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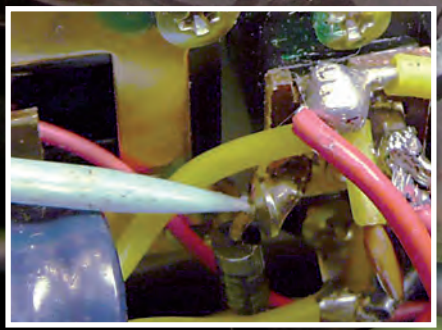

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YAESU

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Practical Wireless December 2008

contents

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Front cover: Our thanks go to Richard Newton G0RSN for the Little Tarheel II photograph.

Design by Steve Hunt.

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Rob Mannion's

keylines

Rob chats about radio regulation and mobile radio pirates.

Here in the UK, I'm sure that most Amateur Radio enthusiasts are fully aware that we are an 'unprotected service'. This means that we really do receive minimal protection from the authorities.

Fortunately, we have our own **Radio Society of Great Britain** (RSGB) to help protect our needs and to represent us to Ofcom, the Government appointed agency. At International level we've got the **International Amateur Radio Union** (IARU), which is supported by Amateur Radio socities from all over the World.

In the UK, the administration and regulation of the electromagnetic spectrum has changed dramatically over the years. Nowadays **Ofcom** – a non-Governmental agency working on behalf of the Government – has taken over from the much respected **Radiocommunications Agency** (RA). Ofcom has a much different remit than the old RA (which was part of the Department of Trade & Industry). In fact, I think that the Government must be very satisfied indeed, because Ofcom is doing just what it was planned to do – bringing in money wherever possible, while employing as few Civil Servants as possible to oversee the radio spectrum.

Whenever possible (from a commercial standpoint) Ofcom has – operating under its Governmental brief – earned the highest revenue wherever possible for spectrum use. When that approach wasn't possible, they have introduced 'deregulation' or reduced regulation to (what some some would suggest) to be a token level to reduce costs.

However, I feel that Ofcom shouldn't be criticised for doing the job that it was set up to do – it's a totally different organisation to the RA it replaced! Instead, I feel that those of us who are active in the hobby should actually take advantage of the situation and persuade Ofcom that the necessary regulation of Amateur Radio should pass to the hobby itself.

As Amateur Radio is not a source of revenue for the Government (via Ofcom) we surely cannot expect the same service as those who pay commercial rates for their communication licences. That's why I think it's time that we 'regulated' ourselves. I've mentioned this before but it now seems imperative that things change and change quickly. Ofcom would (I have no doubt) ensure that they had a representative (there are Radio Amateurs working within Ofcom) serving on my proposed regulatory board and this would best selected by us, perhaps through the RSGB.

Once the regulatory aspect had been devolved to the Amateur Radio community, we could work together to overcome some of the problems that are now beginning to blight many radio enthusiasts and among these would be tackling repeater abuse. This could be expensive for Ofcom, but I'm sure the suggested system would work because there are many of us who would be prepared to offer our services free. Our hobby encompasses a huge variety of professions, skills and expertise and I'm sure that when this is combined with regulatory powers we could eradicate repeater abuse and other problems quickly and efficiently.

The advantage to the Government and Ofcom would be that any carbuncle disfiguring the public face of Amateur Radio could be removed at minimum cost to the exchequer. The advantage to Amateur Radio would be that repeater abusers – and other nuisances on the bands – would be silenced. And, once they are identified the offenders could be monitored at minimum cost. Additionally, when (many convicted offenders are eventually allowed back on the air) they regain their licences they can be monitored by their peers.

I think this could be the future for the hobby in the UK. What do you think readers?

Vehicle Vibrations

Many readers will (I have no doubt!) have heard the extreme power audio, from 'customised' cars, that can be strong enough to vibrate car doors at traffic lights! Unfortunately, so they can share their music with friends in the same vehicular convoy – some enthusiasts now seem to be using relatively high power illegal (up to 5W!) in-car Band II wide-band frequency modulation transmitters.

Recently – in Bournemouth – a 'procession' of 'customised' vehicles passed my car and due to the 'capture effect' of the strong f.m. signals, my BBC Radio 3 music was replaced by the thumping of Reggae! Now it seems we have mobile pirates on Band II!

Rob Mannion G3XFD/EI5IW

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We have a selection of back issues, covering the past three years of PW. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. See the Book Store page for details.

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Orders for back numbers, binders and items from our Book Store should be sent to: PW Publishing Ltd., Post Sales Department, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling. Credit card orders (Access, Mastercard, Eurocard, AMEX or Visa) are also welcome by telephone to Broadstone 0845 803 1979. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Broadstone 01202 659950.
The E-mail address is bookstore@pwpublishing.ltd.uk

Technical Help
We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. Any technical queries by E-mail are very unlikely to receive immediate attention either. So, if you require help with problems relating to topics covered by PW, then please write to the Editorial Offices, we will do our best to help and reply by mail.

Practical Wireless

readers' letters

The Star Letter will receive a voucher worth £20 to spend on items from our Book Store or other services offered by *Practical Wireless*.

Surface Mount Component Help?

Dear Rob
Despite being of the same vintage as **Barry Horning GM4TOE** and having the same problems with my eyesight – I have thoroughly enjoyed reading his two articles featuring the use of surface mount components. I think that Barry's choice of instructing himself (and us) by building a useful project employing SM components was excellent and I was most encouraged to have a go. Unfortunately, even though I have several boards removed from modern equipment in the shack I'm unable to identify any of the SM components – a problem that I think I've shared with you!

Over the years since I started in the radio hobby, literally since I was a schoolboy, I have saved and re-used components. Reading in *PW* of your own salvage exploits on rubbish dumps brought a smile to my face as I wondered if we were actually ever on dumps at the same time after school in the late 1950s – albeit several hundred miles apart!

Of course, like other keen but hard-up constructors at the time, I had my disasters and during the very last Rochdale QRP Convention Mini Rally in 2007, I was amused that you had also had a 'wet' electrolytic capacitors explode in your shack. I think we were both pleased that we wore glasses and the only after-effect was a pair of foil and paper coated set of lenses. So, I'm sat up here on the outskirts of Liverpool Rob, keen to try working with SM components although I'm unable to identify them on the p.c.b.s I've aready got. Surely – as the only 'practical' magazine there is nowadays *PW* can help us out? Regards to you and Tex and I hope to see you at a rally again soon.
Charles (Chas) Thomas
St. Helens
Merseyside

Editor's comment: *Thanks for your letter Chas! Please join me on the Topical Talk page for further discussion on the SMD subject.* ***Rob G3XFD.***

Star Letter

Recording & Storing *PW* Articles & Circuits

Dear Rob,
Over the years, whenever we've met, I have often mentioned to you and Tex that it would be truly wonderful to have *PW* articles and circuits on CDROM, so that I could keep my precious stock of magazines (going back to 1961!) safe and in good order. We've often discussed the problems together and I listened – perhaps not entirely convinced – as Tex explained to me the reasons why *PW* is not fully available on CDROM, from 1932 to the present year.

Well, I can now freely admit to you both that I have discovered just what a big job it would be to scan in and computerise all the issues from 1932! This is because I have been kept busy scanning in articles and circuits starting from around 1966 – and only those that interest me – for the past four years. I've tried to put aside five or six hours during the month to do the scanning. I can usually manage to scan in three or four articles – heaven knows how long it would take to do an entire issue!

Having chatted to you both at the Rochdale Mini Convention last year, I realise that Tex had put in many hours 'tidying up' many of the scans for the vintage issues provided on the *PW* disks in the past. I've been fortunate in that I have had few problems in the relatively small amount of scanning required for selected articles – although getting a good 'clean' scan has proved difficult at times.

I have only managed to scan in and store a selection of articles from issues going back 20 years. Next year though, I retire and perhaps before I reach the 'three score and ten' I'll manage to scan a few more vears of *PW*! I realise just how much work there is to do. Best wishes to you both.
Steve Collins
Salford
Manchester

Editorial comment: *Keep it up Steve – you're running your own marathon with a prize at the end! Please join me on the Topical Talk page for further discussion on archiving.* ***Rob G3XFD.***

Star Letter November *PW*

Dear Rob,
I read with interest your *Star Letter* in the November issue of *PW* from **Peter Fardell G0LQU**, concerning the fitting of Amateur Radio transceivers in modern cars. I have been operating mobile for some years using h.f., v.h.f., and u.h.f, with various cars and the

mounting of such gear always seems to be a problem.

Having recently changed my car, I was interested in finding a suitable position to mount my Icom 706 head in a location that was easy to use and that could be removed very quickly. Most modern radios can be boot mounted just leaving the head to be located in the front of the car for easy use. Most cars have an area in front of the gear lever or to one side which is suitable to put a simple mounting plate. Wiring can be tucked along the side of the seats if it comes from the boot.

I enclose a photograph of my simple installation which is easy to remove if the car is sold on and which does not involve drilling holes or removing other vital car equipment. In making the fitting I used a flat piece of wood as the base, and bolted the head mount onto an angled piece of aluminium of the same size. Two thin strips of aluminium were used to fasten the whole fitting to the gear-lever housing. All the parts used were covered with black tape so as not to mark the interior of the car.

Whilst this installation is geared to the Icom IC-706MKII it could be used for most of the mobile rigs on sale today. If anyone would like more information they can contact me by E-mail at: **m5gac@sheilap.co.uk** Best wishes to everyone at *PW*.

Geoff Pendrick M5GAC
Spondon
Derbyshire

Editor's comment: *Thanks for your interesting letter and photograph Geoff. By the time you read this in* PW, *I hope to have had a chat with you at the Leicester Show where a formal invitation to write a practical article on mounting equipment in cars will have been issued! We would also like to hear from other readers who've also overcome similar difficulties in their own vehicles.* ***Rob G3XFD.***

Waters & Stanton Assistance

Dear Rob,
I just wanted to follow up on the E-mail I sent recently. It went, "I've had a bad year as far as customer service is concerned. I've waited endless weeks for items to show up having paid for them in full, I've had items delivered to the wrong address, I've been lied to by feckless wastrels and generally been given the runaround. This catalogue of abuse has left me somewhat touchy with an itchy finger on the trigger of snotty E-mails."

One such snotty E-mail was fired in the direction of Waters & Stanton, as I had (or so I thought!) been sent the wrong item. Imagine my surprise then to receive an apology mere minutes later and an assurance that the correct item would be dispatched! This simple act has restored my faith that customer service is more than just an advertising slogan so thanks once more to **Nigel McAlpine** and all at Waters & Stanton for putting the smile back on my face and scratching the itch on that finger!

Nigel at W&S was true to his word and pursued the matter with Icom UK. It turned out that the item supplied to me was exactly what I'd ordered and the problem lay with my ignorance and unfounded assumptions! So I'm now chock full of humble pie but at least I've identified a supplier that cares about its customers.

David Ricketts M6SPV
Didcot
Oxfordshire

Contacting The UKQRM Website & Owner

Dear Rob,
I'm the owner and creator of the UKQRM group and its web sites. I had my short wave reception obliterated by BT Vision PLT next door and found it near impossible to get anything done, so I made the first *YouTube* QRM video. After this I found that there were many others suffering the same thing. At this point I set-up the UKQRM group on Yahoo groups.

As I have been on-line for many years I used this to pull in new members. It was something of a avalanche! With hundreds joining in just a few days. From this I selected the most supportive members who became moderators to help me. From then the RSGB, BDXC and WDXC joined up and expressed their full support. The leaders from these bodies form part of the policy group. This is a separate group from UKQRM and is used to help shape what we do and deal with other issues.

Of course, I'm just one person and have a busy life with particularly demanding family circumstances – plus a full time job. So while UKQRM is very important to me. hopefully you will understand that it cannot be my whole life, and I'm unable to provide a postal address because of the extra work correspondence that could be generated.

The UKQRM website **www.ukqrm.org** – paid for by two of our members – provides full details on what we are about. It also provides (in several places) a contact address that will come to me.

The address of the group is **http://tech.groups.yahoo.com/group/UKQRM/** We currently have 434 members and the group is very active indeed. Perhaps taking the above into consideration and the fact that h.f. is important to *PW*, as an Amateur Radio magazine, you might like to include some of the above information if and when you publish my letter. Incidentally, UKQRM also has a number of commercial supporters see: **http://www.mikeandsniffy.co.uk/UKQRM/ukqrmlks.htm**

I'm pleased to say that UKQRM has more or less on its own caused Ofcom to take the matter seriously enough to commission tests of these devices

themselves as they now don't trust the original TCF provided by the manufactures.

We have also helped 20+ members to have the offending QRM removed by BT and Ofcom. Also, I think we are now a very loud voice redressing the fight back so that the pro-PLT lobby no longer have it all their way.

The UKQRM set-up has to remain a on-line venture for the reasons already stated but for those who can't, or don't want to use this method, I'm sure the RSGB, BDXC and WDXC would all offer a postal advice service if anyone was to write and ask about the problem. Incidentally, I've just re-checked the website and found a contact E-mail on the main page, on the press release, on the three *YouTube* video links, and on the supporters page, so I really don't think the suggestion in November issue of *PW* of being hard to contact – as mentioned in *PW* letters – is at all fair. Like I've said, I'm just one person who is trying to do something about an issue that will – if left unchecked – destroy my main hobby and that of many millions around the globe. I really hope you understand all this and I'm pleased we've made contact with each other. I have to say that the other bodies that are on-side with us haven't had any issues such as your readers have encountered and with the E-mail address I have supplied, I'll be pleased to hear from *PW* readers. Cheers.

Mike Trod
mike@insussex.fsworld.co.uk
West Sussex

Editor's comment: *Thanks for your letter Mike. I'm pleased that we've now managed to establish direct contact with you. Of course, you have my full support in the fight against the ever increasing interference problems and I'm sure that – now readers can contact you directly via the E-mail address you've provided – many more of our readers will be keen to contact you.* ***Rob G3XFD.***

Send your letters to:
Rob Mannion
PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: pwletters@pwpublishing.ltd.uk

A *PW* 70MHz Contest?

Dear Rob,
As a very keen 70MHz operator, I was just wondering if it would be possible for *Practical Wireless* to run a 4m contest, especially as I know that your 2m QRP contest really does generate a lot of interest and is always well supported. I think a 4m contest would surely generate a similar interest. Just as a side-line, to show how keen I am with the band, I was on to Tony Nailer G4CFY at Spectrum Communications to order the full kit of parts for the Poundbury 70MHz s.s.b. transceiver. I'll let you know how I get on with the kit and it certain to occupy the long winter evenings that are just round the corner!

I also have a question regarding Rhombic antennas as I've been toying with the idea of making a very large Rhombic antenna for 144MHz and my problem is the terminating resistor. The reason being that it would be hard to manufacture such a terminator without having the problem of stray inductance. The second problem is that it would have to tolerate high power levels as in more than the standard allocation. I'm asking you because I thought you are in the right circle to find an answer, as I've got none so far from the contacts over here! Any help or ideas would be more than welcomed.

Lastly, please check out the website of the **Galway VHF Group** at **www.galwayvhfgroup.com** where you are more than welcome to glean anything that may go up on the site as we will be fairly active over the next year. There is a nice item about the inland Ballycurrin Lighthouse, on Lough Corrib in County Mayo, in there and a few nice pictures of it. It's the only inshore lighthouse of its kind in Europe. If you are interested I can give you more information Looking forward to seeing over on this side of the water again soon, best wishes.

Steve Wright EI5DD
Pathology Department
University College
Galway
Republic of Ireland

Editor's comment: *Thanks for the idea Steve – I've discussed the idea with* ***Colin G6MXL*** *the* PW *144MHz Adjudicator and with* ***Tex Swann G1TEX*** *my friend and colleague here at* PW*. We all think it's a good idea but would now like to ask readers what they think of having a new contest – perhaps running in tandem on the same day as the 144MHz contest for those who are really keen? In the first instance I would like readers to contact me at the* PW *offices either by E-mail, letter or by telephone to register your interest. I won't be able reply to everyone individually but your interest will be acknowledged in* Keylines *or* Topical Talk *as soon as possible.* ***Rob G3XFD.***

A great deal of correspondence intended for 'letters' now arrives via E-mail, and although there's no problem in general, many correspondents are forgetting to provide their postal address. I have to remind readers that although we will not publish a full postal address (unless we are asked to do so), we require it if the letter is to be considered. So, please include your full postal address and callsign with your E-Mail. All letters intended for publication must be clearly marked 'For Publication'. **Editor**

news & products

A comprehensive round-up of what's happening in our hobby.

Busy Time for bhi

Many *PW* readers would have seen the bhi stand at the Leicester Amateur Radio Show where **Graham Somerville M3ZGS**, Managing Director of the West Sussex based company, was kept very busy! Despite the hustle and bustle, Newsdesk found time to chat to Graham and catch up with his latest news and activities.

Asked what the latest bhi activies are Graham replied, "At the Leicester Show we, as the digital signal processing (DSP) noise cancellation specialist, demonstrated our new CAT-MATE Electronic Y splitter for the Yaesu FT-817, FT-857 and FT-897. The CAT-MATE allows up to three accessories to be used at the same time via the CAT/ACC port of the radio."

Graham continued, "Primarily designed to be used with the bhi Radio Mate compact keypad, the new unit can also be used as a standalone product. The CAT-MATE is able to receive commands from either of its two CAT input ports and connect to a single radio. The appropriate reply from the radio will then be directed to the port from which the command was issued. For greater flexibility the CAT-MATE has a built-in RS-232 (PC) to CAT interface that allows operation at 9600 baud with PC control software programs such as the FT-817 *Commander*, *SuperControl*, and *Ham Radio Deluxe*. This means that a null modem cable is not required – just a standard 9 way D-type serial cable is needed. The CAT-MATE is priced at £49.95 including VAT."

Newsdesk then asked Graham what else is coming along of possible interest to *PW* readers? "We also have our unique range of DSP noise cancelling products and have also just made improvements to our two amplified DSP noise cancelling in-line products: The NEIM1031 MKII in-line module now comes with 20% more audio output, and an improved filter control knob, and the ANEM 'Noise Away' MKII now has a speaker/headphone switch giving the unit much greater flexibility.

"The NEDSP1061-KBD low level DSP module can now be fitted into the following radios including the FT-817, FT-847, FT-897D and FRG-100, Kenwood TS-50 and TS440, Alinco DX-77, Icom IC-706 MKIIG & 736/738, 765, and Realistic DX-394. Fitting instructions are available from bhi, and the module can also be fitted into your radio by most of the main UK dealers. "The NEDSP1062-KBD amplified DSP p.c.b. module can now be fitted into the following extension speakers: Yaesu SP8, SP2000, Kenwood SP31 and Icom SP20/21, fitting guides are included in the user manual and are also available on request or via the bhi website."

The company have also hinted that there are some exciting new developments under way and Newsdesk will be ready to announce as soon as bhi take the wraps off!

For further details contact **bhi Ltd., PO Box 318, Burgess Hill, West Sussex RH15 9NR. Tel: (01444) 870333, Fax: (0845) 217 9936. Skype: bhi-sales** E-mail: **sales@bhinstrumentation.co.uk** and website **www.bhinstrumentation.co.uk/**

Stop Press!
Graham Somerville M3ZGS has made a CAT-MATE and RADIO-MATE available, along with a Yaesu FT-817, for review in *PW*. The review will be undertaken by **Richard Newton G0RSN** and will appear in *PW* very soon. So, watch this space! **Editor**.

Martin Lynch Open Day December 6th!

Martin Lynch has announced that his ' 2008 Open day' at the Chertsey, Surrey shop, will be held on **Saturday December 6th** and – to quote Martin – "It will be the biggest and best" – and will also feature the favourite 'Hog Roast'. The event will be sponsored by **Yaesu UK Ltd.**, **Icom UK**, and **Kenwood UK** and the doors will open at 0800 and close at 1600. There'll be free bacon butties for the early birds too! Also on offer will be a live demo of the new **SBS-1e Virtual Radar**. Staff from Icom, Yaesu and Kenwood will be on site together with **Elaine Richards G4LFM**, the Managing Editor of *RadCom* and **Rob Mannion G3XFD** and **Tex Swann G1TEX** from *Practical Wireless*. "And finally" – says Martin – "there'll be even **BIGGER** discounts than you've ever seen before! So, don't miss the best day out of the year!"
Further details from **Martin Lynch & Sons** on Tel: **0845 2300 599** or E-mail: **sales@hamradio.co.uk**

New Radio Club For New Forest!

Keith Cromar G8MZF contacted the Newsdesk with good news for Amateur Radio enthusiasts in the New Forest area of south west Hampshire.

Keith wrote, " Hi *PW*! I'm writing to let you know that a new Amateur Radio club is being established in the New Forest at the **Lymington Community Centre** and will operate under the title **Lymington Community Association Radio Club M0LCC**. (RSGB Registered Examinations Centre No. HA423).

"The club will start by offering a Foundation Course on Friday evenings 1900 – 2130 commencing Friday November 7th. From January 2009 Intermediate and Advance level courses will be available. Additionally from January it is planned that the club will meet regularly for talks and social events."

Further details can be obtained from **Keith Cromar G8MZF** on (**01590**) **672337** during office hours or via E-mail: **lymcomass@aol.com**

Editorial comment: *Everyone at* PW *wishes your new club well Keith!* ***Rob G3XFD.***

Icom UK Donate Digital Radio To Chatham House School

Icom UK has donated an IC-E2820 advanced digital radio transceiver to **Chatham House Grammar School**, based in Ramsgate, Kent the school specialises in Mathematics, Science and Computing. The transceiver will allow students at the school to communicate with other radio users around the globe using a sophisticated mix of Digital Amateur Radio and the Internet.

The radio will be used by the School's Amateur Radio Club (Amateur Radio callsign **M0DLI**), that meets every Tuesday afternoon. This is run by their Science Teacher, **John Hislop G7OHO**, who has tutored 14 students for their Amateur Radio Foundation Licences.

John says, "The brilliant thing about this D-Star digital radio is that it allows us to connect to our local D-star digital repeater, which will give us access around the world. I do believe the thrust of Amateur Radio has always been to push back the frontiers of technology. The marriage of this new digital Amateur Radio technology and the Internet does just that!"

Ian Lockyer, Marketing Manager at Icom UK Ltd said, "We are pleased to be supporting a local school which shows a major commitment to teaching and taking part in the fascinating pastime of Amateur Radio. By donating this radio we hope the students will get a different glimpse of what the hobby can offer."

Further information from **Icom UK Ltd**, **Sea Street**, **Herne Bay**, **Kent CT6 8LD**. Tel: (**01227**) **741741**.

Send all your news to:
PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
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Dorset BH18 8PW
E-mail: newsdesk@pwpublishing.ltd.uk

Inside the Telford HamFest – an unusual venue.

Telford HamFest September 2008

The third Telford HamFest took place on September 28th, at the unique **Enginuity Technology Centre** in Coalbrookdale, Telford, Shropshire. As well as hundreds of visitors, a special local guest arrived – **Adrian Bennett**, bringing along his jet-powered Daihatsu pick-up truck, complete with ex-*Provost* jet engine bolted to the reinforced rear frame! He's not allowed to use it on public highways, as it can propel the pick-up to almost unimaginable speeds – so he arrived more genteelly using its normal internal combustion engine! Adrian also brought a jet-converted 'mini-moto' bike along – capable of at least 60 mph (frightening!) These and numerous other zany jet-propelled projects, many with video clips, can be seen on his web-site **www.jetpower.co.uk** . As well as these exhibits, visitors to the HamFest also browsed around the more conventional exhibits of radio equipment and components, and many took advantage of the special admission rate into the Hands-On Technology Centre, 'Enginuity', next door.

The *Provost* jet engine in new surroundings!

Much interest was also focused around the specialist stands of the **Eddystone User Group** (EUG) and the **Vintage and Military Amateur Radio Society** (VMARS). The organisers were delighted at the positive feedback received from the majority of visitors.

Further details and information on next year's event from **Martyn Vincent G3UKV** via E-mail: **ukv@ukv.me.uk**

Adrian Bennett's jet-powered 'mini-moto' bike – he who dares!

Shefford's 60th Anniversary Bash!

Commemorative badge presented to all members.

The **Shefford and District Amateur Radio Society**, based in South Bedfordshire, hosted a special reception on September 25th as part of their celebrations marking 60 years of continuous activities in the hobby of Amateur Radio and electronics. Members were joined by VIPs and many past members, many of whom had travelled a long way for the occasion.

The Mayor of Shefford Councillor **P. F. J. Mackin**, the Deputy Mayor **Mrs. J. M. Harrison** and principal guests from the trade and national organisations were welcomed by SADARS Chairman **Ken Amos G4YRF**. He spoke of the continuing pioneering work by Radio Amateurs in our modern-day communications. He cited, as examples, the everyday use of digital texting and the latest work in the detection and reception of extremely low-level radio signals.

Councillor Mackin congratulated the Club on its Anniversary and told the guests that he must have been only two years of age when it was founded by a group of radio enthusiasts and ex-servicemen in the very same hall. He emphasised the importance of such societies to the community of Shefford and was delighted to see that it was flourishing in these difficult times.

Peter Kirby G0TWW, General Manager of The Radio Society of Great Britain, which has recently relocated its national headquarters to nearby Bedford, spoke of the importance of societies such as SADARS in the wider development of communications technology. On behalf of the RSGB, he presented an engraved silver salver to G4YRF with heartfelt best wishes for the next 60 years.

Dr. Rob Mannion G3XFD/EI5IW, Editor of *Practical Wireless*, spoke of his pleasure in being invited to join his many long-standing, Amateur Radio friends at Shefford. He presented a special subscription to the magazine to prize draw winner **Paul Weldon G4DNI**.

Special guest **Mr. Mark Francis G0GBY**, **Sales Director** of **Waters & Stanton**, the long established Essex based retailers of amateur radio equipment, presented the top draw prize, a Yaesu FT-7800 transceiver, to **Alan Smith G0WAS** and added his own congratulations to the Society. Mark is due to return to Shefford on Thursday 20th November to give members an overview and demonstration of the latest technology, to present a talk to which all local Amateurs and short wave listeners are also invited.

Among further 'goodies' kindly donated for the draw were an all-band h.f. mobile antenna donated by the local, Buckinghamshire based **Moonraker Ltd.**, and an f.m./a.m. radio by **Martin Lynch & Sons**, who are based in Chertsey, Surrey.

All members received a 60th Anniversary lapel badge featuring the club's original callsign **G3FJF**. Although SADARS has a modest – but dedicated membership – their mission statement is '*To be devoted to the encouragement and assistance of Amateur Radio enthusiasts*'. They are regular participants in SSB CQWW contest and the VHF/UHF NFD and the club's construction work is flourishing. They have members who care for a unique collection of restored and working domestic wireless sets dating from the early 1930s.

The SADARS members meets every Thursday evening at 7.30 for 8pm at the **Shefford Community Hall** and welcomes visitors. For more information go to **www.sadars.org.uk** or call the Secretary **David Lloyd G8UOD** on (**01234**) **742757**.

Further pictures and information are available via Victor Brand G3JNB Tel: (01462) 850001.

Shefford & District Amateur Radio Society celebrates 60 years. Joe Fitzgerald G3EUS (front row second from left) has been a member for 58 years!

Alan Smith receives his Yaesu first prize from Mark Francis.

Paul Weldon receives the Practical Wireless subscription prize from Rob Mannion.

Ken Amos Chairman receives the commemorative silver salver from Peter Kirby of the Radio Society of Great Britain.

Amateur TV pioneer Ivan Howard G2DUS demonstrates his 250 line 'Iconoscope' camera over closed circuit, in front of the national press and an audience of 250 at, probably, the first public demonstration of amateur television on April 21st 1950. *(Photo courtesy of Biggleswade Chronicle')*

Icom UK Sponsor G6PZ Contest Group

Herne Bay, Kent, based **Icom UK** have issued the following statement "We are pleased to be sponsoring the **G6PZ Contest Group**, based in Eastertown, near Weston Super Mare. The sponsorship involves Icom providing the station with two IC-7700 h.f. transceivers. From humble beginnings, the station has rapidly moved forward, installing the latest equipment and creating one of the youngest and most successful contest teams in the UK. The G6PZ Contest Group goal is to promote young contesters, particularly those who are members of the **World Wide Young Contesters** (WWYC). This gives young operators a chance to operate a top grade station that they may not otherwise have access to.

"The sponsorship began with **Mark Haynes M0DXR** contacting Icom UK about supporting the station. He said that the station was 'up and coming' and had a firm commitment into developing youngsters. Icom UK agreed and supplied the team with two IC-7700 h.f. Transceivers. These two high-end transceivers now sit alongside the station's IC-7800 creating, a 100% Icom based station.

The callsign **G6PZ** has a long history and began in the 1930s and originally belonged to **Ron Weston**. It was first issued around 1932. Ron was a professional maritime operator before the war and saw service in the Army and RAF during the Second World War. He was a member of **FOC** and **RAFARS**. Ron finished his career at RAF Locking (near Weston-Super-Mare) as a civilian radio instructor. The callsign is now allocated to **Paul Beecham**, and the callsign of his operating station, appropriately near the site of Marconi's early test transmissions. Paul Beecham said, "Ron has been a Silent Key for some time now and he's sadly missed. He was my friend and mentor and I'm very proud and privileged to hold his call".

Paul continued, "As a team we are striving to become the best as well as accepting younger operators. We want to win but not at any cost. We want to win, but we also want to have a good time. As well as the two IC-7700s, that have been kindly, loaned by Icom UK, we have the Icom top of the range transceiver, the IC-7800. As part of our equipment set-up we use band-pass filters, five PCs, *Wintest* special event software and three towers on site. We have a 4-over-4 stack for h.f., a 4-element Monstir for 7MHz and a Cushcraft (X-7) 7-element tri-bander. We also have dipoles and loops for the lower bands. Engineered together the installation allows us to compete against the top operators on all bands. Both IC-7700 radios have worked faultlessly. The units are easy-to-use, have really nice displays and nice big buttons. I especially like the dual display."

Ian Lockyer, Marketing Manager at Icom (UK) Ltd said, "We really are pleased to be supporting G6PZ. We share the same aims of the station in promoting amateur radio and the development of youngsters in the hobby. Look out for some great things from this station."

Note: If you are interested in joining the Contest Group for a particular event, please get in touch with **paul@attenuate.org**

Operating First Class On The Advanced Passenger Train!

Members of the **South Cheshire Amateur Radio Society**, which is based in Crewe – the historic British Railway junction – took part in the **National Railways On The Air Weekend** in association with the **Crewe Heritage Centre**. The weekend had been organised to celebrate the anniversary of the first steam powered passenger railway journey, which took place on September 27th 1825. The South Cheshire Club set up their equipment on board the preserved British Railways Advanced Passenger Train (APT) and contacted almost 150 other Amateur stations throughout Great Britain and Europe and they were delighted with their 'First Class' accomodation. The QSL manager is **Paul Zobrok G0UZP**. The weekend was organised by **John Dalgliesh M0JCD**.

The South Cheshire Amateur Radio society meets on the 2nd and 4th Thursday of each month at the **Sea Cadets HQ**, ***Training Ship Ambuscade***, **57 Queen Street, Crewe, Cheshire CW1 4AF**. Anyone with an interest in Radio is welcome to attend. Website **www.m1rek.co.uk/g6tw/** For further information E-mail **Ray King M1REK** via **ray@m1rek.co.uk**

New Rugged Rig From Icom

Icom announce the **new IC-7200** – a rugged h.f./50MHz rig with i.f. DSP! The Kent-based company contacted the Newsdesk with the hot news of their new product and announced that, "The IC-7200 offers an excellent overall specification coupled with ease of use. The controls on the front panel are water resistant, providing a measure of protection against the elements. The IC-7200 has a rugged build, which means that this rig can be used in the field as well as in the shack.

The front-mounted speaker provides clear audio sounds that can be clearly heard during operation. The '7200 sports a 'rear bumper' which provides protection for the radio for storage and transportation with the radio standing on the rear panel. Some of the main features of this model include: 100W transmitter and an all-mode, general coverage receiver, covering 30kHz – 60MHz.

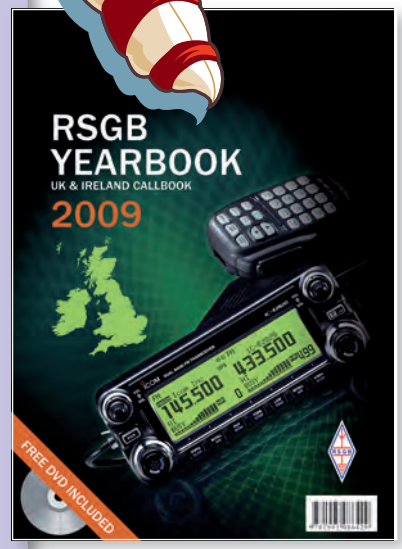
The built-in digital filter will allow the operator to flexibly select the filter width and shape from soft to sharp and provides cutting edge filter characteristics. This makes optional filters a thing of the past for this model. 'Twin Passband Tuning' (TBT) allows the i.f. pass-band to be tailored, by electronically shifting the upper and lower edges of the i.f. filter. This allows the operator to either reduce the i.f. pass-band, or shift the entire pass-band to eliminate interfering signals."

