bin or for dumping them. All VRLA batteries contain sulphuric acid and lead; both are harmful to the environment. Always take scrap batteries to your Local Council tip for safe disposal. This is important.

Example 12V Charger

The circuit in Fig. 1 shows a simple charger for 12V VRLA batteries. It’s capable of up to 2A output and is based on the SGS L200 adjustable regulator.

The d.c. input should be in the range 18V - 24V. Remember to use an appropriate heat sink. The set-current resistor, Rlim, should be a wire wound type with a resistance of:

Rlim = 0.45 Ω

(Where Imax is the maximum charge current)

Acknowledgement

My thanks to Yuasa Battery Sales (UK) Limited for permission to reproduce their graphs in this article. So, now you know a little bit more about them why not try using VRLA batteries yourself? You’ll find they’re in use everywhere - from wheelchairs to fire alarms - because they are so useful.
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Hello once more. Here I am at the helm again, looking forward to the summer - all that portable operating with vintage gear - and I hope I can interest you with the following selection of sets.

First of all ... how about an unknown set? I know the set number and I know the manufacturer. I also know the line-up of the valves and how it all works. But there are a few points that still need to be cleared up.

The set in question, Fig. 1 and Fig. 2, is called a TRI11HS, marked as being made by a company called "E.T.E. Ltd". The set is a tuneable receiver, 2 to 6MHz, with a crystal controlled transmitter with two 513/254Ms in the power amplifier (p.a.) stage, plus another two for the modulation. Output is 8W on low power and 25W on high.

The unknown bit concerns the mode switch. This offers phone and modulated continuous wave (m.c.w.) as well as a position marked "S.S.D." and one marked "FIRE"! What on earth are these for? I wonder. Switching to the positions mentioned simply throws the set into transmit mode.

Also, as well as screw terminals marked A (for antenna) and E (for earth) there are two more marked D. It was suggested to me that this was for a dipole, but a check inside reveals the wires to these terminals go nowhere near the radio frequency output side of things.

I did have a feeling that this set might be for marine use, maybe used on trawlers, etc., as it has a similar style and colour to the Reece Mace equipment. However, the S.S.D. and FIRE options are a real puzzle.

Needless to say, if you can throw any light on to this problem I will pass it on to the other readers.

Spy Set

For many collectors of military radio the spy set is always of great interest. I still get E-mails and letters asking where such sets can be bought. The answer is, of course, that they are few and far between.

Normally any special 'clandestine' sets falling into the hands of real collectors stay with them. There are the few 'dealers' who advertise in a lot of magazines who are happy to hype up the prices and pass them on though.

One way of not lining the pockets of such 'dealers' is to construct a replica. Indeed, if you build a copy of a vintage set, using vintage components and vintage methods, is it a 'copy' or simply a late production run?

One 'clandestine' transmitter-receiver which can be copied quite easily is the Second World War 'Para' set. This extremely well designed little unit uses just three valves. Two valves, 6SK7 types, are used as a 'straight' regenerative detector receiver with a single valve, a 6V6, being used as the oscillator/power amplifier (p.a.) stage.

The receiver is tuneable between 3.3 to 7.65MHz in two switched bands. The transmitter, giving about 4 to 5W output, is crystal controlled.

An external power supply running on a.c. or 6V d.c. was used and the set was housed in a firm Cadmium-plated steel box with a lifting lid. The original unit weighed around 1.4kg.

When the set was not in use the valves were extracted from their bases and stored in clips in the lid. This kept the overall height of the box down and meant for easier clandestine transporting.

On Receive

On receive, the operation of the 'Para' unit is straightforward. The set is tuned to the required frequency, a calibration chart held in the lid gave the correct dial reading, the reaction control was advanced until a rushing sound was heard in the headphones and a final 'tweak' on the tuning dial finds the station.

On transmit, the correct frequency crystal was inserted and the small built-in Morse key is pressed. The p.a. tuning control was then rotated while the operator watched a small bulb which glowed the brightest on tune-up.

The antenna tune capacitor was then rotated while the operator watched a second bulb, again showing brightest when on tune. Both controls were then given a final tweak and then the unit was ready to send any messages.

I acquired a 'copy' of a 'Para', Fig. 3, from a local Radio Amateur who is well known for his excellent construction projects. He built the set as a near-perfect copy but did make just one small mistake as...
the receiver/transmit switch and the bandswitch are transposed. Despite this, there’s no great problem and this small error can be corrected quite easily, I have just not got around to it yet.

Next, there’s the ‘copy’ built in France by Michel F5XM, Fig. 4. This again is very good but the tuning dial and knobs are slightly different to the original. I have heard Michel on 3.5MHz with his set but we have not managed to work ‘pars set to pare’ yet.

Although I have used mine on 3.5MHz with good contacts up and down the country, I was using a good antenna. And of course, in original usage we must bear in mind that the controlling station the ‘Para’ set was working with would have been a high powered transmitter with very good antennas.

Chinese In Origin?

Now I’ve got a request from Dave G4BXH who has acquired a strange h.f. transceiver, Fig. 5, which he believes is Chinese in origin. The set has the number ‘892’ boldly on the front and seems to be a 2 to 10MHz type set, running a.m., c.w. and lower sideband (i.e.b.). Large ‘Nixie’ type display tubes are used for frequency read-out and the construction is of a very solid type.

Obviously, the mystery transceiver was used in tanks or heavy fighting vehicles. Dave would like any information, circuits, etc., for the set so that he can try and get it going. Can you help?

Radio Marvel?

In another letter, Wilf Naylor wrote asking the following: “I was meaning to ask you about a set of mine which someone gave me years ago. Called the ‘Grid Leaks Pocketphone’ with the quotation ‘The radio marvel of the age’, it has three Hivac X series valves in it.

Someone took it to pieces and gave me the bits and I have been meaning to put it together for years. Do you know anything about this one?” Needless to say, if you can help, do get in touch and I’ll let Wilf know.

It seems that I was the only one not to know what the small wooden boxed ‘Q & I’ meter, mentioned last time, was. However, I now have the answer!

A somewhat overwhelming response came from Jim Grant, J. Gomer. E. Gastrell, Pete G1DHZ, Jim Grant, Dennis Neech, Rex Wilkinson, Denis G3MNO, Michael G0NRE, A. Hunt and a very detailed reply from John Goldfinch (and a mystery person) who all sent me information which identified the meter for me.

It turns out that the ‘mystery meter’ is part of a testing unit for telegraph lines and detonators and firing circuits in explosives. Apparently it was made before 1895 and used in the First World War (as I thought from the one that I mentioned I saw in the television programme) the meter seems to have been in continual service with the military through to the Second World War, even branching off to become a GPO test meter at some time.

In use, the meter was used in conjunction with a battery, which were all housed together in a nice leather case. Thank you all for your help!

Translation Of Japanese

I must also thank Ikuo Fujimura for his translation of the writing on the Japanese war time crystal calibrator (shown on page 52 in the February PW) and Kazuo Takeda JH1AMC, for similar information forwarded via the UK Yaesu offices in Hampshire.

The unit turns out to be a 98 Type-4 Crystal Calibrator used by both the Japanese Navy and Army forces. And, as I surmised, it does allow a tone to be added to the carrier signal to aid in its location on the receiver.

So that’s it for now. Hopefully I’ll be able to meet one or two readers at the rallies throughout the summer and I can, as always, be contacted at: 62 Cobden St, Kidderminster, Worcestershire DY11 6RP, via the PW offices or you can E-mail me on G4BXD@compuserve.com You might also like to have a look at my Web page as well at http://ourworlds.compuserve.com/homepages/G4BXD/
This month, the Editorial team here at Practical Wireless have compiled some information on the latest CDROMs for you to download. If you’re one of those Radio Amateurs that likes to keep up with the times then this could be something for you to look into! So, why not sit back, relax and browse through this month’s special ‘CDROM Profiles’?

Call Seeker
1999 CDROM.

