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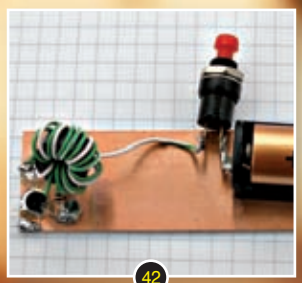
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Rob Mannion's

keylines

Rob discusses E-mail based viruses and the problems they bring.

Over the past 15 years or so the Internet has gradually become more important for anyone involved in publishing. Indeed, nowadays we couldn't manage without it and the early novelty (for me anyway!) of the electronic messaging facility and the web itself, has now become an essential Editorial tool.

The Apple Macintosh computers we use, are ideal for those people (like me!) who don't react well with computers! In fact, I often have to remind my long time friend and valued colleague **Tex Swann G1TEX** that I'm a writer and journalist and not a computer technician. In reply our IT Manager always says, "That's why you use a Mac rather than a PC Rob!" Yes, they're great machines and they are also – for most practical purposes – resistant to the hundreds of thousands of computer viruses infesting the global Internet on a daily basis.

Of course, we receive large numbers of spam messages and other E-mails with hidden contents but we're generally able to avoid them. However, many of our readers and other friends can't, as has recently been demonstrated by some rather clever trickery that seems to originate in the Peoples' Republic of China – Communist China to the rest of the world.

As I write this edition of *Keylines* in early July, the press and media around the world have been discussing the PRC's ever-increasing monitoring, manipulation and control of the Internet and world wide web (web). It seems that the PRC monitor literally everything – and generate and control an enormous amount of spam on the web.

The most discussed topic has been the close monitoring and blocking web access to the outside world by the mind-boggling huge numbers of people living within the 'Bamboo Curtain'. However, bearing in mind that **absolutely nothing whatsoever** can take place without official sanction within regimes such as the PRC, Internet users on this side of the 'Bamboo Curtain' shouldn't really be surprised that many spam messages and viruses now seem to have official backing from the Chinese Communist authorities!

By now, my regular readers are probably wondering if "Rob has really 'lost the plot' this time" – by entering the murky and distasteful world of politics! So, I'd better explain just how I think the increasing dominance of the PRC, also seems to be invading computers owned by radio enthusiasts!

Earlier in the year, I was occasionally receiving E-mails – worded in the peculiarly stilted English favoured by Chinese instruction manual writers – supposedly from *PW* authors, readers and other friends. But apart from tipping off everyone whose computer had been obviously 'nobbled' by a virus, I didn't take it any further. However, the messages eventually became so frequent I did some simple research and found myself – on several occasions – looking at what appeared to be an official PRC government sanctioned website promoting a large number of Chinese electronics manufacturers!

Also, On a number of occasions the provided link took me directly to companies based in China, who produced everything from electronic components to thermionic valves and communications equipment. Indeed, it seems as though I could easily buy counterfeit equipment – including obvious copies of well known Japanese Amateur Radio products from some sources!

Unfortunately, my letters and E-mails to the PRC Embassy in London, asking for clarification as to whether or not the official-looking sites **are official**, have – as I expected – gone unanswered!

Which Website?

Wherever possible, when I've got back to the virus victims, I've asked if they could remember which websites they'd used but unfortunately, the question remains unanswered. Despite this, because of the specific specialist radio and electronics nature of the website links in the spam messages, I'm sure the PRC have – very cleverly – managed to insert the necessary viruses on some important sites. But which ones?

So, have you been effected by a computer virus that's used your address book to spread spam messages with links to websites in the PRC? If you have, and have an idea where your PC picked up the virus – please let me know. It's an insidious form of cyber-terrorism in my opinion and we must be fully aware of the implications, including spyware, that can be deposited on computer systems.

Rob Mannion G3XFD/EI5IW

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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*.

Advice From A Professional Installer

Dear Rob,
Further to the installation advice given in the July *PW* Letters pages, I would like to offer some more information I can share with your readers. As a cellular, PMR and tracking installer of many years standing, I would like to continue with some more advice.

Firstly, it's very important **never** to take the earth return back to the battery. Always ground at the shortest (nearest) point within the vehicle itself. Two reasons, one is corrosion but the main reason is to avoid any potential difference when the vehicle is charging but especially when the vehicle is being cranked. If the radio ground is taken to the battery, the outer of the coaxial cable is also at ground, giving rise to an earth loop causing alternator whine. There can be a considerable voltage drop between the battery ground strap sometimes around 2V at "unlimited" current. The voltage drop will then take another route, across your radio via the coaxial cable and through the earth return and – sometimes – the printed circuit within the radio. I have seen installations where the p.c.b. board has blown beyond repair!

Taking the power feed from a sensible point on the fuse board is perfectly okay for up to, let's say, a radio with a total power of 20W, providing it's soldered and insulated. However, when a more high powered radio or linear amplifier is used then there's really no alternative than going directly to the battery.

When drilling through the bulkhead to get to the battery use a small drill less than 1/8in and wrap tape around, to make a "stop" guide, by exposing just 1/8in or so so. This is to ensure that when you break through, you don't drill into a break pipe or wiring harness as this will make you very cross! When you are happy you can see daylight through the hole and there's no obstruction the other side, then use a cone cutter or step drill to take it to the correct size. Next, de-burr the hole and y**ou must use** a suitable sized grommet. Cable tie the power cable at convenient existing points but never to brake pipes. Always use proper termination and a heavy fuse holder. **Never do an installation without a fuse.** These can be obtained from good car accessory shops that deal with high power in-car Hi-Fi.

When drilling a hole in the roof, pull off the trim to expose the inside of the roof and make sure it's clear. Measure, put insulating tape at the point in which you're going to drill and mark the tape. Check and re-check the position. Drill from the inside if possible to avoid any

Star Letter

A Welcome In The Highlands & Islands!

Dear Rob,
I first became interested in Amateur Radio way back in 1983 but sadly never got round to getting licenced, what with getting married, buying houses it was not top priority at the time – so I just enjoyed being a listener on the bands.

So, only two years ago I took my Foundation examination followed by the Intermediate last November and am now studying hard for my full licence. I remembered all those years ago what a friendly hobby this is, and certainly from my very first QSO. I knew I was going to enjoy our hobby.

Recently my girlfriend and I went on holiday up to the far reaches of Scotland, the Wester Ross peninsula to be exact, opposite the island of Skye. I had the 2m/70cm rig in the car and given the sparse population up there I was pleased that after putting out a "CQ" call on 145.5MHz, back came my first Scottish contact, **Bill Egerton GM8RBR** on the Isle of Skye. He enlightened me to 2 metre repeaters that would be in range, even on the Outer Hebrides. A very pleasant contact indeed and also told me that there are only a handful of other licensed active Amateurs up there but one other contact would be **Harry Nichol GM4WZD** who happens to be the keeper of the Isle of Skye repeater. Sure enough, Harry came back following a call through the repeater. Word gets round fast up in the Highlands that a visiting Amateur is in their midst and sure enough on an afternoon's drive out to Loch Torridon I made contact with **Finlay Mackay GM0WXX** who told me that he was expecting my call as he'd spoken to Harry only the day before!

He then insisted I went to visit him after he gave me his QTH address and informed me that it wasn't a problem for him to do so, something I would not do here in the Midlands! So, off we went to visit Finlay and his extremely pleasant wife who made us so welcome with the finest cup of tea and Scotch pancakes I've ever tasted! Where Finlay lives is just paradise right on the banks of the Loch in Inveralligin and the view from his shack is magical.

Bear in mind that I had never met these kind people ever before in my life and the hospitality I received through the medium of Amateur radio is something I'll never forget and it reaffirms what a fantastic hobby this is. We actually stayed in the only pub in Applecross, fantastic views and very friendly people. I could easily live there!