"The IC-7200 comes with a high stability oscillator, providing ±0.5ppm frequency stability with all the versatility of Icom's i.f. and the DSP. The manual notch-filter delivers more than 70dB of attenuation and strong interfering tones will be eliminated without adversely affecting the a.g.c. loop performance with a dedicated control knob adjusting the notch filter frequency.

The USB port provides PC control as well as the possibility of recording incoming calls and/or transmits pre-programmed messages from your PC. (third party software required.) Further information from **Icom UK Ltd, Sea Street, Herne Bay, Kent CT6 8LD**. Tel: (**01227**) **741741**.

Note: *A review of the Icom IC-7200 will appear in* PW *very soon. In fact, as soon as one is available from Icom!* ***Editor.***

Christmas Essentials



RSGB Yearbook

UK & Ireland Callbook 2009

Published by the RSGB

Tex Swan G1TEX and I were chatting about what we thought was the most essential book in day-to-day use in the *PW* office. We both agreed it had to be the RSGB's *Yearbook* (as it's known in the office). It's certainly no understatement because my *Yearbook* is never out of reach, providing an enormous amount of essential information. However, although – sadly – many Radio Amateurs in the UK (not so many in the Irish Republic) are taking the decision to become 'Details Withheld', I think it's important to remain listed. That's why you'll find the address for G3XFD at my home in Bournemouth, England and as **EI5IW,** in Coolaght, Claremorris, County Mayo in the Republic of Ireland within the section provided by the **Irish Radio Transmitters Society** (IRTS).

Nowadays though, the *Yearbook* is much more than a callsign listing. Instead, it's an incredibly compact reference book where I'm often to be found checking bandplans, looking up clubs for enquiring readers, finding beacon frequencies and so on. The book is also the RSGB's 'showcase' for the year in Amateur Radio listing contests, clubs activities, library and the many other activities, and QSL bureau details. Without doubt, I think that the *Yearbook* will remain at the top of my Christmas gift list as it's absolutely essential. **Very highly recommended**. **Price £18.99**.

Vintage Radios

By Tony Thompson
Crowood Collectors' Series
Crowood Press

Tony Thompson's book is a consistently best seller from the *PW* Bookstore. I've often spoken to readers who've 'phoned the office to enquire about the *Vintage Radios* after seeing it mentioned in *PW* – when they've asked me what I thought of the book. In reply I delight in telling that the book is a excellent read – not just because *PW* is featured (there's an interesting article on Fred Camm, the founding Editor of *PW*) and it is superbly illustrated with truly excellent photographs. Despite this, I also make a point of mentioning to enquiring readers, that it was very obvious indeed that the when preparing the book – that the author didn't realise *PW* was still being published! But, even with that lack of knowledge taken into account, the rest of the author's work is excellent! Indeed, rather unusually, along with covering the early days of domestic radio equipment, the book doesn't ignore early transistor radio receivers. Additionally, the author offers practical advice on finding and restoring older receivers, along with some technical information. Altogether this book is one of my favourites, every time I pick it up I find something different! **Very highly recommended**. **£19.95**

F J Camm

The Practical Man
1895-1959
By Gordon J. Cullingham

Many readers who've met me during club visits have become fascinated with the copy of the late **Gordon Cullingham**'s book, which is amongst the 'archive' type material that I take along with me on such occasions. I first started taking my much loved copy with me to clubs so that readers could see what was on offer. They could then order Gordon's privately published book direct from him. However, we can now offer it direct to readers who want to know – a very great deal – more about the engimatic, very private man behind the many *Practical* titles. Re-designed with a new cover, the book's reproduced drawings, scans and text are of a better quality than the original edition. **Highly recommended** for any *PW* reader. **£10.99**

Rob Mannion G3XFD looks at what he'd like to find in his pile of Christmas presents this year!

Open six days a week. Mon - Fri: 9.30am - 5.30pm Sat: 9.00am - 5.00pm

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The World's Favourite Ham Store

Outline House, 73 Guildford Street, Chertsey, Surrey KT16 9AS
Tel: 0845 2300 599 (Local Call Number) Tel: 01932 567 333 (Direct Dial Number)
Web: www.hamradio.co.uk E-mail: sales@hamradio.co.uk

MODEL WX-2008MkII Weather Station

Latest version of this exciting touch-screen radio connected (no wires!) advanced weather station.

Everything you need is included in the box even high quality Ultra-Alkaline batteries. A short support mast and clamps are supplied to attach the assembled sensors to. There is a generous amount of cable to interconnect the sensors to each other, but as it is WIRELESS, you do not need any cable back to the LCD control console that you use indoors. You can mount the sensors up to 50m away from the LCD panel and not a cable in sight!

Special Intro Offer ONLY £79.95

RRP: £99.95

Another great feature is the large, touch controlled extra bright illuminated LCD panel. Being wireless means that you can take the panel anywhere around your house, garden or shed and be able to see all the weather parameters on a screen that is not tethered by cable. Locating your sensors is easy too as it is not governed by where the wiring should go. If you want to move them, you do not have to worry about re-wiring, IT'S WIRELESS!

Included in the package:
- Complete set of Batteries
- 23 x 14.5 x 3.5cm LCD touch screen extra-bright illuminated monitor
- Wind speed sensor
- Wind direction sensor
- Rain gauge
- Outside temperature / humidity sensor with transmit module
- Cable harness to connect sensors to transmitter
- Mounting arms for sensors and hardware
- Short stub mounting mast
- USB cable
- Latest CD with PC software and operating manual

Hustler Antennas

Full range of Hustler Mobile & Base HF antennas available from stock

Full range of Hustler accessories in stock

See web for full listing

Base Station Range, free standing, max 7.3m tall, 1kW
4-BTV 40/20/15/10m..... **£149.95**
5-BTV 80/40/20/15/10m..... **£219.95**
6-BTV 80/40/30/20/15/10m **£219.95**
17-BTV-S 17m add on for 5-BTV or 6-BTV.... **£49.95**

Mobile Range, 200W or 1kW, both stocked.
RM10 to RM-80 10M to 80m single-band whips,
£19.95 to **£31.95**

Kinetic SBS-1e

NEW MODEL

Real-time Virtual Radar

Another Gold Medal for the UK thanks to Kinetic Avionics.

SBS-1e 'Pocket Radar'

Based on the famous original SBS-1 launched in 2005, the **NEW SBS-1E Pocket Radar** is a portable low-cost Mode-S/ADS-B Receiving instrument designed for commercial, training and aviation enthusiasts. Supplied complete with antenna and Basestation Virtual Radar software. The SBS-1e Pocket Radar allows you to track ADS-B aircraft on a PC simulated radar screen and identifies and displays Mode-S equipped aircraft.

NOW IN STOCK! only **£449.95**

For full details see our website: www.virtualradar.com

ML&S are appointed distributors for the SBS-1e and associated products.

Begali Morse Keys

Begali

For the entire range and choice of bases and contacts see our website.

The finest range of keys available today.

Sculpture. The definitive CW operators dream key. Iambic with Carbon Fibre & Stainless Steel. Available from stock. **£349.95**

Begali Sculpture

Simplex. Excellent value available with Palladium or Gold Contacts. **From £109.99**

Begali Simplex

Simplex Mono. As above but single lever. **From £125.99**

Magnetic Classic. As the name implies, employing magnets for the return rather than springs. **From £169.99**

Begali Signature

Signature. Beautiful design. Uses precision bearings, magnetic system & two sets of paddles. **From £234.99**

Camel Back. Original design dates back 150 Years. Mounted on cast iron base. Superb. **£114.95**

Begali Camel Back

Kent Morse Keys

The best British range of keys money can buy!

The Kent twin paddle Morse key
Designed and precision engineered to the highest standards. The key is machined from solid brass having a solid steel base with non slip feet for stability. Precision and individual adjustment on each of the two contacts and springs. **Price: £84.95**

Kent Single Paddle Key
Designed to allow each individual operator total flexibility in setting adjustment. Precision made contact screws with instrument knurled heads and locking nuts to allow for precise and positive gap setting. **Price: £72.85**

Kent KT-1 Professional
High rigidity and stability, smooth, reliable, trouble-free operation under the most arduous conditions. The professional KT1 is the ideal choice for training, commercial and military use. **Price: £79.90**

Little Tarheel II

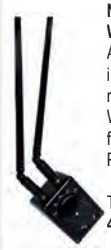
£279.99

Motorised Mobile Antenna
- Freq: 3.5 to 54 MHz continuous
- Power rating: 200 watts p.e.p
- Vswr: typically 1.5 or less
- Weight: 850g
- Mast size: 1.5" diameter
- Mast length: 16 inches
- Whip length: 32 inches
- Total length in 54 MHz position 48 inches
- Total length in 3.5 MHz position 54 inches
- Includes 20ft of plug & play control box, ferrite decoupling core and 3/8 stud

When properly installed on your vehicle this antenna will provide continuous coverage from 3.5 to 54 MHz with the supplied whip. The Little Tarheel II like all of Tarheel motorized antennas are built to the highest specification

WonderWand

New! WonderWand Combo
A one-stop solution to your portable antenna requirements. The new WW Combo is a single unit housing the famous WonderWand and TCP Tuneable Counterpoise. Full operation 7MHz-440MHz, max 40PEP.
In stock now! £159.95



New! WonderWand WonderPole
As featured in CQ magazine in Japan! Yet another new antenna system from WonderWand products. 20-10M Portable dipole for any rig with an SO-239 Socket. 40 Watts PEP. **Only £129.95**

The original and best selling **WonderWand 40m-6m** portable antenna for all rigs. Ideal for IC-703, FT-817, FT-897 etc. Superbly made and excellent value for money. **Only £89.95**

WonderWand TCP
A tuneable counterpoise ideally suited to the WonderWand for increased performance.
Only £59.95

5 STAR

British Products

Linear Amp UK – Ranger 572B

The 572B uses four 572B Triode Valves to produce a rugged 800W on the Amateur HF bands. This version is ideal for users who may want higher power on data modes, RTTY, PSK, including Contest SSB/CW etc. As with all Ranger models, the Ranger 572B has a toroidal transformer providing the power into a voltage doubler board. The voltage doubler is used in preference to a bridge rectifier as it keeps the AC volts down.

Price: £1,275.00

Also a selection of nearly new Rangers available from only £899

Mini VNA PC Controlled Antenna Analyser

The mRS miniVNA is a compact 100kHz to 180MHz antenna analyser interface that is operated via a PC powered by a single USB connection. You can see at a glance where the antenna is resonant, what the SWR and the return loss is. The best (minimal) SWR frequency is automatically found and displayed. An optional internal RS232 connection is also available. **MLS: £229.95**

Palstar - Full range now in stock *For the full range of Palstar products see: www.HamRadio.co.uk*

Palstar AT-Auto Automatic 1500 Watt ATU **£999.95**
Palstar AT-1KP 1200W Antenna Tuner **£359.95**
Palstar AT-1500DT 1500W Differential Antenna Tuner **£379.95**
Palstar AT-2K 2000W Antenna Tuner **£399.95**
Palstar AT-4K (2.5kW) & **AT-5K** (3.5kW) Antenna Tuners
AT-4K.....**£679.95** **AT-5K**.....**£909.95**
Palstar BT-1500A Balanced Antenna Tuner **£529.95**
Palstar ZM-30 Antenna Analyser **£309.95**
Palstar Power/SWR Meters
PM-2000AM **£119.95**
Palstar Dummy Loads
DL-1500 (1.5KW)....**£89.95** **DL-2K** (2kW)....**£189.95** **DL-5K** (5kW)....**£309.95**
Palstar R30A Receiver
Palstar R30A, fitted Collins filters for SSB & AM **£529.95**
R30 Matching Accessories:
Palstar MW550P Active preselector & ATU for AM & 160M reception **£229.95**
Palstar SP30 Matching Desk Speaker **£49.95**
Palstar AA30 Active Antenna Matcher 300kHz-30MHz **£79.95**

Palstar AT-Auto

Palstar AT-1KP

BT-1500A

Palstar R30A Receiver

see www.hamradio.co.uk for more details on all of these items ... and much, much more!

Open six days a week. Mon - Fri: 9.30am - 5.30pm Sat: 9.00am - 5.00pm

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YAESU

Yaesu FT-2000 HF Base Transceiver

Deposit then £170 36 x £55.07p/m

Available from stock and on permanent demo in our showroom

The FT-2000 & FT-2000D (200W version) are available from ML&S. No cuddly toys that you don't really need, just excellent customer service and a fair deal.

- The Yaesu FT-2000 was the best selling HF Base Transceiver in 2007.
- The Yaesu FT-2000 was the ONLY radio used on the 3B7C St Brandon Island during 2007.
- There were NO FAILURES during 18 days of continuous 24 hour operation during 3B7C.
- ML&S sold more FT-2000's than any other dealer in the UK.
- ML&S always has the FT-2000 on permanent demo with large stocks of the 100 & 200 versions.
- Peter Hart said: "SON OF FT-1000MP, aimed at the serious DX and contest operator".

FT-2000 Accessories

DMU-2000 Data Management Unit. £619.95

- Spectrum Scope with Limited Bandwidth Sweep feature
- Audio Scope/Oscilloscope Display Page
- Swept-Frequency SWR Page
- Memory Channel List
- World Clock withGreyLine Page
- Rotator Control Page
- Log Book Feature

Deposit then £70 36 x £22.75p/m

SP-2000 External Speaker with 2 inputs & filters..... £139.95
MD-200A8X Desktop Deluxe Microphone, sounds amazing with the FT-2000! £189.95
MD-100A8X Desktop Microphone..... £116.95
CW Filters for Sub-Receiver
YF-122C (500Hz) CW Filter £94.95
YF-122CN (300Hz) CWN Filter £109.95
FH-2 Remote Control Keypad £33.95
RF External Tune Kits
3 versions available.160m Band Kit "A". 80/40 Band Kit "B". 30/20m Band Kit "C" ..... NOW IN STOCK £359.95

The Ultimate Accessory!

Quadra System 1kW HF Linear Amplifier, PSU & Auto ATU Always available from stock ..... £Call

Yaesu FT-950 HF Base Transceiver

Deposit then £90 36 x £28.89p/m

FT-950. Yaesu's "Midship Radio"
Many of you grabbed the new Yaesu FT-950 HF & 6M from us at the end of last November. Once again Yaesu identified a position in the market and hit it spot on. When Peter Hart said it was "An eye catching radio with some very nice features" and "it represents extremely good value" he wasn't kidding. If you don't need dual receive or internal PSU like its Dad, (the FT-2000) then check out the FT-950.
The FT-950 available NOW from ML&S at only £889.95
Price Match! or £90 deposit and 36 x £28.89

Winter Sizzlers

Got a Yaesu FT-2000 or FT-950?
Add a DMU-2000 Data Management Unit for only £619.95!

Yaesu FT-450 HF Base Transceiver

HF & 6m full DSP

Without ATU ML&S: £529.00 Without ATU — Deposit then £53 36 x £17.19p/m

With ATU ML&S: £599.00 With ATU — Deposit then £60 36 x £19.46p/m

The Yaesu FT-450 is a major new HF & 6m transceiver offering full a 400MHz IF DSP design at a very low price. Available with or without internal ATU, this new rig offers serious performance for those who are not bothered about the upper V/U bands.

Nifty Handie Stand

Get double duty out of your HT, add an external microphone and use it as a Base Station.The HT Stand holds your radio upright and steady at a comfortable viewing angle. Stops a remotely connected antenna or external microphone from "dragging" your HT around on the desk. Only £28.95

Come to the ML&S OPEN DAY AND HOG ROAST AT THE CHERTSEY STORE on SATURDAY 6TH DECEMBER

See you there!

More Yaesu at ML&S!

Winter Sizzler!

Yaesu FT-897D
Latest batch straight from the factory! Call for Lowest Price or Special 'Bundle' Offers!!
High Power version of the FT-897. Use as a transportable, (20W) or as a base/mobile (100W)

Yaesu FT-857D
The Ultimate HF Mobile Installation!
Plus ATAS-120D 40m-70cm Auto Antenna
Bundle Price Only £CALL
(Rig only: £CALL)

Yaesu FT-817ND
The worlds only all-band portable transceiver. Only £349.95
Why not add a CSC-83 Carry Case for only £19.95?

Bundle 1 FT-817ND 'Vanilla' - Basic FT-817 .....£349.95
£35 deposit, 36 x £11.37p/m
Bundle 2 FT-817ND + YF-122C 500Hz CW Filter.....£429.95
Bundle 3 FT-817ND + YF-122S COLLINS SSB Filter£449.95
All ML&S FT-817ND's include; 2 Years Warranty, Metal Hydride batteries, charger, mic, etc.

NEW Yaesu VX-8
Arriving November
Latest 6/2/70 Handie with Bluetooth, APRS and optional GPS.
See web for more details, price TBA.

Yaesu FT-7800E. NOW ONLY £169.95
Bar make the tea it'll give you 2m/70cm @50W/40W.
Add a YSK-7800 Remote Kit for Only £19.95!

Yaesu FTM-10R. ML&S £239
A small compact dual band 2m/70cm transceiver with high power output of 50W on 2m and 40W on 70cm, (adjustable power levels of 50/40W, 20/20W, 5/5W). Receive range from 0.5–1.8MHz, 76–108MHz, 137–222MHz and 300–999MHz.

Yaesu FTdx9000D. ML&S £7299
200 Watts or 400 Watts, TFT Screen or not. You choose. Call for more info or see www.FTdx9000.com 'D' spec now shipping.

Quadra VL-1000. ML&S CALL
The easiest way to get 1kW output from any Yaesu HF Transceiver. Plug in 240V, attach rig & antenna and you have a fully automated amplifier with auto tuner.

Yaesu FT-8800. ML&S £219.95
Similar to the FT-7800 but can receive on 2 & 70 simultaneously.

Yaesu FT-8900. ML&S £249.95
High-power FM on 10m, 6m, 2m & 70cm. When your local repeater is busy, slip onto 10m & work DX! **NEW Yaesu**

FT-1802E. ML&S £99.95
2m FM Mobile. 5-50W out. Very similar to the FT-2800.

NEW Yaesu VX-3E. ML&S £119.95
Micro Handie 2/70 with scanner. Complete with Li-ion battery, charger & antenna.

Yaesu FT-60. ML&S £129.95
Latest twin band handie complete and ready to go.

Yaesu VX-6R. ML&S £189.95
Yet another 2/70 handie from Yaesu.

Yaesu VX-7R. ML&S £CALL
The UKs best selling Triple Band Handie.

To Finance or not to Finance? That is the question!

Having many years of experience offering specific finance packages for our customers, we can now offer various options on payment, including 36 and 60 months on selected products. Please note that interest is calculated from the date of the original agreement at 19.9% APR. Minimum purchase available for finance is £350.

Finance Example IC-E2820 with UT-123. Discounted price of £519, £52 deposit, then 36 x £16.86p/m. TAP £658.96, APR 19.9%. E&OE.

KENWOOD

Kenwood TM-V71E v.h.f/u.h.f. Mobile Transceiver

ML&S: £269.95

- High r.f. power output (50W)
- Dual receive on same band
- Green and amber colour display
- Invertible and detachable front panel
- Programmable memory
- Multiple scan
- Built-in CTCSS/DCS
- Wide Band Reception : 118-524MHz & 800-1300MHz (excluding cellular blocked frequencies)

Kenwood TM-D710E APRS & TNC Loaded mobile

Deposit then £40 36 x £12.94p/m

ML&S: £398.00

- Built-in TNC & APRS® Ready
- Switchable Backlight LCD & Multifunction Key Display
- High RF Power Output
- Dual Receive on Same Band
- 1,000 Memory Channels
- Multiple Scan & Visual Scan
- Built-in CTCSS/DCS
- EchoLink® Memory
- EchoLink® NODE TERMINAL Operation

Kenwood TS-2000E

Flagship Base Transceiver

Just superb on all bands 160m-70cm with optional 23cm (X-Version) RRP: £1699 **ML&S: £1299**

Deposit then £130 36 x £42.21p/m

Kenwood TS-2000X

As above but with 23cm fitted. **RRP: £1999**

Deposit then £160 36 x £51.96p/m

TS-2000E Bundles

Bundle 1 TS-2000E Supplied with hand Mic, DC Lead **£1299**
Bundle 2 As above with MyDEL MP-250A PSU..... **£1379**
Bundle 3 As above with MC-60A Desk Mic..... **£1499**

The TS-2000X (fitted with 10W 23cm module) version of any of the above is available for as additional £400.

Kenwood TH-F7E 2/70 Handie With Gen Cov RX.

The only dual-bander with proper SSB receive capability!
RRP: £289.95 ML&S LOW PRICE: £199.95

Kenwood TS-480SAT

This best selling Kenwood H.F. Can be used mobile or base. Includes ATU. **ML&S: £699.95**

Deposit then £70 36 x £22.75p/m

Kenwood TS-480HX

As TS-480SAT but 200 Watts, no ATU. **ML&S: £799.95**

Deposit then £80 36 x £25.96p/m

Perseus VLF-LF-HF Receiver

RRP: £649.95

PERSEUS is a VLF-LF-HF receiver based on a outstanding direct sampling digital architecture.

Unlike lower class direct sampling receivers, the PERSEUS RF analog front-end has been carefully designed for the most demanding users. PERSEUS can be operated also in a wide band mode as a 10KHz - 40MHz spectrum analyzer with more than 100dB dynamic range in a 10KHz resolution bandwidth. PERSEUS is a Software Defined Radio and relies on PC software applications to carry out the demodulation process.

New Product!

Deposit then £65 36 x £21.12p/m

ML&S are Sole Distributors for Perseus in the UK and Ireland

see www.hamradio.co.uk for more details on all of these items ... and much, much more! ML&S are approved stockists for the following: Alpha Delta, AOR, Begali, bhi

ICOM

RRP: £4499.95
Call ML&S for more details

Deposit then £00
60 x £112.37p/m

The New Icom IC-7700
HF/6m All Mode Base Transceiver

The wait is over! This fantastic new HF & 6M base station has finally arrived and is available from stock and on demo in our Chertsey showroom.

Same size as Icom's flagship IC-7800, the IC-7700 has 200 Watts output on HF & Six, Two independent DSP units (same as 7800) a +40dBm* 3rd order intercept point and ultra wide dynamic range, again like its big brother.

Icom IC-E2820
Dual Band Mobile

GB7ML D-Star repeater now active

Deposit then £52
36 x £16.86p/m

Rig Only ML&S: £379.95

Buy the new IC-E2820 with UT-123 for only £519! Rig Only £379.95

PC Controlled Receivers from ICOM

All Windows XP Controlled via USB with four models to choose from:

D-Star Capable

IC-PCR1500 10kHz-3300MHz All Mode **£359.95**
IC-R1500 As above but with remote head **£419.95**
IC-PCR2500 Twin Receiver version of PCR-1500 ..... **£474.95**
IC-R2500 As above but with remote head **£529.95**

See web for full details, PDFs etc.

Icom IC-7000
If you want a small IC-756Pro111 in your shack (or car) then the IC-7000 comes very close. Superb display & HF-70cm operation.
ML&S: CALL

Icom IC-706MkIIG Mobile / Base
HF+6M+2M + 70cms Mobile/Base.
ML&S: CALL

Icom IC-7400
Fantastic HF+6M+2M 100W All Mode Base Transceiver.
VERY SPECIAL PRICE - Please call
SPECIAL PACKAGE DEAL AVAILABLE - PLEASE CALL!
SM-20 Desk Mic, SP-21 Speaker, MP-250A PSU

Winter Sizzlers

NEW: Icom SP-20
Matching Desk Top Speaker for the IC-7700, 7800, IC-R9500. **Only £129.95**

Winter Sizzlers — **FREE LDG Z-11Pro Automatic ATU!**

ML&S: £795

NEW: Icom's Latest IC-7200
HF/6M Heavy Duty DSP Transceiver with **FREE LDG Z-11Pro Automatic ATU! CALL FOR DETAILS OR SEE WEB SITE!**

Icom IC-756Pro mkII

Rig Only: £1749

Package deal
IC-756ProII
SM20 Microphone
SP-23 New Base Speaker with filters
RRP: £2768 ML&S: £1969

Deposit then £175
36 x £56.84p/m

Icom IC-7800mkII

RRP: £6400 Call for ML&S package deal

Deposit then £00
60 x £160p/m

Defer payment for 6 months - Interest FREE!*
The Icom Flagship **Base Transceiver** just keeps getting better & better. Now fitted with 3 Roofing Filters for even more receiver performance.
On permanent display next to the FTdx9000.

Icom IC-910X

High Performance 2/70/23 All Mode Base Transceiver.
Only £1189 with 23cms fitted!

Deposit then £119
36 x £38.64p/m

Icom IC-E92ED

Latest waterproof VHF/UHF dual band with D-STAR Operation included!

The IC-92ED has waterproof protection and is equivalent to IPX7 (1m depth of underwater for 30 minutes). The aluminium die cast chassis and gasket-sealed housing provide performance you can count on in harsh outdoor environments; when hiking, mountain biking, touring and for alpine activities. **ML&S: £CALL**

Icom IC-E90 Triple Band Handie

Multi-band handheld transceiver
ML&S: £199.95
Or available with 4m and extra antenna for Only £239.95

Icom IC-703 IDEAL FOR M3 USERS
10W Portable/Base HF Transceiver with built-in ATU.
RRP: £703 ML&S: £449.95
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SWR: <2:1
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Current consumption: <0.8A
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The Little Tarheel II

Continuous Coverage HF Mobile Antenna

The antenna mounted on Richard's Honda car.

The Little Tarheel, **Fig. 1**, is a rather new concept to me – it's a motorised high frequency (h.f.) antenna! This means the antenna has a coil that moves up and down powered by its own internal motor, thus enabling the antenna to cover a wide range of frequencies just by adjusting the antenna itself.

The antenna is supplied with a 813mm (32in) whip, which will cover from 3.5 to 54MHz. You can also get a 1.422m (56in) whip as an option and with this the antenna will cover from 2.9 to 38MHz. Another option is a 3.65m (12ft) portable whip and this will enable the antenna to cover to 1.85 to 18MHz. For the review I just had the supplied 813mm whip.

Tarheel System

The Little Tarheel system comprises of the base, which is 457mm (18in) in length, this is about 51mm (2in) in diameter at the top and 38mm (1.5in) in diameter at the base. Adding the 813mm whip makes the overall length of this antenna only about 1.270m (50in) long in total.

The overall length does increase by about 102mm (4in) when the movable coil is extended – but this is still a short antenna considering the frequency coverage! In fact when I unpacked it I thought a bit was missing and I couldn't believe it was so short! The antenna weighs about 0.86kg (1.9lb) and it can handle up to 200W peak envelope power (p.e.p.).

The American manufactures say, "Don't let the small size fool you" and they are right! They have designed The Little Tarheel to be mounted higher on the vehicle because, "when mounted higher on the vehicle you have less ground losses which equals higher performance", again their words, not mine. However, I found that the other benefit is that the smaller size means it's easier to mount using a 3/8in stud type mount.

The antenna is supplied with an instruction leaflet and although this covered the basics very well, I have to be honest and say I would have liked a bit more detail on the antenna itself. However, the big plus point was the liberal use of colour pictures to help with the set-up. So, overall the leaflet was more than adequate and I was able to follow the instructions and get the antenna set up and working very quickly.

The antenna has a 3/8in hole at the base. It's supplied with a 3/8in stud and this means you can fit it onto a mount that either has a 3/8in hole or a mount with a 3/8in stud.

Control Box

The Little Tarheel system also comes with a manual control box with all connections ready to go and a 6m (20ft) length of control cable. This is very generous and should be long enough for almost anyone's needs!

Richard Newton G0RSN described the installation and the use of a new motorised h.f. antenna system – despite terrible conditions on the bands!

The choke must be carefully wound to ensure the motor-driver antenna works correctly.

The final bit of kit that comes in the box is a ferrite core. This is supplied because the control cable needs to be wrapped around the ferrite core for at least three turns to make a choke and this should be as close as you can get to the antenna base, as in **Fig. 2**.

The choke has a dual effect, first it helps reduce antenna motor noise during tuning and – perhaps most importantly – it also decouples the control wire from the antenna, without it the antenna wouldn't be tuneable.

Really Well Made!

The first thing I have to say about the Tarheel is that it's really well made! It is a gorgeous looking antenna and it appears sturdy and has a truly elegant look and 'feel'. It is fashioned from DuPont™ Imron® 5000 system and has a Lexan™ Weather Shield. "What?', I hear you ask, "are they"?

Well I didn't know either! But after a quick search on the Internet I discovered that DuPont™ Imron® is a long lasting, tough Polyurethane Enamel and Lexan™ is a tough polycarbonate sheet. So basically speaking this antenna is built to last!

Mounting High

I did have a disadvantage when doing the review because it wasn't until I came to fit the antenna that I found out from the manual that it's really designed for mounting high on a vehicle! This is actually one of the main selling points – according to the literature and according to what information I could find on the internet.

My own car is a Honda F-RV, which has a glass hatch-back. This meant that I had one of the cars that wouldn't benefit from an antenna that was to be mounted high up. But I thought, "Never mind, perhaps it'll be better put the antenna to a real test!"

In fact I had purchased a new mount just for the review, a cunning design supplied by **Geoff Brown G4ICD**. This is a mount that bolts onto the towing eye for your car. Please note that this is the towing eye that every car has and it mustn't be confused with a tow hitch or tow bar.

Attaching the antenna to the towing eye gives a really great 'ground' for an h.f. mobile antenna – but unfortunately it's just about as low as you can get on the car, as it transpires, this is just where the Little Tarheel didn't want to be!

Product: The Little Tarheel II Continuous Coverage HF mobile antenna

Company: Tarheel Antennas Inc., UK importers and agents Moonraker, Woburn Sands, Buckinghamshire.

Pro & Cons
Pros: Really well made. Ideal for the motor-caravanner or for use on trailer caravans. The Armchair control will be ideal!

Cons: A mobile whip is always going to be a compromise, a multi-band whip especially so, but if you want a great quality and a professional looking piece of kit that will do the job for you across the bands mobile and portable – then you could certainly use the Little Tarheel!

Price: The Antenna costs £279.95 plus £7.99 p&p.

Note: Optional extra (including the 53in whip are in stock and the 6ft whip will be available soon. Moonraker will also soon be stocking the enter Tarheel range of antennas.

Supplier: My thanks for the loan of the review unit go to **Justin Godfrey**, Sales Director, at **Moonraker (UK) Ltd., Cranfield Road, Woburn Sands, Buckinghamshire MK17 8UR**. Tel: **(01908) 281705**. Fax:**(01908) 281706**
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Easy To Install?

So, how easy was the Little Tarheel to install? Well, in answering I can say it was very straightforward. Connecting the antenna to the rig, in my case my trusted old Icom IC-706 Mark 1, is just done in the normal way, with the coaxial into the bottom of the mount, ensuring as much solid ground as possible. Physical grounding is absolutely essential when operating h.f. mobile but with this particular antenna it's a fundamental requirement.

Once the installation was sorted I connected the manual control box to a 12V d.c. supply, using a cigar lighter plug plugged into the car accessory socket. Next I got the ready-made control cable, which has the connections already sealed on the ends. The connectors are small, good quality, four-pin plugs and sockets. These even have a lug to prevent incorrect polarity and Tarheel even supply a small sachet of resin to seal the external joint!

The next stage is to connect the antenna to the control box. This feeds 12V d.c. to the antenna and then you operate the antenna by operating what the manufacturer's refer to as a 'manual control' box. This is basically a rocker switch with arrows and mounting holes for those who wish a more permanent installation. As you can see from the pictures, mine was anything but a permanent

Richard G0RSN used his faithful IC-706 for the evaluation of the Tarheel antenna.

installation but still seemed to work well none-the-less!

Push the switch, **Fig. 3**, one way and the coil moves up, push the other way and the coil moves down – it's as simple as that! The more copper coil you can see – the lower the frequency the antenna will operate on. At first I had a lot of noise on the rig when tuning, although a couple more turns with the spanner on the earth side of the mount sorted that out in quick order!

Tuning Very Sharp

Tuning the Tarheel does take a bit of getting used to and I found it to be very sharp, especially at 7MHz, I am inclined to put this down to the fact the antenna was not mounted in the optimum operating environment, in fact as you can see for the pictures, it was so short not even the whip came above the car body, this was by means ideal and is not to be recommended*** (See Editorial note panel)**.

Despite not being it the best position I still heard a lot of stations on 7 MHz and 14 MHz and worked several station with good reports – bearing in mind the very poor conditions on the bands at the moment! Unfortunately all the other bands were pretty quiet, I put this down to the band conditions and not the antenna – as checking on the main station set with a long wire the bands were just as flat.

When tuning The Little Tarheel I tended to use the advice in the instruction leaflet; I tuned for maximum noise and then tweaked the tuning using my Icom IC-706 internal s.w.r read out as a guide. This seemed to work well.

Fully Extended

The only thing I would mention is that it takes almost two minutes to get the antenna fully extended. It takes a similar amount of time to retract the antenna and this does make tuning rather a slow process if you are moving from high bands to low bands.