This RSGB CDROM is probably easier to use than the RSGB Yearbook, except that you’d have to boot up your computer every time you needed to use it - if you’ve got a computer that is! We would strongly recommend this CDROM to anyone who has a computer or something to go hand-in-hand with the RSGB Yearbook therefore, when you are using the computer and need to look up a callsign from a name, or a name from a callsign you can simply load the CD and search for it. If you are not using the computer, however you can revert to the RSGB Yearbook.

The PW team think that most readers would agree that the way the old RSGB Callbook worked wasn’t always the simplest and therefore the CDROM will solve a number of problems. You can go by callsign, surname or postcode and when it works well, it works well but sometimes you will have difficulty with certain callsigns and, of course, not everyone’s callsign is in there. Recommended.

Shortwave Eavesdropper CDROM

The Shortwave Eavesdropper CDROM is a Windows compatible CDROM and is recommended to the shortwave listeners among you. On the front of the CD’s cover, it claims to contain over 100Mb of frequencies and callsigns; the largest list of world-wide utility stations; DX edge, maps and aircraft plotter and sound samples and built-in tutorial. Produced by RG Software, Shortwave Eavesdropper claims to be “a huge step forward in the presentation of information for the shortwave utility listener” with “instant access” to over 32 000 frequencies; over 42 000 callsigns (ITU and tactical); extensive lists of aircraft and ARQ Selenic codes; audio samples of data modes; country-by-country Information files containing QSL addresses, schedules, example of traffic, maps and much more.

This CDROM appears to be good value for money and it comes Recommended to those of you whose main interest lies in shortwave.

The ARRL
Antenna Book 1999
CDROM
Edition 1

The ARRL Antenna Book 1999 CDROM will probably live up to all expectations which you might have of anything produced by the ARRL. The write up on the back of this CDROM claims that it has "A wealth of practical information on antennas, feed lines and propagation..." It states that the CD includes the complete text and all the illustrations from the printed book and also contains 70 000 pages of propagation tables. This Windows compatible CDROM also contains DOS utility programmes which the ARRL claims will "assist in the design and analysis of Yagi antennas and beam antennas and analysis of local terrain effects". If you are a keen antenna designer and/ or builder and you prefer CDROMs to books then this could be the one for you!

Highly Recommended.

The ARRL
Handbook 1999
CDROM

Version 3.0

The ARRL Handbook 1999 CDROM is convenient and easy-to-use, say ARRL. Once again, it contains the complete text and illustrations from the printed book, but the back of the CD states that it also includes a powerful search engine; audio clips to illustrate a variety of modes and activities; tools to create bookmarks, zooming controls, Windows printing and clipboard support (text and Illustrations can be printed or pasted into other Windows applications); all of the Handbook "template packages" with PC board etching patterns and other useful information in Adobe Acrobat portable document format and much more.

If you enjoyed last year’s ARRL Handbook in printed format and wish to move with the times then this could just be what you need! Highly Recommended.

1999 North American/ International Radio Amateur Callbook CDROM

All of you will probably be familiar with the 1999 North American / International Radio Amateur Callbook CDROM. It’s original, printed format, but what about their new CDROM? The compilers of this CD say that it comes with more than 1,490,000 licensed Radio Amateurs (up by approximately 20,000 from last year) and includes International and North American listings. Because of the way the data is displayed, you can search for that particular callsign or name by either callsign, name, street, zip, license class, issue and expiration, etc. Powerful search and label features plus QSL managers can also be found on this extensive CD.

So, for all of you who like chasing that DX from across the pond and further afield, this CDROM comes Recommended.
Practical Wireless, May 1999

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Please mention Practical Wireless when replying to advertisements
The first book I'd like to tell you about this time is from the ARRL stable, and it's the hard-backed Physical Design Of Yagi Antennas by David B. Leeson W6QHS. Since the original descriptions in the mid-1920s by Shintaro Uda and Hidetsugu Yagi, the Yagi-Uda antenna has been described and written about many times and in many books. But now this book looks at, and takes a very different perspective on, the antenna. What's so different? (You may ask!)

The different viewpoint to the subject of Yagi antennas, is that they're looked at from the mechanical aspect. As mentioned, there have been many articles describing the antenna by the physical values to achieve its electrical dimensions. This book tells you how to build a better and stronger antenna that will withstand almost anything nature can throw at it.

There are 11 chapters in this well-presented book, with titles such as: 'The Wind In The Yagis', 'Wind And Ice Loading', Yagi Element Design' and 'Mass And Rotators'. The electrical side of the design hasn't been forgotten about all together, as chapters eight and nine cover 'Self impedance Of Yagi Elements' and 'Yagi Element Design Issues'. The final chapter looks at ten antennas from firms such as Cushcraft, Hy-Gain and QHS in more detail.

The book will not suit anyone looking for a quick antenna design for one or more bands, but if you fancy building antennas with a more professional finish it's the book for you. Now you can give that design the final polish by using the information within this book. The book: Physical Design Of Yagi Antennas is excellent value at £15.50. You'll feel proud to say "I designed and built that myself" of your next yagi antenna.

Second Book

The second book I'd like to show you, actually has some significance to an antenna that is described later on. From the partnership of William Orr W6SAI and Stuart Cowan W2LX comes the book Cubical Quad Antennas, subtitled 'How To Build And Adjust Quads' and gives more examples of cubical quad antennas for many h.f. and low v.h.f. bands. There are ten chapters in the 110 pages of this book, all choc-a bloc with information on how to understand, design and build cubical quad antennas for any frequency. The first chapter deals with the history of the cubical quad antennas from its conception by W9LZX to answer an arc-over problem that was destroying the antenna systems originally built at the 10kW Ecuadorian station of HCIB set high in the Andes.

Chapters Two and Three deal with how the quad antenna works and its characteristics, while chapters Four and Five look at multiple element systems and cubical quad like antennas. Feeding and matching the various quad systems follows, before the final section dealing with building and adjusting cubical quad antennas. This is a small book but well worth having in your library if you fancy a cubical quad antenna with its small turning circle and size coupled with a good gain/bandwidth figure. And I think this book Is more than worth every penny of the asking price of £8.95.

Upwards In Frequency

From antennas for the h.f. and low v.h.f. bands let's move upwards in frequency. Antennas for the v.h.f. and u.h.f. bands are both small and easy to construct as they tend to be self-supporting. In the book Antennas For VHF

After chapters on antenna basics and feeders Ian moves on to cover dipoles, which contrary to what you might think, work extremely well on v.h.f. and u.h.f. Other antenna types covered are vertical, Yagi, cubical quad and wide-band antennas (in the form of the log periodic). The final chapters deal with measurements and practical matters to do with antennas, finishing up with a simple frequency charts for the frequency range of 30-2450MHz. It's a simple book, but effective as well as remarkably purse-friendly at only £4.95.

The final book this month, is one covering the more unusual type of antennas, and it's called Experimental Antenna Topics by H.C. Wright. In this book there are 28 'chapters' dealing with a
variety of antennas (and indeed rarely seen or heard about. Some of the antenna models are dealt with in a rather 'distant' descriptive manner, leaving you to work out how to create your own. Others have sufficient design information to make this task a little easier. You'll be able to see how to create your own 'Abe Lincoln', helical, loop or frame antenna, a doubly-fed coaxial antenna or build one in a plastic water bottle. This book is a valuable curiosity shop of strange and yet thought provoking antenna designs. That could be just what you're looking for as your next antenna challenge. And although my 'part-Scottish' heritage sometimes shows through, the asking price of £3.50 is enough to make me want to have a go at some of the designs. After all it isn't going to break the bank!

**Your Projects**

Now to the side of 'Antennas-in-Action' which you've all been waiting for! Let's have a look at two of your projects. The first project is from Nigel Booth M1DKN and it's the 'High Gain 4-Ele Cubical Quad Antenna' shown in Fig. 1. This is a simple, and above all, cheaply made antenna for the 144MHz band. A photograph of Nigel's version is shown in Fig. 2 which shows the quickly made antenna.