Gary Bertola 2E0GSB
Burton on Trent
Staffordshire

Editor's comment: *I'm delighted to hear you're enjoying Amateur Radio Gary. Having lived in Wester Ross myself for a number of years, I am not at all surprised at the welcome you received. The 'everyone knows everyone else' effect is reflected in all aspects of life in the Highlands and Islands!*

damage to the paint. And remember – swarf is hot, so watch the paint work. Always use a cone cutter or step drill, as a regular drill will snatch and bend the metal. Finally, run the cable through the headlining. Good luck and 73.
Steve Ward G4MVL
Exhall
Coventry
West Midlands

Editor's comment: *Thank you Steve! Please join me on the* Topical Talk *page for further comment.*

Calibrating Home Brew Projects

Dear Rob
Just a quick note to say how much I enjoy reading *Practical Wireless* every month. I particularly enjoy *Carrying on the Practical Way* and *Technical for the Terrified*. Both **George Dobbs G3RJV's** and **Tony Nailer G4CFY's** articles are very helpful to a non-technical but enthusiastic amateur constructor like me.

I've been interested in Amateur Radio since the late 1970s and never thought I'd hold a licence. This was mainly due to the highly technical nature of the old RAE. However, the new licence structure has allowed me the opportunity to hold an Amateur licence and I'm so pleased to have been given the opportunity to realise this ambition.

One of the aspects of the hobby I really enjoy is construction and although I'm a relative novice, I have made one or two regenerative short-wave sets and I'm actually working on a superhet short-wave receiver at the moment.

Unfortunately, one of the aspects of constructing radio sets that I find quite difficult is the accurate setting up of the set once it is finished. I have a couple of old Nombrex signal generators, but they are both faulty and diagnosing the problems is beyond my current technical capability! New signal generators are quite expensive to buy so this brings me to my idea for a feature in *PW*.

I'm wondering if there are any plans to feature the construction of a signal generator? If not, might I suggest it as a possibility. I'm thinking along the lines of a simple 0-30MHz, a.m. signal generator with an analogue dial – not unlike the Nombrex and Maplin style generators.

It might be the kind of article that Tony Nailer would like to include in *Technical for the Terrified*. Circuit board and component kits could be made available to support the article.

I think that a clearly written article, such as the those that Tony, George or **Tim Walford G3PCJ** produce, would be of great value to anyone building and aligning radio receivers and transmitters.

A follow up article on how to correctly align a receiver would be very helpful to those of us who are still learning – anyway, enough of my chat for now! Thanks for producing such an informative and interesting magazine. Looking forward to the next issue, I send my warmest regards to the *PW* team.
Ian Wilkinson M3FQW
Fletton
Peterborough
Cambridgeshire

Editor's comment: *Thank you for a most interesting letter Ian! I'm delighted you are enjoying home-construction and yes, you have come across a very old problem! Please join me on the* Topical Talk *page for further comments.*

Andy's Discontent With Maplin

Dear Rob,
I'm writing with reference refer to your recent discontent with **Maplin Electronics**. Back in the 1980s I used to be very happy with the service that Maplin offered. It also had an easy-to-use catalogue and it guided me into making the right purchase. Not so these days!

Nowadays, I continually have incorrect parts supplied, E-mail orders get lost, and poorly described and photographed parts and orders are taking up to two months to arrive. Additionally, parts advertised in catalogues are no longer available within months and the usability of the catalogue is appalling.

One shoddy practice – that I feel

Grimeton Received In Edgware!

Dear Rob,
Following your news item mention (*PW* News page 13, July issue) This morning – Sunday June 28th – I copied the entire transmission from **SAQ Grimeton**, the Alexanderson v.l.f. alternator transmitter in south-west Sweden. My equipment was a copy that I'd built of the up-converter by **Ed Chicken G3BIK** on page 28 of the December 2007 *Radio User*. The 4MHz i.f. was fed to my main station receiver, an FRG-100. The text of the Morse c.w. transmission that went out at 1000BST, as decoded by me, was as follows: *"This is Grimeton Radio/SA. In transmission using the Alexanderson 200kW alternator on 17.2kHz. Today we celebrate Guglielmo Marconi receiving the Nobel Prize in 1909 together with Carl Ferdinand Braun "In recognition of their contributions to the development of Wireless Telegraphy".*
Signed : The Alexander-Grimeton Radios Vaenner Association. For QSL Info please read our website ***WWW.Alexander.NSE***
DE SAQC SAQ RX at 1200UTC

The v.l.f. converter also pulled in the German time source DCF77 on 77.5kHz as well as Anthorn GBZ on 60kHz.

Finally, you may be interested to know that I've given up using Veroboard in favour of a rival product made by Multicomp and sold by CPC (their catalogue No. PC01230). This comes pre-tinned and accepts solder much more readily than Veroboard, yet seems conveniently resistant to solder bridges accidentally shorting adjacent tracks. I built my version of the v.l.f. Converter on this Multicomp board. 73!
Godfrey Manning G4GLM,
Edgware
North West London

should be exposed – is the re-selling of returned goods. My company recently ordered a mains inverter, which was supposedly in stock. Three weeks later it hadn't arrived and so I contacted Maplin. It turns out that they were re-selling a customer-returned item and they were still waiting for it to arrive back from the customer!

To put it politely, it comes across to me that Maplin are simply opportunistic traders who have staff with no electronics background at all. Maplin is no longer a company I have good faith with. Kind regards to you all at *PW*.

Andy Foad G0FTD
Whitstable
Kent

Loch Rannoch TV Signal Expedition!

Dear Rob,

Recent letters and articles about marine ducting and other unexpected modes of propagation remind me of when I was u.h.f. TV signal hunting (about 1974) around Loch Rannoch, Perthshire – where even the BBC agreed there was no chance of reception.

I had a small Physics class with me, and a dual-standard nine inch standard portable powered from motorcycle batteries. Whilst walking under the 132kV grid line, which connected the 45MW hydroelectric generating station to the Tummel Switching Centre, we suddenly found a spot where strong signals could be received from the Tealing (Angus) transmitter just north of Dundee.

The strong signal was 'top dead centre' under the power grid line. At first we thought it was a transient freak – but we connected the local Doctor's TV to it (through a masthead amplifier) and after a few days he reported that the signal was there all the time, no 'noise' and no weird colours. Back at school we examined OS maps and found that between the Angus (NO 415 385) – see **http://tx.mb21.co.uk/gallery/angus.php** – and the reception point (NN 665 585) there were at least three hills and high land, making 'line of sight' impossibe. But the u.h.f. could not be passing **through** the mountains. It must be diffracting over, or round (perhaps both) the obstructions. Or could it be 'ducting' along the electricity grid line? Maybe the lines and earth constituted two sides of a sort of 'waveguide'?

I would like to know whether anyone else has found reasonably strong and usable u.h.f. signals directly under power lines. I only regret that we did not have enough 'out of classroom' time to walk along underneath the power lines, and collect more data. Meanwhile I shall call the effect 'Power Line Ducting'! 73.

Bill Jarvis GM8APX
Edinburgh
Scotland

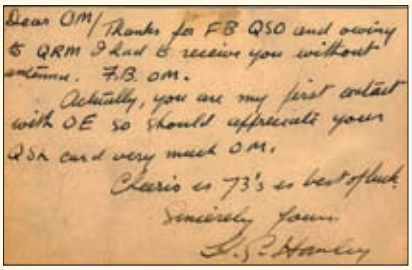
Seeking The G8LP/G5AW QSL Card

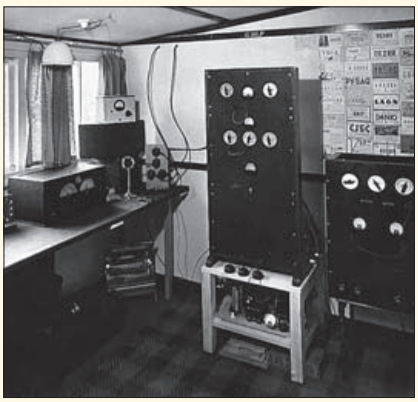
Dear Rob,

I'm writing to try and ask for help from *PW* readers regarding my late father, **Harold Geoffrey** (Geoff) **Hanley** who had the callsigns **G5AW** and **G8LP**. I am attaching a picture (front and reverse) of a QSL card. I had a few days off a month ago and was in the vicinity of Kent's caverns Torquay when I came across a group of Radio Amateurs who suggested I contacted *PW* for help. I'm actually searching for (and have been for years) a QSL card that my late father had printed in 1937/38. My father was G8LP at the time of the photographs but started out as G5AW. For anyone interested, I have a copy of an article on my father's DXing achievements, which was published in the **Radio Society of Great Britains's** (RSGB) *Bulletin in the late 1930s*.