I still think I prefer a mono band whip, if I'm operating h.f. mobile. This isn't a criticism of the Little Tarheel but I tend to use one band and stick to it, if I do want to change I just unscrew one antenna and screw on the next and that would take me less than two minutes.

However, when I'm camping out with the family I like the idea of multi-band antennas, I don't know why, perhaps it's because I'm 'chilled out' and perhaps more interested in the glass of red wine and sitting back in the caravan than unscrewing and selecting antennas!

For me I can really see the appeal of the Tarheel on camper vans or caravans. You can also get an automatic tuner control for the antenna that has memories and this would make operating it more convenient. Operating the Tarheel from the comfort of your own caravan without having to put a glass of wine down is where (for me) this antenna would come into its own!

The Little Tarheel is, it has to be said, extremely smart and appears to be made to the highest quality. A mobile whip is always going to be a compromise, a multi-band whip especially so, but if you want a great quality and a professional looking piece of kit that will do the job for you across the bands mobile and portable – then you could certainly use the Little Tarheel! ●

****Editorial note:** I think it's important to point out that when I set the antenna up on my own Toyota Yaris Verso car (mounted high up using my built-in and well grounded roof rack and mobile mounting system), the tuning on the Tarheel was still very sharp and this is a feature of the design. With my car parked in my driveway (badly screened by the house and overhanging trees) I was able to get 57 to 8 reports on 7MHz working into Germany and Hungary using s.s.b. On 14MHz I received several 57 reports from southern Europe. However, like Richard I found conditions to be very poor and the other bands to be devoid of signals – both on the Tarheel and on my main 10m high inverted Vee antenna system. Conditions must, surely, soon get better!* **Rob G3XFD**.*

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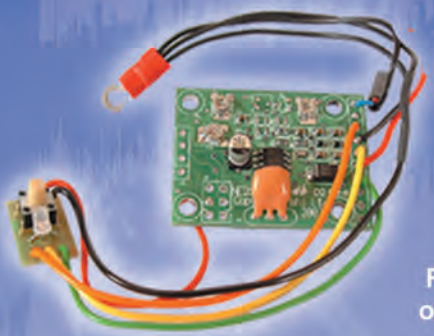

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Operating From A Flat Or Limited Space Location.

Vince Lear G3TKN/ZL1VL shares the experience he gained while operating in a less-than-ideal QTH in Cheltenham.

The unpromising looking block of flats in Cheltenham offered a real challenge to Radio Amateur Vince Lear G3TKN! In this first of two articles, Vince encourages readers who may be in a similar situation to have a go on the bands!

Probably one of the greatest 'challenges' facing most Radio Amateurs these days is putting together an effective station in the general 'suburban' environment that many of us live in. Most of us face the problems of limited space for antennas, planning restrictions and interference to neighbours' electronic equipment.

A number of years ago I was working away from home and living in a rented flat in the middle of Cheltenham. I decided that I would like to try and establish a station for high frequency (h.f.) operations, despite the constraints of the location. I hope that what follows may help others in limited space environments.

What Antenna?

I was lucky in securing a top floor flat in a five storey block, so what antenna should be used? This gave me a height advantage with respect to antennas. However, please don't be put off if you are on the ground floor, since it's surprising what relatively low antennas will do when propagation is favourable!

There were two blocks of flats on the site, both with flat roofs. In an initial burst of enthusiasm I considered placing an antenna (such as maybe a multi-band vertical) on the roof of my block. I also considered running a horizontal wire between the two blocks.

Both these ideas were soon discounted for the following reasons. To start with, I was only able to gain access to the flat roof on my block via an internal trap door on the ceiling of the top landing. This would have meant obtaining a ladder, which I didn't have!

The communal TV and Band II v.h.f. radio antenna was mounted on the roof and was presumably linked to a broad band distribution amplifier system. Transmitting antennas placed near this could have caused severe interference to all the flats via the distribution system! Tenants were not allowed access to the roof and an aluminium antenna such as a multi-band vertical presents a serious risk should it come crashing down from a great height in adverse weather conditions.

Although the 'roof option' may have looked tempting, I think that we must always consider the problems and hazards I've already outlined. Unless you is going to be living in the property 'long term' it's probably not worth the time and effort to get permission to place Amateur Radio antennas in this environment!

I then briefly considered small indoor transmitting loop antennas – but I felt that better performance could be obtained with an outdoor antennas. However, having said this, I have heard some very competitive signals from small transmitting loops and if this is the only option then it may be worth investigating further.

Another consideration was an inverted V antenna with its centre fixed to the window, and the legs run out to any suitable supports I could find. This is a good option – if it can be used – since it offers a balanced antenna and overcomes to a large degree the problem of obtaining a good radio frequency (r.f.) earth. However, I didn't have the space to run an inverted V and felt that two wires running away from the window might look a little too conspicuous!

I then came to my final antenna, the simple 'end-fed wire'. Using an end-fed wire from a flat or other limited space location has the following advantages; It's probably the 'lowest profile' antenna we can erect and can be cut to fit whatever space is available.

The long wire can also be tuned to resonance on almost any frequency from the 'shack end' and it's quick, cheap and simple to erect antenna. However, the end fed wire requires a good r.f. earth to be tuned against and operating from the top floor of a flat, or even one floor up is sometimes difficult to achieve this.

What Length Wire?

In the limited space environment, the individual Amateur may not have too much choice on the actual length of wire. So, it's probably best to

avoid a length that offers a very high impedance (i.e. end fed half wave or multiple thereof) on the bands to be used. This is because high r.f. voltages will be present at the shack end which could lead to matching problems and r.f. feedback.

To help, I'm going to suggest three lengths of wire that will offer a reasonable compromise impedance on 'most' bands – although not all. These are lengths around 26m (85ft), 15m (46ft approx.), and 10m (30ft approx.).

As a result of my space restrictions, I went for a 15m wire. This was run out of the top floor window and secured to the top of a small 3m (10ft approx.) high tree. The wire sloped some 45 to 60° from the horizontal which made it a 'sloper' and provided a mix of both vertical and horizontal polarisation.

I used thin black polypropylene cord to secure the wire to the tree, so there was no need to use an insulator. This makes for 'lower visual impact'.

Note: The end of any wire should always be placed out of 'easy reach'. This will not only lessen the chance of it being tampered with but also prevent someone getting r.f. burns from the wire when it is being used for transmitting.

I used lightweight, grey plastic covered multi-strand wire. I find that grey seems a good compromise colour (certainly in the UK climate!) in terms of low visual effect.

The RF Earth

Obtaining a suitable and reasonably efficient r.f. earth is probably the secret to making an end fed wire perform in a satisfactory manner. However, it's really important here to distinguish between the mains 'safety earth' and the 'r.f. earth'.

The earth attached to the normal mains socket is there to provide a quick path to earth for any mains voltage that should appear on the metal parts of any equipment under fault conditions. The sudden surge of current via the mains earth wire to earth will then blow the protection fuse in the mains plug and isolate the supply from the faulty equipment.

However, if we consider how the earth wire attached to our mains socket behaves when carrying r.f., we'll soon realise that it may not produce a suitable r.f. earth at all on some frequencies.

To get a better understanding of what happens under r.f. conditions, let's take a simple example and consider an end fed wire antenna, which we will tune for 7MHz (40m) operation.*

The transceiver and antenna tuning unit (a.t.u.) rely only on the mains earth connection. The length of the mains lead between the mains socket and the point at which it is attached to grounding stakes at true ground is 10.05m (a quarter wavelength on 7MHz).

It's at this point that we'll need to consider the current distribution curve obtained on a quarter wave length of wire at 7MHz (see **Fig. 1**); i.e. high impedance where current is low, and low impedance where current is high. At the point where the 10.05m earth wire connects to ground, current will be high and impedance low. However, if we travel 10.05m back up the wire to the mains socket (which is where the a.t.u. is attached to mains earth) we'll come to a low current, high impedance point on the wire.

Hence, on the 40m band, the earth wire will offer a high impedance connection to the transceiver and a.t.u. From an r.f. point of view, it's as if we don't have any earth on the system at all! The results of this will be that the antenna will be extremely difficult to tune, since we'll end up tuning it against the equipment case and ourselves should we touch the a.t.u. or equipment! This is likely to result in r.f. burns and r.f. feedback.

But on 14MHz (20m), we're more likely to have success. This is because if we plot the current distribution back from the point where the 10.05m earth wire is connected to real ground, we'll go through a low current (high impedance) a quarter wave back from the grounding point (about 5m on 20m) then come back to another high current (low impedance) point 10.05m back from the grounding point.

So, on 14MHz, the earth wire will now present a low impedance, which of course is a desirable condition.

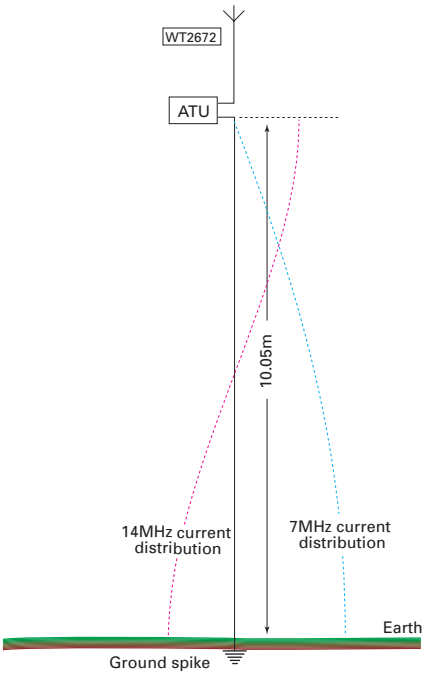

Fig.1: The current distribution curve obtained on a quarter wave length of wire at 7MHz.

Note: From this point onwards – to avoid metric to imperial conversion approximations – only metric measurements will be used.* ***Editor.*

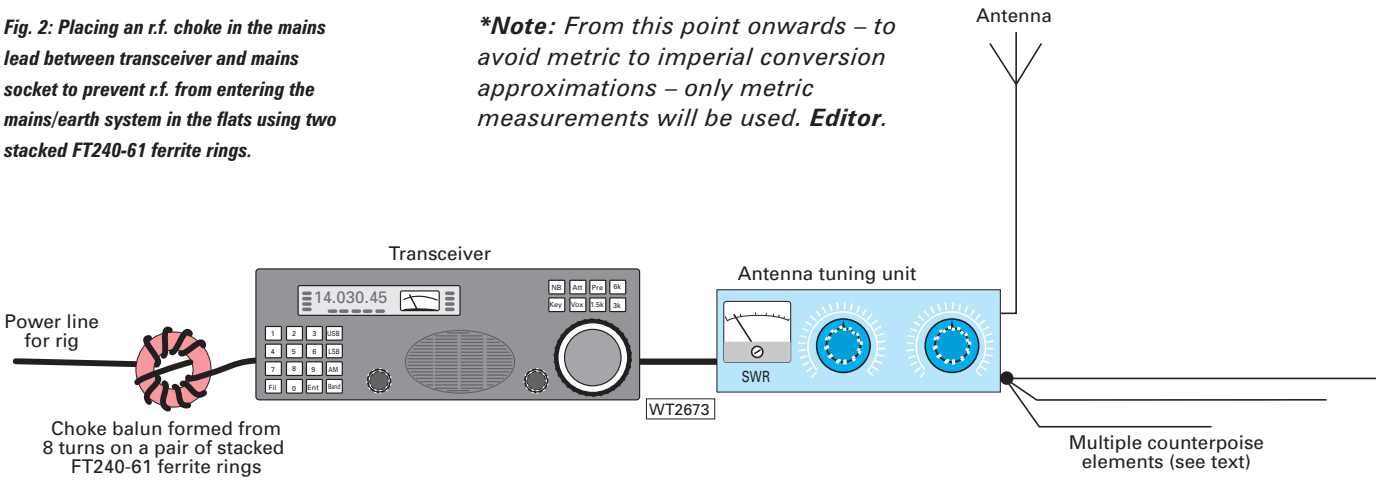

Fig. 2: Placing an r.f. choke in the mains lead between transceiver and mains socket to prevent r.f. from entering the mains/earth system in the flats using two stacked FT240-61 ferrite rings.

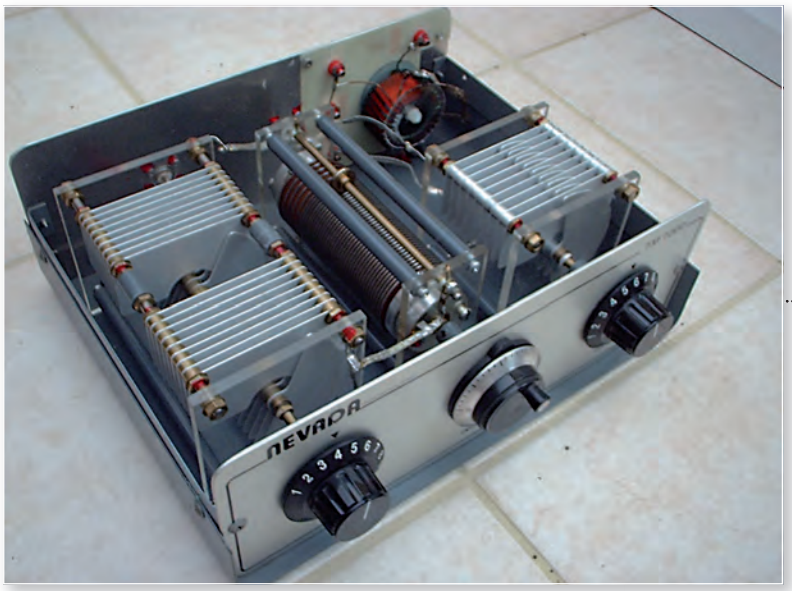

Fig. 3: The inside of the Nevada TM1000 ATU. For the lowest losses, the use of heavy duty capacitors and a good quality roller inductor are always preferable.

Vince Lear G3TKN/ZL1VL
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Fig. 4: Making the ferrite ring mains choke. Eight turns of mains cable (8mm dia) was wound on a pair of FT240-61 ferrite rings. This provided good choking action from 1.8 to 28MHz.

If you experience r.f. feedback problems on some bands and not others, it may well be that the earthing (even if separate from the mains earth) is behaving in this way.

The Cure

Fortunately, the cure for all the problems I've discussed is really quite simple. I used what are commonly called 'counterpoises' cut for quarter-wave or odd multiple quarter-wave resonance on the bands I wished to use.

I had three wires of 2.59m, 5m and 10.05m tucked around the sides of the carpet which ran around the flat. These wires represented quarter-wavelengths on 7, 14 and 28MHz respectively.

The 10.05m wire also acted as three-quarters wavelength on 21MHz (15m). These wires then provided a low impedance connection for the antenna to work against on 7,14, 21 and 28MHz. I also found it possible to tune 3.5MHz (80m) and 1.8MHz (160m) without any problems despite the counterpoise wires being short on these frequencies.

Interestingly, a counterpoise can be electrically lengthened by the inclusion of a loading coil. This technique may need to be employed in cases where it's not possible to tune a system on the lower bands.

There's an elegant solution to multi-banding a counterpoise system – although I didn't try it – this would be to use effectively one half of the standard W3DZZ trapped dipole (i.e. 10.05m wire to a 7MHz trap, then some 6.4m on the other side of the trap) as a counterpoise. This should offer a low impedance on 3.5, 7 and 14MHz so that three bands could be covered with one counterpoise. However, its length is getting quite long and it may not be convenient to fit such a length in, even when run around the skirting boards and the sides of carpets!

Counterpoise lengths are not critical but they do form part of the overall antenna system. On the lower bands of 1.8 and 3.5MHz, the antenna really became an 'off -centre fed' wire with the longer section (of 15m) outside, and the shorter section (10.05m) inside, with the a.t.u. at the feed point.

Choking Mains Earth

Although at the time it seemed tempting to leave the mains earth connected in addition to the counterpoises, I decided that it was probably a good idea to place an r.f. choke in the mains lead between transceiver and mains socket to prevent r.f. from entering the mains/earth system in the flats. This was achieved by wrapping some eight turns of the mains lead (8mm dia) around two stacked FT240-61 ferrite rings, as in **Fig. 2**.

I used two ferrite rings (obtainable from **Sycom** – see *PW* advert) so as to achieve effective choking action on 1.8 and 3.5MHz 160m since the diameter of the mains wire limited the number of turns to about eight. (A single ring would suffice for 7 to 28MHz).

It's important to note that the use of an r.f. choke **does not** compromise the normal safety function of the mains earth. The technique could prevent r.f. from being fed down the mains earth lead, which can be a cause of television interference (TVI) or audio frequency interference (AFI) to the many other users connected onto the same mains/earth system in high-density occupation accommodation! Additionally, the choke can also provide the added bonus of reducing mains born interference on receive.

Matching The Antenna

Almost any type of a.t.u. suitable for matching end fed wires can be used. See *PW* February 2004 *Antenna Tuning Units – Inside and Out!* for more ideas.

I already had an old Nevada TM1000 a.t.u., which I acquired at a junk sale for just £30! This is a very robust unit and uses the transmatch circuit that I've always found capable of matching a very wide range of impedances over a wide frequency range.

Social issues

In the second part of this article I'll be discussing the social issues we can come up against operating our Amateur Radio equipment in modern, high density housing. However, with good planning and common sense the problems can be overcome.

So, if you're in a position where there are limited possibilities for antennas – don't give up! The experiences I've shared about operating from a flat near Cheltenham town centre may give a little inspiration. ●

The Piel Island GB0PIA Adventure

John Earnshaw M0JFE shares the fun and adventure enjoyed with friends when they operated as GB0PIA from Piel Island in Cumbria.

You really don't need to go abroad to enjoy operating from an island and this is how our adventure to Piel Island started; Early one day **Ian Taylor 2E0EDX** went on a drive and saw this beautiful island in the Irish Sea, just off Barrow in Furness, known as Piel Island. Ian tells me he said, "Wow – what a great place to go and play radio!"

So, when he arrived back home, Ian sent a post to the **CQ CQ** portable forum and soon a merry band of men – who were brave and bold – took up the challenge of telling their families that they would be better off without them and of all the fun things that they could do at the weekend, without the menfolk under their feet!

First Meeting

So, with our leave passes signed by our bosses (or wives), we were all set for our first meeting after the **Northern Amateur Radio Societies Association** (NARSA) rally at the Norbreck Castle in Blackpool, to **Brian Nuttal 2E0OYG**'s QTH in the town. During the meeting our plans unfolded and the mains decisions were made as to what each of us would be bringing. We sorted out the logistics of the **Fylde** group and **Macclesfield** lads for us all to meet at Rho Island, ready for the ferry at 11am.

There followed much chat on the forum, getting resources together and 'phone calls to the local Tourist Information office in Barrow in Furness. They told us that a toilet block and running water was all that would be available on Piel Island as the pub was under refurbishment. But we had considered everything, had tents and could be self-sufficient!

At last the big day came – Saturday May 24th – and Ian 2E0EDX acted as the Fylde group's driver and **Greg Acton 2E0RXX** was the Mac lads' chauffer. It was an early breakfast for everyone before we set off. With Ian's Range Rover *Discovery* full, we proceeded on our way to what we considered to be 'far off' lands!

Gale Force Winds!

Upon arrival at Rho Island – nearest road access to the ferry point for Piel Island – the wind had increased to about a gale-force five–to-six and the tide had an obvious 'fair rate of knots'! We then had to wait for our friends **Sean Amesbury 2E0BAX**, Greg Acton 2E0RXX and his **Liam Acton M3ZRY** to arrive (after a slight scenic detour!).

Once we met up, we found Greg's Ford *Focus* estate was also full which altogether equates to a large load of equipment and food! Soon, John the ferryman arrived to take us on our journey. After a quick natter he said, "I'll best get the boat then" and quickly appeared with a small rowing boat. Taken aback we all seemed to speak together, saying "You jest!" And – without batting an eyelid he said," No, I'll just row over there in this dinghy and get the boat. The sense of relief was almost tangible (Phew!). It was only about 5.5m (18ft) long – if that – with an outboard motor.

Right to left , Liam Acton M3ZRY operating on 14MHz with an FT-817 and G5RV. John Earnshaw M0JFE, Nathan Nuttal 2E0OCC and the back of Sean Amesbury's head 2E0BAX listening & watching!

We proceeded down the jetty and – once on board – our journey was brief and we soon arrived at Piel Island after a little splash from the Irish sea! It was a race against time to unload all the gear as high tide was approaching and the ferryman had to get back to the mainland.

Once there we found the new 'King of Piel Island', Steve at the bunk house, which we found served hot and cold food and drink. If we had been informed of that we wouldn't have brought our own!

We were told that we could camp anywhere we wanted to. A quick survey of the windy island proved that the grounds of the castle were the most sheltered (at the time!).

Antennas Hoisted

We proceeded to set up camp and hoist the antennas, which consisted of two half-sized G5RVs and a home-brew 1.8 and 3.5MHz antenna from Sean. We also used Greg's 144MHz **Summits On The Air** (SOTA) beam antenna.

The next job was to get the tents up. However, we quickly discovered that they make great kites as the wind had changed direction – so it ended up with us in a battle against the elements of nature to put up our shelter without Amateurs taking off!

However, while the Macclesfield lads, together with Brian 2E0OYG and **Nathan Nuttall 2E0OCC**, had conventional tents, Ian 2E0EDX had brought a pop-up special with him. So, while we all played with our portable windsocks Ian had his up in a second with nothing to do but put some tent pegs in. Everyone else thought he was a lucky – and very wise – beggar!

After all the setting up it was almost 1400UTC before we were on the air. Thankfully, the bands

– especially 14MHz – were in great shape (one of the advantages of being very close to the sea). In fact, all the high frequency bands seemed to be working well.

On the other hand, the 144MHz conditions left something to be desired! Several calls on both s.s.b. and f.m. resulted in few contacts, so we concentrated on the h.f. bands. We worked many stations as the bands were open all the hours we could wish for. We even had a couple of pile-ups and every credit should to young Liam M3ZRY – who coped very well indeed! (Well done Liam!). In fact, Liam worked all the pile-ups really well – and most importantly he stayed calm and took control in a way many mature Amateurs can't seem to do! Meanwhile, Ian was efficiently working stations on other bands and we were all kept busy.

However, needing a break several of us went to the bunkhouse for some warm refreshments. Arriving there we received some news, "Guess you noticed the wind has got worse? Well the ferry might not be running!"

Worried, we spoke as a group, "So how do we get off the island?"

Steve replied, "I should know in the morning by a 'phone call."

So, it was off back to camp to play some more radio (oh the hardship!) and pass the good news onto the rest of the group.

Winds Increased Overnight!

The wind increased in speed overnight and changed direction. Despite this, we continued to work several more stations through the night including a friend of mine, **Valerie Tuzhilkin UN7MMM** in Aksai, Kazakhstan, worked at 0149UTC by young Nathan on the 14MHz band. So, we worked and worked, and then worked some more, eventually ending up with a good number of contacts.

In the morning one of our team took a venture to the Bunkhouse when Steve came out to him and said, "A nice Storm Force 9-10 wind and the ferry might not be coming – but if it does then there'll only be one run at about 1100. So, my advice is to pack up and be at the top of the slipway ready to go!"

An immediate decision was made to pack up at 0830UTC on the Sunday morning in what can only be described as horrendous winds. The breakdown commenced and I can only say it was a real challenge!

Radios and antennas weren't a problem – but taking the tents down was a real nightmare! We took them down one at a time with each member grabbing a corner and lying down on top to stop it blowing away. However, as I'm disabled I had the easy job of waiting by the jetty as it was safer for me to wait with all the equipment, while the more able-bodied did the break down and portering work. Being honest, it was definitely safety first, as the wind had really become a real menace!

The ferry wasn't able to come and get us, so Steve decided it was time for plan B to come into force – so we waited to see just what that would be! We waited, then a Mitsubishi *Shogun* four-wheel-drive estate arrived. We were then directed to a trailer (of sorts!) where the salt had corroded and eaten away some of the metal work and it had a lot of suspension travel – for a reason we were to find out later!

We were told to load up as quickly as we could as we didn't have much time. Everything went in the trailer rather quickly and another man with his young daughter, who were staying on the Island, came to help us.

Steve the landlord then said we would drive out across the causeway but we had to be quick. So a decision was quickly made. The helpful man with his daughter and our youngest members would go in the vehicle as well as myself, as I was unable to climb in the trailer.

Ian said he would supervise us in the vehicle while the others Brian 2E0OYG, Sean 2E0BAX and Greg 2E0RXX would (wait for it – ride **in the trailer**! Then came surprise number two – the 'causeway' (what causeway?) actually turned out to be the sea bed complete with big dips and gullies and a blinding sandstorm! Safe in the *Shogun* I shuddered to think of the lads on the trailer – hanging on for grim death bouncing along behind us!

We weren't re-assured of our safety when we passed by the tops of the vehicles – that hadn't made the crossing – protruding from the 'sands of death'. As we progressed Steve told us we didn't have much time as the tide was fast approaching, so when we got to Walney island we had to get everything out of the trailer as quick as possible so he could get back to the Island. He wasn't kidding – as he vanished out of sight the sea came in over the 'causeway' rather quickly to say the very least!

John the ferryman was waiting for us and took the drivers and the man with his daughter back to Rho island to get the cars. While they where gone, the remaining crew divided the equipment into two piles ready for each vehicle and waited in the sand storm for our chauffeurs to return. Once the cars arrived we loaded up and chattered on 144MHz until we went our separate ways.

Excellent Time For All!

We all agreed that a most excellent time was had by all operating GB0PIA. We learned a lot as this was our first 'DXpedition'. We proved that – even using only QRP power levels – that many countries can be worked and new friends made. Would we do it again? Yes, we certainly would!

●

Ian Taylor 2E0EDX operating on 14MHz in his tent.

Liam Acton M3ZRY and his dad Greg Acton on 144MHz.

Brian Nuttal 2E0OYG enjoying the FT-817 antenna test.

Piel island is a great place to go and stay or visit for the day.
For the CQ Portable Forum see **http://forums.delphiforums.com/blackpoolars/**
Our DXpedition website is **http://www.hamuniverse.com/pielislanddxpedition.html**
A video of the trip click on cqportable link to see more of Sean's videos on **http://youtube.com/watch?v=TpcV4MPEPgI**
For Piel island information visit **http://website.lineone.net/~carolscarr/**

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Half size 51ft (now includes heavy duty 300Ω ribbon) £24.95
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Half size (Deluxe) - 51ft (40-10m) £36.95
Full size (Deluxe)- 102ft (80-10m) £42.95
In-line choke balun £39.99

Q-TEK INDUCTORS

80mtr inductors + wire to convert ½ size G5RV into full size. (Adds 8ft either end) ..... £29.99 P&P £4.00 (a pair)

TRAPS BACK IN STOCK

BALUNS & TRAPS

Baluns 1:1 or 4:1 or 6:1 ..... £34.99 each P&P £4
Traps 80m or 40m or 20m or 15m ..... £39.99 pair P&P £5

DOUBLE THICK FERRITE RINGS

A superb quaility ferrite ring with incredible properties. Ideal for "R.F.I". Width 12mm/ OD35mm. 6 for £12.00 P&P £4.00
12 for £20.00 P&P £5.00
50 for £40.00 P&P £10.00

NEW NOISE FILTER!

A superb TDK 'snap fix' ferrite clamp for use in Radio/TV/ Mains/PC/Phone etc.

Simply close shut over cables and notice the difference! Will fit cables up to 13mm diameter. Ideal on power supply leads/mic leads/audio leads/phone leads.

2 for £12.00 or 6 for £27.50 (P&P £3.50)

COAX SWITCHES

(P&P £5.50)

2 way CX-201 (0-1GHz) SO239 ..... £19.95
2 way CX-201 'N' (0-1GHz) 'N' £24.95
4 way CX-401 (0-500MHz) SO239 ..... £69.95
4 way CX-401 'N' (0-500MHz) 'N' £79.95

REPLACEMENT POWER LEADS

DC-1 Standard 6-pin/20A fits most HF £22.00
DC-2 Standard 2-pin/15A fits most VHF/UHF £10.00

YAESU REPLACEMENT MICS

MH-IC8 8 pin Yaesu mic (8-pin round) £34.99
MH-4 4 pin fits older HF, etc. (4-pin round) £29.99

COAX BARGAINS

RG-213 Military spec x 100m. **£99.99** or 2 for £170.00
RG-58 Military spec x 100m. **£35** or 2 for £60.00
Coax stripping tool (for RG-58) £4.00

Q-TEK TRI-MAGMOUNT

Very heavy duty. Available:- SO-259 or 3/8 – specify. **£39.99**

HEAVY DUTY SWAGED MAST SET

New extra heavy duty 2" mast set. 4 sections x 5½ foot slot together.

£59.99 each. TWO FOR £110.00 DEL £15.00

NEW 20' SLEEVED MAST SET

A heavy duty-sleeved, mast set that will tightly slot together. 4 x 5' (2" dia) 16 guage heavy duty aluminium tubes. (Dimensions approx).

£64.99 Del £12.50. TWO FOR £120.00 DEL £12.50

NEW SWAGED MAST SETS

20 foot mast. 1½" – 4 x 5 foot sections. (Swaged) **£39.99**

20 foot mast. 1¼" – 4 x 5 foot sections. (Swaged) **£36.99**

NEW CAR BOOT MAST SET

Superb 18 foot (6 x 3 foot sections) that slot together. Dia: 1¼" ideal to take anywhere. **£34.99**

2 for £62.99 del £12.50

ALLUMINIUM POLES

20 foot (collection only) 2" £49.99
10 foot (collection only) 2" £29.99
2.4m (2") Ally pole 24.99
5 foot (2") Ally pole £12.50

TELESCOPIC MASTS

6 section telescopic masts. Starting at 2½" in diameter and finishing with a top section of 1¼" diameter we offer a 10 metre and a 12 metre version. Each mast is supplied with guy rings and steel pins for locking the sections when erected. The closed height of the 10 metre mast is just 6½ feet and the 12 metre version at 8 feet. All sections are extruded aluminium tube with a 16 gauge wall thickness.

10 mtrs £199.99 12 mtrs £229.99 Carriage £20.00.

MAST HEAD PULLEY

A simple to fit but very handy mast pulley with rope guides to avoid tangling. (Fits up to 2" mast) **£12.99** + P&P £4.50

30m pack (4.4mm) nylon guy rope £12.50
132m roll 4.4m nylon guy (480Kg b/f) ..... £40.00 Del £7.50

NEW EASY FIT WALL PULLEY

Pulley will hang freely and take most rope up to 6mm. (Wall bracket not supplied).

£12.99 + P&P £4.50

Wall bracket, screws not supplied. Simply screw to outside wall and hang pulley on WALL BRACKET £2.99 P&P £1.00

30m pack (4.4mm) nylon guy (480kg) £12.50
132m (4.4mm) nylon guy (480Kg) £40.00

BARGAIN WINCH

500kg brake winch. BARGAIN PRICE **£74.99** Del £10.00

(Now includes cable grip)

Winch wall bracket £22.99

MFJ-1117

DC High current distribution unit £39.99

MFJ-1118 metered

High current distribution unit £74.95

LOW LOSS PATCH LEADS

£3.50 P&P

Connectors	Length	Price
PL-259 - PL-259	0.6m	£9.99
PL-259 - PL-259	1m	£11.99
PL-259 - PL-259	4m	£14.99
PL-259 - PL-259	20m	£49.99
BNC - BNC	1m	£9.99

EP-300

Over the ear earpiece. **£9.95** P&P £3.00

DB-770H (BNC)

2m/70cm Tx + wide Rx. High gain up to 5.5dB. **£44.99** P&P £5.00

MT-3302

Heavy duty universal mount. Includes 5m cable **£24.99**

MT-6601

Adjustable roof rack/window bar mount **£16.99**

club news

Please remember to include full details of your club, E-mail and telephone contact details and the postcode of your meeting venue - it helps potential visitors to find you!

Send all your club info to

PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: newsdesk@pwpublishing.ltd.uk

BEDFORDSHIRE

Shefford &DARS
David Lloyd. Tel: (01234) 742757
www.sadars.org.uk
The Shefford and District Amateur Radio Society meets every Thursday at the Community Hall, Ampthill Road, Shefford, SG17 5BD (next to the Chip shop).
See web site for our full programme.

BERKSHIRE

Reading & DARC
Pete Milton. Tel: (01189) 695697
www.radarc.org
The Reading & District Amateur Radio Club meets on the second and fourth Thursday of the month at Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Berkshire RG5 4LY.

CHESHIRE

Chester & DRS
Graham. Tel: (07930) 655 121
E-mail: info@chesterdars.org.uk
www.chesterdars.org.uk
The Chester & District Radio Society meets on Tuesday evenings at the Burley Memorial Hall, Common Lane, Waverton, Chester CH3 7QT.

Halton RC
Sam. Tel: (01928) 714231
http://g7wfs.sytes.net/hrc/index.htm
The Halton Radio Club meets in The Play Centre, Norton Hill, Windmill Hill, Runcorne WA7 6LJ every Thursday from 7.30 to 9.30pm. There's plenty of parking and full disabled access.