Nigel's antenna design offers a very high gain in a very compact size, when he says it's ideal for Radio Amateurs with limited space who are unable to fix long-boom antenna atop a 40m mast, but who still want a reasonable performance. I think that the vast majority of us must fall into this category. The gain offered by this four element quad antenna is approximately 11-12dBd (dB referred to a dipole antenna) dependant upon location and accuracy of construction.

"I'll try to give you a better appreciation of what this gain figure of 11-12dBd means. A gain of this level means it's an effective power some 12-15 times the output power from the back of your radio. Not only do you get this power gain on transmit, but you also get the same improvement on receive. All this power gain, and yet it's still a relatively small antenna."

"The boom used for the antenna is a mere one metre in length and it may be constructed from 25mm (1in) square, weather treated wood. The treatment should consist of a good outdoor or yacht varnish. The elements are all constructed from 2mm diameter (14swg) enamelled copper wire, the dimensions of which are shown in Table 1.

Nigel goes on to say "All the dimensions for all the loop elements were calculated using the formulae shown in Table 1, which were admittedly, gleaned from The Radio Amateur Antenna Handbook by William I. Orr W6SAA. (More information is available in the Orr and Cowan Book Cubical Quad Antennas. Ed.) The beam antenna that's described here is though, all my own design.

"But please remember that as with most 'home' designs, the dimensions are only approximations, and some fine tuning may be needed once the antenna is complete and you've carried out some measurements of matching and gain (although I suspect that..."

**Table 1:**

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**Fig. 1:** Using heavy gauge wire to make an antenna that has good forward gain but is still fairly small. An idea from Nigel Booth M1DKN. See text for more detail.

**Fig. 2:** The M1DKN prototype cubical quad antenna for 144MHz.

**Fig. 3:** How to work out the polarisation of the cubical quad antenna.

In answer to that question, the two correlate extremely well. I would say that the CDROM version was produced at the same time and from the same work files that were used to create the paper version. Although the CDROM has only the featured software available for IBM PC (or clone) computers, I found the CDROM ran perfectly on my Macintosh computers that I have both here at work and at home.

The supplied Adobe Acrobat 'reader' software that may be installed from the CDROM makes 'reading the book' possible on almost any computing 'platform'. The files on CDROM are in 'Portable Document Format' (PDF) format allowing the viewing software to recreate (almost exactly) the paper version on screen. From Windows95 to Linux via 'the Mac', this CDROM may be used by almost everyone with a computer.

The 'on-screen' view of the ARRL
50MHz DELTA LOOP ANTENNA.

ANTENNA BOOK Is, with one vital exception almost exactly like the printed version! The one difference between the 'real' and the 'on-screen' book is, that on screen the 'book' may be magnified to several times its size to make viewing easier. This facility alone makes the CDROM version a candidate for my 'very highly recommended' label. With a 17In computer screen the 'book' may be viewed at the equivalent of over eight times 'real' size, making it ideal for those whose sight is failing, or not as good as it might be.

I've included several 'screen-grabs' so that you can appreciate what the view on screen looks like. There is other software on the CDROM, but mainly for the IBM PC. Although there is a series of .PDF' files for propagation prediction charts, making them 'viewable' on most computers.

These are the only 'pages' that use colour which is, I think, a bit of a shame. To the ARRL I'd say 'please use colour on the CDROM version next time', it would make the computer version 'nicer'. The CDROM version of the ARRL ANTENNA BOOK is highly desirable at only £28.

Short Wave Magazine, Aerial Techniques is well known among the TV DX 'crowd'.

This well produced catalogue lists antennas, signal amplifiers, mounting and lashing kits, rotators, signal strength meters, converters and video systems, not to mention multi-standard TV's for the serious DX'r. Aerial Techniques supplied the Semi41 signal strength meter that was reviewed by Gordon King G4VTV in the May 1997 issue of PW where Gordon showed how such a device may be used in the fight against TVI. Costing only a nominal £1.50 the catalogue from Aerial Techniques is available from them by post at:

T1 Kent Road,
Parkstone,
Dorset BH12 2EH
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or FAX: (01202) 716951

Little News

This time of year is well known for the paucity of news coming in from manufacturers and suppliers. In fact, the news cupboard is almost empty except for the catalogue from Dave Martin of Aerial Techniques. Probably better known to readers of our sister magazine 'Antennas-in-Action'. Well done Nigel!

Delta Loop

Now let me return to an update-to the 50MHz delta loop antenna that I described on page 30 of the September 1998 issue of PW. Derek Morley G70XJ, has sent me details of his modification to make the 'quick-lash-up' that was my original antenna design into a more weatherproof version suitable for more permanent outdoor installation. Derek writes "I saw your idea for the 50MHz delta loop and thought you might like to see how I mounted the p.c.b. with coil and trimmers inside a plastic single outlet conduit box".

Derek also says that it's possible to purchase a 'soft plastic gland' to seal the coaxial cable in the outlet, instead of using self amalgamating tape. He says this will make a neater job of it. I have to admit Derek, that I often make this type of lash-up in response to a need (usually quite urgent). Then, if it works, it is ignored. And this is what happened with the delta loop, which was needed to monitor the 50MHz band during the Annual Novice contest run by Poole Radio Society.

But back to Derek's description of the method he uses, shown in Fig. 4. The p.c.b. for the Pi-matching unit as described in the September 1998 issue of PW and it's placed in the conduit box as shown. When you're happy with the matching of the loop antenna then the lid may be screwed on and the matching rechecked.

If all is well then an application of the glue used to 'weld' plastic conduit piping together will give a very good weatherproof seal. Derek has also sent in details of the conduit box he uses for dipole centres shown in Fig. 5. This time he uses a three-exit version and instead of simple washer-clamped contact, he uses small eye-bolts as strain bearing point that offer some relief to the wire contact.

Interestingly enough, Derek shows his loop fed from the top of the loop, even though it is still shown as a single 'point' upwards, supported by a rope to a chimney or other point. But he says that he has never had any water get into his 'conduit-box' antenna feedpoints. Well done Derek, a simple effective antenna has been improved again - now who's next with modifications?

Ah well! That's all I have space and time for this month, I look forward to meeting you in the next issue of A-i-A.

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G3BDQ presents a simple antenna design, giving three different radiation patterns at the flick of a switch.

Fig. 1: The Double Dipole Antenna arrangement. See Table 1 for dimensions. The dipole centres ‘T’ are shown in detail in the inset drawing.

Table 1: Dimensions for the Double dipole system covering the 14-28MHz bands.

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<td>14.25</td>
<td>10.03</td>
<td>9.46</td>
<td>29.52</td>
<td>5.1</td>
</tr>
</tbody>
</table>

To achieve some gain a pair of identical dipoles, arranged in line and having the correct spacing between their ends, can be driven in phase and this pair of antennas will then give more than 3dBd (double the power) of gain at right angles to the line of the antenna wires. This ‘in-line’ arrangement of two antennas is called a Collinear antenna that can have a maximum gain of 3.4dBd which is possible when the two dipoles are separated by 0.45 of a wavelength at the operating frequency.

With end spacing closer than 0.45λ, the gain in the two side lobes falls to just over 1dBd. When the two dipoles are fed 180° out of phase with one another, the radiation pattern becomes that of a full wave antenna, which is a four lobe pattern with maximum radiation directions 54° from the line of the dipole wires. Both of these patterns are shown in Fig. 1. To achieve correct phasing each dipole must be fed with identical lengths of feeder from the switching point.

Under the arrangement I’m suggesting, feeder switching can be done at some point close to the operating position and I’ve given some details in Fig. 2. Positions one and two on the switch control both dipoles, but when the switch is in position number 3, one feedline is completely isolated and the antenna then effectively becomes a single dipole. But enough of the theory, let’s have a look at a practical arrangement that may be put together at home.