My father was then active from Bradmore, Wolverhampton. His activities dated back to the First World War and he was a founding member of the old **Southport Wireless Experimental Society**, which was later affiliated with the **London Wireless Club** before the establishment of the RSGB. He even worked the Pitcairn Island station in mid-Pacific on telephony – quite an achievement from England in those days! I also have a copy of his earlier G8LP QSL card of 1937. The card he had specially printed had the illustration of the interior of his shack printed faintly on the card with all the relevant details overprinted. My regards to you all and I hope someone can help.

Robert Hanley
25 The Rock
Telford
Shropshire TF3 5AA
Tel: (01952) 507889
E-mail: **Batstiger@aol.com**





Editor's comment: *Bill and I have swopped many long E-mails on this fascinating subject, and other topics raised as we went along! Please join me on the* Topical Talk *page for further discussion.*

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.

Free Callbook Data?

Roger Hall G4TNT writes: Ofcom recently released the callbook data to **Ian Abel G3ZHI** who has now made it freely available on his website **www.qsl.net/g3zhi/cb1.html** and this has caused some confusion.

For many years, Ofcom would only release the data, which is a complete list of UK Amateur Radio callsigns, along with the names and addresses of those people who have agreed that their details can be published in a callbook, to recognised callbook publishers. These have included **PW Publishing Limited** and the **Radio Society of Great Britain** (RSGB).

Ofcom then placed on their website an application form for a licence to use the data, that they said anyone who intended to publish a callbook, could complete. Ian applied and in due course was awarded a licence and sent the data in Microsoft Excel format. The file was dated June 2008 and it contained just over 51,000 callsigns with names and addresses and just the callsigns of those 15,600 Amateurs who had asked for their particulars to be withheld.

As well as putting the file on his website, Ian G3ZHI spread the news through various newsgroups that the data was available and this prompted many others to apply to Ofcom for a licence. It also prompted some to use Google to see if the data could be found elsewhere. Eventually, it was discovered on the Ofcom website in comma delimited format and many people downloaded it directly from there.

Ofcom almost certainly did not anticipate anyone finding and downloading this information, because there were no links to it on the site. They had probably simply stored it there with a view to releasing it via their website at some time in the future.

Unfortunately for anyone currently hoping to be given a licence to publish the data, Ofcom now seems to be rethinking its policy. This follows a complaint and queries about the licence.

The complaint came from the RSGB, who sell the data annually in their *Yearbook*. They say that after consultation with the Information Commissioner's Office, they have learned that Ofcom could be in breach of the Data Protection Act by releasing these personal details and their main concern is the security of the details, which can now be downloaded by any individual, Radio Amateur or not.

One of the queries is what exactly constitutes a callbook? A printed book is obviously a callbook and the free searchable CD-ROM that *Practical Wireless* gives away to its readers is also considered to be a callbook by Ofcom. They now have to decide if placing the entire list on a website can also be considered to be publishing a callbook.

Another query concerns the use of the word intend. If someone were to be granted a licence and given the data on the basis that they intend to publish a callbook, what happens if they just want the list for themselves and don't actually publish a callbook? Will they still be able to say – perhaps two years later – that they still intend to publish it, but they just haven't got round to it yet?

Ofcom are currently reviewing the situation and they have removed the comma delimited files from their website. They have also written to everyone who applied for a licence to advise them that there will be a delay.

An Ofcom spokesman said, "*Ofcom appreciates the value in making the Amateur Callbook Data available and has received several requests to make this more generally available.*

"We have concerns that some individuals will attempt to use the information in a manner incompatible with the licence conditions and for uses other than some radio amateurs had previously consented to.

"Our approach is always to be open and transparent and to treat all applications to re-use in a fair and non-discriminatory way. However, it is important to Ofcom to operate within the framework of the law and, as such, we have suspended further distribution of the callbook data whilst we explore our options with the Information Commissioner's Office."

We contacted the Information Commissioner's Office to see if Ofcom releasing the information to people who apply for a licence for them to publish a callbook would be a breach of the Data Protection Act. A spokesperson there said, that providing only the details of those Amateurs who had agreed to have them published in a callbook were released, and then only to people who intended to publish a callbook, the Information Commissioner's Office did not believe this would be a breach of the Act. If they say the same thing to Ofcom, and if Ofcom can clarify the ambiguous parts of the licence, we can expect to see more versions of the callbook appearing, either printed or online.
Roger Hall G4TNT.

Geoparks On The Air Success

Martin Foster G3VOF of the **Torbay Amateur Radio Society** (TARS) reports, "Following the very successful event of the Geoparks On The Air, the Global network would like to offer a diploma endorsed by **HRH The Duke of Edinburgh**, to anybody working either two other Geoparks stations or **GB6GEO** the headquarters station – as an instant qualifier for the award.

"Radio Amateurs who become the first to claim the award in their particular country, will also earn one point towards the two points required for the basic Geoparks diploma.The cost of the award in the UK is £2.20, in Europe €3 (Euro), and US$5 anywhere else in the world. Certificate manager for this award is myself, Martin G3VOF."
Martin Foster G3VOF,
1 Clavering Court,
Lincombe Drive,
Torquay,
S.Devon TQ1 2HH.
Tel: (**01803**) **201120**,
E-mail **itnld@btinternet.com**
Contact details for TARS:
Ged Coker G6CLD,
Tel: (01803) 812117,
E-mail: **g6cld@tars.org.uk**
Website: **www.tars.org.uk**

The Torbay Club's Kent's Cavern QSL card

Horndean Foundation Course

The **Horndean & District Amateur Radio Club** (H&DARC) will be running their next Foundation Licence course and examination in October in the village of Waterlooville, north of Portsmouth in Hampshire. The course is suitable for all ages. Pre-registration is essential, and more details can be obtained from **Stuart Swain G0FYX**. Tel: **023-9247-2846**
E-mail: **stuart.swain@hotmail.co.uk**
Website: **www.hdarc.co.uk**

Martin Says "McMichael Rally A Great Success!"

Martin Lynch G4HKS informs *Newsdesk* that he's "Very pleased" to announce that **Tony Cox G8TEE** was the lucky winner of this year's McMichael rally 'Star Raffle Prize', a brand new Yaesu FT-450 worth £600. The prize was very kindly donated to all the clubs involved in running the McMichael Radio Rally& Boot Fair, by **Yaesu UK** and **Martin Lynch & Sons**.

The rally, held on July 12th was the most successful rally to date with the car park overflowing with visitors. The weather was fantastic with brilliant sunshine with just a few spots of rain. Just as well – Martin and Chris didn't have any wet weather protection for their stand!

Next year's event will be even bigger and better, with lots of new attractions and more stands. (Date to be announced).

Martin Lynch G4HKS
ML&S Martin Lynch & Sons Ltd.,
Outline House,
73 Guildford Street,
Chertsey,
Surrey KT16 9AS, UK.
E-mail: **Martin@MLandS.co.uk**
Website: **www.MLandS.co.uk**

Thorpe Abbotts Museum GB2TAM

Mark Sanderson M0IEO writes: The **Chelmsford Amateur Radio Society (CARS)** will be operating the Special Event station **GB2TAM** from the **Thorpe Abbotts Airfield**, the site of the **100th Bomb Group Memorial Museum**, near Diss in Norfolk, on Saturday and Sunday September 12th and 13th.

Thorpe Abbotts was a Second World War air station, which was the home of the **United States Army Air Force** (USAAF) 100th Bomb Group from 1943 to the end of the war in 1945. During that time, 753 aircrew made the supreme sacrifice and since then hundreds of veterans have returned to Thorpe Abbotts and continue to do so to this day. Although much of the air station has now gone, the control tower still stands and has been restored to its former glory by a group of dedicated volunteers over the last 25 years, most of who are still working for the museum.

The GB2TAM operation has been organised to coincide with the weekend of the 100th Bomb Group reunion, which is held each year in Albuquerque, New Mexico. It's hoped that, band conditions allowing, we will be able to make contact with the reunion and possibly speak to some of the dwindling number of veterans who will be attending.