Macclesfield & DRS
Ray King. Tel: (01260) 278431
www.gx4mws.com
The Macclesfield & District Radio Society meets every Monday at the Pack Horse Bowling Club, Westminster Road, Macclesfield SK10 3AT at 8pm.

Stockport RS
David Simcock. Tel: 0161 456 7832
www.stockportradiosociety.co.uk
The Stockport Radio Society meets on the first and third Tuesdays at the Bramhall Air Scouts HQ, Leewood Hall, Benja Fold off Ack Lane East, Bramhall, Stockport SK7 2BX.

Warrington Amateur Radio Club
Paul Carter. E-mail: g7odj@warc.org.uk
www.warc.org.uk
The Warrington Amateur Radio Club meets every Tuesday at 8pm at the Grappenhall Youth and Community Centre, Bellhouse Lane, Grappenhall, Warrington WA4 2SG.

CORNWALL

Cornish RAC
Ian Williams. Tel: (01872) 561058
E-mail: ianporsche964@aol.com
www.cornishradioamateurclub.org.uk
The Cornish Radio Amateur Club meets at the Church Hall, Church Road, Perranarworthal, Truro TR3 7QE on the first Wednesday of every month at 7.30pm. There is also a Computer Section that meets at the same venue and time on the second Monday of every month, except December.

Poldhu ARC
Keith Matthew. Tel: (01326) 574441
E-mail: g0wys@yahoo.co.uk
www.gb2gm.org
The Poldhu Amateur Radio Club meets at The Marconi Centre, Poldhu Cove, Nr Mullion, Cornwall TR12 7JB. Tel: 01326 241656.

COUNTY DOWN

Bangor and District ARS
Mike. Tel: 028 4277 2383
http://www.bdars.com
The Bangor and District Amateur Radio Society meets on the first Thursday of every month in 'The Boathouse', Harbour Car Park, Groomsport BT19 6JP at 8pm. Visitors and new members are most welcome.

COUNTY DURHAM

Bishop Auckland RAC
Mark Hill. Tel: (01388) 745353
http://barac.m0php.net/
The Bishop Auckland Radio Amateur Club meets every Thursday at 8pm in the Village Community Centre, Stanley Crook, Co. Durham DL15 9SN. Tuition for Foundation, Intermediate and Advanced licences is available. The club is registered as an RSGB exam centre.

Great Lumley AR&ES
David Barclay. Tel: 0191 3888113
E-mail: m0bpm@btinternet.com
The Great Lumley Amateur Radio & Electronics Society meets in the Community Centre, Front Street, Great Lumley, Chester-le-Street, Co. Durham DH3 4JD on Wednesday nights from 7 to 9pm.

DERBYSHIRE

South Normanton Alfreton and District ARC
A J Higton. Tel: (01773) 783658
E-mail: Snadarc@aol.com
www.snadarc.com/
The South Normanton Alfreton and District Amateur Radio Club meets in the Village Hall, Community Centre, Market Street, South Normanton, Derbyshire DE55 2EJ.

DEVON

Exmouth ARS
Mike G1GZG, Tel: 01395 274172
E-mail: micael.newport1@btinternet.com
The club meets on the 1st and 3rd Wednesdays of each month at 'The Scout Hut', Marpool Hill, Exmouth Devon EX8 1TD. November 19th is a Natter Night and on December 3rd, Dean G0UIL willexplain about DRM. Dec 17th is their Xmas party.

Exeter ARS
Paul Cheshire. Tel: 01392 660246
E-mail: pchesh-29@hotmail.co.uk
The Exeter Amateur Radio Society meets on the 2nd and the 4th Monday at 7.30pm in the Moose Centre, Spinning Path Lane, Blackboy Road, Exeter EX2 5RP. Tuition for Foundation, Intermediate and Advanced licence is available. The club is registered as an RSGB examination centre.

Torbay ARS
Dave Helliwell. E-mail: g6fsp@tars.org.uk
www.tars.org.uk
The Torbay Amateur Radio Society meets Fridays at 7.30pm in the Teignbridge District Scout Headquarters, Wolborough Street, Newton Abbot, Devon TQ12 1JR.

DORSET

Bournemouth RS
John. Tel: 07719 700 771
www.brswebsite.org.uk
The Bournemouth Radio Society meets on the first and third Friday of each month at the Kinson Community Centre, Pelhams Park, Millhams Road, Kinson, Bournemouth BH10 7LH. Meetings take place in Room 5 at 8pm and members assemble in the bar from 7.30pm. Visitors are always welcome.

Poole Radio Society G4PRS
'Tex' G1TEX Tel: 07966 460 552
www.g4prs.org.uk
Meetings are every Friday at 19:30 for 20:00 at the The Old Chapel Hall, Cabot Lane, Creekmoor, Poole BH17 7BX, the second friday meeting of each month is the formal evening, all others are basically shack and Natter nights. The Foundation class is presently fully booked and well underway!

EAST SUSSEX

Brighton RC
Reg Moores. Tel: (01273) 503869
The Brighton Radio Club meets on the second and fourth Tuesdays of each month at the Vallance Community Centre, Conway Court, Sackville Road, Hove BN2 3WR at 7.30pm. Anyone wishing to know more are welcome to come along to a meeting, entrance is free.

Hastings E&RC
Gordon Sweet. Tel: (01424) 431909
E-mail: gordon@gsweet.fsnet.co.uk
www.herc.uk.net or http://g4cus.mysite.wanadoo-members.co.uk/
The Hastings Electronics & Radio Club meets on the third Wednesday at the Taplin Centre, Upper Maze Hill, St Leonards on Sea TN38 OLQ at 7pm.

ESSEX

Braintree & DARC
Keith. Tel: (01376) 329279
www.badars.org.uk
The Braintree & District Amateur Radio Society meets on the first and third Monday of the month in The Clubhouse, Braintree Hockey Club, Church Street, Bocking CM7 5LJ.

Colchester RA
David Chambers. Tel: 07766 543784
www.g3co.ccom.co.uk
The Colchester Radio Amateurs meets at 7.30pm on alternate Thursdays at St Helena School and The Colchester Institute, Sheepen Road, Colchester, Essex CO3 3LE. Members and non-members welcome.

Chelmsford ARS
Martyn Medcalf. Tel: (01245) 469008
E-mail: info2007@g0mwt.org.uk
www.g0mwt.org.uk
The Chelmsford Amateur Radio Society meets on the first Tuesday of each month in the Marconi Sports & Social Centre, Beehive Lane, Great Baddow, Chelmsford CM2 9RX at 7.30pm. On thursday 16th October there's the Essex Repeater Group AGM to be held at Danbury Village Hall 7:30pm - All welcome

Loughton & Epping Forest ARS
Marc Litchman. Tel: 020 8502 1645
E-mail: info@lefars.org.uk
www.lefars.org.uk
The Loughton & Epping Forest ARS meet Friday fortnightly at All Saints House, Romford Road, Chigwell Row, Essex IG7 4QD between 7.45 and 10pm. All visitors will be made most welcome.

GLOUSCESTERSHIRE

Gloucester Amateur Radio and Electronics Society.
Anne 2E1GKY/M3GKY 01452 548478 (After 10am)
E-mail: hamreed@blueyonder.co.uk
www.g4aym.org.uk
Meet at Churchdown School, Winston Road, Glos. GL3 2RB EVERY MONDAY EVENING 7-30pm until 10pm except for Bank Holidays when we operate from a local escarpment.

HAMPSHIRE

Andover Radio Amateur Club.
Martin M0MWS. Tel: 01980 612070
E-mail:- martinsmith@kukltd.co.uk
Website: www.arac.co.uk
The Andover Radio Amateur Club meets on the first and third Tuesdays in the month at the Club venue in The Village Hall at Wildhern, SP11 0JE. Map Ref SU350510 at 19:30 hours.

Fareham & District ARC
Ken Sapsed. Tel: 023 9279 7240
E-mail: secretary@fareham-darc.co.uk
www.fareham-darc.co.uk/
The Fareham & District Amateur Radio Club meets on Wednesdays evenings from 7.30pm in the Portchester Community Centre, Westlands Grove, Portchester, Fareham PO16 9AD.

Horndean & District ARC
Stuart Swain. Tel: (02392) 472846
E-mail: g0fyx@msn.com
www.hdarc.co.uk
The Horndean & District Amateur Radio Club meets on the first and fourth Tuesdays each month in the Lovedean Village Hall, 160 Lovedean Lane, Lovedean, Hants PO8 9SF at 7.30pm. Visitors are always very welcome.

Isle Of Wight Radio Society
Tony Pegg Tel: 01983 868 978
e-mail tony.pegg1@btinternet.com
www.g3sky
The IWRS meets every Friday evening 7.00pm-10.pm at Haylands Farm,Salters Rd. Ryde PO33 3HU.
Visitors very welcome.The club runs courses for Foundation,Intermediate and advanced licenses. The club is registered as an RSGB exam centre

Hertforshire
Verulam Amateur Radio Club (St Albans)
Norman. Tel: 07773 628912
E-mail: g1bsz@aol.com (sec)
www.radioclubs.net/verulam
The club normally meets every 3rd Tuesday of the month 800pm at Aboyne Lodge School.Etna Road, St Albans, AL3 5NL. New members and visitors are always very welcome. Regular talks, events, Foundation, Intermediate courses exams are held. Club nets also take place every Sunday 12.00noon 40m (7.150MHz), then 14.00pm 2m (145.375) and on Tuesday 19.45pm 160m (1.975) then 20.00pm 2m (145.375). For further information about the club and events please see the website.

HUMBERSIDE

Hull & District ARS
Raymond Penny. Tel: (01482) 504618
E-mail: sirraymond@sirraymond.karoo.co.uk
The Hull & District Amateur Radio Society meets every Friday at the Walton Leisure Centre, Walton Street, off Anlaby Road, Hull HU3 6JB.

JERSEY Amateur Radio Club GJ3DVC

Rob MJ3RZD Tel: 07974 756402
E-mail: gj3dvc@gj3dvc.org.je.
www.radioclubs.net/gj3dvc
Jersey Amateur Radio Society has recently completed the club radio shack refurbishment and re-fitting. The full story can be followed in words and pictures on the new club website at **www.radioclubs.net/gj3dvc** where progress has been recorded almost as it happened. The shack is now more operator friendly and desirable as a venue for visiting DX-expeditions to the Channel Islands - details can be obtained by E-mail. Thank you to all the club members (and others) who provided their time, resources and materials for this project

KENT

Bredhurst RATS
www.the-brats.co.uk
The Bredhurst Radio Amateur & Transmitting Society meets on Thursdays at the Parkwood Community Centre, Rainham, Gillingham, Kent ME8 9PN at 8.30pm. If you are interested in joining the club, write to: Membership, The BRATS c/o The Club Room, The Parkwood Community Centre, Long Catlis Road, Rainham, Gillingham, Kent, ME8 9PN.

Hilderstone Radio & Electronics Club
Mike Howland E-mail: g4mix@waitrose.com
Website: www.g0hrs.org.uk
Meetings now at The Science Block, Chatham House School, Chatham Street, Ramsgate, CT11 7PP on 2nd and 4th Friday of the month at 7-30pm.

Bromley & DARS
Graham
E-mail: bdars@grahamc.net
www.bdars.org
The Bromley & District Amateur Radio Society meets in The Victory Social Club, Kechill Gardens, Hayes, Kent BR2 7NH (off B265, Hayes Lane, Bromley) on the third Tuesday of the month at 7.30pm.

LANCASHIRE

Oldham RC
Christopher Cunliffe. Tel: 07749347142
E-mail: secretaryoarc@btinternet.com
www.oarc.org.uk

The Oldham Radio Club meets on Thursdays at Royton Air Training Corps, Hillside Avenue, Royton, Oldham OL2 6RF at 7:30pm.

Ellenroad RC
David. Tel: (01706) 358650
E-mail: info@ellenroadradioclub.org.uk
http://www.ellenroadradioclub.org.uk/info.htm
The Ellenroad Radio Club (ERC) meets every Monday evening from 7 to 9pm at the Ellenroad Steam Museum, Elizabethan Way, Newhey, Rochdale OL16 4LG. The museum houses the UK's only fully-working cotton mill engine, complete with its original steam raising plant and 220ft high chimney. Newcomers are always welcome and made to feel at home.

LINCOLNSHIRE

Spalding & DARS
Graham Boor. Tel: 07947764481
E-mail: secretary@sdars.org.uk
www.sdars.org.uk
The Spalding & District Amateur Radio Society meets at the Castle Sports Swimming Complex, Spalding PE11 1QF on Fridays at 7.30pm.

LONDON

Cray Valley Radio Society
Bob Treacher. Tel: 020 8265 7735
www.cvrs.org
The Cray Valley Radio Society meets on the first and third Thursdays of the month at the Progress Hall, Admiral Seymour Road, Eltham, London SE9 1SL at 7.30pm for 8pm.

Southgate ARC
Donald F Berry. Tel: 020 8360 3614, E-mail: dfberry@eggconnect.net
www.southgatearc.org
The Southgate Amateur Radio Club meets on the second Thursday of the month at Winchmore Hill Cricket Club, The Paulin Ground, Firs Lane, Winchmore Hill, London N21 3ER at 7.30pm.

Wimbledon and District ARS
Jim Bell. Tel: 020 8874 7456
E-Mail: james@jbell5.wanadoo.co.uk
www.gx3wim.org.uk
The Wimbledon & District Amateur Radio Society welcomes new comers to our meetings whether they are licensed or not. We hold our meetings at 8pm the second and last Friday of each month at Martin Way, Methodist Church, Buckleigh Avenue, Merton Park, London SW19 9JZ. The church is on the corner of Martin Way and Buckleigh Avenue.

THE LOTHIANS

Cockenzie & Port Seton ARC
Bob Glasgow. Tel: (01875) 811723
E-mail: gm4uyz@cpsarc.com
www.cpsarc.com/news.php
The Cockenzie & Port Seton Amateur Radio Club meets in the Thorntree Inn (Lounge Bar), High Street, Cockenzie, East Lothian EH32 0HP from 7pm till late. Organised talks are held in the Port Seton Community Centre, South Seton Park, Port Seton, East Lothian EH32 0EE. Timings 18:30 to 21:30hrs.

Lothians Radio Society
Tony Sigouin. Tel: 07739742367
E-mail: enquiries@lothiansradiosociety.com
www.lothiansradiosociety.com
The Lothians Radio Society meets on the second and fourth Mondays of the month in the Royal Ettrick Hotel, 13 Ettrick Road, Edinburgh EH10 5BJ from 7pm. Membership costs £12 per year and includes a free BBQ every June!

MERSEYSIDE

Wirral & District ARC
Tom. Tel: 07050 291850
E-mail: secretary@wadrac.com
www.wadarc.com
The Wirral & District Amateur Radio Club meets at the Irby Cricket Club, Mill Lane, Irby CH61 4XQ on the second and fourth Wednesdays of each month. Other Wednesdays are informal (D&W) meetings at a local hostelry.

NORFOLK

King's Lynn ARC
Ray Dowsett, MBE. Tel: (01553) 671307
E-mail: ray-g3rsv@supanet.com
http://www.klarc.org.uk
King's Lynn Amateur Radio Club meets every Thursday at the Scout HQ, Chequers Lane, West Winch, King's Lynn, PE33 0NY off the A10 at West Winch at 7.30pm.

Norfolk ARC
Mark Taylor. Tel: (01362) 691099
E-mail: narc@g0lgj.co.uk
www.norfolkamateurradio.org
The Norfolk Amateur Radio Club meets every Wednesday at the Happy Landings, Norwich Aviation Centre, Norwich Airport NR6 6JA a 7.30pm. On the 3rd Dec.: Radio and Space - Stuart G7KBF, 10th Dec.: Informal and on the 17th Dec.: it's their Christmas Party (Some venues still to be confirmed)

North Norfolk ARG
Tony Smith. Tel: (01263) 821936.
E-mail: g4fai@btinternet.com
www.radioclubs.net/nnarg/
The North Norfolk Amateur Radio Group meets in the Radio Hut at the Muckleburgh Collection Military Museum, Weybourne, North Norfolk NR25 7EG on Wednesdays and Thursdays from 10am to 4pm and some Sundays from 1 to 4pm. New members always welcome.

NORTHAMPTONSHIRE

Kettering & District Radio Society
Lorna Froggatt. Tel: 0153 676 2523
E-mail: LornaSteveLorna@aol.com
The Kettering & District Radio Society meets each Tuesday from 7 to 9pm in the winter at The Lilacs Pub, Church Street, Isham, Northants NN14 1HD and in the summer at the Carpetbagger Aviation Museum, Sunnyvale Farm Nursery, Harrington NN6 9PF. Foundation, Intermediate and Advanced courses are held regularly.

SHROPSHIRE

Salop ARS
Richard Golding. Tel : 01743 356195
The Salop Amateur Radio Society meets in The Telepost Club, Railway Lane, Abbey Foregate, Shrewsbury SY26BT on Thursday between 8 and 10.30pm.

NOTINGHAMSHIRE

Worksop Amateur Radio Society (W.A.R.S.)
'Daz' Spence 01623 747314
Email- g3rcw@qsl.net
website- www.qsl.net/g3rcw/
Meets every Tuesday at 7:00 pm. Our cubhouse is located at 59 - 61west street, Worksop, Nottinghamshire. S80 1JP. Exams and courses run frequently for all licence levels. Construction nights due to start in the autumn, and we also put on various special events amongst which is the famous Sherwood Forest. Licensed bar & hot food available on club meet nights. Membership fee for the year is £10.

Telford & District ARS
Mike Street. Tel: (01952) 299677
E-mail: mjstreetg3jkx@blueyonder.co.uk
www.tdars.org
The Telford & District Amateur Radio Society meets on Wednesdays at the Little Wenlock Village Hall, Malthouse Bank, Little Wenlock. Telford TF6 5BG at 8pm. On 5th Nov. it's an Open House/HF OTA/Committee, 12th, New project launch, 19th, Surplus Sale with G8UGL, 26th, Skills evening led by MØTAW. On the 3rd Dec. it's again an Open House/Committee (Away venue)

SOMERSET

North Bristol ARC
Dick Elford Tel:(01454) 218362
E-mail: g0xay@aol.com
www.nbarc.org.uk
North Bristol ARC meet Fridays at 7.30pm at SHE7, Braemar Crescent, Northville, Filton Bristol BS7 0TD. We carry out training for all the Radio Amateurs examoination, and our next training course is to be for Intermediate exams.

South Bristol ARC
Len Baker. Tel: (01275) 834282
E-mail: g4rzy@msn.com
www.sbarc.co.uk
The South Bristol Amateur Radio Club meets every Wednesday evening at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol BS14 0LN. Nov 12th Start of the Xmas raffle, 19th AGM, 26th On-Air evening and December 3rd is an Amteur Radio Software Workshop, run by David G7PKJ.

Yeovil ARC
Gary. E-mail: g.swain@tesco.net
www.yeovil-arc.com/
The Yeovil Amateur Radio Club meets at the Red Cross Centre, Grove Avenue, Yeovil BA20 2BE (on the corner where Grove Avenue meets Preston Road).

SOUTH GLOUCESTERSHIRE

Thornbury and South Gloucestershire ARC
Tony. Tel: (01454) 417048
E-mail: tonytsgarc@sky.com
The Thornbury and South Gloucestershire Amateur Radio Club meets in the United Reformed Church Hall, on the corner of Chapel Street and Rock Street, Thornbury BS35 2BA at 7.30 - 9.30pm. On 12th November, there's a Computer Workshop run by G7NVZ, on 19th Nov., a Video Night and on the 26th, an On-Air-Night

SOUTH WALES

Barry ARS
Glyn Jones. Tel: (01446) 774522
E-mail: glyndxis@talktalk.net
www.bars.btik.com
The Barry Amateur Radio Society meets on Tuesdays from 7.30 to 10.30pm in the Sully Sports & Social Club, South Road, Sully CF64 9TG.

SOUTH YORKSHIRE

Axholme Radio Club
John Fennell. Tel: (01427) 872522
E-mail: g4hoy@tiscali.co.uk
The Axholme Radio Club meets at Hollytree Farm, Westend Road, Sandtoft, Epworth DN9 1LB on Wednesdays at 10amm to 4pm, Thursdays at 7 - 9pm and Saturdays from 10am - 4pm (other times by arrangement).

Sheffield ARC
Trevor Wood. Tel: 0114 2216947
E-mail: trevorwood6@yahoo.co.uk
www.sheffieldarc.org.uk
The Sheffield Amateur Radio Club meets at the SYPTE Social Club, Greenhill Main Road, Sheffield S8 7RH every Monday at 7.15pm. All three types of classes are held for the Foundation, Intermediate and Advance levels of licensing.

STAFFORDSHIRE

Tamworth Amateur Radio Society
Colin Marks. Tel: (01827) 700893
E-mail: colin.marks2@ntlworld.com
The Tamworth Amateur Radio Society meets every Thursday at 7.30pm at St Francis Church, Masefield Road, Leyfields, Tamworth B77 8JB.

SURREY

Sutton & Cheam RS
John Puttock. Tel: 020 8644 9945
E-mail: info@scrs.org.uk
www.scrs.org.uk
The Sutton & Cheam Radio Society meets on the third Thursday of the month at 7.30pm in Sutton United Football Club, The Borough Sports Ground, Gander Green Lane, Sutton, Surrey SM1 2EY. In addition to monthly meetings, licence training courses are held at regular intervals in Banstead Surrey.

TYNE & WEAR

Angel of the North RARC
Nancy Bone. Tel: 0191 477 0036
E-mail: nancybe2001@yahoo.co.uk
www.anarc.net
The Angel of the North Radio Amateur Radio Club meets every Monday 7 to 9pm at Whitehall Road Methodist Church Hall at the corner of Whitehall Road and Coatsworth Road, Bensham, Gateshead NE8 4LH. The entrance to radio club room is through door at the side of building next to the car park. The car park entrance is on Whitehall Road.

Tynemouth ARC
Tony Regnart. Tel: 0191 280 1981
E-mail: tony.regnart@gmail.com
www.gx0nwm.co.uk
The Tynemouth Amateur Radio Club meets each Friday from 7 to 9pm at St. Hilda's Church, Stanton Rd, North Shields, Tyne & Wear NE29 9QB. It's known locally as 'the church near the fire station'.

WEST MIDLANDS

Aldridge & Barr Beacon ARC
Roy Horton. Tel: (01922) 691646
E-mail: leslie137@btinternet.com
www.g0neq.co.uk
The Aldridge & Barr Beacon Amateur Radio Club is a daytime club and meets at the Aldridge Community Centre, Middlemore Lane, Aldridge, Walsall WS9 8AN on the first and third Monday of every month at 2pm to 4pm. They have a long wire and a 2 metre antenna for radio operation using the club callsign G0NEQ.

Midland AX25 Packet Radio Users Group
Miles. Tel: 01384 254199
www.maxpak.org.uk
The Midland AX25 Packet Radio Users Group, MaxPak, meets on the first Monday of the month at The Sir Robert Peel, 104 Bell Lane, Bloxwich, Walsall WS3 2JS.

Stourbridge and District ARS
John. Tel: (01562 700513)
www.g6oi.org.uk
The Stourbridge and District Amateur Radio Society meets on Monday evenings, except for Bank Holidays at The Radio Shack, Old Swinford Hospital School, Heath Lane, Stourbridge, West Midlands DY8 1QX at 8pm. We have Open Shack Nights - Tea/Coffee always available, along with an opportunity to get on the air or just a natter with whoever attends

Sutton Coldfield RS
Andy Sherman. Tel: (01827) 875155
E-mail: peugeotnut@hotmai.com
www.hamradio.piczo.com
The Sutton Coldfield Radio Society Meets on the second and fourth Monday of the month at 7.30pm (no meeting on bank holiday Mondays) in the Sutton Coldfield Rugby Club, 160 Walmley Road, Sutton Coldfield, West Midlands B762QA.

Wythall Radio Club
Chris Pettitt. Tel: (07710) 412 819
E-mail: g0eyo@wythallradioclub.co.uk
www.wythallradioclub.co.uk
The Wythall Radio Club is based at Wythall House, Silver Street, Wythall, near Birmingham B47 6LZ. They meet every Tuesday at 8pm and meetings are informal and friendly. Their 2009 annual rally is planned for March 8th – see rallies pages in this issue.

WEST SUSSEX

Horsham ARC
Andrew Vine. Tel: (01483) 272456
http://www.harc.org.uk/
The Horsham Amateur Radio Club meets on the first Thursday of the month at The Guide Hall, Denne Road, Horsham, West Sussex.

Worthing & DARC
Roy or Joyce. Tel: (01903) 753893
www.wadarc.org.uk
The Worthing & District Amateur Radio Club meets every Wednesday at 8pm in the Lancing Parish Hall, South Street, Lancing, BN15 8AJ. There's a free car park at the rear and full disabled access. Visitors are always welcome.

WEST YORKSHIRE

Pontefract & District Radio Club
Colin. Tel: (01977) 677006
E-mail: info@pontefractradioclub.org
www.pdars.com
The Pontefract & District Radio Club meets every Tuesday from 7pm and Thursday from 8pm at the Carleton Centre, Carleton Grange, Carleton Road, Pontefract, West Yorkshire WF8 3RJ. A feature of their tuesday meetings is a series of 'Chinese Whispers run from 1900 – 1930 by Reg, G4KMW. Go along and find out what these are!

WILTSHIRE

Trowbridge & District ARC
Ian Carter. Tel: (01225) 864698
E-mail: ian.l.carter@btinternet.com
http://uk.geocities.com/tdarc@btinternet.com
The Trowbridge & District Amateur Radio Club meets at Southwick Village Hall, Southwick (nearest postcode is BA14 9QN). On August 20th it's a Natter night

WORCESTERSHIRE

Worcester RAA
Martin Carter. Tel: 07976 917987
E-mail: secretary@m0zoo.co.uk
www.wraa.co.uk
The Worcester Radio Amateurs Association meets on the second and fourth Tuesday at the Hallow Scout HQ, off Main Road, Hallow, Worcester WR2 6PP. Visitors, as always, will find a warm welcome at the new clubhouse, as will potential new members.

Club Secretaries

Please remember to include full details of your club, E-mail and telephone contact details and the postcode of your meeting venue - it helps potential visitors to find you!

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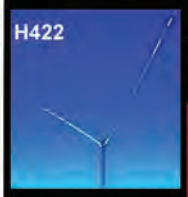

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Amateur

radio personality

The Late Arthur Noakes G2FTK

Editor's comment: Originally, I had invited Arthur G2FTK to become a *PW* Amateur Radio Personality so we could all share his remarkable history. Unfortunately, Arthur died before the article could be published. However, with the co-operation of the Coventry Amateur Radio Society and kind agreement of Arthur's family, Bob Nash G4GEE presents the interview as a tribute to his much admired friend. **Rob Mannion G3XFD**.

This article is the result of an interview with the late President of the Coventry Amateur Radio Society. Unfortunately, Frederick Arthur Noakes G2FTK died on July 5th 2008 aged 91. This article is presented as a tribute to Arthur with the agreement of his sons Graham and Martin Noakes. **Bob Naish G4GEE**.

Bob G4GEE: Arthur were you born in Coventry?

Arthur G2FYK: No Bob, I was born in Staffordshire in 1916 but my family moved to Coventry to the Stoke Aldermoor district when I was two years old.

Bob G4GEE: What was the stimulus to interest you in radio?

Arthur G2FTK: I had been playing cricket with a friend when rain stopped play. He asked me back to his house to show me a radio receiver he'd built which he explained picked up long distance short wave transmissions. I heard a station from Schenectady in New York State. From there I was hooked! I asked my friend if I could build a similar set. He gave me a circuit diagram and then took me to a second shop that sold radios and radio parts in the centre of Coventry.

After putting it together I picked up a transmission from someone in Coventry. He mentioned that he and others were thinking of forming a club in the city. A meeting was held in café in the town and the Coventry Short Wave club (later to become the Coventry Amateur Radio Society) was founded.

Bob G4GEE: How did you become licensed?

Arthur G2FTK: The society helped me. I found out that I had to serve a probationary period of 12 months. I was given the call sign 2FTK. I built a transmitter but I could only transmit into a dummy load. I served my 12 months period and duly made an application for the full licence so I could become G2FTK. This involved a visit by a Radio Inspector (RI) to examine the suitability of my equipment. Alas! The war was declared and I never received the visit.

Bob G4GEE: I believe all Amateur Radio equipment was impounded once war was declared?

Arthur G2FTK: Yes, unfortunately you're right there Bob!

Bob G4GEE: What was your occupation at that time Arthur?

Arthur G2FTK: I became an apprentice tool maker at Rootes Security. I chose that path because the factory was just over the road from where I lived. When the war broke out the factory became very busy building aero engines for the Bristol company. I was involved with the Pegasus engine.

Bob G4GEE: I'm fascinated in your wartime radio work Arthur. Just how did you become a 'secret listener' and what did it involve?

Arthur G2FTK: Whilst I was serving my 12 months probationary period I had been advised by society members to learn Morse code. They said I would hear many more stations and would be able to understand the traffic. One day two people knocked at my door. I recognised one of them from the Coventry Society. They explained that they working for the Government and were visiting Radio Amateurs to ask if they would become involved in working for the Government. They asked if I could read Morse code and would like to work for the government – I said yes on both counts! Then they asked what equipment I had. I explained that my equipment was very modest, was a young lad with very little spare money. However, I had to sign the Official Secrets Act at that point! Two weeks later they returned with a Hallicrafters *Sky Champion* receiver something that was far beyond my purchasing power!

Bob G4GEE: That was a stroke of luck Arthur – but what then were you asked to do?

Arthur G2FTK: I was asked to listen on specific frequencies for specific stations. I was also provided with official logs onto which I copied the messages which I posted off regularly to a PO Box number near London. If the station didn't come up, then I was asked to tune around between certain frequencies.

Bob G4GEE: When did you actually start your 'Secret Listening' Arthur?

Arthur G2FTK: I actually started in 1940, but before I went on 'listening watch' I was asked to go to an inaugural meeting at the Imperial Hotel in Birmingham along with other listeners. The co-ordinator was Brian Warren who lived just outside Kenilworth – unfortunately, I've forgotten his callsign. At this meeting we were told that we were going to listen for illicit stations in the UK and operators from the Low Countries, who had been heard by official listening stations.

A Secret Listener's Recollections

As Arthur Noakes G2FTK had been invited to feature as a PW Amateur Radio Personality, Bob Nash G4GEE interviewed the much admired G2FTK – President of the Coventry Amateur Radio Society – to learn more of his activities as a Second World War 'Secret Listener'.

Thanks to our guest interviewer, Bob Nash G4GEE.

Bob G4GEE: So, Arthur – who was the first station you heard?

Arthur G2FTK: I was asked to listen for a certain station on a specific frequency by his callsign. I found him but it was difficult as the *Sky Champion* didn't have a very good tuning indication. Brian Warren came to visit me and I explained the problem to him. He asked if I would like an HRO. Of course my answer was yes! The receiver arrived. It wasn't brand new but was a vast improvement on what I had. Of course, the HRO was another a valved receiver, but it used plug-in coil sets to provide a much more accurate tuning range. Next time I found my station almost immediately. He sent a callsign made up of three letters. I could tell he wasn't an experienced operator from his slow sending, which suited me at the time! He sent his callsign several times and then suddenly he gave a time, a pre-amble and then a message in five letter groups. He ended the message with a single letter. The letter Z meant red hot and an X less urgency. My main concern was whether or not I could copy down the entire message. I was worried that neighbours might switch on their radios and drown out the signal. I was able to check I had copied down the entire message correctly, as he might resend the number of five letters groups he'd sent first. This happened on one occasion as I waited to see if the sender would come up again, which he did. He sent the part of the message that I missed, so presumably the person listening for him had had similar trouble!

Bob G4GEE:
How much time did you put into your 'Secret Listening' Arthur?

Arthur G2FTK: Well Bob, I did as much as I could – evenings and weekends. However, we were told not to exceed 2 hours in case we became tired.

Bob G4GEE: Did you get any feedback from the authorities?

Arthur G2FTK: Yes we did Bob! Regular meetings were held at the Imperial Hotel in Birmingham and Brian Warren conducted these. On one occasion Lord Sandhurst, who was a 'big wig' in Government communications, came to talk to us. He told us that the work was very important and what a good job we were doing. He said collation of the reports from the 'Secret Listeners' enabled them to produce even more useful information.

Bob G4GEE: Did you have any problems associated with your work Arthur?

Arthur G2FTK: Yes I certainly did Bob! In fact, I received a visit from an official who was in charge of fire watching for the city. He asked me why I wasn't 'doing my bit'. I explained to him that I was actually doing equally important war work and that he should ring a telephone number that I gave him. He must have done so because he came round again to say he fully understood. Incidentally, this person later became one of my best friends!

Bob G4GEE: What were the frequencies that you listened on?

Arthur G2FTK: These were between 35 and 50 metres. Because of the propagation this made me believe that I was receiving signals from the Low Countries.

Bob G4GEE: What were the transmissions like Arthur?

Arthur G2FTK: Some had T9 quality Bob – but others were fairly ropey! The latter signals enabled me to recognise them easily.