Length Not Excessive

When such an antenna is designed for one of the higher frequency h.f. bands, i.e. 14MHz and above, the total length of the antenna will not be excessive. Many small or medium sized gardens will accommodate such a collinear antenna. The total length needed for 28MHz will be some 14.75m (48ft 4in), with twice this distance needed for the 14MHz version.

To operate effectively and provide the low angles of radiation needed for DX work, the dipoles should be elevated to at least a half wavelength from the ground. If possible, the antenna can be higher to be above the screening effects of nearby buildings and trees. The dipole lengths are calculated from the well known 143/f (MHz) metres formula and the separation distance ‘S’ (as shown in Fig. 1) is calculated from the free-space full wavelength 300/f (MHz) metres multiplied by 0.45.

The optimum lengths of the dipoles and the spacings for five amateur bands are given in Table 1. Both dipoles must be as near identical as possible, by using vertical sticks in the ground and a cord to measure out the half dipole lengths and allowing a little extra to take care of the bends at the insulators and at the dipole centres ‘T’. This method of measurement is easier and more accurate than efforts using a metre rule or tape running along the wire.

A strong man-made cord such as Nylon or polypropylene, not wire, must be

Practical Wireless, May 1999
The two pole three-way switch needed to change the spacing of the antenna pair right legs of each dipole. The wires can then be marked in some way. This cannot be done once the antenna is in the air.

**Final Point**

As a final point, I have to say that the 'Double Dipole' system is longer than a 'normal' dipole, it isn't always possible to orientate the antenna into the most favourable position but when you have enough space available this can be done to give the greatest operating advantage.

A Great Circle world map will help a lot with this orientation and really your first consideration is to arrange the antenna so that the in-phase lobes which have good gain are directed towards desired countries or continents. If the antenna is positioned so that one in-phase lobe fires towards North America the antenna should give the same gain towards the South East. The 'out of phase' pattern of four lobes will then be found to cover much of the remaining land mass areas.

Unfortunately, there will always be two unavoidable poor 'directions'. These directions are always in the line of the wires off the ends of the dipoles. If possible, make sure that the line of the antenna wire is towards a direction where there is little amateur radio activity. Although each location is somewhat different, I'd always try to position the antenna so it runs a little east of north and west of south. This puts the radiation nulls towards Finland and the South Atlantic; two directions that the surroundings at my QTH doesn't often favour.

**Balanced ATU**

The feeders, being balanced, must connect to a balanced a.t.u. and of course, the impedance presented to the a.t.u. will be around 37 or 38Ω (half of the 75Ω nominal feeder impedance). When the system is switched to operate as a single dipole then the feed impedance will again be the 75Ω of a single dipole. If the a.t.u. (for example a transceiver internal a.t.u.) is only designed to work into an unbalanced feedline (coaxial connector) a simple 1:4 or 1:1 Balun is needed. If this is the case then the designs for a suitable balun can be found in many antenna books.

Although a fixed antenna, the Double Dipole is electrically steerable and is a cheap and easy way to 'cover the World'. The 3.4dB gain is as good as the gain available from some multi-element beams which, with their shortened trapped elements have very little gain at their lowest frequency of operation (which is often as high as 14MHz).

Switching the antenna when listening is interesting, for often the switch position giving most signal can be bettered on receive by switching to a position where, although the signal is not so strong, there is much less noise or QRM. If the feeders are 'strapped' the antenna can be tuned to operate as a top loaded wire on the I.f. bands.

---

**Heavy Duty**

There is a heavy duty type of this 75Ω twin feeder which is advertised as being suitable for powers levels of several kilowatts (a little 'over-the-top' in the UK). The 50Ω or 45Ω 'ladder' line feeders can be used, but these are heavier and cost about twice as much as the 75Ω variety which is also affected less by rainfall. Suitable 75Ω feeder can be obtained from W.H. Westlake of Holsworthy, Devon.

I've found that dipole wires will last longer and give many years of first class service if 16 a.w.g. hard drawn copper wire is used in preference to multi-strand wires. I have a personal dislike of multi-strand plastic insulated wires used by so many people for antennas. These wires often have invisible breaks inside the insulation and capillary action can lead to the corrosion of the thin internal wires. I have used the same hard drawn copper wires for antennas of all types for more than 20 years at my present location which is not far from the sea.

Each feeder must descend vertically (or at right angle to the dipole elements) for at least a quarter of a wavelength before it bends to travel towards the operating position. The feeders must not run together and I've found that a separation distance of at least twice the feeder's diameter will prevent unwanted coupling. At the shack the feeders must enter through separate and spaced holes.

The two pole three-way switch needed to change the phasing need not be an expensive item, for the r.f. voltage along the feeders is low. Often the junk box will provide a suitable component and I've found that rotary hand switches rescued from old 'dead' broadcast receivers are ideal. Before the antenna is hauled up into position a multi-meter must be used to identify which feeder wires connect to the left or right of the dipole.
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This Month David Butler G4ASR Has News of Band Plan Proposals and Details of an Automatic Packet Reporting System.

Hopefully the recent lack of good propagation conditions on the V.H.F. bands is indicative of the full before the storm. Conditions were reported as "rather quiet" in the December-January period and that in February was even quieter. Just two events were worthy of note - a sporadic-E (Sp-E) opening to Scandinavia on February 8 and an auroral back-scatter event on February 18.

Novice station operator Alex Gordon 2E1CJG (I083) reports that he heard the Sp-E opening on the 50MHz band between 1320-1420UTC. He mentions that for much of the day he listens to the band whilst driving vehicles around a large quarry in Lincolnshire. Alex uses an Allinco DX-70 transceiver running 3W into a ProAm P8F-6 loaded vertical antenna and was very pleased to make s.s.b. contacts with the stations of OH1VR (I011), OH2ZV (I020), OH3M4 (I020) and OH15NE (I041).

The auroral opening on February 18 consisted of a number of discrete events commencing around 1330UTC, waning and waning until late in the evening. Conditions on both the 50MHz and 144MHz bands were very similar with contacts being made from the UK with stations located in Norway, Sweden, Denmark, Germany, and Holland.

Surprisingly, there was a reasonable amount of activity on the 50MHz band. I say surprisingly as, in my opinion, most operators on this band tend to miss or perhaps they're just not interested in working the short-distance DX via auroral back-scatter. That's a shame as you really are missing out on this exciting propagation model.

Among the contacts reported on the 50MHz band were DI4AX (I031), DLBYH (I041), LA4LN (I050), PZ3TAR (I032), PZ4VST (I032) and PE2ENG (I033). The amount of activity on auroral openings such as this, much of the UK activity was situated in northern England and Scotland with the stations of G4FVP (I094), G6GYN (I093), G7LYK (I093), GM3WOI (I077), GM4VHU (I087), MW6AMW (I075) and MW1ATY (I085) being particularly active.

However, down south, stations such as G3JNO (I091), G4HRA (I090), G5RNM (I080), G7IVQ (I081) and GW7SMW (I081) were also noted. Juhee GW7SMW was also active on the 144MHz band and he reported hearing s.s.b. signals from the stations of G6GYY (I080), GM3JJ (I068), GM7WE (I088) and PE1HWO (I022). Other stations known to be active during the afternoon included GM8LFB, MW6BQF (both in I085) and OZ2LHP.

Transatlantic Attempt

Later this year, during the June-August period, a Belgian contest group led by ON7WP will be attempting to make the first transatlantic contact on the 144MHz amateur band. Their intention is to win the Brandon Trophy which will be awarded to each of the operators of the two Amateur Radio stations which first establish two-way communication between the continents of Europe and America (North or South) without the assistance of repeaters or satellites.

The proposed equipment includes a Yaeuu FT-255RD transceiver with Murakami front-end and a Kenwood TS-650S h.f. transceiver with an external transverter, Antennas are of course a vital part of the system and the group intend to use an array of four 16-element 80' Yagis at 20m above ground. To give the signals a fighting chance two 2kW amplifiers will be used (not both at the same time!) with a solid-state 600W unit as a spare.