Thorpe Abbotts Control Tower.
Photo credit: John Bowen G8DET

The station will be operating on all h.f. bands using s.s.b. as well as 144MHz f.m. and will be pleased to contact stations regardless of location. A GB2TAM QSL card will be available for all contacts, which will show the control tower as it is today, in a pristine restored condition.

Further details on the airfield via their website **www.100bgmus.org.uk/**
Further details from the Chelmsford Amateur Radio Society from Vice Chairman and Contact Secretary **Martyn Medcalf G1EFL**,
Tel: (**01245**) **469008**
E-Mail: **info2009@g0mwt.org.uk**
Website: **www.g0mwt.org.uk/**

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A Towering Event For GB2GHR!

Ian Hollingsby G3TDT reports – from a great height – that members of the **Gloucestershire Amateur & Electronics Society** (GA&ES) will be running the Special Event station **GB2GHR** for **Gloucester Heritage Weekend** on September 12th and 13th using a church tower as the antenna support! *St Michael's* Church tower has recently been refurbished as a heritage cultural centre thanks to National Lottery funding. The tower is right on the city cross and we hope to erect a dipole antenna from the top of the tower and plan to be on the air using the h.f. bands from 1000 to 1600. As St. Michael's is in the very centre of the city we expect to welcome many people during the event and we're hoping to work many *PW* readers.

St. Michael's Church tower before restoration.
Photo credit: David Champion

Further information from Ian G3TDT via E-mail: **ian.hollingsbee@blueyonder.co.uk**

Louis Braille Special Event Station Spain

The Spanish based **Catalonian Blind & Handicapped Ham Radio Operators National Association** (ARMIC), who normally use the callsign **EA3RKR**, are commemorating **Louis Braille**, inventor of the embossed printing, who would have celebrated his 200th birthday this year. Furthermore the group of blind Amateurs celebrates its own 30th anniversary as well in 2009.

The special event station **EG5LB** will be active on following dates: Jul 26th, Aug 2nd -9th, August 16th, August 23rd - 29th and September 6th and 7th. Any QSLs can be sent via EA3RKR, direct or via the bureau. More info at **QRZ.com** or **www.gratisweb.com/ea3rkr/eng/index2.html** (The website is presented in English).

Attention Radio Amateurs Around The World!

Newsdesk spotted this news item on the **American Radio Relay League** (ARRL) website – and is repeated here because it has implications for the hobby world wide.

The (American) **FCC Continues BPL Debate** (Jul 22, 2009). "On July 17, the FCC issued a *Request for Further Comment and Further Notice of Proposed Rulemaking* (*FNPRM*), addressing the issues remanded to them by the US Court of Appeals. In October 2007, the ARRL took the Commission to court concerning the Commission's Orders adopting rules governing broadband over power line (BPL) systems.

In April 2008, the Court agreed with the ARRL on two major points and remanded the rules to the Commission. Writing for the three-judge panel of Circuit Judges **Rogers**, **Tatel** and **Kavanaugh**, Judge Rogers summarised: "The Commission failed to satisfy the notice and comment requirements of the Administrative Procedure Act ('APA') by redacting studies on which it relied in promulgating the rule and failed to provide a reasoned explanation for its choice of the extrapolation factor for measuring Access BPL emissions."

The full news item can be seen on the ARRL website at **www.arrl.org/news/stories/2009/07/22/10977/?nc=1**

Harrogate Ladys' Amateur Radio Success!

Harrogate Ladies' College is celebrating as 14 Lower Six Year pupils have become the first Amateur Radio Examination class to achieve 100% success rate on the first attempt since the Foundation Licence was introduced in 2001. This brings the total number of girls who have obtained their Amateur Radio Licence at Harrogate Ladies' College to 191, since the first class was taught in 1980.

The Amateur Radio Club is one of the most popular extra-curricular activities on offer at Harrogate Ladies' College, starting nearly 30 years ago after a demonstration of the hobby by two members of staff and a parent who held Amateur Radio licences.

Richard Horton G3XWH, who runs the club, says "Amateur radio really is a great hobby, and I'm sure it will stand all the girls in good stead in the future. I'd like to congratulate them all". Website: **www.hlc.org.uk**
Harrogate Ladies College,
Clarence Drive, Harrogate, North Yorkshire HG1 1QG.
Tel: **01423 504543,** Fax: **(01423) 568893**.

Falkirk & District ARS Lottery Award

The **Falkirk & District Amateur Radio Society** (F&DARS) has contacted *Newsdesk* to spread the word that they've received an 'Awards for All' Lottery grant of £4,915. The club's application was made to fund two projects designed to expand their main activities.

The first project will assist the delivery of training with the acquisition of a new laptop, l.c.d. projector and software. The second project will develop the club's h.f. special event station, **GM0FRC**, by adding a replacement 3-element tri-band yagi antenna, a linear amplifier, associated instrumentation and test gear. The club members are also grateful for the help, the Awards for All team in Glasgow provided in preparing the successful application.

The F&DARS has a long and successful record of training at Foundation, Intermediate and Advanced levels and the new equipment will help improve the presentations to both students and experienced members alike.

The club operates regular special event stations for many events, including JOTA, Science Week, Girl Guides Thinking Day, Castles on The Air, etc. These events, as well as promoting Amateur Radio to the public, also give many of our newly licensed members the opportunity to operate on h.f. with first class equipment. The equipment purchased with the grant will make the club much less reliant on items previously loaned from members

Further details from **Peter Howson GM8GAX**, via E-mail **gm8gax@tiscali.co.uk**

The picture shows a group of members present at the formal announcement of the grant, including Gordon Hunter GM3ULP (RSGB Regional Manager) and Alex Irvine GM7OAW his Deputy, Ken Elliot GM4NTX President of F&DARS and Lead Instructor and Peter Howson GM8GAX the F&DARS Chairman and Instructor.

The Dayton Hamvention 2009

We report from the biggest Amateur Radio show in the world.

Now in its 58th year, the Dayton Hamvention has grown into a massive radio show that attracts visitors from all over the world, as Roger Hall G4TNT reports.

From its humble beginnings in 1952, when it was first held in the Biltmore Hotel in downtown Dayton (with just 600 visitors and seven exhibitors!), the Dayton Hamvention has grown to be the biggest Amateur Radio show in the world. It's now held in the Hara Arena just outside Dayton and this year it had about 500 inside exhibitor spaces and some 2,000 places in the flea market. Official visitor numbers are still not available at the time of writing (more than two months after the show!) but my feeling is that there were fewer people there this year.

I was there for the three days the show was on and by getting there early and staying late, I did manage to see most of it. Luckily, I started in the flea market on the Friday because the weather was fine and I was able to take my time looking around. If I'd waited until the Saturday, I wouldn't have been able to see much because it rained and by lunchtime, most of the vendors had given up and gone home.

The Flea Market

The massive flea market almost fills the Hara Arena car park and this year there were vendors selling the usual selection of antique, vintage and fairly modern second-hand radios, along with a vast range of other goods such as lock picks, hats, sweaters, food, fire extinguishers and so on.

If you'd like to get a flavour of the flea market, take a look at **Randy Hall K7AGE**'s excellent video of last year's show on *YouTube*.

www.youtube.com/watch?v=a6eynz6NxLU

New this year – used equipment being sold by the pound!

New Products

The Dayton Hamvention has always been the place where manufacturers launch their new products and part of the pleasure of going to the show is getting the first look at new models. This year, however, there wasn't much to see. Kenwood had two posters simply saying that there would be a new handheld and a new h.f. transceiver coming in 2010, Icom had some radios that had been previously announced, including the IC-7600 and the IC-E80D and ID-E880 dual-band D-STAR transceivers, and Alinco had their already released DJ-G7E tri-band (144, 430MHz and 1.2GHz) handheld.

Of the major manufacturers who did bring something new to the show, Yaesu stood out because they launched five new models. They didn't have anything new for h.f. but they did have two new v.h.f. hand-helds, the FT-250R/E and the FT-270R/E, and three new mobiles, the FT-1900R/E and FT-2900R/E for 144MHz and the dual-band FT-7900R/E for 144 and 430MHz.