Bob G4GEE: There were stories about spies in the UK, did you know of these rumours Arthur?

Arthur G2FTK: Yes there were stories Bob – but I never received any signals that originated from spy transmitters in the UK.

Bob G4GEE: Do you know if there were there any other amateurs in Coventry involved in this work?

Arthur G2FTK: There was a small group including G2ZT, G5PP and G6TD. We talked to each other often about the work – but we didn't tell anyone else what we were doing because it was secret!

Bob G4GEE: So how long did you carry on with this work Arthur?

Arthur G2FTK: Right up until the end of the war in August 1945 Bob! After victory in Europe we were asked to listen for strange signals coming from the Far East but there was little to do in reality. We had a final meeting in the police station in the Earlsdon district of Coventry where Brian Warren spoke to us. He told us that the work was over and that we were to hang onto our equipment for the time being. Eventually I bought the HRO for £10! That episode of my life ended. I applied for my licence when Amateur Radio was re-instated and became G2FTK. By then I had married my wife Dorothy and so I carried on with my life, looking after my wife and children and became even more involved with the Coventry Amateur Radio Society.

Bob G4GEE: Arthur, thank you for sharing your a fascinating story!

Arthur G2FTK: My pleasure Bob!

Tony Nailer's

technical for the terrified

This month Tony Nailer G4CFY aims to dispel the mysteries of filtering in h.f. and v.h.f. receivers.

In the previous article in this series in October 2008 *PW,* I dealt with the local oscillator and intermediate frequency of a 1.8 to 30MHz superheterodyne (superhet) transceivers. I considered the avoidance of birdies and unwanted spurious signals on both transmit and receive.

In this issue I'll be dealing with the choice of filter bandwidths to achieve low noise and single-signal reception and transmission. As usual I'm planning to de-mystify everything!

Superhet Receiver

A single conversion superhet receiver is shown in block diagram form in **Fig. 1**. Designs of present day commercial receivers and transceivers almost exclusively use digital synthesisers and digital readout. Consequently there really is no hope of producing a receiver with a quiet background.

On this occasion I'll start at the speaker end and work forward. This is because normally authors start at the antenna end and often run out of enthusiasm, long before they get to the audio stages!

Audio Amplifier

Integrated circuit (i.c.) audio amplifiers capable of high quality reproduction are readily available at ridiculously low prices. Consequently it would be a nonsense to build discrete component alternatives. Probably all are designed for use in portable domestic radios or car radios. The frequency response of these circuits is normally flat from 50Hz to at least 20kHz.

Voice-only communication does **not** require such a high bandwidth and many of the amplifiers can be bandwidth limited down to much lower frequencies. In fact, I remember learning that the bandwidth of audio for modulation in Amateur Radio stations was 2.4kHz and occupying the range 300 to 2700Hz. (**Note:** The current Amateur Radio Licence no longer requires this).

Nevertheless the principal intelligence carrying tones are around 800Hz for male voices, and up to 1200Hz for females. The bandwidth of telephones is only slightly higher than this and results in a more mechanically sounding voice received at the other end of the line. To achieve a reasonably normal voice usually requires at least some lower tones and the second or third harmonic of the principal tones.

It should be clear that the 300 to 2700Hz voice range can include the third harmonic principal tone of a male and the second harmonic of the high pitched females. So the audio amplifier should be band limited to 4kHz or less at its –3dB point. The main reason for this is that audio noise in wide-band amplifiers rises to a peak at about 7kHz. Band limiting in this way makes it a lot less harsh sounding and significantly reduces listener fatigue.

Post Demodulation

The post demodulation filter is the primary circuit for audio frequency band limitation before the main audio amplifier. The demodulation process usually involves the mixing of at least two signals at the intermediate frequency (i.f.) and results in audio and i.f. harmonics and intermodulation products, as well as the wanted recovered audio. This virtual 'soup' of signals needs to be cleaned up, so that it doesn't radiate around the unit nor get back into the input of the i.f. stages.

Normally a simple resistance capacitance (RC) low pass filter (l.p.f.) with a cut-off at 4kHz would be adequate to significantly reduce i.f. feed-through of 455kHz or higher. It would only reduce higher audio noise and harmonics at 8kHz by about 6dB though. Use of a choke in place of the resistor in the l.p.f. would improve this to an attenuation of 12dB (See **Fig. 2**).

Whereas the resistor in Fig. 2**a**, looks like 4700Ω at audio and i.f., the choke in Fig. 2**b** looks like 60Ω at 2kHz and over 13kΩ at 455kHz. Stereo domestic radio receivers often fall down in this respect where in order to allow a music bandwidth of 15kHz or higher they are not sufficiently filtered to remove the 19kHz stereo pilot tone and other high frequency noise. Incidentally, in a stereo decoder I designed for radio linking operations contains a ten element elliptic l.p.f. to pass 15kHz and severely attenuate 19kHz.

Pre Demodulation

The pre-demodulation filter is usually in the form of a tuned circuit, to provide a low impedance drive to the demodulator. It also serves to reduce the bandwidth of signals and noise passing to the detector. In the case of a low frequency i.f., such as 455kHz, a tuned circuit with a *Q* of 100 will have a –3db bandwidth of just 4.55kHz, which is really useful. (See **Fig. 3a.**).

When a higher i.f., such as 9 or 10.7MHz, was used, a tuned circuit on its own will do nothing worthwhile to reduce the noise bandwidth. Even if the *Q* was as high as 300 the –3dB bandwidth is 30kHz.

In the situation where wideband integrated i.f. amplifiers are providing nearly all the receiver gain, it would be worth using at least a two-pole crystal filter immediately prior to the demodulator, to reduce the wideband noise.

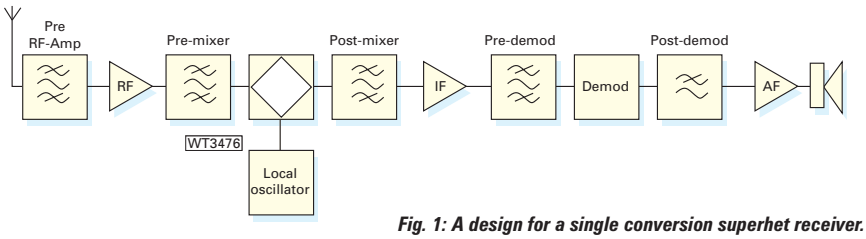

Fig. 1: A design for a single conversion superhet receiver.

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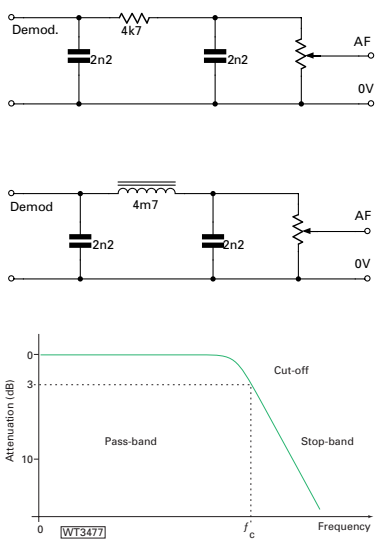

Fig. 2: Using a radio frequency choke (r.f.c.) instead of a resistor. The resistor in Fig. 2a, looks like 4700Ω at audio and i.f., the choke in Fig. 2b. The roll-off rate of the stop-band varies with the type of filter, though the bandwidth can remain the same, Fig. 2c.

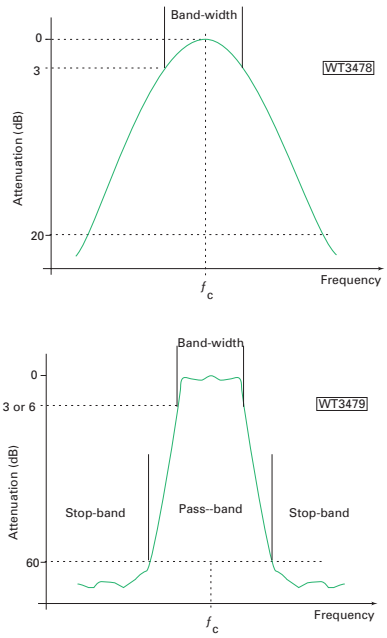

Fig. 3: A low frequency i.f., using 455kHz, a tuned circuit with a Q of 100 will have a –3db bandwidth of just 4.55kHz, which is really useful.

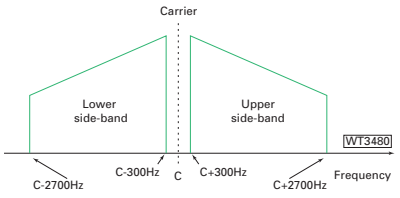

Fig. 4a: The amplitude modulation (a.m.) filter needs to have a bandwidth of at least 5400Hz to accommodate the sidebands, which extend 300 to 2700Hz each side of the carrier. Filters for a.m. can have 1 or 2 dB of amplitude ripple and also quite sharp changes of phase in the passband without any noticeable effect on the demodulated signal.

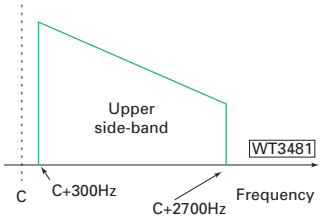

Fig. 4b: Like a.m., single sideband filters can have similar pass-band characteristics, but need only to have half the bandwidth.

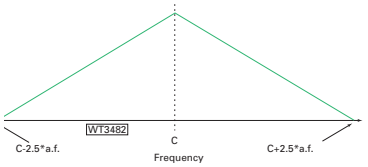

Fig. 4c: A pictorial idea of the occupancy of an f.m signal around the carrier, the bandwidth needed is around four times the highest a.f. frequency.

Post Mixer

The post mixer filter is the most important bandwidth-determining element in any receiver, and selects the signals that will be subsequently processed. It has to select from everything thrown at it from the front end and local oscillator and their myriad products (similar to the 'soup' I've already mentioned!).

To effectively remove unwanted signals each side of the wanted one, the stop-band will need to attenuate them by at least 40dB (a factor of 100). Ideally the stop-band should be 60dB below a pass-band, then adjacent signals would be attenuated by a factor of 1000 relative to the wanted one. (See **Fig. 3b**).

A filter to achieve a 20dB stop-band would require a two-pole crystal filter. To achieve 40dB would require two two-pole crystal filters and to achieve 60dB three two-pole crystal filters would b e required.

Alternatively, ladder crystal filters can be made up from individual single-pole crystals and achieve much the same results. Two crystals for 20dB, four crystals for 40dB, and six crystals for 60dB. They are commercially available packaged-up and are called monolithic filters.

Amplitude Modulation Filter

The amplitude modulation (a.m.) filter needs to have a bandwidth of at least 5400Hz to accommodate the sidebands, which extend 300 to 2700Hz each side of the carrier. (See **Fig. 4a**).

Filters for a.m. can have 1 or 2 dB of amplitude ripple and also quite sharp changes of phase within the passband without any noticeable effect on the demodulated signal. The same is also true for single sideband (s.s.b.) filters, though in this case the bandwidth is half that of a.m. (See **Fig. 4b**).

Frequency Modulation Filter

The bandwidth of a frequency modulation (f.m.) filter is not so easily defined as that for a.m. and s.s.b. This is because there are multiple sidebands of reducing amplitude extending far beyond the expected bandwidth.

So, to achieve good quality and good recovered audio from an f.m. signal it's usually considered necessary to use at least two and a half times the highest modulating frequency each side of the centre frequency. For example, a 1kHz maximum audio frequency will require ±2.5kHz, which is 5kHz overall bandwidth. The diagram, Fig. 4**c** gives a pictorial idea of the occupancy of an f.m signal.

With the classic 300 to 2700Hz Amateur Radio audio range this would require plus and minus 6.75kHz, which is 13.5kHz. **Note**: Not too long ago the channel spacing on many very high frequency (v.h.f.) bands was reduced from 25kHz to 12.5KHz. This means that the filters in early rigs are probably no longer adequate to prevent adjacent channel interference.

Typical commercially available monolithic crystal filters for 10.7MHz i.f. have passbands specified at ±3.75kHz for 12.5kHz channel spacing, ±6kHz for ±20kHz channels and ±7.5kHz for 25kHz channels.

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MASTHEAD PREAMPS, for 2 or 4 or 6meters. 20dB gain 1dB NF. 100W through handling. RF switched & DC fed via the coax. Heavy duty waterproof masthead box, and a DC to RF station box with SO239 connectors. **RP2SM, RP4SM, RP6SM, PCB & hardware kit £41.00, Ready Built £65.00**. **Masthead fitting kit £6.00**.

MASTHEAD PREAMPS 400W rated, for 2 or 4 or 6metres. RF switched. DC fed via a separate wire. 20dB gain 1dB NF. Heavy duty waterproof masthead box with SO239 connector. **RP2SH, RP4SH, RP6SH. PCB & hardware kit £42.50, Ready Built £65.00**. **Masthead fitting kit £6.00**.

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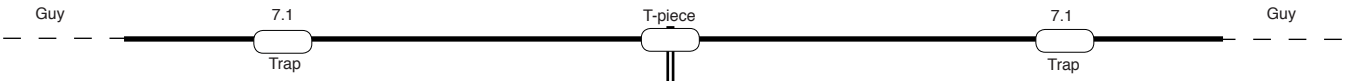
G2DYM / G4CFY AERIALS



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difficult, filter passband amplitude ripple and rapid phase changes cause serious distortion to an f.m. signal. Care in the design and development of crystal filters for f.m. use is needed to achieve a smooth linear phase change each side of the centre frequency. Linear phase filters for f.m. can be used to pass a.m. signals, but non-linear a.m. filters cannot be used to pass f.m.

The Pre-Mixer Filter

The pre-mixer filter in single-band receivers is often quite extensive, comprising two or even three cascaded parallel tuned circuits. The purpose here is to pass the whole of the wanted band, while usefully attenuating the adjacent bands.

Let's now consider an Amateur Radio single band receiver for the 144-146MHz frequencies. In this application the pre-mixer filter should pass the wanted band but reject the bands above and below it. Above this Amateur band, the frequencies from 148 – 151MHz are used for scientific and medical and above that 156 – 162MHz for the Marine service.

Below the 144MHz Amateur band, the frequencies around 140MHz were used by the Police, and BBC talk-back channels and 138MHz is used for high power beamed transmissions for security purposes. The137MHz is used by polar orbiting satellites, and below that is used for aeronautical communications.

Now if the receiver uses a 10.7MHz i.f. and a low-side local oscillator tuning 133.3 – 135.3MHz, then a strong signal 10.7MHz below the local oscillator could also be mixed into the i.f. pass-band. In this case 122.6 – 124.6MHz could be a problem, and this is referred to as the image signal.

The other problem area is where signals are 10.7MHz above 144 – 146MHz. They then act as an alternative local oscillator and produce intermodulation products, which also fall into the i.f. pass-band. In this case 154.7 – 156.7MHz, part of which is in the Marine Band.

Clearly then, the pre-mixer filter for v.h.f. receivers has to cope with potentially strong adjacent band signals, and should aim to reduce these by at least 40dB (a factor of 100). Usually a band-pass coupled pair of parallel tuned circuits will do the job just fine.

On the high frequency Amateur bands 1.8 – 30MHz, the pre-mixer filter may not be needed at all. Using a 9 or 10.7MHz i.f. puts the image a long way away relative to the wanted frequency, and this can be solved with an extensive front end band-pass filter. In place of the pre-mixer filter a wide-band transmission-line-transformer may be used to match the r.f. amplifier to the mixer.

Pre-Radio Frequency Amplifier

The pre-r.f. filter is tricky to get right for the v.h.f. Amateur service due to the requirement for a low front end noise figure. However, extensive filtering at the front-end will incur an insertion loss, which equates directly to noise. On the 144 – 146MHz band a front-end noise figure needs to be below 2dB.

Modern m.o.s.f.e.t.s achieve typically 1 – 1.5dB noise figure, so there's not a lot left for the pre-r.f. filter. Usually a single parallel tuned circuit is used, partly as a filter, but mainly to present the m.o.s.f.e.t. with the impedance necessary to achieve optimum noise figure.

To keep the noise to a minimum and to achieve the highest *Q*, it's common practice to use air wound coils here, with a tapping to provide the necessary coupling to the antenna and to the m.o.s.f.e.t. Tuning is achieved using a trimmer capacitor.

Commercial transceivers for the low-band and high-band Private Mobile Radio (PMR) services of 70 – 88MHz and on 164 – 176MHz, together with marine radios (MB) on 156 – 162MHz, all have stringent specifications to meet for type approval. These are concerned more about adjacent band interference, image rejection, and direct intermodulation. Consequently, the front-end filtering is much more comprehensive and effective, but they incur the penalty of a high input loss and poor weak signal sensitivity.

I have no doubt that anyone who has purchased MB or surplus PMR type of rigs, and used them on the 70 or 144MHz Amateur bands, will know how 'deaf' they are in comparison with purpose designed Amateur rigs!

On the h.f. Amateur bands (where man-made and galactic noise figures are usually well in excess of 10dB) there's much scope to build extensive band-pass r.f. filters. These now usually comprise cascaded low-pass and high-pass sections for each of the bands. Stop-band attenuation of between 40 and 60dB is usually achieved just 20% above and below the wanted pass-band.

There are problems though on the lower frequency bands where international broadcast stations are on the other side of the Amateur band edge. Additionally, other services use the low frequencies for commercial use and there are even pirate radio bands now bordering on the designated Amateur bands.

For the 1.8 – 2, 3.5 – 3.8, and 7 – 7.1MHz bands the best solution would be to use tuneable high *Q* band-pass coupled circuits, either as a built in front end, or as an external pre-selector. This would minimise the amount of signals passing to the r.f. amplifier stage and subsequently to the mixer.

Final Words

Finally, I feel that this article really does achieve what I set out to do, providing a comprehensive overview of the filter requirements in modern h.f. and v.h.f. receivers. It should enable Amateurs and short-wave listeners to understand better the circuitry of commercial equipment and also how to achieve desired results in home-built circuits. ●

Tony Nailer G4CFY

If you wish to correspond regarding this article or previous ones, subscribe to the list **pw-g4cfy-on@pwpublishing.ltd.uk** by sending a blank email with the word SUBSCRIBE in the subject box. When you receive confirmation from the server you can send an E-mail to **pw-g4cfy@pwpublishing.ltd.uk** and your comments will be answered by the *PW* team or by myself. I will also respond to a private Email directed to **tony@pwpublishing.ltd.uk**

This month we feature The British Railways Amateur Radio Society

Enjoying Amateur Radio and railways!

Geoff Simms G4GNQ shares the story behind the society that links Radio Amateurs who work on or for the railways of Britain.

When *PW's* Editor, **Rob Mannion G3XFD,** wrote to me suggesting an article on the **British Railways Amateur Radio Society** (BRARS), besides it being an honour to inform you all what our Society is all about – I was also placed in an unusually difficult position! This is because over the years, because I have no doubt that readers will have read about Rob's passion for railways, and you'll probably realise that perhaps, Rob knows more on the formation of British Railways Amateur Radio Society than I do!

So, how did the society come into existence and what relationship have we had with the railway authorities over the years? To answer this pointed question involved me delving back into history, when in the mid 1950s, several continental railway Radio Amateurs started having regular radio contacts, mainly on the 7MHz (40m) band.

Four Countries

Initially, four countries were involved, Switzerland, Denmark, France and Germany. As a result of these regular QSOs, the operators then decided to hold a meeting in Strasbourg, which took place in 1961. The outcome of these discussions resulted in the formation of an organisation Federation Internationale des Radio Amateurs Cheminots, or The International Federation of Railway Radio Amateurs (FIRAC).

In 1965 short wave listener **Ron New** from Plymouth visited France on holiday as a guest of **Paul Carnand F8PB**, the stationmaster at Rennes where he learnt about this organisation of continental Radio Amateurs.

Following his holiday Ron New then contacted his very good friend **Ron Hooper G3SCW**, who was Stationmaster at Tavistock North Southern Regio station (just outside Plymouth) and informed him about the FIRAC organisation. His friend seemed extremely interested, so Ron New forwarded some of the literature he'd obtained whilst on his holidays. This included a copy of the FIRAC call book plus other information on the various groups in existence at the time.

Over the years Ron Hooper G3SCW had been compiling a list of British Railways staff he knew who held Amateur call signs or staff with an interest in Amateur Radio, so he was very optimistic about the formation of a club. Ron thought that there must be far more railway staff who were licensed or had an interest in the formation of a national railway radio club – but starting any national club is far from easy!

Further discussions took place with Ron New who incidentally was not a railwayman (although he worked on public transport) and the outcome of this meeting was that Ron Hooper G3SCW would write to *Rail News*, the award winning internal newspaper for British Railways and ask them to publish his request in the *Platform 10* section of the paper.

At that time *Rail News* was issued free to all active railway employees nationally – so no doubt some response to the article could be expected! With the aid of the publicity the word spread and with the replies received a meeting was organised at the historic **British Railways Board** (BRB) headquarters St. Marylebone Station, 222 Marylebone Road, London on October 29th 1965. In order to obtain the maximum benefits for all concerned, the meeting coincided with the RSGB radio exhibition at Earls Court.

The inaugural meeting at St, Marylebone was where the Acting

Geoff G4GNQ (centre) with BRARS friends.

A very young G4GNQ poses with railway Radio Amateur friends including (centre) the late Ron Hooper G3SCW.

Send all your club info to

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Secretary s.w.l. **Harry** (H.A.J.) **Gray** from East Dereham in Norfolk, outlined the plans for a national railway radio society. From this initial meeting, a committee was formed with the following people; Chairman Ron Hooper G3SCW, Secretary Harry Gray BRS23279, Vice President **Mr Martin** and Assistant Secretary / Public Relations Manager **Robert Mannion**. Amongst other who attended were **Roy Cross G3TMC** and s.w.l. **John Chappell (**later **G4ZTQ**) who has provided me with some historical documents on the society and it might be of interest that some of our members still have the first copy of the newsletter that Rob produced in 1967.

What's BRARS About?

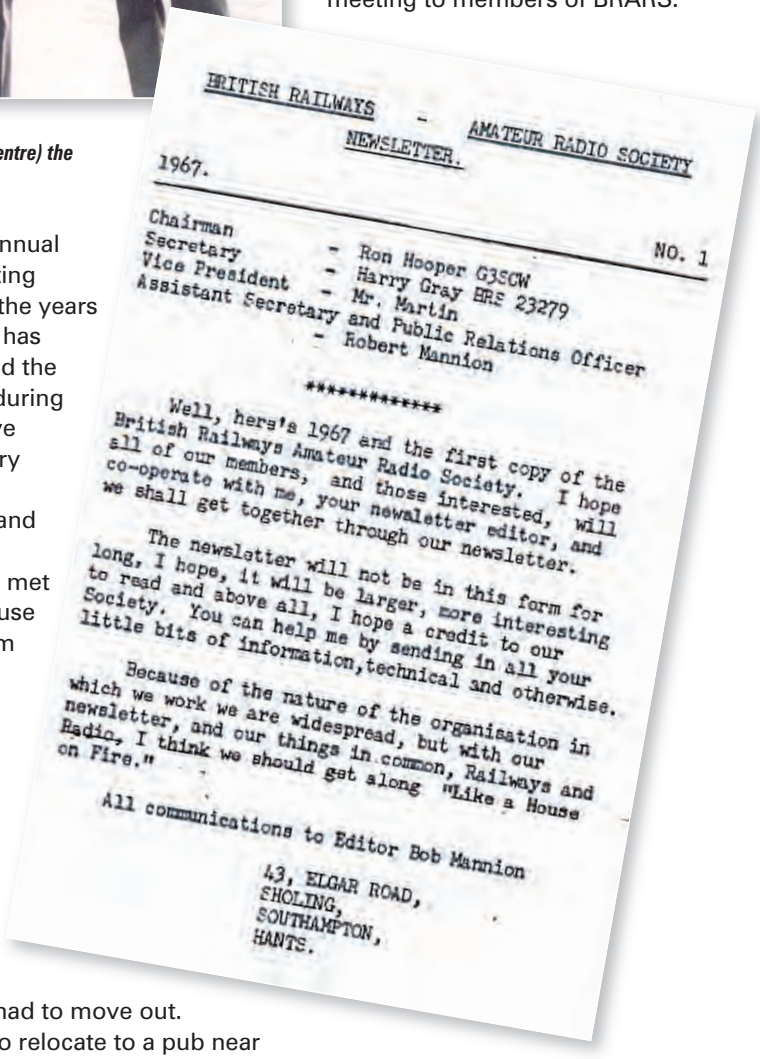
So what are we – BRARS –about? In some respects this is a difficult question to answer, because under normal circumstances, Radio Amateurs usually meet on a fairly frequent basis in local clubs to exchange ideas.

National societies however, are placed in a very different position. Regular club meetings are virtually impossible to arrange on a regular basis unless there are several railway Radio Amateurs living fairly locally who can get together.

Our Society however, does manage to meet up more than once during the year. Naturally most importantly we hold an Annual General Meeting (AGM). Over the years this meeting has moved around the country and during the time I have been Secretary we've met in Birmingham and Derby.

Initially we met in Stanier House in Birmingham this being the regional headquarters for the West Midlands of British Rail but due to structural changes within the railway industry, we had to move out. We decided to relocate to a pub near Birmingham New Street Station, a venue that offered a meeting room and refreshment at a reasonable cost.

Sadly, over the years the price of the rooms increased and small societies are not really in a position to pay ever increasing room costs that eventually became three figures. Something had to be done and one of our members, who is also a member of the **British Amateur Radio Teledata Group** (BARTAG) suggested a public house located in Derby that also had food available at reasonable cost and some good home-brewed beer. So that's where we have been for the past few years. As AGMs go it is a very informal affair (so I'm advised) and we don't restrict attendance to the meeting to members of BRARS.



BRITISH RAILWAYS – AMATEUR RADIO SOCIETY
NEWSLETTER.

1967. NO. 1

Chairman – Ron Hooper G3SCW
Secretary – Harry Gray BRS 23279
Vice President – Mr. Martin
Assistant Secretary and Public Relations Officer – Robert Mannion

****

Well, here's 1967 and the first copy of the British Railways Amateur Radio Society. I hope all of our members, and those interested, will co-operate with me, your newsletter editor, and we shall get together through our newsletter.

The newsletter will not be in this form for long, I hope, it will be larger, more interesting to read and above all, I hope a credit to our Society. You can help me by sending in all your little bits of information, technical and otherwise.

Because of the nature of the organisation in which we work we are widespread, but with our newsletter, and our things in common, Railways and Radio, I think we should get along "Like a House on Fire."

All communications to Editor Bob Mannion

43, ELGAR ROAD,
SHOLING,
SOUTHAMPTON,
HANTS.

The first BRARS newsletter, edited by a 'young' Bob Mannion!

Leicester Show

For a number of years we have attended the Leicester Amateur Radio Show, firstly at the old Granby Halls then latterly in Castle Donington. Whilst not being a formal get-together, this small venture serves to promote

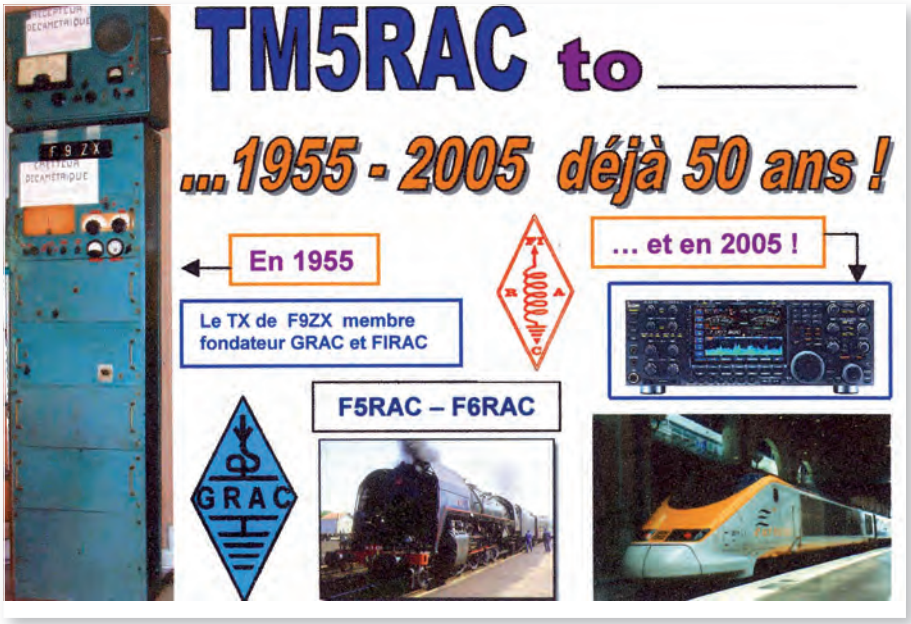
the society, obtain new members, to collect subs and meet members who we would not otherwise see.

Finally. to top things off, a 'spring meeting' is usually held in mid-May at a different location countrywide. Places we have visited so far include: Dumfries and Dundee in Scotland, Kings Lynn, Norfolk, Peterborough, York, Nottingham, several other locations in Yorkshire, North and South Wales and finally the south and south-west coast.

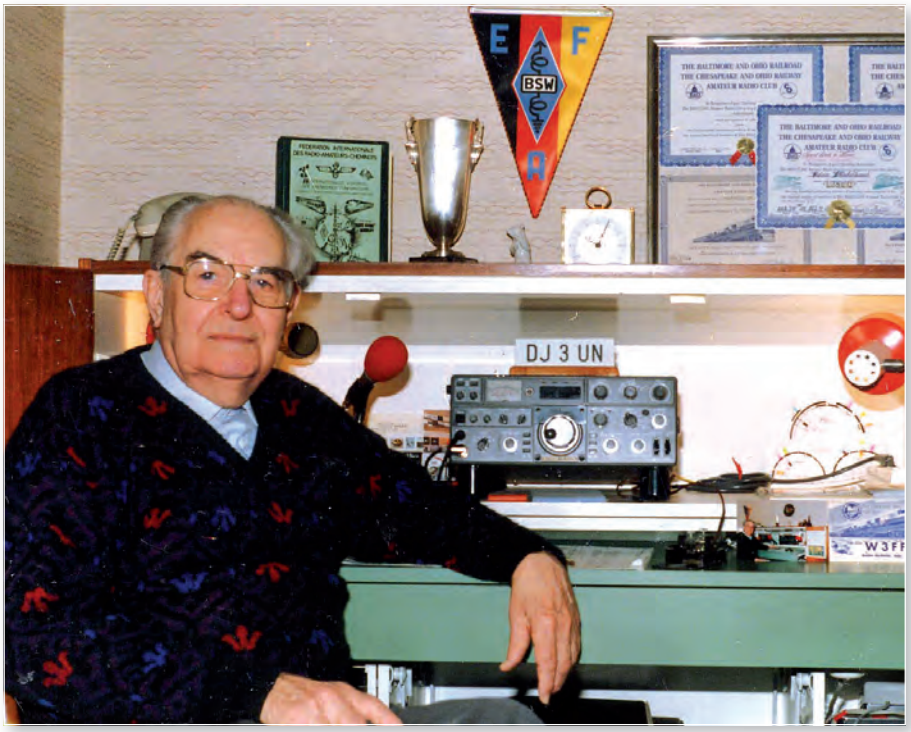
Our main means of communication is via regular radio contacts on either 3.5 and 7MHz, mainly on a Friday afternoon around 1600 local time. The frequencies are 3.685 or 7.055MHz, dependent on band conditions.

Initially, the society did not have a designated club call sign, but in 1981, I requested **G4LMR**. However, contrary to general opinion 'LMR' does not stand for London Midland Railway – instead it stands for 'Liverpool – Manchester Railway' a truly historic railway. This call is regularly aired on the high frequency (h.f.) bands.

The original intention was that the club would locate a permanent radio station at the Liverpool Road Transport Museum, in Manchester, but when I approached the museum they showed little interest, so the plan was abandoned. We did however, operate from the site during the 150th celebration of the opening of the Liverpool–Manchester Railway in 1980. Incidentally, I might add that the location of the station in the Castlefield bowl does no favours for Amateur Radio propagation, so perhaps it was a good idea that the plan for the radio station was abandoned!



It's very clear that the French Railway Radio Amateurs are proud of their 50 years in the hobby. Bon chance cheminots!



German Railway Amateur DJ3UN in his shack.

Special Events

Over the years we have operated many special event stations from various parts of the country and the Bulmers Railway centre in Hereford used to be a favourite. We've also operated on the Amateur bands from several preserved railways in the South West and the Dinting Railway centre, until the Bahamas preservation Society moved to Ingrow on the Keighley & Worth Valley Railway.

During the opening of the Channel Tunnel we ran a joint venture with the French Railway Radio amateurs which including live demonstration of ATV pictures between the two sites. The callsign GB2CT was in use at New Romney, as this was he nearest available site to the Channel Tunnel.

In 1982 we hosted our first international railway Radio Amateur congress in Lowestoft, Suffolk using the call GB2ICR. The year 1987 saw BRARS operating at the Crewe Heritage centre using GB2GJR. (Grand Junction Railway). Next, in 2001, we held our second FIRAC congress in Blackpool. As it was the 40th FIRAC congress we were allocated GB4OFC. (We weren't allowed to use the figure 40, so we circumnavigated the rules with the 'O').