So, what are the chances of hearing anything? According to Emil Porock W3EP (V.h.F. columnist in Q57) the chances of hearing a transatlantic signal on the 144MHz band, although small, may be distinctly possible. They're certainly much better when properly equipped operators on both sides of the Atlantic Ocean make concerted efforts.

Tropospheric ducting remains the best bet for sustained and repeated openings, especially from the Caribbean to southern Europe. This is the Bermuda "high" which I mentioned in this column last year. Sporadic-E is a remote possibility but any openings are likely to be short-lived and unpredictable.

With the establishment of bases in North America and Europe, serious consideration should also be given to a third possibility - Auroral-E. Single-hop auroral-E on the 144MHz band is common enough in the auroral zones and it probably appears during magnetic storms at the latitudes of these northerly openings, especially from the northern parts of North America. This is the Bermuda "high" which I mentioned in this column last year. Sporadic-E is a remote possibility but any openings are likely to be short-lived and unpredictable.

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SOLAR ACTIVITY

The increase in solar activity over the next few years could therefore make this time an ideal period in which to attempt a transatlantic contact via auroral-E. Coincidentally, a recent press release from NASA has provided details of the solar wind emanating from the Sun. Like water gushing through cracks in a dam, 'fountains' of electrified gas, called the solar wind, have been observed by scientists flowing around magnetic regions on the Sun to begin their third million kilometres per hour rush into space.

Using the Solar and Heliospheric Observatory (SOHO) spacecraft, scientists have observed solar wind flows coming from the edges of honeycomb-shaped patterns of magnetic fields at the surface of the Sun. For over 30 years, scientists have observed high-speed solar wind coming from regions in the solar atmosphere with open magnetic field lines, called coronal holes. The solar wind comes in two varieties, high-speed and low-speed. The low-speed solar wind moves at only 1.5 million kilometres per hour, while the high-speed wind is even faster as high as three million kilometres per hour.

As the solar wind flows past Earth, it changes the shape and structure of the Earth's magnetic field. In the past, the solar wind didn't affect us directly, but as we become increasingly dependent on advanced technology, we become more susceptible to its effects.

Researchers are learning that variations in the solar wind flow can cause dramatic changes in the shape of the Earth's magnetic field which can damage satellites and disrupt communication and electrical power systems.

The solar wind can also lead to major auroral events but whether a transatlantic contact is made depends on the state of the auroral-E. It is useful to note what Andy Nicholls G3VMZ has to say on the subject. He thinks that it's very important to make tape recordings of any signals heard. Andy mentions that simple auto-record circuits are available. Anyone attempting the challenge must easily be able to make a recording of the event. This will confirm to you that your ears are not playing tricks whilst listening for weak signals in a noisy environment and it will provide irrefutable evidence to those who doubt it is possible.

It will also allow others to post-process the signals with digital signal processing (d.s.p.) units in case further information can be extracted. I'll be giving more details next time how d.s.p. can be used when listening for extremely weak signals buried in the noise.

Band Plan Changes

You may have recently heard that NTL, owner of many prime, hill-top communication sites (mostly with TV transmitting stations), are planning to charge site rental rates equaling to those
levied to commercial operators. They're sympathetic to the Amateur Radio community but are under pressure from their customers to impose a more realistic fee for the space they provide to Amateur Radio repeater groups.

Organisations such as the RNLI, National Trust and other charitable groups already have to pay 80% of the commercial rate. At the same time, work with the Radio Society of Great Britain (RSGB). NTL have now agreed that the time scale for reaching the 50% of the commercial rate period will be extended from three to seven years and also agreed to a 5% reduction in the year one charge.

Amateur repeater groups (commercial rates are lower than links) will now pay 10% of the commercial rate from April 1999 with the remaining 40% increase spread in equal increments over the six year period ending March 2006. From April 2006 groups will be required to pay 50% of the then current commercial rate.

Even at the 10% rate being charged this April, the fees being quoted are not inconsiderable. For example, they range from many hundreds to many thousands of pounds. Clearly this is a tremendous blow to groups who run key digital nodes and repeater units from these sites and it is apparent that many of these links will be lost in the near future.

During the forthcoming year, the RSGB will be working with both the repeater keepers and NTL to carry out a full survey of Amateur Radio equipment located on NTL transmitter masts with a view to seek further reductions in costs. An example of this is that if equipment can be re-sited in a lower position on the mast or be re-located to buildings on the site then the charges levied will be considerably lower than the commercial rate.

For some months, the RSGB v.h.f. and data communications committees have been aware of this issue and have sought solutions which would provide additional spectrum allocations for digital communications. It's expected that these proposals to the v.h.f. and u.h.f. band plans will go some way in easing the provision of replacement facilities for those which are under threat.

At the same time, work with the repeater management committee has enabled certain frequencies within the repeater sub-hands to be prioritised for emergency communications use. The proposals, shown in the tables Figs. 1-4, go some way in achieving the requisite objective while providing allocations which are proportionate to the current and projected use of the bands. That said, one downside to this is that it appears that Amateur TV (ATV) enthusiasts on the 430MHz band are slowly being squeezed out of what is a shared area of the spectrum. Fast Scan TV (FSTV) carrier frequencies already need to be carefully chosen as to avoid interferences from other users. In particular the repeater input frequencies (434.600-434.925MHz) and the amateur satellite service (435-436MHz).

International Amateur Radio Union (IARU) Region 1 recommends that video carriers should be in the range 434.000-434.500MHz for 438.500-440.000MHz. The use of 438.025-438.525MHz and 439.600-439.999MHz for digital communications clearly reduces the available spectrum for the FSTV enthusiast.

Fig. 1: 50MHz Band Proposals:
51.2100MHz: Emergency communications priority (now deleted)
50.7500MHz: Emergency communications priority
51.2500MHz: Emergency communications priority

*This channel pair is proposed for emergency communications talk-through operation.

Fig. 2: 70MHz Band Proposals:
76.3625MHz: Digital Modes
76.3875MHz: Digital Modes
76.4125MHz: Digital Modes
76.4375MHz: Digital Modes

Because of the clutter of interests affecting both television, emergency communication and other specialist users, the RSGB have decided that it would be unwise to proceed without having a further period of consultation with everyone affected. If you have any suggestions regarding these specific band plan proposals then you are invited to send them to RSGB HQ, Lambda House, Cranborne Road, Potters Bar, Hertfordshire, EN6 3JE or alternatively to post them to banyplane.org.uk if you have E-mail. Background Information behind the reasoning for these band plan changes are expected to appear in the April edition of RadCom, the RSGB Society magazine.

Whilst on the subject of band plans, I've heard that requests have been received asking for the provision of an exclusive frequency within the 144MHz band for use by a new mode called Automatic Packet Reporting System (a.p.r.s.). One of the suggestions being made is that it's unnecessary to have both a slow scan TV (SVT) calling frequency (144.500MHz) and a FAST calling frequency (144.700MHz). It may be possible to have a combined calling frequency for both of these modes, therefore releasing one for use by a.p.r.s. users.

In my opinion, I think that a.p.r.s. should be located on the 430MHz band but we are after all driven not by what is best for the user but by what the manufacturers think we want! I'm afraid that the RSGB know your views.

 PACKET REPORT SYSTEM

Never heard of the automatic Packet reporting system (a.p.r.s.) or unclear about what it does? Maybe the following will help. Basically, it's very similar to a Packet radio set up but that's where the similarity ends. It consists of a transceiver

makes this system different is the a.p.r.s. software - written by Bob Bruninga WB4APR. It allows for real-time tactical communications and also provides a display system that shows you where other stations are located. The software works by using specific Packet radio frames to transmit its data as a broadcast. By doing this, it's able to keep an "all-points" net. Any station that has information to contribute simply sends it and all stations receive and log it. However, the data information sent isn't simply restricted to text messages - I've heard that some stations have recently been sending fixed pictures via the system.