The internationally well known MFJ company always introduce new products at Dayton and this year they had several interesting new items, including a giant automatic s.w.r./wattmeter, a 1.8 to 50MHz (160 to 6m) vertical antenna and the Grab-and-Go emergency communications centre. This is a metal box for holding your Icom IC-706 and it is completely self-contained. It has a built-in full-range automatic a.t.u. that will tune anything from a long wire to a vertical whip at the push of a button. And the whole thing, including the radio, can be powered from your car's cigarette lighter thanks to several Farads of built-in capacitance!

The GRE company were there again and they had a new model on show. The PSR-200E is an inexpensive European RoHS compliant scanner that is aimed at the users who don't need trunk-tracking. It should be on sale in the shops here soon. They also had news of some interesting developments that are in the pipeline – but that has been embargoed until later in the year so more details then.

Flex Radio launched their new lower priced software defined

Just one of the dozens of booths selling test gear.

Coming soon from Kenwood.

The Dayton Hamvention 2009

We report from the biggest Amateur Radio show in the world.

radio, the FLEX-3000. This will retail in the UK for £1395.95 including VAT as opposed to the £2495.95 cost of the current the top of the range model, the FLEX-5000A.

Probably the most spectacular new product at the show was the latest tower from Luso. This massive (145ft) edifice was on sale for $41,000 although towards the end of the show I did hear that rather than take it home with them, they were willing to let it go for 'just' $34,000. Anyone thinking of buying one should be aware that it needs 1,000 cubic feet of concrete as a base! You can take a good look around this amazing retractable tower on YouTube courtesy of **Jay Schwisow KT5E**.
www.youtube.com/watch?v=AFc1ZrhQGWU

Lack Of Characters!

I was disappointed by the lack of Amateur Radio characters this year. The Hamvention has always been a place where radio enthusiasts go to enjoy themselves, wear funny hats, dress up in costumes and generally have a good time. This year, however, even though there appeared to be as many visitors as before, I didn't see any of the usual sights.

For example, there was no sign of the urban spaceman in his spacesuit, the people with big antennas on their hats or any of the usual colourful characters who I normally see at the show. I don't know if this had anything to do with people feeling the widespread effects of the recession, or the more local problems that the Dayton area has now that the massive local General Motors truck plant has closed with the loss of some 2,000 jobs.

Whatever the cause, it was a subdued show but there were a few highlights. The major one was the presence of English-born American **Richard Garriott W5KWQ**, the space tourist, and his father **Owen Garriot W5LFL**, an astronaut who first flew in 1973 and then again on STS-9 in 1983, when he became the first Radio Amateur to operate from space.

Richard W5KWQ made his fortune from video games and he's reported to have paid US$30m for his flight to the International Space Station (ISS). While he was on board the ISS, he made contact with Amateurs all around the world and he has certainly helped popularise Amateur Radio with the video game generation. His progress around the Hamvention was slowed by eager autograph hunters and people wanting to chat and he was in such demand for interviews and talks that his assistant had to split his time at the show into 15-minute segments in order to fit in everyone who wanted to interview him!

Someone else who attracted photographers was regular visitor **Tom Vogel WA0KGU** with his 'porcupine' car, which this year was sporting more antennas than ever!

Quit a few Brits made it over this year, including **Peter Waters G3OVJ** and **Jeff Stanton G6XYU**, **Phil Godbold G4UDU** from **Adur Communications** and **Graham Somerville M3ZGS** from **bhi**, who spent his time racing between halls because he was promoting his products on **two** separate stands, GAP and

The New Alinco DJ-G7E tri-band handheld.

The new Yaesu FT-250 R/E and FT-270 R/E.

Richard and Owen Garriott chatting to Elaine Richards G4LFM, the editor of RadCom, on the RSGB stand (left to right).

Graham Somerville M3ZGS on the W4ART stand.

Visiting Dayton?

If you're thinking about visiting the Dayton Hamvention next year, the dates are May 14th, 15th and 16th, 2010. Return flights to Cincinnati should cost between £300 and £400, car hire for a week will be about £120 and a hotel room (for up to four people) will be between £50 and £150 per room.

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YAESU Summer Sizzlers!

Special prices on Yaesu HF for August – call now!

Yaesu FT-450 HF Base Transceiver with & without ATU. HF & 6m Full DSP

Yaesu FT-450 without ATU: £589.95
Yaesu FT-450AT with ATU: £639.95

When the FT-450AT was recently introduced, customers queried how could a rig offering proper IF DSP, Auto ATU, 100 Watts on HF & 6m, a roofing filter plus a whole host of other class leading features be any good when it costs less than £650?

To answer, in a recent review in Radcom, Peter Hart writes: "For a budget priced radio covering HF and 6m, the FT-450 is an excellent all-rounder for general use. With a high level of features for SSB, CW and data modes, easy to use and a good overall performance, it will suit the home station operator or someone looking for a lightweight radio which is easily transportable".

Options

MyDEL MP-8250 23Amp PSU	£69.95
Stand-FT450 Bail Stand	£19.95
ATU-450 Optional internal ATU	£159.95
MMB-90 Mobile Bracket	£18.95
MHG-1 Carry Handle	£9.95
MH-36E8J DTMF Mic	£69.95
MD-100 Desk Mic	£149.95
MD-200A8X Super Deluxe Desk Mic	£199.95
YH-77STA Headphones	£54.95
MLS-200 High Power weatherproof speaker	£27.95
ATAS-120A Fully Auto Mobile 7.50MHz Antenna	£239.95

Yaesu FT-2000 HF Base Transceiver

FT-2000: £1869.95
FT-2000D: £2375.95
Available from stock and on permanent demo in our showroom

The Yaesu FT-2000 with PEP "Performance Enhancement Program" Upgrade.

The Yaesu FT-2000 has been a bestselling HF Transceiver since its introduction almost three years ago. The ability of downloadable firmware up-grades by the Yaesu Factory make this 100 or 200 Watt HF & 6M rig one of the most up to date pieces of equipment available to the Radio Amateur.

With the introduction of their latest release the "PEP" or Performance Enhancement Program" the FT2K is without question the very best value base HF on the market today.

For more information on what the PEP upgrade delivers see:
www.hamradio.co.uk/pdf/Yaesu_PEP_Enhanced_Version.pdf

The FT-2000 & FT-2000D (200W version) are available from ML&S.

- 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

Got a Yaesu FT-2000 or FT-950?

Add a DMU-2000 Data Management Unit

- 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

DMU Price: £CALL

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..... £119.95
CW Filters for Sub-Receiver
YF-122C (500Hz) CW Filter £115.95
YF-122CN (300Hz) CWN Filter £126.95
FH-2 Remote Control Keypad £42.95
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 VL-1000 1kW HF Linear Amplifier, PSU & Auto ATU Always available from stock..... £3599.95

NEW Yaesu FT-VX-8. ML&S £349.95 Latest 6/2/70 Handie with Bluetooth, APRS and optional GPS.

NEW Yaesu VX-3E. ML&S £144.95 Micro Handie 2/70 with scanner. Complete with Li-ion battery, charger & antenna.

Yaesu FT-60R. ML&S £142.95 Latest twin band handie complete and ready to go.

Yaesu VX-6R. ML&S £199.95 Yet another 2/70 handie from Yaesu.

Yaesu VX-7R. ML&S £234.95 The UKs best selling Triple Band Handie.

Yaesu FT-7800E. NOW ONLY £199.95 Bar make the tea it'll give you 2m/70cm @50W/40W. FREE YSK-7800 Remote Kit!

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 FT-8800. ML&S £289.95 Similar to the FT-7800 but can receive on 2 & 70 simultaneously.

Yaesu FT-8900. ML&S £329.95 High-power FM on 10m, 6m, 2m & 70cm. When your local repeater is busy, slip onto 10m & work DX!

FT-1802. ML&S £109.95 2m FM Mobile. 5-50W output.

Yaesu FT-897D

£624.94

High Power version of the FT-897. Use as a transportable, (20W) or as a base/mobile (100W)
Latest batch straight from the factory! Call for lowest price and special "Bundle" offers

Yaesu FT-857D

£543.95

The Ultimate HF Mobile Installation! Plus ATAS-120D 40m-70cm Auto Antenna
Bundle Price: £CALL
(Rig only: £543.95)

Yaesu FT-817ND

The world's only all-band portable transceiver
Only £439.95 with FREE CSC-83 Carry Case worth £19.95

All ML&S FT-817ND's include;
2 Years warranty, metal hydride batteries, charger, mic, etc.