The Internet is not forgotten either and the society runs two web pages where any late news is posted for anyone with Internet access. A brief history of the society is also featured, along with several 'mug shots' of members.

Finally, anyone interested in membership can download an application form from **www.brars.info**. The two sites are **www.brars.info** and **www.firac.org.uk** Both sites provide various links to other railway and radio related sites.

The Society is now in its 42nd year and with a membership of around 90 rail and non-rail staff continues to prosper. So, if you have an interest in railways – why not join us? You'll be made very welcome! ●

Phil Cadman's

valve & vintage

Phil Cadman G4JCP dons his traditional brown dust coat and chats about transistors and miniature valves.

A very merry Christmas to one and all, and a hearty welcome to the (recently transistorised!) *Valve & Vintage* (*V&V*) 'shop'. This time I shall complete my look at early transistors, and then consider what might have happened if semiconductors had not been invented, or had not fulfilled their initial promise.

I've received some interesting feedback from **Roy Harry**, who from the late 1950s through until the mid 1960s, ran a component company called **University Radio Stores**. He tells me that throughout those years, there was a split between valve enthusiasts and those who were keen to work with transistors.

Roy says, "It was a big learning curve for everybody, including us. Lots were still using Solon 65W soldering irons! Our sales of OC71s and the like rocketed. The big attraction of these pesky things was the no-mains circuitry, and the ease of making, say, an amplifier for a crystal set with often no soldering, just using drawing pins stuck in a wooden chassis."

Thanks very much Roy! You reminded me of my first transistor projects which were also built on bits of wood. I then received an E-mail from **Douglas Wallace** concerning the *PW* MiniAmp I featured last time.

Douglas says that the V6/R2 input transistor - Pye's near equivalent of the OC44 – could indeed be replaced by an OC71. The choice of an r.f. transistor was probably made to keep internally generated noise to a minimum but any improvement is negligible. Also, Douglas tells me he's used both the LT700 and LT44 transformers with some success, but considers the Repanco TT4 and TT5 transformers to be the best. Thank you for the information, Douglas.

Finally, I received an Email from **Jim Jobe**, who also confirmed that the *PW* MiniAmp could be used with the LT700 and LT44. He also told me that his garage radio is an **F. G. Rayer** design (writing under the pseudonym R.F. Graham) called the **TRF5 Pocket Portable**, which was published in the May 1968 issue of *PW*. Out of curiosity, I had a look at the circuit of the TRF5 and decided it would be worth reproducing it here, see **Fig. 1**. The circuit is quite interesting and illustrates to some degree, how transistor radio design had developed over the preceding few years.

Radio Frequency Stage

The big difference, compared to the days of the 'amplified crystal set', is the inclusion of an OC44 radio frequency (r.f.) transistor. In this circuit, Tr1 is reflexed, in that it amplifies at both radio and at audio frequencies. Given the still high cost of transistors back then, making one transistor do the job of two was well worthwhile.

The aerial coil L1 is a standard medium wave ferrite rod type. Most coils have separate tuning and coupling windings, so if you want to duplicate this design, connect the two windings in series. Make sure the winding sense is the same for both windings.

The trimmer TC1 provides reaction (positive feedback), giving the stage both increased sensitivity and selectivity. Increase TC1 until Tr1 oscillates and then back off a little. Note that the setting will change with frequency, so you'll have to accept a compromise.

Unlike valved t.r.f. designs, which often use a regenerative or plain leaky grid detector, transistor sets nearly always use a point contact diode for detection. Here, two diodes are used since their input is a.c. coupled, plus there's a voltage doubling action.

The detected audio is fed back to the base of Tr1 and an amplified copy is developed across R1. The audio then passes via C6 to the directly coupled pre-amplifier and driver, Tr2 and 3. The volume control VR1 varies the supply voltage to Tr1 and hence its gain. **Note:** Bear in mind that the position of VR1 will also influence the setting of TC1.

Jim says the TRF5 front end is very good and it could be used to drive something like the *PW* MiniAmp, or even an LM386! In fact, it reminded me of a similar tuner I made when I was young, from the remnants of a Philips Electronics kit; see **Fig. 2** (don't laugh, it still works). Some years after it was built, this masterpiece of radio frequency engineering was pressed into service to feed a home-brewed valved amplifier.

The pair – plus an ancient record

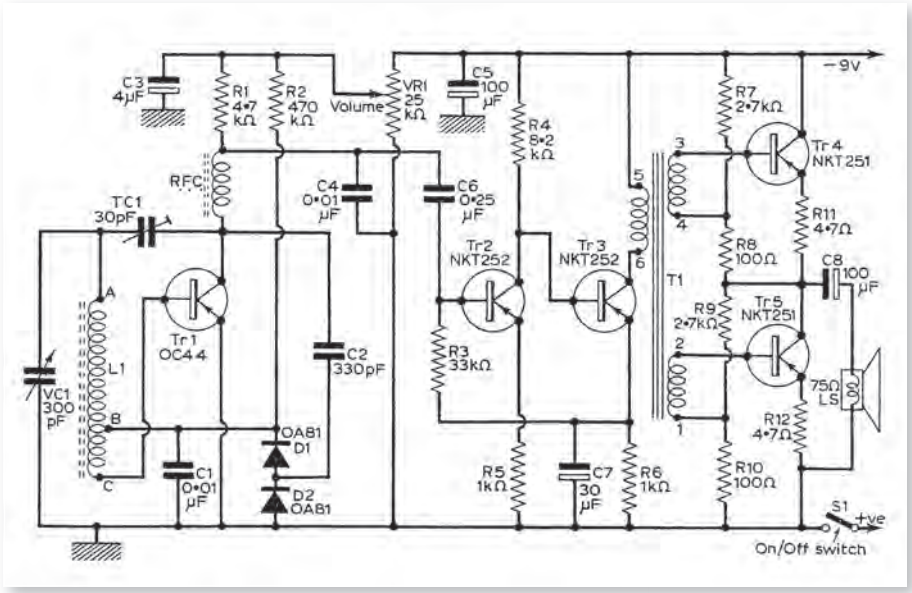


Fig. 1: The TRF5 Pocket Portable design by Frank Rayer G3OGR (writing under the pseudonym R.F. Graham) published in the May 1968 issue of PW.

deck – were used to provide musical entertainment in the sixth form common room at my school. I dare not show you a picture of the amplifier for fear of upsetting people of a nervous disposition. Suffice to say it was constructed along similar lines to the tuner, despite the somewhat higher voltages involved.

Thanks for all your own information, Jim!

Driver & Output Transformer

You'll recall the *PW* MiniAmp used both a driver transformer and an output transformer but in the TRF5, only a driver transformer is used. This was a brief, intermediate step on the road to the transformerless output stage.

Unfortunately, having no output transformer (when such low powers are involved) means the loudspeaker needs to have quite a high impedance, in this case, 75Ω. Loudspeaker manufacturers responded by producing models with high impedance voice coils which were only a little more expensive than normal types.

The final step was to get rid of the driver transformer by using complementary output transistors. If one of the *pnp* output transistors is replaced by a corresponding *npn* type, then a phase splitting driver transformer isn't needed – the output stage does its own phase splitting. To provide higher output powers and to handle the currents required to drive low impedance loudspeakers, two transistors are used in each half of the output stage.

Ideally, output stages should have a matched pair of *pnp* and *npn* power transistors, but back then, that was seldom cost effective (sometimes it wasn't even possible). Fortunately, the quasi-complementary output stage solved the problem by allowing the use of a pair of relatively low cost *pnp* power transistors.

Fragile Germanium

Last time, I mentioned how fragile germanium transistors are. So, when manufacturers began to produce transistors based on silicon, radio constructors were most enthusiastic. Silicon transistors could work at higher voltages and at higher temperatures than comparable germanium types. In addition, they had higher gain, much lower leakage and could operate at higher frequencies.

The first Mullard silicon transistors generally available – and the first ones I used – were the BC107, BC108 and BC109. I don't know exactly when they were introduced, but they're listed in the *Mullard Semiconductor Data Book 1966/67*. This book also lists the BF167 and BF173, which were intended for use in television i.f. stages. Remarkably, the BC107/8/9 are still being made after over 40 years in production. That's longer than the production lifetime of most valves!

While germanium transistors had been mainly *pnp* types, silicon transistors were predominantly *npn* types and so having just got used to positive ground rails, it was back to negative ground! Which, I suppose, pleased valve enthusiasts as the circuits were once again the 'right way up'!

Of course, the introduction of silicon paved the way for the invention of the field effect transistor (f.e.t.), which was actually closer to what **William Shockley** had always wanted – a true solid state alternative to the thermionic valve.

And we mustn't forget the introduction of the first integrated circuits (i.c.s), whose descendants – in both analogue and digital forms – have truly revolutionised electronics design and manufacture, and much of our everyday lives.

Transistor Not Invented?

But what if the transistor hadn't been invented or hadn't been successful? It's impossible to know for sure what might have happened but the period of valve development from just prior to the introduction of the transistor, through to the early 1960s, does offer some clues.

Improved design, materials and production techniques had all helped to produce very reliable valves. While high power valves still had a limited life (depending on just how hard they were worked), low power types could last tens of thousands of hours. If some valves could last as long as any other

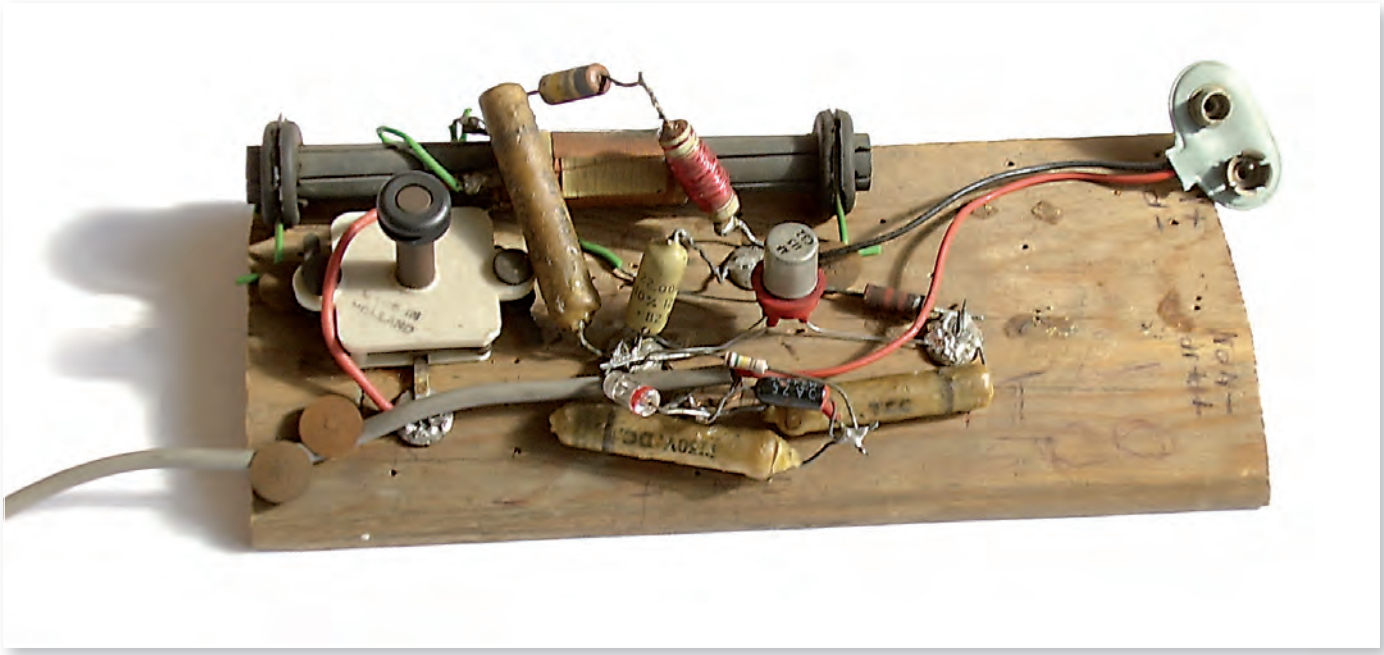


Fig. 2: Phil G4JCP's home-brewed tuner, using the remains of a Philips electronics kit. It worked very well!

Phil Cadman G4CJP
21 Scotts Green Close,
Scotts Green,
Dudley,
West Midlands DY1 2DX
E-mail: phil@g4cjp.freeserve.co.uk

Fig. 3: The miniature wired-in EC70 valve using a 6.3V, 150mA heater and an anode dissipation of 3W.

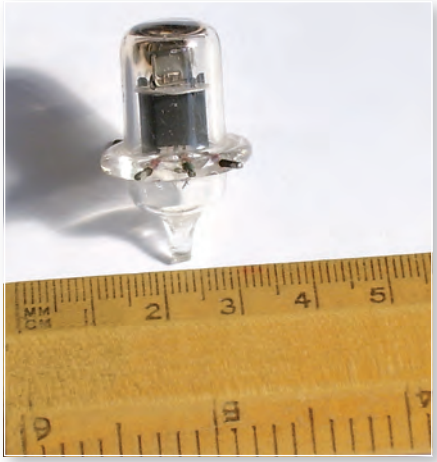


Fig. 4: The historic 955 Acorn triode valve, which was used in many military applications during the Second World War.

component, then why not wire them directly into circuits?

With ever tighter manufacturing tolerances being achieved, low power valves could be made much smaller. One example of a miniature wired-in valve is the EC70, designated CV468 by the Services, see **Fig. 3**. This triode valve has a 6.3V, 150mA heater and an anode dissipation of 3W.

Similar sized battery valves had an extremely important use in hearing aids. They had filaments which required very little power – 25mA at 0.625V or 1.25V – and could operate with an anode supply of just 18V. Because valved hearing aids became so valuable to people with hearing problems, I'll be covering them in some detail next time – especially as *PW* published conversion details to turn them into radio receivers!.

So, one clear trend was that of miniaturisation. But making valves smaller also meant that they could operate at higher frequencies. However, the base was a problem – top caps were impractical with such small valves and anode/grid connections made at the same end might be too close to each other to ensure stability. One solution was to move the pins from the end of the valve to the circumference, as in the Acorn range of valves, see **Fig. 4**.

The photograph shows a **955** triode, the three pins pointing directly 'out of the page' are the two heater pins and the cathode. The grid and anode pins are on the other side. Short internal connections to the pins and their relatively large separation, made it possible for these valves to operate effectively well into the ultra high frequency (u.h.f.) spectrum.

Another significant development in miniature r.f. valves came with the introduction - by RCA in 1959 – of the Nuvistor. These tiny valves – slightly smaller than a thimble – were made from metal and ceramic, with an internal structure consisting of a concentric arrangement of cylindrical electrodes.

The most popular nuvistor in the UK was the 6CW4, a high-mu (gain) triode specifically designed for r.f. amplification. This became a favourite for use in low noise v.h.f. and u.h.f. pre-amplifiers and converters in the 1960s.

Shortly afterwards, in 1961, the American General Electric company introduced the Compactron, an all-glass multiple unit valve designed to replace two or three conventional valves. There was nothing particularly novel about the Compactron but they did use a new 12-pin base and the evacuation tip was underneath the valve rather than at the top, allowing a shorter overall height.

The Compactron's primary use was in (American) colour television sets, which required many more valves than their monochrome counterparts. Having, let's say three triodes or two fully independent pentodes in one envelope, saved both space and cost. Even their use in ordinary radio sets and stereo amplifiers effected similar savings.

Compactrons had a short production life, as transistors rapidly became good enough to replace most TV and radio valves. Only those valves operating at high voltages and high powers remained and even they eventually succumbed to the semiconductor revolution.

Not all Compactrons were multiple valves – colour TV sets needed a new generation of high power line output valves. The 12-pin base was ideal as it allowed 'fatter' valves and the extra pins provided more support for the electrode structure. It was these powerful – yet relatively cheap – line output valves which attracted the attention of Amateur Radio equipment manufacturers as being suitable for the final amplifiers in single sideband (s.s.b.) transmitters.

It's clear to me that the trend in 1960 – just as it is today with modern electronics – was for miniaturisation and higher integration. The next step may well have been the inclusion of passive components within the valve envelope, something that had already been done way back in 1926 by the German company Loewe Radio AG.

Loewe's first 'integrated circuit' valve was the 3NF, which contained three triodes, two capacitors and four resistors. To prevent the passive components contaminating the vacuum, they were sealed in glass tubes. Perhaps that could have been the next step in the evolution of the Compactron?

I wonder what would the world be like if there were no semiconductors? Valves would have become smaller, more efficient, and there may have been developments in cold cathode valves.

Some years ago (can't remember the details), cathodes made of sheets of microscopic cones were shown to emit electrons. The electric field strength at the tips of the cones is so high – even at low applied voltages – that electrons are pulled from the material.

But even if some new kind of microscopic valve had been developed, it's very doubtful that we'd have the highly integrated electronic devices we now take for granted. Still – Let's imagine, no portable MP3 players, no cellphones, no personal computers, no digital radio or TV, and no noisy switched-mode power supplies. Just lots and lots of valves!Maybe it wouldn't be such a bad world after all. Happy Christmas! 73 de Phil G4JCP. ●

rallies

Radio rallies are held throughout the UK. They're hard work to organise so visit one soon and support your clubs and organisations.

Send all your rally info to
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November 30th
Bishop Auckland RAC Rally
Mark. Tel: (01388) 745353
The Bishop Auckland Radio Amateurs Club Rally will be held in the Spennymoor Leisure Centre, Co Durham DL16 6DB. Doors open at 10am for disabled visitors and 10.30 for others. Entry is £1.50 with accompanied U14s free. There will be trade stands and a Bring & Buy.

January 18th 2009
Red Rose Winter Rally
Steve. Tel: (01942) 888900
www.wmrc.org.uk
The West Manchester Radio Club is holding its Red Rose Winter Rally, at Lowton Civic Centre, WA3 2AH, just off the A580 East Lancs Road. This venue is all on one level with disabled facilities and free parking. There is a low cost Bring & Buy, RSGB bookstall, the usual trade stands, component and special interest groups, licensed bar, home-brew catering and large social area in which to mingle with fellow amateurs. Doors open at 10am.

January 25 2009
Horncastle Winter Rally
Tony Nightingale G3ZPU Tel: (01507) 527835
E-mail G3zpu@yahoo.co.uk
The Horncastle Winter Rally is to be held in the Horncastle Youth Centre LN9 6DZ (Note: Google Maps details are wrong), With free parking, it's all on one level and ideal for wheelchair users. Entry will cost only £1 for visitors, with table available at £5 per table, Doors to be open at 10am

February 22nd 2009
Radio Active 2009
Simon G8ATB Tel: 01270 841506
E-mail: info@radioactiveshow.co.uk
Mid-Cheshire Amateur Radio Society (MIDCARS) are hosting, the Radioactive 2009 rally on10:30 Sunday 22nd February 2009 at the The Civic Hall, Nantwich, Cheshire CW5 5DG. There will be Talk In, Car Parking, Trade Stands, Bring & Buy, Licenced Bar, Catering.

The Rev. George Dobb's

carrying on the practical way

The Rev. George Dobbs G3RJV has found time to prepare his traditional Christmas project – an unusual crystal set design from 1932.

"The past is a guidepost, not a hitching post."
Thomas Holdcroft (American Writer).

After a short break, to retire and move house, I'm pleased to be back writing this column for *PW* readers. I can only describe the break as interesting! After 24 years in our six bed-roomed vicarage, my wife an I now squeeze into a three bed-roomed semi-detached house. (I forgot to mention the four roomed cellar we also left behind!). But as L. Thomas Holdcroft suggests in this month's appropriate quote, the past should not be a hitching post!

A significant part of the downsizing exercise has been the reduction in space for my radio activities. Formerly, I had a whole wall of a large room for my construction workshop and operating position with a workshop room in the cellar. My new construction and operating area has a footprint of 1.1 by 1.2 metres with some extra storage shelves.

Thankfully, I also have a shed but that has to be cleared of boxes of 'stuff' with, as yet, undesignated locations. It will be insulated and become a messy-job workshop. 'Welcome to the real world of Amateur Radio' as some readers will say!

Good Choice!

When **Rob G3XFD** suggested I might like to return *COTPW* column for this issue, I thought the issue to be a good choice. Traditionally I have devoted this period to fun projects; often suitable to share with children or beginners over the Christmas holiday period. Something practical to do, perhaps in a family context, may be a welcome change from a diet of TV specials and over-rich food.

The suggestion also had the advantage of giving me an easier task in my, yet to be completed, mini-workshop. So, this month's project really can be built on the kitchen table with the minimum of fuss and with very little cost.

The 'Mystery Crystal set' as put together by George G3RJV using an idea from Tom GM3MXN.

In the past I have often featured crystal radios in my Christmas column. Like many other radio enthusiasts I was raised on crystal sets. My first radio was built in my uncle's shed using wartime surplus parts. It gave me my first taste of joining together a collection of parts and hearing radio stations from the work of my own hands.

Even now, over 50 years and dozens of homemade radios later, I'm still excited when I hear signals on a radio receiver I've built myself. Sharing this with others is not a bad way to spend some of the Christmas period.

I'm indebted to **Tom Sorbie GM3MXN**, for the idea of this month's column. Tom is a fine builder and QRP operator I have known for many years through the G QRP Club. Not long before I retired, Tom sent me an E-mail to tell me of the experiments he had done based on a 1932 circuit called the 'Mystery Crystal Set', **Fig. 1**. However, I had met the Mystery Crystal Set before when looking at crystal set ideas for former editions of this column.

Tom, like many a good radio tinkerer, had brought a new and novel approach to this old radio design. He built his version in one of the plastic cylindrical cases used to hold blank computer CDs and DVDs. Tom's novel twist was that he wound the coils required round the circumference of the case. So, armed with Tom's idea, I set about making a Mystery Crystal Set.

Sunday newspapers have a mixed reputation; some are just scandal sheets and others have in-depth features and discussion that daily newspapers don't have the space to include. But finding a Sunday newspaper with a section on radio construction would be more than a novelty. So it was very interesting to discover that the Mystery Crystal Set was first published in a column in *The Sunday Mail* in Brisbane, Australia!

In what was a regular feature by 'Proton' the design appeared in the edition for July 3rd 1932 (a few months before *PW* first appeared). Proton writes, '*The Mystery crystal receiver is so called because I do not know just why it should be so*

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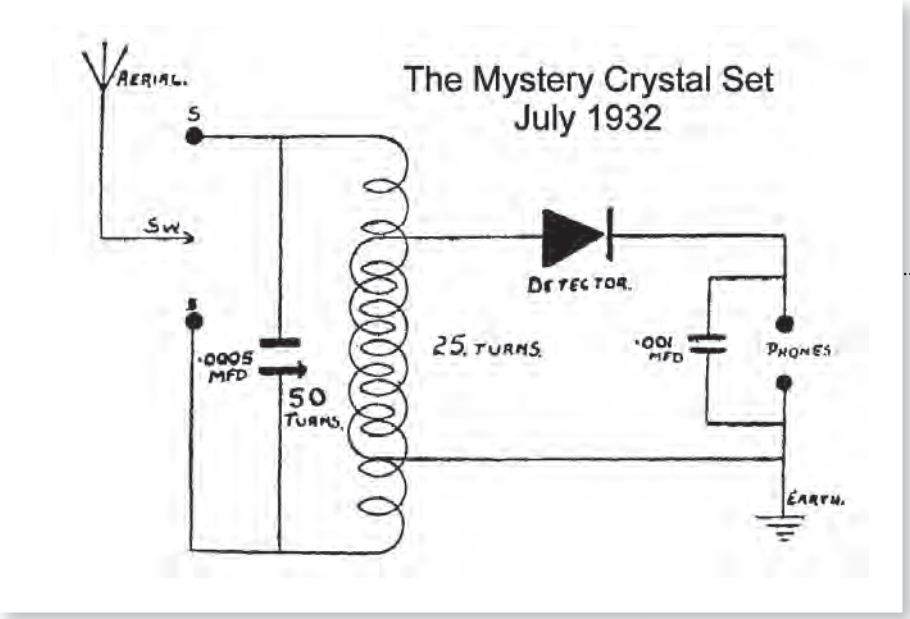

Fig. 1: The circuit of the 'Mystery Crystal set' as it appeared in the 1932, Australian* Sunday Mail *newspaper.

good and after trying it out for about a fortnight I am more amazed at the results than before. It is without a doubt the best crystal set that I have heard. Some of The Sunday Mail *crystal receivers have attained Australia-wide fame and it is quite a common occurrence to receive requests from readers in every State of the Commonwealth.'*

Unusual Design

The Mystery Crystal set's design is somewhat unusual and Proton goes on to say, '*When you look at the diagram you will note that it is quite a different arrangement from that which you normally see in crystal circuits, but nevertheless it is a simple crystal receiver that will cost only a few shillings, and sufficiently selective to separate all the local stations without any overlap, and bring them in with enough volume to make the reception enjoyable. The coil, like the whole circuit, is a most unusual arrangement, consisting of two coils wound together, turn to turn on the one former. The aerial coil, which is tuned has two aerial points without any earth connection. The detection and output circuit is untuned, and has the receiver's earth connection, a very unusual arrangement'.*

The circuit of my Mystery Crystal set is shown in **Fig. 2**. The inductor L1 and a variable capacitor form the tuned circuit. Following Tom Sorbie's advice I used 40 turns of 26s.w.g. enamelled wire wound around the circumference of the CD holder.

Notice that the aerial (I cannot use 'antenna' for a crystal set!) can be connected to the top of the tuned circuit (S) or the bottom of the tuned circuit (B). **Do not** connect the earth to this section of the circuit.

The tuned circuit is coupled to the diode detector via another winding, L2. The inductor L2 is 20 turns of 28s. w.g. inter-wound in the centre of L1. The gauge of wire is not very critical for either winding; enamelled wire from old transformers would serve the purpose.

There's an advantage in making L2 a smaller gauge than L1, if only to help with the winding of the coils. There would also be a similar advantage if the colour of the enamel on the wire used for L1 and L2 is slightly different.

To the right of L2, in Fig. 1, the circuit looks like a conventional crystal set. The diode, D1, should be a germanium diode. The usual suspects for a crystal set are the OA90, OA91, OA47 or 1N34, but any similar germanium type would do the job.

As would be expected, D1 demodulates the radio signal and provides an audio frequency signal which can be heard in the headphones. The 1nF decoupling capacitor across the headphones is common in crystal sets, although I think it probably makes little difference to the performance.

High impedance headphones are required for significant sound output. I used a pair of 2kΩ ohm magnetic headphones (each side). These are getting rare to find and it's possible to use a crystal earpiece in place of the headphones. **Note:** If a crystal earpiece is used, a d.c. load should be added to the circuit. I suggest adding a resistor of about 10kΩ across the headphone output (in parallel with the 1nF capacitor).

The most difficult part of building the Mystery Crystal Set is the winding of the coils, L1 and 2. Tom GM3MXN wound his coils adjacent to each other on the CD holder and I suspect that winding L2 over the centre of L1 would also be satisfactory. However, I decided to follow Proton's instructions to the letter and inter-wind L2 with L1. This is tricky but fun! It requires a little preparation.

If the wire for L1 and 2 is on spools, it's a good idea to hold the spools side by side on spindle, so that wire can be pulled freely from the spools. A tool is required that will make holes through the plastic of the CD holder; I used a small drill in a drill collet. You'll also need some sticky tape; I found 'Scotch tape' but plastic insulation tape is fine.

The final windings will be about 30mm wide, so begin L1 close to the top of the CD holder cover. Make a small hole in the cover and poke the end of the wire for L1 through the hole. Tie a knot about 100mm from the end of the wire and pull the wire until it tightens against the inside of the CD holder cover. Carefully wind the first ten turns of L1, keeping the wire tight and the windings side-by-side.

After completing the 10 turns push the wires into to place and hold them with several strips of tape around the circumference. Make another hole in the former tight against the last winding of L1. Secure the end of L2 in exactly the same way as the end of L1. The next bit is the fun bit!

Add the next 20 turns using both the wire for L1 and 2. The coil is wound so that a turn of L2 is between each turn of L1. I found that the best way to do this was to slowly rotate the CD holder cover towards me aligning the turns with my thumb.

When the middle 20 turns are completed, make two holes against

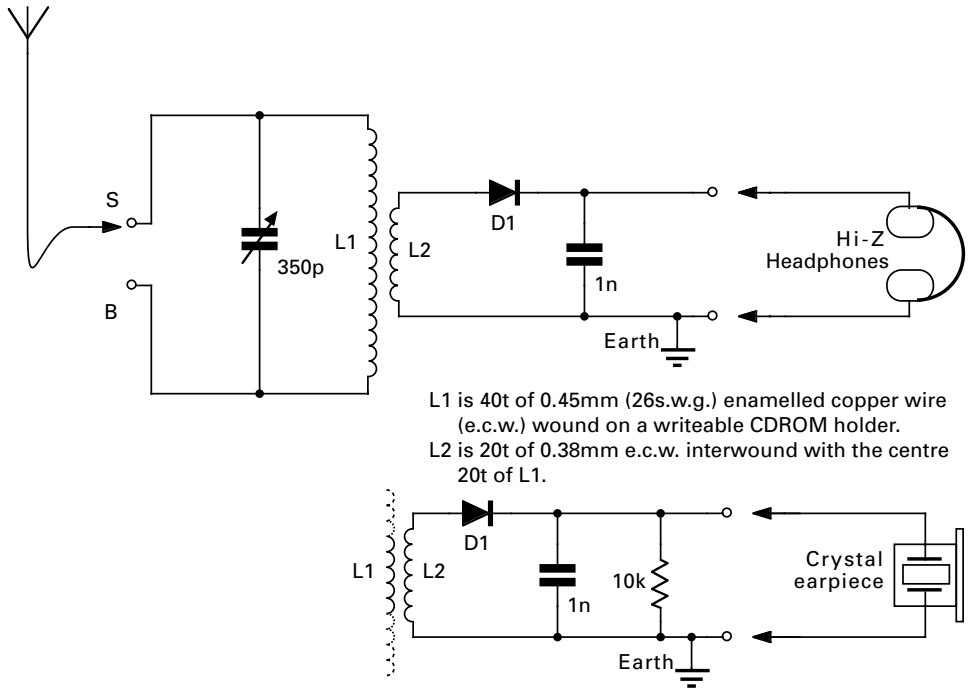

Fig. 2: The circuit, that Tom Sorbie GM3MXN, developed as his 'Mystery Crystal set'. The original 2kΩ headphones can be replaced with the bottom circuit if needed, or use a small i.c. audio amplifier.

the outside of the windings. The wire of L2 is passed through the furthest hole into the CD drum then looped underneath and back through the nearest hole, then finally through the furthest hole to secure it in place.

Trim the L2 wire to allow about 100mm of spare wire. The final 10 turns of L1 are then added to the coil and tied off in the same way as L2. It's doubtful that the windings will be completely tight and remain closely wound without being held in place.

Strips of tape can be added at intervals around the drum, pushing the windings into place as they are added. I used beeswax, melted with a soldering iron tip to drip across the windings. The hot tip can then be used to spread the wax over the width of the windings.

The variable capacitor is mounted in the centre of the CD holder cover. I happened to have a small 350pF air-spaced capacitor, **Fig. 3**, but any variable capacitor of similar value may be used. A postage stamp type trimmer capacitor could also be used. The terminations for the aerial (2) and the phones (2) and the earth are also added on the top of the CD holder. I made holes with the tip of soldering iron and opened them up to size with a hand reamer. The crystal set can be wired point-to-point between the terminals and the components.

Easy To Use

The crystal set is easy to use and the tuned circuit values are for the medium wave band. Note that there are two positions for the aerial. The position marked 'S' is the most selective and tends to cut out the adjacent station interference common in crystal radios.

In position B the tuning is much broader and although the volume is somewhat greater, interference may occur. Crystal sets require a good aerial and an earth but when I completed my Mystery Crystal Set I hadn't yet erected an outside aerial.