You can also interface the system with a weather station (there are currently about ten

units that are compatible) to automatically broadcast the weather at your location. The Information could include pressure, wind direction, strength, rainfall and humidity. The uses of weather information is almost unlimited, not only for keeping records, but also for the prediction of severe weather effects such as floods. There's also the possibility of using the information for propagation studies. In the

Practical Wireless, May 1999
future, a network of remote unattended (and fixed attended) weather units could be set up to form a real-time national weather reporting system. The display system is probably one of the major assets of a.p.r.s. as it can track fixed or mobile stations making it ideal of a p.a.r.s. as it can track fixed or mobile stations making it ideal for special event or emergency use. For the real-time tracking function to work, a global positioning system (g.p.s.) receiver needs to be interfaced into the Packet radio system of the mobile station. Fixed stations can, however, still use the tracking/display system by inserting their location information within the transmitted data frame. The display viewed on the PC comprises of a map of your (selected) area with different stations shown as specific icons. The maps can be generated by using a variety of methods, for example: Notepad, g.p.s. unit or a digitiser and it’s up to you what information goes on them. If a station broadcasts its position it can be tracked.

If you plan to go out walking on the hills you take your hand-held, a pico-packet t.r.c. and your g.p.s. unit with you. Every few minutes you transmit your position and you can be seen on maps throughout the area. Alternatively, you have a tracker fitted in your car so the XYL knows when you’re close to home where if someone has stolen it!

Applying this principle is almost unlimited. For example, you’re watching the news and there’s been a large chemical spill in a local village. You go to your a.p.r.s. and put a ‘no-entry’ icon on your map and call it ‘Chemical Hazard’. Everyone else using a p.a.r.s. can now see that symbol on their map and know of the restriction.

The system can also be used for direction finding by permitting the plotting of signal strength contours. This permits stations with omni-directional antennas to participate and provide valuable Information. It’s made possible because a.p.r.s. has a fine of eight power-height gain (PhG) reporting and display format which it can use to draw range circles around each station showing his relative communication range and strength.

Trials have also been made using the ‘Mir Space Station’ and other satellites as ‘dipperpeers’. Using satellites greatly increases the range and capacity of a.p.r.s. This model is an excellent way of introducing school children to Amateur Radio and satellites communications.

SATELLITE LAUNCH
Following eleven unsuccessful attempts a new amateur satellite, Sunsat, has recently been launched. The satellite was designed and built by engineering students from Stellenbosch University, South Africa and carries an Amateur Radio package in addition to a high resolution image, a precision attitude control system and several other payloads.

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THIS MONTH LEIGHTON SMART GWØLB REPORTS ON THE HIGHS AND LOWS PROPAGATION CONDITIONS AND THERE’S ALSO NEWS OF ONE RADIO AMATEUR’S LOW PROFILE ANTENNA SUCCEESSES.

Following the high in propagation conditions during January, the month of February proved to be a great let down for many of us! Poor conditions were reported by all reporters, although there were a few days this month where things seemed to pick up a little.

Nevertheless, all the h.f. bands have provided some degree of both long and short distance propagation despite this ‘dip’ in conditions generally. At times like this, one really has to be on the right band at the right time and it really pays to scan the bands more carefully for that elusive DX station!

LOW PROFILE ANTENNA
A telephone call came in this month from Ian Cowdrey G4TNZ of Derby, who’s as pleased as punch with the results he’s achieved from the makeshift antenna he’s erected. Ian tells me that it’s a single wire aerial, run around his garden through the apple trees at a height of just 3.5m. It’s about 50m or so in length and used in conjunction with an MF Versatune.

On the 21MHz band Ian has already racked up contacts with 3V8BB in Tunisia, Kan in the USA, a load of Europeans, as well as UNPBD in Kazakhstan, 4ZSL in Israel and even YB6AZ in Jakarta, Indonesia! A total of five continents worked. Not bad for such an antenna eh! He’s tuning it against a single earth rod, which is not a great earth for such an antenna and I’m sure that if he were to add a counterpoise and/or a few buried radials it would perform even better with greater earth return currents. Still, what Ian’s doing just goes to show what amateurs can get away with in terms of antenna systems eh?

Indeed, following Ian’s telephone call, I decided to reconnect the rain guttering of my house as an antenna and give the 21MHz band a try. It turned up reasonably well via the a.t.u. and with 5W of c.w. I managed to hook up with the USA, Canary islands, Belarus, Russia and Slovenia in a single afternoon.

The impedances? No idea at all! Probably horrifyingly high is my guess, but it worked well enough considering and, as I didn’t already have an antenna for 21MHz, it’s now my dedicated radiator for that band. I’m not sure what will happen when it rains heavily though!

Have you used unusual objects for antennas, or been forced to use makeshift antennas in all sorts of places? Write in and share your experiences with our readers!

NOVICE LICENCE RESTRICTIONS
Readers may recall that I raised the issue of Novice licence restrictions recently. I mooted the idea that Novice operators should be allowed to send 10W output and access to all band allocations according to their class of licence - a way of increasing the appeal of amateur radio and reversing its decline.

A letter has arrived from Alan Clay M0AKX of Wirral, who says: “I totally agree that these people should get a fairer deal. I’ve worked quite a number of Novice stations on 3.5MHz and have yet to come across a bad operator. Would it really cause a problem to let Novices use 10W and give them full access to all the bands (and modes)? I don’t think so!”

Alan goes on to say: “It’s very strange how we all support our licensing laws here. Anyone can pass the RAE, learn the Morse code and then be allowed to operate without any practical experience at all. While the poor Novice has to undertake a practical course followed by an examination before they are allowed the so called ‘privilege’ of 3W! Far from being a few of our bands!” Any more thoughts on this anyone?

ALL AT SEA!
A note came in from Martin Lewis M0BBO/MM, who is based on the ‘Kan-Tan 4’ oil rig in the North Sea. (See Fig. 1). Martin says that he’s now had his QSL cards hack from the printers and would like to assure everyone who’s sent a card that they’ll be receiving one soon.

It seems that since he was licensed in 1998, Martin has been really busy operating from the rig (the oil rig, that is!) and has a few more details about his maritime mobile operation can be found on his Web site at: www.angelfire.com/om/kantani4

PROXATION REPORT
Now over to Don McLean G3NOF in Yeovil for his regular ‘Propogation Report’. Don says:
in Kent who has, yet again, cracked Australia on 1.8MHz in the form of VK6HD, as well as working 4N800H (Yugoslavia) and 12X1V (Lithuania) all at around 2100UTC. Ted uses 70W of c.w. and G5RV dipole/FF6 vertical antennas. In between job-hunting, Eric Masters G0KRT of Worcester Park in Surrey has been elected Secretary of the Wimbledon & District Amateur Radio Society - no doubt leaving him with even less time for operating the radiodrome! Nevertheless, he was pleased to work a new country on the 1.8MHz band this month, hooking up with ZL2FI in Kaliningrad at 2212UTC. Also worked on 1.8MHz was OK1DX (Czech Republic at 2100UTC, both contacts taking place on c.w. with a wire antenna of just 26m in length! Operating with 1W of c.w., GW6BII hooked up with F5RP (France), DL2DOM (Germany) and G3TRU (England). While 0.5W brought in GA3RFP, while G2JZ (Jersey) and QM7T (Belgium) were worked at 200mW, all contacts taking place between 1830 and 2300UTC.

THE 7MHz BAND
Leaping ahead now to the 7MHz band, we find Sean Gilbert G4UJC of Milton Keynes, who agrees that conditions have been poor - he says 'rather lousy' in fact! However, using c.w. on the 7MHz band, Sean lists contacts with the ZL9CI Campbell Island DXpedition at 0900, PY1HE (Brazil) at 0137, E21W (Libera) at 0010, V31JZ (Belize) at 0025, as well as P21TV (Burma) and O9FCB (west coast USA) both at around 0700. Not had going on a poor band, eh? Down in Skewen in West Glamorgan we find Carl Mason GW0BYSW who made his 5W QRP Plus rig and a G5RV dipole to hook up with the ZL9CI DXpedition, as well as working EA8/DL6SF/G3/VR (Canary Islands) at 1845, VP5/K8JF (Turks & Caicos Islands) at 0131, and even that rare QRP DX station GW6BII at 1122UTC!