FT-950 HF Base Transceiver

Only £1099 Available from stock

Yaesu's "Midship Radio"

Many of you grabbed the new Yaesu FT-950 HF & 6M from us at the end of 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.

All FT-950s supplied by ML&S are latest PEP factory versions!

See www.hamradio.co.uk for more details on all of these items ... and much, much more! E&OE

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ML&S carry the largest stock holding of Icom equipment in the UK!

ICOM COUNT ON ML&S!

ALL AVAILABLE EX- STOCK

Icom HF products

IC-718	Basic HF Radio, 12V, 100W output	£449.95
IC-703	Ideal M3 Licence holder 10W HF+6m radio	£539.95
IC-706mk11G	100W HF/6m + 2/70 Multimode Mobile	£739.95
IC-7200	Mr T's choice for tough HF/6M Operation	£779.95
IC-7000	Full DSP, TFT Screen, 100W HF/6m + 2/70	£939.95
IC-7400	100W HF/6M/2M Base, full DSP, Auto ATU	£1199.95
IC-756Pro111	Run out of this excellent HF Transceiver	£1799.95
IC-7600	100W, Twin RX, Huge Display. No psu	£3369.95
IC-7700	Superb 200W HF/6M Base, PSU/ATU	£Call!!
IC-7800	Icom's Flagship radio has gone up again	£Call!!
IC-PW1Euro	1kW Fully automatic HF/6m Linear Amp	£Call!!

Icom V/U Products

IC-E91	Full Dual Band 2/70 with D-Star as option	£249.95
IC-E92ED	As above c/w D-Star fitted & splash–proof	£369.95
IC-E208E	Brilliantly easy to use 2/70 remote-head	£269.95
IC-E2820	Proper dual band, dual display, remote etc	£395.95
IC-E2820+D	Supplied with UT-123 D-Star board	£539.95
IC-910H	Multimode 2/70 Base Station	£1249.95
IC-910X	As above but with optional 23cm UX-910	£1449.95

Icom Receivers

IC-R9500	Flagship Base Receiver, 50kHz-3335MHz	£Call!!

PC Controlled Receivers from ICOM

Icom IC-PCR1500 & IC-PCR2500

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

IC-PCR1500	10kHz-3300MHz All Mode	£389.95
IC-R1500	As above but with remote head	£449.95
IC-PCR2500	Twin Receiver version of PCR-1500	£509.95
IC-R2500	As above but with remote head	£559.95

KENWOOD LISTEN TO THE FUTURE WITH ML&S!

Kenwood HF Products

TS-480SAT	Remote head HF/6m 100W inc ATU Transceiver	£749.95
TS-480HX	200Watt version of above, no auto-ATU	£849.95
TS-2000E	100Watt all mode HF/2/6M with auto-ATU etc	£1479.95
TS-2000X	As above but fitted with 10Watts on 23cm (all mode)	£CALL

Kenwood V/U Products

TH-F7E	The only 2/70 FM Handie with SSB/CW WB Receiver	£229.95
TM-V71E	First Class 2/70 FM Mobile with remote head	£289.95
TM-D710E	The only 2/70 FM Mobile/Base with APRS/TNC etc	£429.95
TM-D710E+AvMap Bundle. Personal Navigator for GPS located APRS		£Call!!

ICOM IC-7600

NOW AVAILABLE FROM STOCK

See our website for first full detailed review by Adam Farson VA70J

Special introductory offer: £3369.95 (RRP: £3895.95)

The successor to the IC-7565Pro111, the eagerly awaited new mid-range HF/6M Transceiver will try and set another bench mark like that of its predecessor.

ICOM IC-7000

Only £939.95

Whilst the price has gone up it's actually cheaper now than it was when first introduced!

The only full feature all-mode, all band Mobile/ Base Transceiver with full colour TFT display.

KENWOOD TS-2000X

The new price is a whopping £1999.00

ML&S Only £Call for special price

For those of you that really want a one stop solution to HF though 23cm all mode operation, the TS-2000X is the rig for you. Twenty five years ago this type of frequency operation would have filled a shack – you can now have it all in one neat desktop package.

Real Time Virtual Radar

NEW MODEL NOW INCLUDES AIRBAND and FM Receiver!

SBS-1*er* Portable Low-cost Mode-S/ADS-B receiver.....**Now available from stock!**

RRP: £499.95 SPECIAL INTRO PRICE £469.95

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

The SBS-1*er* Pocket Radar is the latest version of the original SBS-1 launched in 2005. The SBS-1*er* Pocket Radar now includes an Airband and FM receiver and is a portable cost effective Mode-S / ADS-B Receiving Instrument designed for commercial, training and aviation enthusiasts. Supplied complete with antenna and BaseStation Virtual Radar software. The SBS-1*er* Pocket Radar allows you to track ADS-B aircraft on a PC- simulated radar screen and identifies and displays Mode-S equipped aircraft.

Perseus VLF-LF-HF Receiver

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

only £699.95

Unlike lower class direct sampling receivers, the PERSEUS RF analog front-end has been carefully designed for the most demanding users. PERSEUS can also be operated 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.

See www.hamradio.co.uk for more details on all of these items ... and much, much more! E&OE

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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.

Palstar See Web for the LOWEST prices!

PALSTAR AT-500
600 Watt PEP Antenna Tuner

Covering 160 to 6 Meters, the AT-500 features a differential tuning capacitor with 2 stators and 1 rotor, a precision ceramic body roller inductor, and a 4:1 ferrite current balun for balanced line feeds.

The AT-500 utilises only 2 controls to operate for tuning, providing maximum ease of use in a manual tuner. A small-sized roller inductor operates all the way up to 6 Meters, while a relay-switched add-on inductor allows 160 Meter operation. The AT-500 also features Pastar's active Peak and Peak Hold dual cross-needle metering, chem-film treated aluminum metalwork and durable powder coated finish on the front panel and top cover. You'll have a tuner that will grace your shack for years to come.

SPECIAL PRICE - THIS MONTH ONLY: £329.95

Full range of Palstar now in stock. See www.hamradio.co.uk

AT-Auto Automatic 1500 Watt ATU **£1179.95**
AT-1KP 1200W Antenna Tuner **£369.95**
AT-1500DT 1500W Differential Antenna Tuner **£449.95**
AT-2K (2000W) Antenna Tuner **£399.94**
AT-4K (2.5kW)Antenna Tuner **£735.94**
AT-5K (3.5kW) Antenna Tuner **£1079.95**
BT-1500A Balanced Antenna Tuner **£659.95**
ZM-30 Antenna Analyser **£359.95**
PM-2000AM Power/SWR Meter £149.95

Palstar Dummy Loads
DL-1500 (1.5KW) **£109.95**
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The World's BEST ANTENNA TUNERS from ML&S

FACT not FICTION: Did you know that ML&S sell MORE of the excellent LDG Auto Tuners than any other dealer outside the U.S.A.?

LDG Auto Tuner Range

AT-100pro	Desktop tuner covering all frequencies from 1.8-54 MHz	**£189.95**
AT-200pro	Designed for new generation of rigs	**£209.95**
AT-1000Pro	1kw 160m-6m (1.8-54MHz) High speed Auto ATU, tuning range 6-1000Ohms	**£499.95**
AT-897	Bolt-on Alternative Auto Tuner for the FT-897. Wider tuning range and cheaper too!	**£179.95**
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YT-100	NEW AUTO ATU for FT-897/857 or FT-100 with additional Cat Port Control	**£169.95**
Z-817	Ultimate autotuner for QRP radios, including the Yaesu FT-817D	**£119.95**
Z-100Plus	Ultimate autotuner for Yaesu FT-817D	**£139.95**
Z-11Pro	Portable compact & tunes 100mW to 125W	**£154.95**
RCA-14	4-way DC Breakout Box	**£49.95**
KT-100	Dedicated tuner for Kenwood radios	**£169.95**
RBA-1:1	Probably the best 1:1balun out there	**£34.95**
RBA 4:1	Probably the best 4:1 balun out there	**£34.95**
TW-1 & TW-2	Talking Wattmeters! TW-1 HF 0-2kW TW-2 6/2/70 250W	**£129.95** each
DTS-4 + 4R & DTS-6 + 6R	Remote Antenna Switchers. 1.5kW 1-54MHz. Either 4 or 6 way	**£69.95 + £34.95 / £87.95 + £43.95**

NEW FTL- Meter **Jumbo size meter for your FT-857/FT-897.** LDG's new version of the its popular Yaesu meter is the FTL-Meter. It's a highly readable 4.5 inch meter face with calibrated scales for signal strength or disc on receive; power out, SWR, Mod, ALC or supply voltage on transmit. Each function is selected from the radio's meter menus..... RRP: 79.95 **INTRO PRICE: £67.95**

MyDEL CG-3000

ML&S: £279.95

With 200W and 200 memory channels.