So, I connected the aerial socket to the outer lead from the satellite dish left by the former house owners (we don't have satellite TV) and clipped the earth lead onto the metal case of our Hi-Fi unit to access the mains earth. This makeshift arrangement yielded plenty of radio stations all of which could be individually tuned in aerial position 'S'. Radio 5 was loud enough to hear with the headphones resting on the floor. So turn back the clock and build a 1930s radio yourself and I'm delighted to be back with *PW*! ●

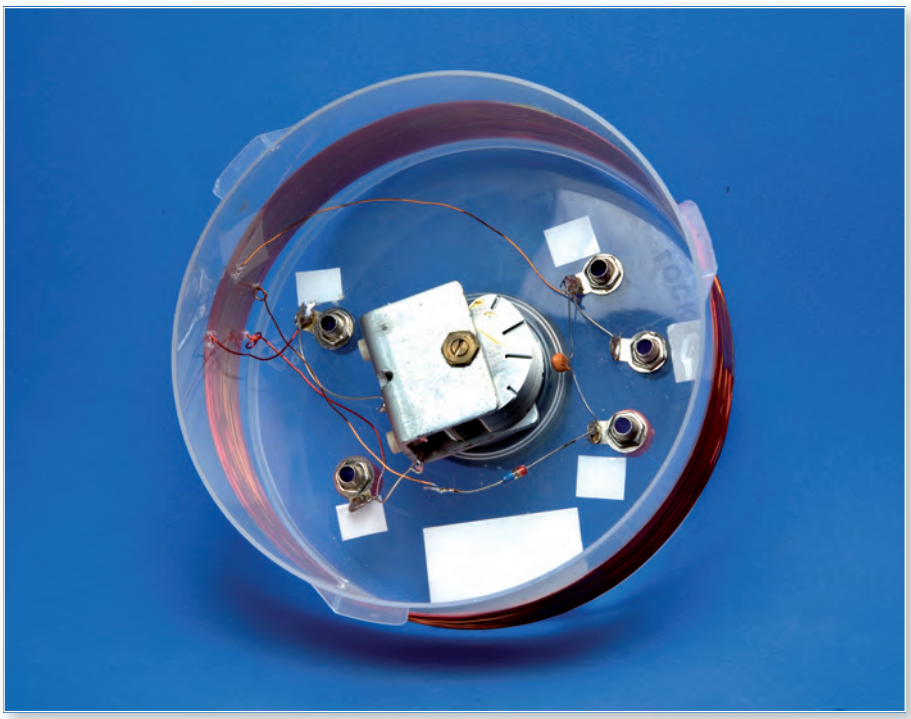

Fig. 3: Looking inside the set, with the tuning capacitor in the middle of the 'lid' and the two coils wound tightly around the side-wall.

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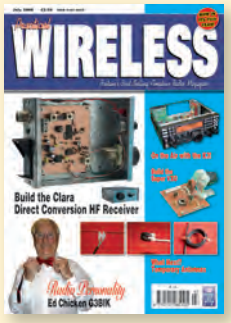

Don't forget that recent magazines (dating back a couple years) are available from the book store and for magazines that have sold out, or very old ones, we can provide a photocopying service as we have a comprehensive archive dating back to 1932.

Harry Leeming's

in the shop

Harry Leeming G3LLL welcomes us to the world of older rigs where he discusses an illogical problem on an FT-290.

Welcome to December's *In The Shop* (*ITS*) session! I'm looking back to when '**Joe**' had obtained a Yaesu FT-290 Mark 1 and it had a problem that seemed totally illogical. Joe advised me that he could operate it on his antenna system with his linear amplifier switched on or off when and it performed well. However, when he fired it up directly into a dummy load, as soon as he operated the push-to-talk control on the microphone the display disappeared!

Joe then fitted a set of internal batteries. No problem! The rig was seemingly okay on the dummy load or the antenna with or without the linear. Rather puzzled he installed it in his pick-up truck, which was fitted with a gutter-mounted whip. Again the rig performed satisfactorily and so Joe ignored the problem with the dummy load and carried on using it for a few weeks until one day he tried it with a magnetic mount in his wife's car. Frustrated, Joe found that the rig wouldn't transmit and when he keyed the microphone, the display went blank once again!

Justifiably Frustrated

To try and make some sense of what was going on – by this time he was justifiably frustrated – Joe took the rig round to a few of his friends' shacks and cars. Unfortnuately, the mystery deepened because in some cases the transceiver performed faultlessly in other cases it wouldn't transmit. So, very confused he sent me an E-mail.

I've also had this very odd fault several times on the FT-290. Yaesu in their wisdom decided to fit, in addition to the normal parallel reverse polarity protection diode, an extra protection diode in series with the supply between the negative terminal of the power socket and the chassis. Unfortunately, this isn't shown in their circuit diagram. This really throws the investigator when it decides to go high resistance, or has a badly soldered joint at one end. After all we can hardly be expected to look for a fault in a part of the circuit that shouldn't exist!

Operation of the rig from internal batteries is, of course, not affected by the fault caused by the faulty diode. But, as Joe found – strange things happen when it's used with an external power supply! If the rig is connected to an external antenna system that's earthed to the same feed as the negative lead of the power supply (as with a gutter mounted mobile antenna, a roof mounted system that's grounded to the mains

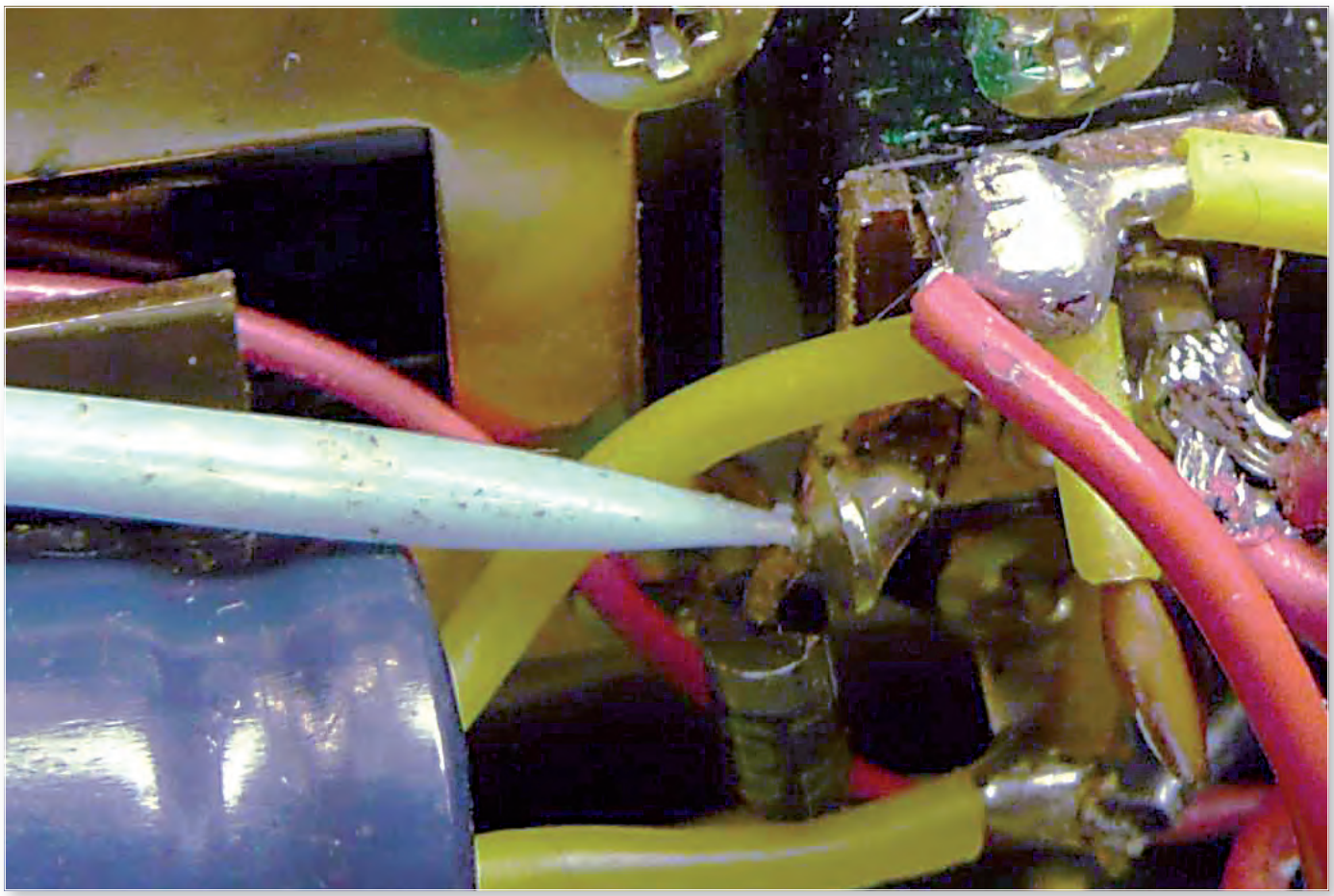

Fig. 1: Using a BY127 1A silicon rectifier as a protection diode. The toothpick pointer is indicating the suspect joint, with the BY127 directly underneath.

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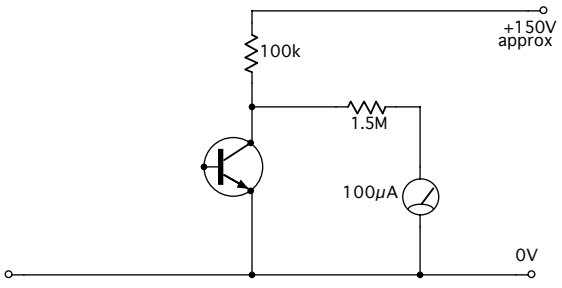

Fig. 2: Measuring critical voltage rating of a transistor, is the maximum that can be applied to the collector with the base open circuit. The simple circuit shown can measure this and the transistor acts rather like a Zener diode, in that its resistance falls sharply once the maximum voltage is exceeded.

supply, or a linear that's connected to the same supply), this connects the case of the '290 to the supply, shorts out the faulty diode or joint and operation is as normal.

However, when the rig is isolated from earth – as with a magnetic mount using a protective rubber 'boot' – sufficient current can't be drawn through the faulty diode in the transmit mode and this was Joe's problem! He swapped the diode (see **Fig. 1**), for a BY127 1A silicon rectifier, made sure that it was well soldered and this restored his rig back to normal operation.

Batteries For Older Rigs

I often get requests for rechargeable batteries for the older rigs and – rather helpfully! – **Neil Killgren** recently sent me some useful information regarding these. With his permission, I quote from his E-mail.

"Hi Harry! In an earlier note I asked you if you had any experience of restoring the battery pack of an FT-203 handheld. I tried one of the battery re-building services you suggested but they didn't want to touch it, so as a last resort I opened it up – it was remarkably easy with a penknife. I removed the old white cells, which were covered in a furry deposit and replaced them with 11 NiMh AAA 1000mA/hr re-chargeables that are obtainable from a high street electronics emporium in packs of 12 at a reasonable price.

The cells fit the box with room to spare and the two halves of the box snapped together over a bit of poly foam to hold the cells in place. The biggest problem was soldering the cells in series without overheating them. The renovated pack took a full charge from the original charger – albeit taking about 30 hours – and it seems to function as it should. It's been running the rig happily for about a month in spasmodic use and the pack has twice the amp-hour capacity of the old one and an extra volt or so."

Harry: Thanks Neil! This sounds a very good idea readers but do remember, as I'm sure Neil did, that any re-built batteries must be fused. Either fit the original heat sensitive fuse, or complete the circuit with some 2 amp fuse wire.

Camera Shutter Tester

Now – let's return to the camera shutter tester that I mentioned last month. Incidentally, the Editor and readers have told me that they've found my story of the design process to be fascinating!

This time I'm looking back at how I started checking the voltage rating of transistors. Last month I mentioned how a friend from Mullards explained that many – apparently identical transistors – came off the same production lines but were only sorted out as regards gain, noise and voltage handling capabilities prior to being stamped with a type number.

The critical voltage rating of a transistor, the one we were interested in at the time, is the maximum that can be applied to the collector with the base open circuit. The simple circuit shown, **Fig. 2**, can measure this and here the transistor acts rather like a zener diode, in that its resistance falls sharply once the maximum voltage is exceeded.

Note: The transistor won't be damaged in this circuit, as the series resistor limits the current and so the meter indicates the d.c. voltage at which the transistor breaks down. With the values shown, the 100µa meter will have a full-scale deflection of 150V. (if you wish to test *pnp* transistors you should reverse the polarity of the supply and the connections to the meter).

Of course, in practice we must allow a safety margin. There's also no doubt with such a simple set-up that the reading may not be accurate with all transistors under all circumstances, although I've found this circuit very useful when comparing potential replacement transistors during servicing.

Quite often I'll have a few transistors that perform the same task in a different piece of equipment, that are the right size, that look like they might do the job, but there's some doubt about the voltage rating. The answer is to test a few and then to select one that is well on the right side of what's required. In the case of the BC109C (which we wanted to use for its high gain and low leakage), whilst they are only rated at 30V, we found that would all take in excess of 40V and that 95% of them tested out at over 50V.

Problems: I like to hear about problems with older equipment, particularly pre-1990 Yaesu rigs. Please E-mail me, (add some radio related term in the subject heading, to differentiate against spam), or write and enclose a stamped addressed envelope. Remember that electricity is dangerous, if you are not familiar with safety precautions you must never work on your equipment whilst it's plugged into the mains. (Switching off at the wall socket does not necessarily make equipment safe).

Fig. 3: Can you spot the difference? Harry's not sure himself if he can!

Suitable Photo Diode

Fortunately, our search for a suitable photo diode was successful because once again our Mullard friend came to the rescue by recommending the BPX25. This is a very handy little photo diode as it's electrically and physically similar to a BC109 but with a hole cut in the top and a lens inserted. It's intended for use as the light-sensing device in intruder alarms, etc. Due to the lens it's very sensitive to light and very directional, which was just what we wanted.

So, we (finally!) then had all the bits and the basic idea of a circuit that proved to function satisfactorily. However, the next question was, "How do we mark the scale and calibrate a camera shutter tester?" At that point my engineer Derek then had a bright idea! But or that, you'll have to wait. More details next month – watch this space!

Spot The Difference?

Can you spot the difference in **Fig. 3**? No I'm not so sure I can either, but there is one! **'Tony'** was 'belting' (his term!) down the M6 motorway when he smelt burning and as he slowed down heard a sizzling noise. He quickly pulled on the hard shoulder, and soon discovered that the burning was coming from his FT-290, the Ni-cads were red hot! Tony managed to remove the bottom of the rig and quickly shook these out onto the grass verge.

So, what had happened? Let's take a look to discover the possibilities. There are a multitude of coaxial type d.c. plugs available, with many looking like those in **Fig. 3**. the problem is however, that there are slight differences in the length and diameter of apparently identical plugs. The d.c. socket on the FT-290, and on many other similar units, incorporates a switch that's intended to disconnect the internal batteries when an external source of d.c. power is connected.

If the socket and the plug don't quite match, or one or the other is worn, a connection will be made but the built-in switch may not operate. If this happens the internal Ni-cads won't be switched out of circuit and they'll be effectively wired straight across the external supply. Without a limiting resistor they will then be vastly overcharged, get very hot, and may even explode or catch fire. Not the kind of thing needed when we're trying to negotiate a roundabout!

The only way to be sure that the right plug is being used, is to push it in (without an external supply connected) while the rig is operating from the internal batteries. With the correct plug this should then switch the rig off, as the switch 'selects' the external supply.

If the plug and switch seem to be operating satisfactorily, then just (to be sure) try wobbling the plug from side-to-side, making sure that doing this doesn't bring the rig on again. If you're in doubt – or if like me you want to be doubly safe – make a point of always removing one Ni-cad when you're operating your rig from an external supply.

Mysterious Hums

When I'm connecting separate items of equipment together, I often end up trying to trace mysterious causes of hum, feedback, or oscillation. Earth loops come top of the list for causing these problems, which will be best explained by an example from outside the field of Amateur Radio.

If a hi-fi gramophone turntable doesn't comply with double insulation standards, they are required to be fitted with a 3-core mains lead and this has to be earthed. In a normal 1960s hi-fi system, the amplifier would also be earthed via a 3-core lead. If the external turntable incorporated the pick-up arm, this meant that it was earthed twice, once via the mains lead, and again via the audio lead to the amplifier. This created a loop starting at the turntable, going via the mains lead to the amplifier and back via the audio lead to the turntable. The loop then acted like one turn on a transformer, picking up radiation from the mains wiring and any nearby electrical equipment – causing hum.

The same problem occurred when a customer tried to connect a tape recorder to his system. Their tape recorder was earthed via the mains lead and again via the inter connecting leads to the amplifier.

The simple way to cure the hum was to disconnect the earth from the tape recorder and the turntable, but then the equipment did not comply with safety standards – a real 'catch 22' situation! With a turntable it was usually possible to break the loop and cure the problem by isolating the gramophone pickup and it's wiring from the metal work but with a portable tape recorder there was no completely satisfactory answer. Fortunately at that time hi-fi enthusiasts were usually reasonably technically competent and if it was part of a permanent installation and was earthed via the interconnecting leads, we told customers to remove the earth lead from the third pin of the recorders mains plug to get rid of the hum.

Alternatively, if the recorder was also to be used portable as a separate item we used to make up a short two core mains extension lead. This was to be use only when the tape recorder was earthed via the hi-fi installation, not ideal from a safety point of view but nothing else seemed to work.

Earth loops were a real problem with early hi-fi installations and some of the dodges used to cure them on amplifiers made these wide open to radio frequency interference (RFI) from Amateur Radio equipment. More about this and about earth loops equipment, next time! ●

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David Butler's

vhf dxer

Share your news, views and reports with fellow readers. Reports to David by the last Saturday of each month please.

This month David Butler G4ASR takes a look at this year's transatlantic openings on the 50MHz band. Please send you reports and information by the last Saturday of each month!

Welcome to the exciting world of Amateur Radio above 30MHz! However, there was a distinct down-turn in ionospheric propagation during September with only three Sporadic-E (Sp-E) openings being reported on the 50MHz band. This compared badly to the previous month of August when openings were noted on 23 days during the period. Only one opening was spotted on the 70MHz band compared to 13 the month before and none were reported on any higher frequencies.

Despite this, the situation is not unremarkable, as the summer Sp-E season is normally over by the end of August anyway.

The three Sp-E openings that reached the 50MHz band occurred on September 19th, 21st and 22nd. Those on the 19th and 22nd were relatively short around one hour in duration and allowed contacts to be made with stations in Morocco (CN), Portugal (CT) and Spain (EA).

The opening on September 21st commenced at 1255UTC and lasted for over three hours with s.s.b. contacts being made into Austria (OE), Hungary (HA), Italy (I), Slovenia (S5) and Switzerland (HB9). This Sp-E opening also reached the 70MHz band with contacts being made between 1330-1410UTC with the stations of IK0OKY (Italy JN61), IK0SMG (JN61), I6BQI (JN72) and S51DI (Slovenia JN76).

Tropospheric propagation on the 144 and 430MHz bands was generally depressed during September although there were a few days, actually a few hours, when conditions improved. A large Europe-wide 144MHz contest held on September 6th-7th enabled a few UK operators to contact well-sited stations such as DF5QN (Germany JN42) as shown in the photograph, **Fig. 1**, EA2TO/1 (Spain IN83), F6ETI (France JN05), HB9HLM/P (Switzerland JN37), LX/PC5T/P (Luxembourg JO30), OE5MKM (Austria JN67) and OL8R (Czech Republic JO69).

Tropospheric Propagation

Towards the end of September there was a short period of enhanced tropospheric propagation that affected all bands from 144MHz through to 10GHz. A number of stations located throughout central and southern England and Wales reported making s.s.b. contacts on September 26th with 144MHz stations that included DD0VF and DL1HTT (both in JO61) and other operators predominantly located in JO42, JO43 & JO44 in the northern-most part of Germany. That was the direction of the ducting and UK stations also mentioned making 144MHz contacts with the Danish stations of OZ1HUF (JO54), OZ1BNN (JO55), OZ6ABA (JO57) OZ9FW (JO65) and OZ3TT (JO66).

Many contacts in excess of 1000 kilometres were also made with stations in Sweden that included SM6UQL (JO57), SM6OEQ/6 (JO58), SF7WT (JO65), SM6AFH (JO66), SM7WSJ (JO67), SA6AFQ (JO68), SM7FWZ (JO77) and SA7AGE (JO87). An unusual callsign SC1658OZ (JO76) was also contacted on the 144MHz band by UK operators and is one of seven stations applicable for the Roskilde 1658 Award. All callsigns with 1658 in the call from Sweden and Denmark are valid for this award that has been issued in recognition of the 350th anniversary of the Treaty of Roskilde in 1658.

There was also a fair bit of DX activity on the 430MHz band with UK operators reporting contacts with the Scandinavian stations of OZ1SKY (JO56), OZ4VW (JO45), OZ8ABE (JO55), SM7DTT (JO65) and SM7NR (JO76). Propagation was similar on the 1.2GHz band with s.s.b. contacts being made from southern England with the stations of OZ0TE (JO55), OZ2OE (JO45), OZ3ZW (JO54), OZ5KM (JO45), SM6HYG (JO58) and SM6VTZ (JO58). **John Quarmby G3XDY** (Suffolk JO02) reports making s.s.b. contacts with the 1.2GHz stations of OZ7DX (JO66) and SM1NJC (JO97). John also contacted SM7GEP (JO77) on the 1.2, 2.3, 3.4 and 5.7GHz bands.

Propagation was also excellent on the 10GHz (3cm) band with the Danish station of OZ2LD (JO54) completing an s.s.b. QSO on 10368.100MHz with G4FSG (JO01) over an 810km path. The station of OZ1FF (JO45) also active on 10368.100MHz (the s.s.b. calling frequency) contacted G4EAT (JO01) at 672km.

Tropo propagation was also very good the following day, September 27th. Although by then the path had shifted away from Scandinavia towards Eastern Europe with QSOs being made deep into Germany, Czech Republic and Poland. Some of the s.s.b. contacts reported on the 144MHz band included the stations of DF5KB (JO72), DG1BHA (JO73), OK1RI (JO60), SP1FJZ (JO84), SP1NQN (JO84), SP1UJU (JO84), SP2IPK (JO93) and SP4MPB (KO03).

At 1705UTC the station of G0KPW (Suffolk JO02) was called on 144.310MHz by the Russian station RU2FM. This station is located in Kaliningrad (KO04), a Russian enclave situated between Poland and Lithuania on the Baltic Sea.

Transatlantic Openings

Looking back at recent *VHF DXer* columns I noticed that I've only taken a cursory look at transatlantic openings made on the 50MHz band this year. During this summer's Sp-E season I've been concentrating mainly on 70MHz activity, so to make amends I'll now take a look at your reports of 50MHz transatlantic propagation.

In general terms the Sp-E propagation throughout Europe this summer was quite disappointing compared to other years. Yes – there

Fig. 1: The 144MHz antennas at the QTH of DF5QN.

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were 50MHz openings virtually every day throughout the summer but there were no instances of blanketing Sp-E, covering huge areas of Europe for hours at a time. The openings definitely didn't seem as intense and often didn't seem to last very long at all. However the openings across the Atlantic Ocean to North and South America provided some wonderful DX opportunities.

Your reports show that 50MHz transatlantic openings were reported during May, June, July and August, the first occurring on May 25th and the last on August 10th. During this 77 day period the band was open for 44 days, the best months for transatlantic propagation being June (with 17 days of openings) and July (15 days).

Just six days of openings were recorded during the last week of May and six days in the first two weeks of August. This is a similar pattern recorded in previous years and confirms June and July as being the magic months for the magic band!

The season got off to a slow start with only the station of W1JJ (USA) being reported in a five minute opening on May 25th. Propagation was much better on May 27th with the stations of NP3CW, WP3UX, WP4G (Puerto Rico) and FJ5DX (St. Barthelemy) being worked between 1230-1800UTC. Later that evening between 2125-2300UTC the band opened up to again to Puerto Rico with the stations of WP3UX, KP4EIT and WP4G being contacted by stations from all over the UK.

Other DX contacted that night, included HI3TEJ (Dominican Republic), YV4DDK (Venezuela), 8P9TS (Barbados) and 9Y4D (Trinidad). The 50MHz band was also in good shape on May 28th, 29th, 30th and 31st, with contacts being made with the stations of FY1FL (French Guiana), KP2A (Virgin Islands), V44KAI (St. Kitts & Nevis) as well as FJ5DX, HI3TEJ, NP3CW, KP4EIT, KP4YI, WP4AZT, WP4G, 8P9TS and 9Y4D.

Your reports show that there were 17 days during June with multi-hop propagation to stations situated in North and South America. Most of these 50MHz openings though were very selective and it was more a case of listening to white noise before a DX signal popped up for a few minutes! It really depended on where you were located as it appeared that stations in the extreme south and north of the UK had the best of the propagation. But it was worth waiting for as some of the DX included the stations of FM5AA (Martinique), HK4SAN (Colombia), PV2BU and PJ4NX (Netherlands Antilles), YV4DDK, YV4DYJ, YV5ESN, YY4ACU and YY5LI (Venezuela), FJ5DX and TO5E (St. Barthelemy), FY1FL, HI3TEJ, KP4EIT and V44KAI.

Two openings were of very long duration, from 1430UTC on June 27th right through to 0330UTC on June 28th and then a few hours later from 0830UTC on June 28th through to 1500UTC that afternoon. Signals strengths were very strong, enabling low power stations to make c.w. and s.s.b. contacts with stations over 8000km away. The DX stations worked during this opening included CY0X (Sable Island), TO5E, FJ5DX, HI3TEJ, V44KAI, WP4G and dozens and dozens of Canadian and USA stations situated in EL, EM, EN, FM and FN locator fields. It really was a tremendous opening as witnessed by the station of MM0AMW who clocked up 255 QSOs during the first phase of the event!

Propagation was equally good during July with 15 days of Sp-E openings reported over the transatlantic path. The events kicked off on July 1st, with an opening between 1145-1630UTC to 5J0M (Colombia), HI3TEJ and HI8LAM (Dominican Republic), KP3AO, WP4G and WP4U (Puerto Rico), TI2NA (Costa Rica), TO5E (St.Barthelemy), ZF2ZD (Cayman Islands) and many USA stations in the W4 call area.

After the first event it just got better with 14 more transatlantic openings between July 2nd – 9th, July 11th – 13th and July 25th – 27th. Apart from stations already mentioned were those of 9Z4BM (Trinidad & Tobago), KP2BH (Virgin Islands), KP4BJB (Puerto Rico), PJ6/K2KW (Saba) and VP5/WB2REM (Turks & Caicos Islands) as well as regular appearances from 9Y4D, CY0X, FJ5DX, HK4SAN, NP3CW, WP3UX, NP4A, KP4EIT, KP4YI, PJ2BVU and V44KAI. And I haven't mentioned all the Canadian stations in the VE1, VE3, VE9, VO1 call areas or USA stations in W1, W2, W3, W4, W5, W8 and W9!

The 50MHz transatlantic path, particularly to the Caribbean area, was also open on August 1st, 2nd, 3rd, 6th, 7th, and 10th. Most of these late-season Sp-E openings were generally quite short, around an hour or so in duration, but an event on August 3rd lasted for around three hours. It commenced at 1320UTC with the station of V44KAI (St. Kitts & Nevis) being worked from southern England. As the opening progressed that station was joined by FM1HM,

FM1II, FM5AN (Martinique), KP2BH (Virgin Islands), WP4NIX (Puerto Rico), 9Y4VU (Trinidad & Tobago), HI3TEJ (Dominican Republic), HK4SAN (Colombia) and PZ1RA (Surinam). So as you can see – it wasn't such a bad season after all!

Deadline Time

That's it again for this month – it's deadline time! Two major meteor showers occur in the next few weeks and both will create additional activity on the v.h.f. bands. The *Leonids* meteor shower occurs for seven days from November 14th to the 21st and is expected to be most active in the mornings of November 17th and November 18th.

From the central UK the *Leonids* shower rises above the horizon at 2300UTC and sets around 1300UTC. The *Geminids* shower is active from December 7th to 15th with maximum activity occurring on Saturday December 13th. The shower rises at 1800UTC and sets at 1000UTC with the best path to south-east Europe being around 0500UTC.

A national RSGB 144MHz contest is being held on Sunday December 7th between 0900-1700UTC. This contest is a great way to pick up new locators squares or counties. The contest exchange is RST, serial number and locator, for example 59028 IO81MX. There's always a great deal of activity especially during Sunday morning – so why not enter and join in with the fun?

In previous years there have been some very good tropospheric openings on the 144MHz and 430MHz bands during December. In the period December 6th to 10th 2004 there was a tremendous opening from the UK to Austria (OE), Belarus (EW), Croatia (9A), Czech Republic (OK), Denmark (OZ), Italy (I), Poland (SP), Sweden (SM), Switzerland (HB9) and Ukraine (US).

Fig. 2: Look out for the 144/430MHz station of YL3GDF during tropo openings in December.

The longest distance 144MHz tropo contact during the December opening was established between the stations of G4CBW (IO83) and US5WU (KO20) over a path of 1843km. In 2005 propagation was quite poor but in 2006 there was a great tropo opening between December 21st –26th to stations in Denmark, Finland, Norway, Sweden, Germany, Austria, Czech Republic, Poland, Estonia(ES) and Latvia (YL).

The best DX during this opening may well have been the 144MHz QSO between the stations of G4LOH (IO70) and OH1ND (KP00) at 2050km. Last year on December 19th 2007 many UK stations experienced a very good 144MHz opening into the Baltic States of Belarus (EW) Estonia (ES), Kaliningrad (UA2), Latvia (YL3GDF, as shown in the photograph **Fig. 2**, Lithuania (LY), Russia (UA) and the Ukraine (UR).

Sergey UR5LX reports that his c.w. QSO with the station of GM0TGE (IO87) at 2600km was the longest distance tropo contact ever made from Ukraine on the 144MHz band. There's no guarantee anything will happen this year – but I reckon that it is worthwhile keeping a look out on the 144 and 430MHz bands for enhanced conditions during December!

If you do hear or work any DX stations then please send me your reports – or any other news – to reach me before the last Saturday of the month. **73 David G4ASR.**

Colin Redwood's

what next?

This month Colin Redwood G6MXL sets out to answer questions sent in by readers.

In this month's *What Next?* (*WN?*) column, rather than dwell on one particular subject as I usually do, I'm answering a couple of questions from readers. There's also some feedback on *Log Book of the World*.

I'm also going to look at some activities to keep *WN?* readers occupied in the period between Christmas and New Year. Finally, there are a few ideas for Christmas presents for Radio Amateurs.

	Ground Conductivity		
Frequency	**Poor**	**Average**	**Good**
500kHz	-10	-3	0
1.5MHz	-30	-10	-5
3.0MHz	-50	-19	-14
10MHz	-60	-48	-30

Table 1: Relative field strength (dB) for ground-wave signals at various frequencies over various type of ground with the receiver just 10km from the transmitter. Based on an article* The Ground Beneath Us *by Ray Hills G3HRH in the RSGB Bulletin of June 1966.

Ground-wave Propagation

First, this month I'm looking at ground-wave propagation. I imagine that most *WN?* readers will be familiar to some extent with the concepts of ionospheric propagation on the high frequency (h.f.) bands. This is the mechanism whereby h.f. signals are refracted (bent) back to earth from the various layers in the ionosphere between about 70 to 400km (44 to 250 miles) above the earth enabling us to make contacts with stations in other continents.

Radio signals can also travel relatively short distances by ground-wave following the surface of the earth. As Radio Amateurs, we generally want to get our h.f. signals as far as possible, so we normally don't show a lot of interest in ground-wave propagation. Consequently ground wave doesn't get much coverage in *PW* and we put all our efforts into getting good ionospheric propagation. So the message I received back in August from **Bob Towers MM0RKT** in Hamilton, Lanarkshire in Scotland really made me stop and think!

Bob says, "It's all I can do to get **Big Iain**, 10 miles away, to hear me on 20m ground-wave when I run 20W. So how is it I can get across the Atlantic ('The Pond') with the same power? Yes, of course, I know it's all about ionospheric refraction and all that for the DX, but surely both ground-wave and ionospheric propagation are subject to the same rules of inverse squares? i.e. double the distance between two stations and the power at the receiver is a quarter; triple the distance and it's a ninth, etc, etc.

So by the time my 20W gets to the USA via the F layer, the distance could be as much as 10,000km and the signal strength at the receiving end is next to nothing. And seeing it's 3D space, maybe it should be the inverse cube rule! According to this argument, DX shouldn't happen. Presumably I'm missing something, but what?"

My reply: Thanks for your letter Bob! What you're actually missing are a number of considerations regarding ground-wave signals – which is what we are looking at when trying to get 10 miles (16km) away on 14MHz (20m). Yes the inverse square law applies up to a point, and not inverse cube law, as we are looking at wave fronts.

However, that's only a very small part of the story as there are also other factors to consider for ground-waves. As we shall see, these all conspire to make h.f. signals quite weak even a few kilometres from the transmitting station.

Local Contact

Operating as G6MXL from home I recently made a contact with a local Amateur on 14MHz who was no more than 3km from me, yet his signal was quite weak. The local Amateur was experimenting with an antenna (which wasn't ideally positioned) and his QTH was immediately on the wrong side of hill from me.

Indeed, the other station was almost 'off the end' of my dipole and the whole path between us was obstructed with houses, hills, and local trees. Signals from much further away were much stronger. So, Bob's observations about weak ground-wave signals are correct.

The main factors we need to consider for ground-waves are the frequency of the signal, the type of ground over which the ground wave signal is travelling and the antenna polarisation.

Have a look at **Table 1**, and you'll see relative field strengths at various frequencies and types of ground. These figures are very much approximations but I think *WN?* readers will agree that the field strengths are much higher on lower frequencies. So, I would suggest that Bob and other *WN?* readers may like to try the 3.5MHz (80m) band or better still the 1.8MHz (160m) band for local contacts.

Using 1.8MHz rather than 14MHz, over 'average' land is likely to increase ground-wave signals by **at least** 26db (400 times) about 4 to 5 S-points. This is the difference between using a 400W linear and a 1 Watt QRP transmitter!