THE 14MHz BAND
Even 14MHz, the most reliable of our h.f. bands seems to have taken a bit of a dive this month as far as conditions are concerned. On many occasions I found myself only to find two weak DX stations audible. Single-hop propagation, bringing in stations European stations was a little better though, but the long-distance traffic certainly has not been as prominent as it was a month ago.

However, on the 14MHz band Ted G2HKU lists all c.w. contacts with FG4JLE (Aruba Islands) and OY1CT (Faroe Islands) at 1000, as well as EA3GYYX (Canary Islands) and EL10XC (USA) USA at 1600UTC. Operating around 1900 brought in contacts with VQ9QM (Chagos Islands). ZS1AX (South Africa) and 5H4AGC (Cyprus). Meanwhile Sean G4UJC lists his QRP contacts on the 14MHz band with F5SB8 (Martinique Island) at 1752, TSLA (Central African Republic) at 1700 and SA1A (Libya) at 1400UTC, whilst using 3W into an indoor wire antenna in the loft!

Yours truly GWOLBI loaded up his 60m long wire on the quarter wavelength to 60W of c.w. to work K1LR (USA) at 2350 during the UBA contest, while Eric G0KRT lists a single QRP contact with JA4CM (Russia) at 1548UTC.

THE 18 & 21MHz BANDS
On to the 18 and 21MHz bands now and this month Don Metcalan G3NOF in Yeovil gave the higher bands all his attention and, starting with 18MHz, lists s.s.b. contacts with E21E1C (Thailand) at 1340, FM5BH (Martinique Island) at 1545, FG5EY (Guadeloupe) at 1800 and T46EZ (Malatia at 1122, while Eric G0KRT lists a QRP s.s.b. contact with SA1A in Libya at 1228UTC, "A rate one for me!" says Eric!

THE 24 & 28MHz BANDS
The 24MHz band is one that's often overlooked by many amateurs who tend to stick to the much wider 21 and 28MHz bands, however, it certainly has some characteristics of its own - not forgetting the fact that because its overlooked, it's not over crowded! If you haven't tried 12m before, maybe now's the time to give it a go.

24MHz from Ted G2HKU lists his impressive c.w. contacts with VU3VLM (India) at 1100, while operating at 1300 during the UBA with E21E1C (Thailand) and 1545 UTCQ (South Africa), V07CM (Chagos Islands), CO2OR (Cuba), EA8TB (Canary Islands) and PY2PM (Brazil).

The 28MHz band was the main spot for Don G3NOF this month, his s.s.b. DX here included: EL2QVW (Libera), EP3H1R (Iran), FR5HFR (Reunion Island), PK3CCD (Chin) QSL via F6AJA, E3RFOJ (Granada Island) QSL to home call, V47XK (Federation of St. Kitts and Nevis Island) and fine QRP contact with 9G1YR (Ghana). Although 28MHz was the patchiest of all the h.f. bands this month, John Wheeler GOIUE of Melksham in Wiltshire worked a load of stations from his mobile set-up of 10W into a mobile whip antenna. Working at around 1300-1400UTC, his s.s.b. contacts included VE1RMG (Nova Scotia), SV1CIB (Greece), KZ1H (USA), 9H1DE (Malta), EW2MA (Belarus) and UT3CJX (Ukraine), while operating later at 1630UTC brought in LUSCW (Argenina).

Finally, The 28MHz report from Sean G4UJC shows 30W c.w. contacts with PR72A (Brazil) and CP4B7 (Bolivia) at around midday, while the mid afternoon brought in 8P7DX (Barbados) and 9J2BO (Zambia), while operating with just 3W gave him a contact with CT4BT again, although this time at 1100UTC.

SIGNING OFF
Well that's about it for this month folks! Although conditions took a dive this month, it seems that our intrepid reporters have still managed to dig out the DX! Still, it's now apparent that conditions will continue to improve if we keep at it. BEST OF LUCK WHEREVER YOU GO, E8/SICD!
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Improving so keep your ear to the speaker! Thanks again to all correspondents for their reports, information and input to the column.

As usual, reports and information (and photos as I’m still looking for photographs of our reporters) by the 15th of each month, details at the top of the column.

PW Listening & Operating Watch List (All times in UTC).

Charlie Blake M0AII listens and operates: 0500-0700 on 7.061MHz s.s.b. with an NRD-525 receiver & Sloping Wire antenna and is also busy with his mobile rig.

George Woods G3LPT (Suffolk) operates: an open net on 29.830 f.m. every weekday morning except Monday at 0930 local time.

Don McLean G2NQP operates: 1030 Saturdays on 3.685MHz on the ISWL Net or 1030 Sundays on the Yeovil ARC Net on 3.665MHz s.s.b. using a Kenwood TS-950 & trapped dipole antenna.

John Wheeler G0UIE monitors: 28.600 m.s.f.m. every evening between 1730 and 2230 regardless of conditions using a Yaesu FT-920 running 100W and a 2-element 5/8 wavelength beam antenna/half-wave vertical antenna.

Leighton Smart G0WLB1 operates: 1.949MHz s.s.b. and around 1.820 - 1.836MHz c.w. on weekday evenings between 1900 and 2230 using a Yaesu FT-747G QRP transceiver at SW maximum and a 60m long wire Marconi antenna.

Rob Mannion G3XFD listens and operates (weeklydays & weekends): 1800-1830 on 3.74MHz 100W s.s.b., 3.530 or 3.560MHz and 16.105MHz QRP c.w. using an Alinco DX-70 transceiver and a long wire antenna or mobile whips. Also at 2300 on either 3.560, 7.025MHz (c.w.) or 3.74MHz s.s.b. Now also operating P from the car on weekends and on way home from work on 7.14 and 1518MHz after 1630UTC. (All operation dependent on PW workload).

Sean Gilbert G4UCJ operates: around 0700 to 1100 and 2100 to 0000 seven days a week on 14KHz and 7MHz using an FT-307 and Alinco DX-70 transceiver at 30W output and a G5RV dipole antenna in the loft space.

Leighton GW0LBI

Data Scape

Roger J. Cooke G3LDI

Tel: (01508) 570278
E-mail: rjcookedefreenet.co.uk
Packet: G3LDNGB7LDI35GRHEU

Roger Cooke G3LDI takes a look at a number of different aspects this month starting with the new Moviestar software and ending with a discussion on the growth of PSK31.

Moviestar is an exciting new development for the video buffs among us - no matter what video source you have, be it VCR, TV, Cable TV, satellite decoders, laser disk players, all types of camcorders, etc., you will be able to work wonders with this add-on board for your PC.

Applied Technologies Manufacturing (ATM) have just released their latest video editor with a four input video multiplexor. The whole package, called Moviestar, comes at a standard, high-quality PCI card - a four-layer p.c.b. constructed to UL 94V-0 standard.

The Moviestar package enables the user to capture video from a camcorder, VCR or TV through the S-video connector, or any one of four composite inputs, into an on-board video multiplexor. You can then save the video in AVI format and then cut/edit both the video and audio, title, fade and splice it with the MGI VideoWave SE+ software that is included with the package.

The software is now becoming the de-facto standard in entry level video editing. It’s the interface to the Moviestar hardware. From within it, you can access the Moviestar drivers and select different video sources via the multiplexor as well as change the capture resolution anytime. Moviestar drivers also support multi-standards in video, such as the NTSC standard and the various forms of the PAL standard.

You can also send the fully edited video over the Internet, include it on a Web page, copy it to CD-ROM, or put it back onto video tape. For copying back to videotape, you will need the VGA-2-PAL Pro card from ATM. Lots of amateurs are already using the Motion Picture card for SSTV and ATM usually have a stand at the major Amateur Radio shows, such has been the interest in their products.