- Tunable frequency: 1.8 - 30 Mhz with long wire antenna from 8 meters
- Input impendence: 50 ohms
- Input power: 10 - 200W PEP
- SWR: <2:1
- Power supply voltage: 12V +/- 10%
- Current consumption: <0.8A
- Auto tuning time: Approx. 2 seconds (first time tuning) Less than 1 second (return to memory frequency)
- Memory channels: 200
- Weight: 1.8 KG
- Size: 310 x 240 x 72mm (L - W - H)

CG-3000 shown with optional remote switch.

NEW! Remote control for the CG-3000 and CG-5000. £39.95

CG-5000MkII

At last! 600W PEP High Speed Remote Tuner from MyDEL

Specifications:

- Tuneable frequency: 1.8 - 30Mhz with long wire antenna from 8 meters
- Input impendence: 45-55 ohms
- Input power: 10 - 600W PEP
- SWR: <2:1
- Power supply voltage: DC 13.8V
- Current consumption: <1.5A
- Memory channels: 800
- Auto tuning time: 0.5-6 seconds (first time tuning), less than 0.2 second (return to memory frequency)
- Weight: 3 Kg.
- Size: 385mm x 280mm x 110mm (L - W - H)

ML&S: £549.95

MyDEL Power Supplies

SPS-8250	25A continuous, fully metered power supply	**£79.95**
MP-9626	120A, 13.8V DC power supply	**£ 299.95**
MP-8230	13.8V DC, 25A power supply	**£69.95**
MP-925	Linear 25-30A, 13.8V DC power supply	**£99.95**
MP-9600	60A switch mode power supply	**£179.95**
MP-6A	13.8V DC, 6A power supply	**£29.95**

MyDEL CG SB-2000 USB Radio Interface

NEW PRODUCT

This small self contained beautifully styled box weighing only 400 grams really is a one stop solution to your data and radio control. It employs a CAT/CIV interface as standard and supports CAT with RS232 protocol.

The MyDEL CG SB-2000 Interface connects to your PC via USB and Sound Card and connects to your radio via Custom leads.

Once connected and configured you have Computer Control via USB and decoding via your soundcard using HamRadio Deluxe or other packages.

Intro price of only £99.95 **High quality ready-made leads for most rigs available at only £18.95.**

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.

ML&S: £259.95

See www.hamradio.co.uk for more details on all of these items ... and much, much more! E&OE

The Icom IC-7600

Having reviewed the Icom IC-7800 and the Icom IC-756PROIII, looking at the '7600 is just like *Deja Vu*! The new '7600 at first glance looks very similar to the 'PROIII. The size is exactly the same and Icom have used the same rigid die-cast compartmentalised chassis for the '7600 as they used for the 'PROIII, **Fig. 1** shows this quite clearly, being the top view with the covers removed.

The IC-7600's rear panel looks just about the same as the 'PROIII, see **Fig. 2,** but the front panel is a new design. It's similar in appearance but the meter has gone and the TFT LCD display has been changed from a 127mm (5in) to a near (152mm (6in) display.

There's now an analogue meter in the new display. In fact there are three selectable type of meter displays, the normal type, an edgewise and a bar-graph. The display is bright – but I think I was spoiled with the IC-7800 and on that transceiver I couldn't tell whether the analogue needle meter was a real one or not.

The display on the IC-7600, whilst I admit is smaller than the '7800, is half the resolution. Nevertheless, at 400 by 240 pixels and back-lit using white l.e.d.s it forms the focal point of the transceiver and as such it is perfectly adequate, with a very wide viewing angle.

The spectrum display now has its own DSP and is very clear and defined. The underside of the rig can be seen with covers off in **Fig. 3**. I use the word 'covers' because the transceiver has internal screening covers before the main case and the engineering is to a high standard.

The power supply that accompanies the transceiver is the slim PS-126, which I noted is made in China and is slightly deeper than the '7600 itself and doesn't have flip-down feet to match. It's obviously a switch-mode unit and I would prefer to use a conventional transformer type 40A d.c. supply rather than this type. Having said that, the p.s.u. performed very well over the period I had the transceiver and no spurious radio frequency (r.f.) 'birdies' were in evidence.

No external speaker came with the transceiver, although the small internal speaker was surprisingly good for its size. The external SP-23 matching speaker is available as an extra.

There's a built-in antenna tuning unit (a.t.u.), which is quite noiseless in operation and has a built-in memory. It

Roger Cooke G3LDI, an extremely experienced Amateur with an extensive antenna system, takes a look at the latest Icom rig.

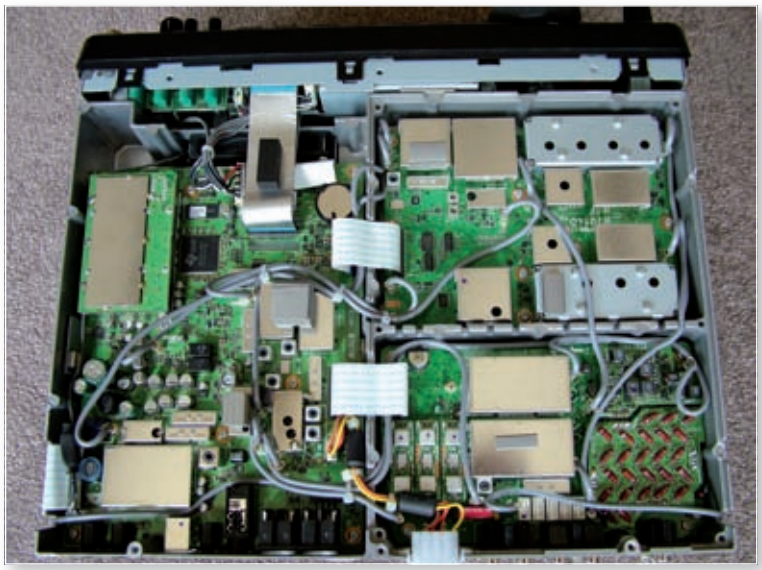

Fig. 1: The Icom IC-7600 with top covers removed.

works on all bands and the memory steps are 100kHz and are user re-selectable.

National Field Day

My club, the **Norfolk Amateur Radio Club**, was given a talk by **Ian Lockyer M3INL** from Icom UK and he was kind enough to supply the IC-7600 transceiver prior to the National Field Day (NFD) with permission to use it for that event. We set it up on a 12V heavy-duty battery and used it on the 'A' station.

Once set up for c.w. there was no need to alter any of the menu settings. We also used pre-tuned antennas with low v.s.w.r. and used the internal a.t.u. on the '7600 to finally adjust the v.s.w.r. on all bands. The rig stayed like that for the 24 hour period and performed flawlessly!

We used five operators on the A station and everyone was very impressed with the performance and 'intuitive' operation the transceiver provides. The main variable frequency oscillator (v.f.o.) was set to 10Hz tuning steps with auto speed up on 'request' for fast tuning.

Extreme selectivity is not really too essential on NFD as some stations call off frequency anyway. These would be missed with a narrow filter selection. However, the passband tuning and c.w. peak controls were very useful on occasion.

There was considerable interest in the transceiver, as can be seen from **Fig. 4**. This picture almost looks as though we were waiting for the transceiver to 'do' something! In fact we were listening to the c.w. and **Fig. 5** shows yours truly operating. As a matter of interest, we made a record number of contacts – 1,017 – but then again the B station also made a record number. (They were using an Icom IC-756PROIII though!