If you think about it, the broadcasters use medium waves for local broadcasts rather than short waves. Bob's choice of frequency is certainly the main reason for the weak signals 16km away. These losses simply don't come into play with long distance h.f. ionospheric propagation.

The ground over which the signal passes also has a major impact on ground-waves. The drier the ground over which the signal travels the

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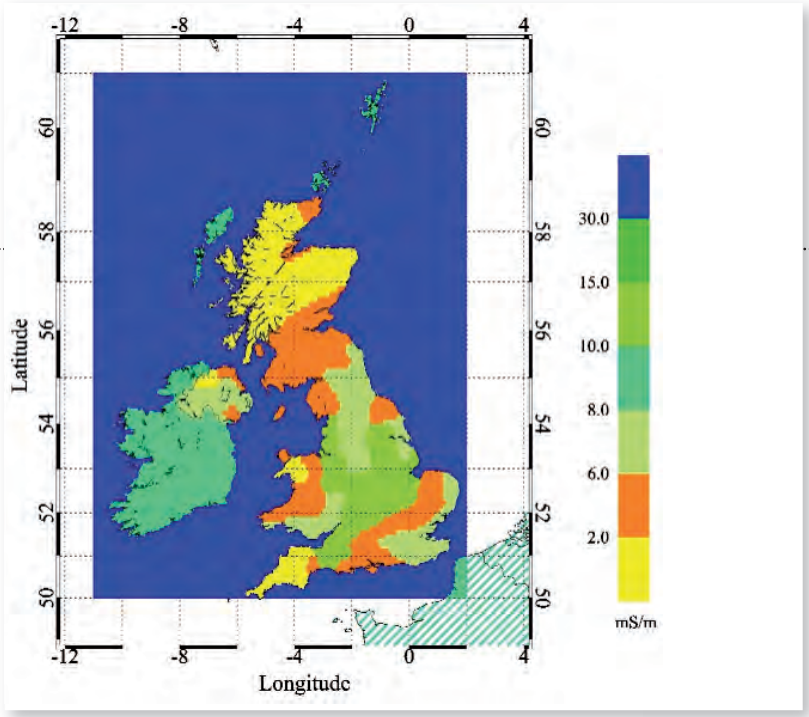

Fig. 1: Map of the British Isles showing earth conductivity in milli-Siemens per metre (mS/m).

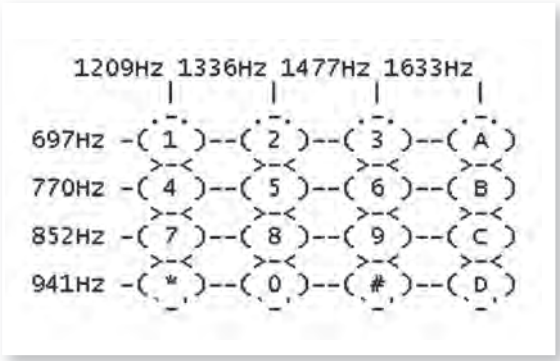

Fig. 2: The audio frequencies generated by a Dual Tone Multi Frequency (DTMF) keypad.

greater the attenuation will be. The map, **Fig. 1**, shows typical earth conductivity for the UK measured in mS/m (milli-Siemens per metre). The higher the conductivity, the better received signal will be on ground-wave.

The fairly thin soils over old rocks which are feature of much of Scotland don't help, although dry sandy soils – such as we have in the Bournemouth area – are even worse! The higher the conductivity the better received signal will be on ground-wave.

Some medium wave DX listeners have even reported better signals during periods when the soil is wet than when it's dry, although this may be due to better earthing during wet periods rather specifically due to the moist ground between the transmitter and receiver.

The attenuation due to the ground is made very much worse if there are horizontally polarised antenna systems at both ends. Vertically polarised antennas at both ends are likely to make an improvement, although this is unlikely to be feasible for many stations on 1.8MHz (160m)!

Even if you can't change to vertically polarised signals and are limited to using horizontally polarised antennas, check that they are roughly parallel and not at 90° to each other. Our local club here in Poole ran a net on the 21MHz (15m) bands a few years ago. We found that the orientation of simple wire antennas was quite important, even over distances of less than 10km.

To summarise, for local contacts as there's not much we can do to change the nature of the ground between stations several kilometres apart. To help I suggest trying the l.f. bands rather than the h.f. bands, and using vertically polarised antennas if possible.

Dual Tone Multi Frequency

I have also received a query from **Paul Millington M6PTM**, who has a recently issued Foundation Licence. Paul has a Yaesu FT-897 transceiver with a DTMF microphone, and he wants to know how to obtain DTMF tones and how to use them.

I imagine some readers will also be asking what does DTMF mean? In fact, DTMF stands for Dual Tone Multi Frequency. By adding together permutations of eight tones it's possible to arrive at 16 tones, see **Fig. 2**. To hear what they sound like, just pick up a land-line 'phone with a key-pad and 'dial' a number! You'll note that the resultant tones are all well within the audio spectrum.

While using the telephone, most readers will be familiar with the messages like "Press 1 to request a statement, Press 2 to pay a bill". Here the DTMF tones are used to route your call within an organisation, or in some cases even to call centres in different countries.

In Amateur Radio circles, the same DTMF tones can be used to remote control some repeaters. An example of this is where two repeaters can be linked as an option. The connection is enabled and disabled by using DTMF tones.

Repeater linking is becoming quite common especially in the more remote parts of the country. Linking is not just confined to voice repeaters, some TV repeaters can also be linked and other TV repeaters use DTMF tones to select directional antennas.

It's possible to take this linking even further by the use of *echolink*, where the link between repeaters can be over the internet and hence world-

Colin's waiting to hear from You!
I like to solve problems with anything to do with amateur radio! I can answer questions and publish my findings here for the benefit of all *PW* readers.

Remember the mains supply is potentially lethal. Unless you really know what you are doing, always pull the mains plug out, do not just switch off at the wall socket, when working on equipment.

wide links can be established. If you decide to have a go, please remember to disconnect when you have finished by pressing the hash symbol (hash symbol here) when transmitting to the repeater. (I shall have a detailed look at *Echolink* in more detail in a future edition of *WN?*).

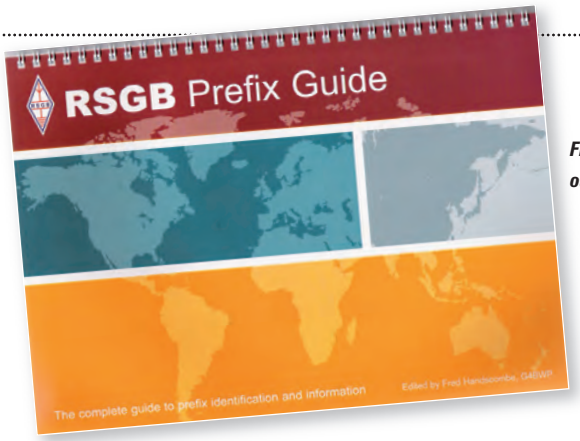

Fig. 3: The RSGB Prefix Guide – Ideal for finding out which country uses which callsign.

Important Exception!

I mentioned the *Log book of The World* (*LOTW*) in the October issue. **Jon Hirst M0OVL** wrote in to say, "You raise the issue of *LOTW* and note that the Radio Society of Great Britain (RSGB) do not accept confirmed QSOs via *LOTW* towards their awards. However, it should be noted that there's one important exception to this rule and that is the Islands on the Air (IOTA) award scheme.

"I'm a truck driver and work in Europe. This means that I use a large variation of callsigns under the CEPT conditions. Some of my activities take place on various Dutch Islands, which can have IOTA references. I also make 'expeditions' to islands within the UK especially for IOTA contests. This can result in my working 'island hunters' who like to exchange QSL cards. Uploading my logs to LOTW has reduced my time spent writing out cards. It provides instant confirmation of a contact when both operators upload their logs. There are a large number of users and most expeditions, both large and small, do use LOTW.

"Without trying to promote LOTW (I'm not on commission!) I have found it easy to use. It's free unless you wish to make a claim for a supported award, and when necessary, I've found the 'help desk' assistance very good and friendly. At the last check I have some 18 different certificates based around my callsign."

Colin G6MXL replies: Thanks Jon! Feedback from *WN?* readers is always welcome. (I'll be looking at Amateur Radio awards on another occasion).

Holiday Period

With the Christmas period coming up, I'm also going to make some suggestions to keep Radio Amateurs occupied during the Christmas Holiday period! Additionally, many local Amateurs come on the air for a short while on Christmas morning on either 3.5 or 144MHz to exchange greetings with friends – why not join them?

The G-QRP Club organises a Winter Sports activity period, on the l.f. and h.f. bands on c.w. (Morse), single sideband (s.s.b.) every day from December 26th to January 1st inclusive.

Being a QRP activity period, power should be limited to 5W out on c.w.. So, if you want a bit of fun, and a challenge, or just want to try QRP for a change, why not come on the bands for a while over the Christmas period and see what you can work?

On VHF & UHF?

If the v.h.f and u.h.f. bands are more to your liking, the RSGB VHF contest committee organises the Christmas cumulative contests on the 50, 70, 144 and 432MHz bands on December 26th, 27th, 28th and 29th from 14:00 to 16:00 UTC each day. These contests are an excellent opportunity to try out your station, perhaps make some improvements and then re-check it the following day.

A New Mode

With the extra free time, why not try a new mode or band? If you are a die-hard c.w. operator, why not dig out a microphone and make a few voice contacts or vice versa? Alternatively why not try one of the many digital modes. SSTV and PSK31 are very easy to try and I'll be looking at these in more detail in the January 2009 issue.

Any Questions?

I imagine that many of us will have a little spare time on our hands over the festive season. If so, why not write some questions for the Foundation, Intermediate and Advanced exams. The Radio Communications Foundation is always pleased to receive additional questions for the question bank used for the examinations.

Before you get carried away writing hundreds of questions, have a look at the guidelines and rules at **http://www.rsgb.org/tutors/general/examq.php** and read the syllabus for the different exams to make sure that each of your questions really focuses on just one topic. As Christmas is a time for giving, why not give a little of your time and help future Radio Amateurs with some really good questions?

Home Construction?

If you haven't warmed up the soldering iron for a while, why not do a bit of home construction for a change? Perhaps you have project under way, if not why not have a go. Once you have found a suitable circuit, make sure that you have the components in advance of the Christmas period so that you can make a start. With several extra days off work, college or school etc., you could make some good progress!

Perhaps you have a pile of circuits that you have built and have never got round to boxing them up? The DIY shops will be open during most of the holiday period, so if you need some materials or tools it should be easy enough to buy anything that you need.

In thinking about what to give as a present to a newly licensed Amateur, I have tried to come up with some ideas for small presents that will continue to be appreciated long after the Christmas festivities have passed.

Log Book

Following on from the October's *WN?*, my first suggestion is a log book. Every Radio Amateur will appreciate a log book. Even those who already have one will eventually need another as they fill their current log book. Likewise those who use computer logging will occasionally need to log from an alternative location where there's no computer.

Rather than just buying the log book and wrapping it up, why not write a personal message in the front cover to make it really special?

I wish all *WN?* readers the compliments of the season and look forward to meeting up again in the New Year.

●

Graham Hankins' in vision

Graham Hankins G8EMX
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Acocks Green
Birmingham B27 7NA
E-mail: g8emx@tiscali.co.uk

Graham Hankins G8EMX provides his regular look at the world of Amateur television and hopefully it's not his last column!

"They think it's all over – well, it is now" – the **British Amateur Television Club** (BATC) Rally and General Meeting, in this case. And what a turn-out we had in Stow Village Hall on Sunday October 5th! If we had not found the store-room of spare chairs it would have been 'House Full, standing room only'!

I would like to think that it was the inclusion of the Civil Aviation Authority in the Lecture programme that enticed the members to travel from some distances on a very wet morning, because it was my letter that invited the CAA to attend! The specific issue for the lecture would be how the CAA viewed the relationship between aircraft radar and 24cm ATV repeaters and the assessments it made before approving, or otherwise, new or changing 24cm repeater applications.

John Banks, Technical Manager Surveillance & Spectrum Management for the CAA was timetabled to be the first speaker of the day, but text messages received from members of repeater groups arriving later but keen to hear his presentation meant that John was asked to follow **Brian Summer G8GQS**, who gave us a history of television camera development. So, eventually to a (by then) packed hall, John began his slides and chat.

Various Rumours

Now, various rumours occasionally circulate with the content that: "the CAA is blocking all new 24cm repeater applications"; "it is more interested in where the home stations are than where the repeater is". Fortunately, both **are** indeed just rumours, both are incorrect.

It is, of course, well known – particularly by groups that have submitted applications – that the licencing authorities (CAA, OfCom) want to know all sorts of things about a repeater – antenna height and type, e.r.p., characteristics of transmitter and receiver – the list goes into many details. A computer path-plot will then calculate likely field strength of the repeater transmission arriving at the antennas of ground radar. If that meets or betters certain figures, all will be okay (so far!).

But while the phrase "more interested" is misleading, the CAA is definitely 'interested' in where individual home stations operating 24cm ATV are. Of course, it will not – and can't – know where they are, but can make some reasonable assumptions of where they are likely to be. Perhaps it will be within the repeaters predicted coverage area? Then, based on information supplied (from memory of the lecture, I think by OfCom or the RSGB – but I'm prepared to be corrected here) about a 'typical' ATV home station, the CAA would again make a calculation to indicate if any home station might potentially generate radar interference.

One of these assumptions was that the home ATV antenna was omni-directional, where of course, the majority are not. So it was the validity of this 'information about a typical home station' that produced most comment from the, by definition, very informed and motivated audience.

So, when BATC Chairman **Trevor Brown G8CJS** invited questions, John Banks had to 'field' perhaps the longest and most enthusiastic 'Q & A' session the BATC rally has ever seen! He did, with open information, with good cheer and the questioners responded accordingly.

It looks to me like there's 'wriggle room' for both the CAA to review its radar vulnerability specification and for CAA, RSGB and OfCom to reconsider (with a view to some relaxation perhaps?) of several aspects of the 24cm repeater licencing process. My sincere thanks to John Banks for talking to the BATC and to all traders and members who supported the event on the day.

Other Lectures

Other lectures were delivered by **Peter Blakeborough** and **Dave Mann** (digital ATV progress) and **Mike Cox** (vision streaming over the internet). Peter and Dave had set up a DATV link from the Hall to the home of **Ian Waters G3KKD** in the village, only a few hundred metres away. Running via a 430MHz and microwave two-way loop, and after a few 'teething troubles' on the Saturday afternoon, this streamed the entire lecture stream onto the BATC.TV internet channel.

However, digital ATV kit – particularly digital encoders – remains a substantial undertaking for the Radio Amateur, notably the current cost of encoders. It's certainly not for the ATV beginner, which raises the question of "what is"?

Much analogue hardware has disappeared, so my recommendation remains, that the BATC or someone supplies or produces a simple, cheapish, analogue 24cm transmitter and matching receiver, to enable the ATV newcomer (or even oldcomer!) to at least work the local repeater! **Bob Platts G8OZP** – where are you? We need you!

Live Stream

The Rally itself closed with a 'live stream' between the Hall and an ATV station in California, USA, via broadband Internet and the BATC's 'BATC.TV' server. However, I'm sorry guys – on both sides of the 'pond' – but I was fairly unimpressed with this demonstration. It was spoiled by frequent picture freezes and intermittent audio (which slightly improved when the distant station reduced his 'symbol' rate) – but no doubt the technology will improve.

By providing the BATC.TV facility the Club is enabling the 'broadcasting' of an event to the Internet with a high-capacity dedicated server, which allows for several simultaneous ATV 'channels' and reduces delays down to a couple of seconds. The fact that the 'other station' was in America was (to me) immaterial. Distance is of no relevance if we're using the Internet. But, if it increases interest in TV production and boosts BATC membership, so be it, I suppose!

I apologise again if I sound a bit less than enthusiastic about BATC.TV, which I regard as a departure from the BATC's original purpose. But my principal ATV interest remains with analogue ATV over the available radio bands, particularly 24cm. The 'A' in ATV means Amateur, as in Radio Amateur, remember?

A recent phone call and subsequent meeting at the Rally has offered a very good repeater site complete with mast – was I interested? Well, errr, let me think about that one……for a microsecond hi! ●

Carl Mason's

hf highlights

Carl Mason GW0VSW presents his monthly report from the h.f. bands. Reports to Carl by the 11th of the month please.

I'll begin this month with some details of a club mentioned in a previous column that may be of interest to those who favour the 'key' or are short wave listeners (s.w.l.s). The **Croatian Telegraphy Club** was founded on December 12th 2001, with the aim of promoting the use of c.w. and now has around 1800 members from all over the world. Membership is free and there's no application form as you just E-mail your name and callsign with a note saying 'I wish to become a member' and you'll get a prompt reply welcoming you to the club and issuing you with your membership number. By applying you'll also automatically become a member of the **European CW Association**. If you are not 'on-line' then you can apply by post and this will cost you 5 Euro or US$8, which is a contribution towards a certificate and return postal charges.

The CTC members can be found on or around 3.530, 7.015, 14.030, 21.030 and 28.030MHz. On the second Friday in December each year, CTC members have a 'get together' on these frequencies to mark the club's birthday. For further information you can visit **www.hamradio.hr/ctc** or E-mail **ctc@hamradio.hr**

The GOLIST - QSL Manager Database

We all know that getting a QSL card from a rare DX station or special call is not always as easy as we would like and any help in successfully verifying a contact is always welcome! The **GOLIST, QSL Manager Database** was started with this in mind and has been helping DXer's like yourself with QSL routes for those all kinds of calls since it was started in 1980.

The list has grown into one of the best sources of 'manager' information in the world. The data is continually being updated and verified on a daily basis by DX stations, QSL Managers and Amateurs around the globe.

A recent survey was carried out by the 'Golist' to determine the top five QSL Managers and there were over 200 nominations made by DXers and QSL card handlers around the world. The results have now been made available and the top five include **Joseph Arcure Jnr W3HNK, Phil Whitchurch G3SWH, Corrado Ruscica IT9DAA, Ant Cannataro IZ8CCW** and **William Loeschman NI5DX**. The full list and details of the database can be found at **http://golist.net/**

This Month's DX News

On to this month's DX news next and we begin in Conakry, Guinea in Western Africa, which is a country roughly the size of the United Kingdom. It borders the North Atlantic Ocean, between Guinea-Bissau and Sierra Leone. Here, the **VooDoo Contest Group** will be entering the CQ WW CW Contest, which runs over the weekend November 29th – 30th, as **3X5A** in the multi-multi category. This will be the group's 15th straight year in multi-multi operating from West Africa and their 20th straight year participating in the CQ contest.

The group, formed by American and UK operators will have seven 1kW stations running using 12 antennas – so there should be plenty of opportunities to work them! They'll also be using the **3X5A** callsign on the 10, 18 and 24MHz bands before the contest and may also try some RTTY. The QSL route will be to **Roger Western G3SXW** either via the bureau or direct to **7 Field Close, Chessington, Surrey KT9 2QD**. The logbooks will be uploaded to LoTW and more information can be found at **http://voodoocontestgroup.com/**

In Nairobi, the largest city in Kenya, East Africa, **Valery Baisha** is operating as **5Z4/RW1AU** though currently only on 14MHz s.s.b., but he'll be also using c.w. soon. The best time to catch Valery is at weekends and occasionally weekday nights after 1500UTC and should you work him, a card is good via his manager **Ronald Evans K5XK, 2 Pembroke Drive, Bella Vista, Arizona, AZ 72715-8823, USA.** (Ronald also handles cards for 3B8FQ, 3B6FQ and 3B7FQ).

In South Africa the special event call **ZS08TV** will be used to commemorate the Treaty of Vereeniging. This treaty marked the end of the Anglo-Boer War between 1899 and 1902 waged between British and Empire forces and the established European Dutch South African population. The callsign was first used to mark South Africa's Heritage Day on September 24th and was transmitted from a cricket pitch which is part of the property of Vereeniging

The QSL from TM3WRC (Worked by Martin Addison 2E0MCA using s.s.b.).

Carl Mason GW0VSW
2, Golwg-y-Bryn,
Woodland Road,
Skewen,
Neath Port Talbot,
SA10 6SP
Tel: 01792 501176
E-Mail: gw0vsw@btinternet.com

The QSL card from AY0DX (Worked by Owen Williams G0PHY on 14MHz s.s.b.).

OH2BAD (Worked by Martin Addison 2E0MCA s.s.b.)

Refractories, a local brick and tile company and close to the original site where the Treaty was negotiated.

The city of Vereeniging is located on the north bank of the Vaal River and lies about 100km south of Johannesburg in the 'Vaal Triangle'. There are two active radio clubs in the Triangle, Sasolburg Radio Club **ZS4SRK** and Vaal Triangle Branch **ZS6VTB**. Suggested frequencies to find the special event station will include 7.020MHz c.w. and 7.055 to 7.090Mhz s.s.b. and 14.140 and possibly 14.225MHz s.s.b. Some c.w. will take place on 14MHz and up but frequencies have yet to be decided.

Most of the field days (when the stations are active) will be public demonstrations of the effectiveness of the radio hobby. They form part of events arranged by the Museum Department of the Municipality of Vereeniging to celebrate Heritage Days. A card will be good via the bureau or direct to **PO Box 13574, Zuurfontein 1912, Republic of South Africa**.

In Indonesia **Adhi Widodo YB3MM** will be active as **YB3MM/9** from the station of **Ferdiy Konay YC9MKF** on Timor Island OC-148 which is currently under Indonesian administration though the islanders have recently petitioned the Indonesian government to gain their Independence. Operation is planned to be on 14MHz only and will be 'holiday style' between December 4th and 7th and the QSL will be available via **Ant Cannataro, PO Box 360, 87100 Cosenza, Italy**. Interestingly, the island of Timor was originally populated by sailors and immigrants from around the 14th Century when Timor was incorporated into both the Chinese and Indian trading networks as an exporter of aromatic sandalwood, slaves, honey and wax.

Your Reports

Time for your reports now and the log of **Eric Masters G0KRT** in Worcester Park, Surrey, starts, " I'm pleased to report QSOs on all bands this month although I'm sure this will change as the E's season is about to end". Eric's 3.5MHz QRP log included Colin Weaving M3WCK 1852 in Pershore and G0OTC at 1916 using 5W from a Kenwood TS-570 and modified W3EDP antenna. A move up to 7MHz found conditions a little better with YU1WN (Serbia) 1941, RV3UF (European Russia) 1950 and DF3GG (Germany) 2003UTC all making the log.

Also operating on 7MHz was **Martin Addison 2E0MCA** in East Finchley, London who took time out to fit in "a little h.f. time" and even though propagation was poor worked HB9HI/P (Switzerland) 1008, EK8PL (Armenia) 1844 through a large pile up and IV3SUS (Italy) at 2012UTC using a Yaesu FT-2000 with Heil headset and 50W to a G5RV antenna. By the way Martin's has a Vertex/Standard C7800 with a dead microphone and he needs to track down either a new element or MP-717 unit. If anyone can help then I'm sure Martin would be pleased to hear from you.

Regular *PW* reader **Tony Tuite GW0NSR** in Conwy, Gwynedd, North Wales, was prompted to put "pen to paper" when he saw his callsign mentioned in Eric Masters G0KRT's 7MHz report in October's column. Tony said, "I was pleased to give Eric a 449 whilst I received 559 while we were both running about 5W. My own log around that time at 1100 included UA1CEX and RK6AJ (European Russia), YL130DX (Latvia), EW7BY (Belarus), 3Z0LH (Poland) a special 'lighthouse' call QSL via SP1PBW, which is not bad going for under 20W and an antenna barely 14ft above ground." Tony is currently working on a scrap fibreglass pole to make a support for the centre of the dipole to raise it up twice the existing height!

The 10 & 14MHz Bands

On 10MHz Eric G0KRT managed 5W QSOs with HA0DD (Hungary) 1625, OZ1CTK (Czech Republic) at 1647 while 100W found EA2IF (Spain) a little later at 1834UTC.

Next, the 14MHz band and the log of 'all c.w. man' **Ted Trowell G2HKU** on the Isle of Sheppey in Kent, who fired up his Icom IC-703 and with 5W logged EA9EU (Ceuta & Melilla) at 1600 while 7X4AN (Algeria), EA6UN (Balearic Islands) EU-004, and YV5DTJ (Venezuela) all made the log around 2100UTC.

Using a Ten Tec Omni V and upping the power to 70W Ted found 8P6CF (Barbados) NA-021, HK4CZ (Columbia), HC2SL (Equador), K0RU (USA) Robert in Gardner, Johnson

County, Kansas, and Douglas Woolley ZP6CW (Paraguay) who also said that conditions were poor even with a ZP prefix. Also worked with LU6HH (Argentina) and TA3D (Turkey) between 2120 and 2200UTC.

In Biggleswade, Bedfordshire **Owen Williams G0PHY** used his Yaesu FT-747 and dipole antenna to work VE8RCS/VY0 (Canada) at 2027, a call to mark the 50th Anniversary Operation of the Canadian Forces Station, Alert (CFS Alert) on Ellesmere Island NA-008. A group of 'Alert Veterans' went to the island to reactivate the Amateur Radio station VE8RCS (Royal Canadian Signals) which for four of the past five decades was the only means of communication available for station personnel to talk with loved ones in the south. Military members were stationed there for six month of duty at a time and were unable to take their families. Their only contact with the outside world was via 'phone patching' using Amateur Radio.

It wasn't until the early 1980s that a 'phone service was brought into Alert and Amateur Radio operations began to decline until it was shut down in the late 1990s.

Finally, AY0DX (Argentina) a special callsign for the 100 years of San Jose School, founded in 1908, was also worked at 2036UTC using s.s.b. at 100W.

Back to London and Martin 2E0MCA who listed s.s.b. stations RK3FQ (European Russia) 0709, JY4NE (Jordan) 0811, IG0/I1XOI (Italy) on Lampedusa Island AF-019 at 0820. He also worked CQ4IPY (Portugal) 1014 and a call celebrating International Polar Year, EE5GG (Spain) 1121 a call to mark the Volvo Ocean Race, SD7M/5 (Sweden) EU-084 at 1132, Then came 3V8BB (Tunisia) 1138, JX9JKA (Jan Mayen) EU-022 at 1206 for a new entity, US7TJ (Ukraine) 1236, TK8R (Corsica) EU-014 at 1240, 9H3YM (Malta) EU-023 at 1344, 5D0IPY (Morocco) at 1659 and another special call for International Polar Year and OZ7AM (Denmark) at 1739UTC.

The QSL card from 3Z0LH (Worked by Tony Tuit GW0NSR on 7MHz c.w.).

The 18, 21, 24 & 28MHz Bands

This section really belongs to Eric G0KRT who is the only reporter to work anything on or above 18MHz! Using 100W c.w. Eric logged SP5ES/P (Poland) 1247 and using s.s.b. 4X4FR (Israel) at 1627.

On the 21MHz band Eric had s.s.b. QSOs with AM1TDH (Spain) 1241 and DF0H/P (Germany) at 1449.

Unfortunately, 24MHz was not in good shape but HA5AGS (Hungary), DK5W (Germany) and SM6A were all worked around 1500.

However, 28MHz appeared better during the day and contacts here included IT9HUV (Italy) 0815, F4EQA (France) 0915, PA3FAO/P (Netherlands) 1355 and LY5W (Lithuania) at 1419UTC using s.s.b. There was also one c.w. call EA7UU (Spain) slightly later at 1909UTC.

Judging by comments heard on the bands and a conversation with **Colin Topping GM6HGW** there are many who feel we are yet to reach the solar minimum for the current cycle, that was expected in early March this year. This would have marked the end of cycle 23 and the beginning of cycle 24 ,which would bring with it better propagation as it reaches its predicted peak in late 2011/12. For further information see **www.swpc.noaa.gov/SolarCycle/SC24/index.html** As I write this column I can hear nothing above 18MHz and mostly European stations below that. However, the lower bands do have activity which is always good news!

M8C (Worked by Martin Addison 2E0MCA s.s.b.)

Signing Off

Well once again that's about it for another month! There's just enough space to thank all our reporters for their logs and to **Mauro Pregliasco I1JQJ/KB2TJM** editor of *The 425 DX Newsletter* for all the DX information. Until next time I wish you all good DX. 73, Carl GW0VSW. ●

TRADERS TABLE

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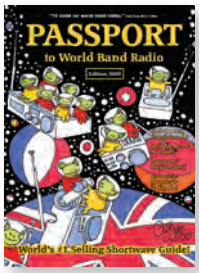

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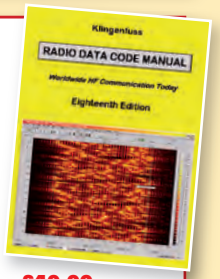

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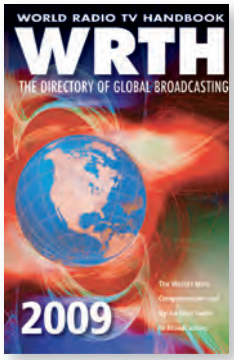

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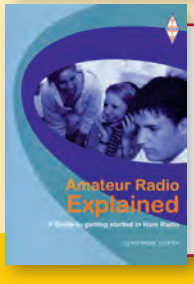

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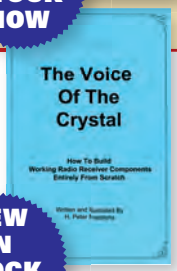

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Rob Mannion's

topical talk

Rob G3XFD discusses feedback on surface mount components and archiving *PW* articles for reference purposes.

The letter from my friend **Chas Thomas** (Letters pages this issue) came as a welcome reminder of our shared joke at last year's **G QRP Club's Rochdale Mini Convention**. Chas and I were discussing some of the risks associated with using recovered components, when he mentioned his experience with an exploding (boiling) electrolytic capacitor. But Chas and I never suffered the problem again, once we'd read an article in *PW* and learned to reform electrolytic capacitors – by using a low wattage mains light bulb in series with the power source. A leaky capacitor allowed the bulb to glow brightly and slowly dimmed as less current flowed as the capacitor reformed!

However, the main point of the letter from my friend was the difficulty he's had identifying just what surface mount devices (SMDs) he's dealing with. Chas had actually written before reading the November *Keylines*, where I had mentioned my ideas for improving our knowledge base on SMDs.

Of course, Chas is 'right on the ball' and I've no doubt that many other radio constructors have the same problem with SMDs. By the time you're reading this edition of *TT*, plans for a special article on this topic will be well underway. Although, at the time of writing this I'm not sure just how much information we'll be able to collate on your behalf, I'm sure we'll get enough to identify some of those mystery components. Incidentally, I would be delighted to hear from anyone who has experiences along these lines, so that we can share the information with readers.

Storing & Archiving Articles

Steve Collins (Letters pages this issue) is another keen constructor and *PW* reader who I've also had the pleasure of meeting along with many other readers at the Rochdale Mini Convention. Here we've managed to chat about storing and archiving articles from *PW*. Steve has explained – in his letter – how he's been (rather slowly!) archiving his favourite articles onto his computer over a number of years. He's now reluctantly admitted that he fully realises the problems we would have in scanning in the full archive of *PW* back to 1932. However, we'll be starting the job one day Steve!

Working in my own shack recently I've been looking at the hard backed note books into which I had laboriously re-drawn my own favourite circuits from *PW* and other sources. This method – with someone working alone – is very prone to transcription errors, as I've found out over the years! Despite this, the circuits were always referenced to what the source was and I rarely found any major problems due to my mistakes.

Over the years I've recorded a large number of extremely useful circuits and projects and this is how I remembered the 70MHz amplitude modulated transistor transmitter-receiver from *Short Wave Magazine* in October 1968 and then republished in *PW* several years ago. I also built an extremely useful and very effective 70MHz single-valved oscillator/multiplier circuit (from the RSGB's *Amateur Radio Circuit Book*. This project provided me with a great deal of experience building v.h.f. equipment, together with getting G3XFD on to 70.260MHz to join in the (very popular) a.m. operations in the south of England during the 1970s.

Even though I had much fun using transistors on v.h.f., after destroying of number of expensive f.e.t.s, I preferred to experiment with valves because it was extremely difficult to damage them! In fact, I found that one *PW* circuit (from October 1966) featuring the truly remarkable B7G based N78 pentode valve, which is used in several models of the Eddystone receivers as an audio output valve, also works well as an output amplifier on 70 and 144MHz. Driven by the ECF82 70MHz exciter it remained in use at G3XFD for many years.

I dismantled my original a.m. rig years ago, although I'm tempted to build another for portable working on a *PW* 70MHz activity afternoon. The sound of good quality a.m. on v.h.f. has to be heard to be appreciated. I'm also hanging on to my circuits book!

Rob Mannion G3XFD/EI5IW

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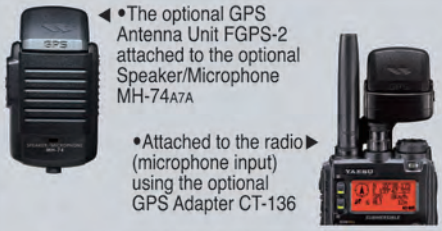

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