A full user guide and a tutorial on how to capture and edit a movie are included in the Moviestar package and I feel sure that present Motion Picture users will be interested in this card and it will certainly sell well at a very competitive £49 plus VAT.

Present users of the Motion Picture product can buy it for £49 plus VAT.

There is another attraction for the card. There is an option called the Security Patch Panel, which ATM feel will produce a huge interest. It has four video inputs, each with its own power output 12V @ 1A and a trigger Input that is alarm sensor compatible. When an event triggers the panel, the software switches to the correct camera and starts recording a time and date stamped AVI movie to disk for a pre-determined time. This will be a very useful selling point.

The operator can look at any of the four cameras immediately selecting from the screen display) and record a time and date stamped video. There is also an auto sequence to go through the four-camera selection automatically. The accessory lead is £10 and the Security Patch Panel and software is a quite high, so the minimum host PC requirements are fairly demanding. However, HD prices are reducing all the time these days and it’s not uncommon to find a 6ch HD as a standard. To use Moviestar, the minimum requirements are a P166 processor; a 32Mb memory, a VGA card (256k) x 600i, a Motherboard PCI with a free slot, a hard drive UDMA IDE as large as possible, several GB, a "16-bit" sound card with line in.

The Moviestar card is fully compliant with Microsoft’s Video for Windows standard and you can use any AVI editor software with the Moviestar hardware drivers. The VGA-2-PAL Pro should be available by the time this is read. You can get in contact with ATM on Tel: 0191-414 5929. A picture of the Moviestar card is shown in Fig. 1. It comes complete with software, drivers, 20 page handbook and leads.

A very interesting and useful device to be used in conjunction

Fig 1: The Moviestar card.

Fig 2: Pictures of Neil G0CAS, taken from his Web site at: http://www.g0cas.demon.co.uk
Welcome to the Official PSK31 WWW Page!!!

I'm a small sneer in the success. Hence I was a little counterparts. I would expect than their commercial has been shown that 'amateurs' prograninung. And in that held it ieople in the area of computer for the commercials. amateur providing competition Jackson. Jim talks about the leads alt(1 4111 instructions. and see the chicks hatch! Again, just seriously Wt urits' Is its mime thought of for this unit. video can he recorded tor more from Maphn. part code MIN I a suitable low powei camera can run under Windows which runs under Windows controlled by supplied software. st ale installation of loss power sensors like the PIR or rioor mats or normally closed for the PC.. The patch panel has IOW mounted within Iwo metres irt a (h or the lour channels has a I flows plus an output relay. the PC.. The patch panel is slain to be erw orr in has of Moviestar Security Patch Panel. official PSK31 Web site. Home page of the weekly radio amateur.
At the same time the English-language broadcasts Express' and 'VOA Europe' and allowed to downlink the service and local radio stations will be on the air by the beginning of this month. 'VOA America will be on the air by the end of the month. Radio Free Europe (RFE) ended short wave transmissions in Estonian at the beginning of February. RFE now relies on transmission via the Internet. The Web site also allows you to listen to programmes in MPEG3-quality audio using AudioActive software (the player can be downloaded free-of-charge).

PETER SHORE brings you more news of broadcasters from around the globe!

Voice Of America (VOA) OSL card

Voice Of Free China OSL card and sticker.
April 18: The Lough Erne Amateur Radio Club will be holding their 18th rally at Killyleagh Yacht Club, Killyleagh, Co. Down. Doors open 10.00 for disabled visitors and Bring & Buy. Admission is £1 plus a £10 donation per vehicle or £10 per van, £40 per 4x4, £100 others. Admission £1, large and small cars. Bring & Buy: stalls, collecting boxes, refreshments, a large car boot sale, etc. Doors open 10.00 and admission is just £1. Refreshments will be available. Talk on S22. Paul Dyke G4HUC (01462) 663574.

April 18: The Yeovil Amateur Radio Club are holding their 28th Annual Convention at Digby Hall, Hound Street, Sherborne, Dorset from 0900 to 1700. There will be interesting lectures, trade stands, a Bring & Buy and refreshments. Tickets are £5 and can be purchased from Mike G7SDN (01935) 814612. Entry fee is £2. Further details from Mike G7SDN.

April 24: A Manxman Birthday Exhibition will be held at the National Wireless Museum, on the Island of Wight, Open from 10.00 until 1700 with free entry and parking. More details from Douglast G3HOP (01983) 576665.

May 3: The Dartmoor Radio Rally is to be held at Pannan Market, Tavistock, Devon. This new location has much more space for traders and visitors, with access for disabled too. There is plenty of free public car parking within five minutes walking distance. There will be trade stands, Bring & Buy, and refreshments, etc. Doors open 10.00 and a talk on S22. There are beautiful views over Dartmoor, ideal for picnics, so why not take the family? Ron G7FLL (01322) 852586.

May 3: Amateur Radio & Computer Rally is to take place at the Priory School Leisure Centre, Bilton Road, Worcester. Full restaurant services from 0700, licensed bar from 1100. All traders in two adjoining halls, easy access to the halls (ground level) and convenient parking for traders. There will also be free parking for 500 cars and coaches. Bring close to The City Centre, wives and children can spend a pleasant day in historic Worcester sightseeing, shopping, etc. William F. Cotton G2MX (01905) 737181. For fax please ring first.

May 30: The Plymouth Amateur Radio Society are holding their rally at the usual venue, which is at the Plymouth College of Further Education, Kings Road, Devonport. Plymouth. Doors open 10.30 till 14.30 and admission is just £1. There will be the usual traders, plus Morse testing on saturday. The venue is large and spacious with ample free car parking. The display halls have plenty of room for stalls to mingle and browse. There is also a large car park, serving freshly prepared light meals and snacks at reasonable prices. Plymouth City Centre, the Hoe and many major attractions are all close by for the family. Signposting will be from the Manadon Junction on the A38 Devon Expressway and there will also be a talk-in on S22. More information on (01752) 662671 during office hours.

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If you're travelling long distance to a rally, it could be worth phoning the contact number to check all is well, before setting off. The Editorial Staff of PW cannot be held responsible for information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers. If you have any queries about a particular event, please contact the organisers direct. - Editor

sae, Fax enquiries to (01525) 595896 or E-mail: dist@magazines.demon.co.uk

May 23: The Three Counties Radio & Computer Rally is to take place at the Pershore Leisure Centre, Bilton Road, Worcester. Full restaurant services from 0700, licensed bar from 1100. All traders in two adjoining halls, easy access to the halls (ground level) and convenient parking for traders. There will also be free parking for 500 cars and coaches. Bring close to The City Centre, wives and children can spend a pleasant day in historic Worcester sightseeing. shopping, etc. William F. Cotton G2MX (01905) 737181. For fax please ring first.

June 13: The Evasion Castle National Mobile Radio Rally are holding their rally at Evesham Castle Park, on the B5010, five miles south of Evesham. Further details from Jon (01386) 751412 or contact Stuart for trader enquiries on (0218) 537770.

June 20: The Ranger & District ARS are holding their 13th Annual Amateur Radio Car Boot Sale on Cold Ash Playing Fields at, near Newbury. Sellers/Traders should arrive by 0800. Sales open from 0900 till 1500. Ian Trendall. Secretary, on (01265) 820019. E-mail: g3rvm@compuserve.com

June 6: Spalding and District ARS are holding their annual rally at the Springfields Exhibition Centre, Spalding, Lincolnshire. Opening time 1000. This Rally, Radios, Electronics and Computer Rally and includes a 'Car Boot area. Ample parking available on site. Talk-in station G1DSP, refreshments available. Admission £1.50. overnight camping if required. Contact Ray Pearson G3NVF (01775) 711933.

June 13: The Riverant Castle National Mobile Radio Rally are holding their rally at Evesham Castle Park, on the B5010, five miles south of Evesham. Further details from Jon (01386) 751412 or contact Stuart for trader enquiries on (0218) 537770.

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Icom R-70 receiver, offers to John GU4B8. Tel: 0181-600 7904.

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