Fig. 2: The rear panel of the IC-7600.

The New PRO?

Despite being told that the IC-7600 **is not** a replacement for the IC-756PROIII, it obviously is! The new innovations are well worth having, the new display being the most obvious. It's a substantial improvement on the 'PROIII and placed on your desk it will give a great deal of satisfaction with the ease of readability from all angles.

The '7600 **is** very similar in appearance to the '756 but I think it will be difficult to convince 'PROIII owners that it's worth upgrading when there is such a large price difference. However, it's always very satisfying to have the latest in technology sitting on the desk and at the present time there's not much to be gained from leaving it in the bank!

Looking at the specifications of the '7600 compared again to the '756, I wondered if it would be possible to tell the difference in performance between the two? The only way to do that would be to have both on the desk, but the new specifications certainly suggested that there have been some considerable improvements. For example, the older '756 suffered from third order inter-modulation from multiple strong signals in the 2 to 20kHz region either side of the tuned frequency and several operators I know of, installed an Inrad roofing filter to help with the problem.

The new '7600 is now a dual-conversion superhet and is fitted with three roofing filters in the first intermediate frequency (i.f.) at 3, 6 and 15kHz. The improvement is not staring you in the face – but when used over a period of time, in my opinion the '7600 is a much better performer.

The double superhet design of the '7600 uses a 64.455MHz first i.f. and converts down to a second i.f. of 36kHz. The digital signal processing (DSP) functions all operate at the second i.f.

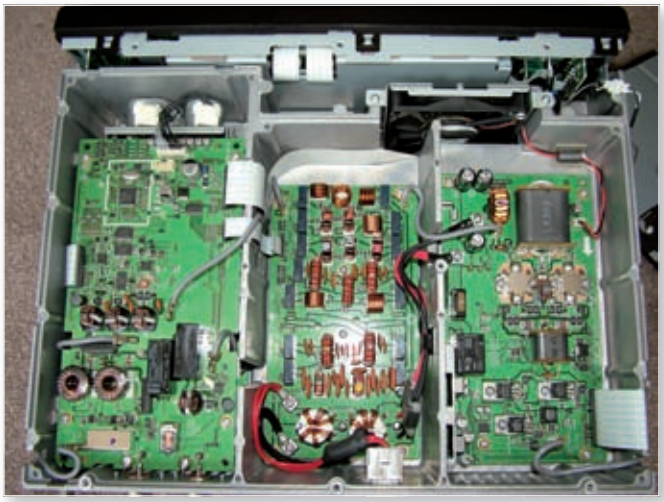

Fig. 3: The underside of the chassis.

After using the '7600 I've become more accustomed to the shape, although ergonomically I still prefer the slightly larger Yaesu FT-1000MP size. However, that's being rather pedantic when looking at the performance! The IC-7600's shape, coupled with the larger display makes for quite an attractive package.

The tuning dial is also the same size as my own FT-1000MP, at 55mm. The tuning rate of the '7600 can be set right down to 1Hz if required and I liked the auto speed increase when tuning! This useful feature helps a lot when moving from one end of the band to the other.

Knee-Deep In Menus!

Most modern transceivers are knee-deep in menus and the IC-7600 is certainly no exception! It did take me quite a few 'wrong' pushes to get where I wanted to go, but on reflection I should have adopted the – strongly advised – 'Read the manual first' approach!

Once I did read the manual, it really is quite amazing at the number of things that can be done with the '7600. For example, the spectrum display was bright white but that can be changed to anything you want with a red, green and blue mixing selection, similar to the way the colours are produced on a TV screen. (Or were, in my day as a TV service engineer!). In the end I set it to a relaxing shade of green. The background can also be changed, along with the fonts, etc.

The filtering on the '7600 is extremely wide-ranging and operator variable, similar to the 'PROIII and can be set up – via a menu – to suit the operator's requirements. There's also pass-band tuning adjustment, allowing the user to close the bandwidth from either side or both.

The '7600 also features the same twin-peak filters for RTTY provided in the 'PROIII and the DSP provides audio filtering, including a peak filter for c.w. that's very useful. The notch filter is superb at automatically rejecting interfering signal causing heterodynes (those annoying whistles) even moving (changing frequency) and also has three selectable bandwidths, plus a manual adjustment.

Operating On CW

Operating on c.w. (Morse) with the '7600 is again very similar to the 'PROIII and the Icom IC-7800 and would be a very good selling point for me. The '7800, the 'PROIII – and now the '7600 – are the best transceivers I've used on c.w., both on the transmit characteristics and the receive capability.

The side-tone on the '7600 is unsurpassable in my opinion. The side-tone and audio pitch of the received signal is variable from 300 to 900Hz and doesn't affect the operating frequency. Incidentally – and importantly – our age usually affects our sidetone frequency preference and 400Hz is about right for me.

A built-in memory keyer for c.w. is provided on the '7600 and it's configurable in performance and has contest numbering too. The rise-time of the transmitted envelope of 2, 4, 6, 8, or 10 milliseconds can be selected.

I had several QSOs on 50MHz c.w., not to mention a few hours on NFD and I never tired of using the transceiver. Full break-in, QSK, or semi break-in are available if required. (I prefer to use semi break-in myself).

Digital Modes

In common with the 'PROIII and the '7800, the new '7600 has a built-in RTTY and PSK encoder/decoder enabling the transceiver to be used on RTTY and PSK31 with no add-ons. A USB socket is on the front panel for the keyboard that accompanies the '7600.

The larger display does make it somewhat easier to use on the digital modes. I was lucky enough to have a set of leads to hook up the '7600 to my MicroHam II interface, so was able to use that and simultaneously using my computer running *MMTTY* program. This enabled me to do some comparisons. And, as far as I could tell over a short period, there was nothing to choose between the two.

Copy was as good on the '7600 as on my PC running *MMTTY* and the PSK31 performed in a similar way, with tuning displays available for both modes. Again there are memories, eight in total, that can be pre-programmed prior to transmission and data can also be stored from a received signal. The usual FFT tuning indicators are available, with the twin-peak filters coming into their own on RTTY.

There are various colour selections in the menu allowing different colours for received and transmitted text etc. There's no provision for incrementing serial number selection using data modes, so it would still be necessary to use a PC running *N1MM* software in a contest. I would prefer that anyway, using the much larger computer display. There's a limit on the amount of text and also the size of font that one can have on a six inch display!

Operation On SSB

For operations on s.s.b., the transceiver is normally supplied with an HM-36 fist microphone, but the rig I had also came with an SM-50 desk-top microphone. Using s.s.b., performance seems to be much the same as the 'PROIII. Reports were favourable using both microphones but the SM-50 had the edge. Filtering can be selected from the front panel down to 1.8kHz and voice operated transmit-receive switching (VOX) is available if wanted. However, this isn't available when using data modes.

The built-in audio equaliser has separate bass and treble adjustments for a total of 121 combinations, so you can adjust the tonal quality of your voice as you want! In addition, the transmit bandwidth is selectable from 100, 200, 300, 500Hz at the high-pass edge, and 2500, 2700, 2800, 2900Hz at the low-pass edge, respectively. Three types of high and low combinations can be stored in the memory as your favorite settings.

The only problem is finding the menu in which these adjustments can be made! I found this a very frustrating exercise and was eventually helped by a local Amateur who already had a '7600 and had found the appropriate menu! Once I had tailored the audio, bandwidth and compression properly, the '7600 performed admirably.

There's also digital voice recorder with four memories for transmit and 20 for receive. There's a maximum message length of 30 seconds for each of the receive memories and a maximum of 99 seconds total for the transmit memories.

Recorded messages can be protected from accidental erasure if required. They can also be labelled and recalled from a menu. Instant playback of the last 15 seconds of recording can be invoked by pushing the **Play** button on the front panel. These messages could be pre-programmed for contest operation but of course a computer log would also be needed for the exchange, so it would still be more desirable to dedicate the whole contest operation to a computer where DVK (digital voice keying) is available anyway.

Fig. 4: Norfolk Amateur Radio Club members showed considerable interest in the new IC-7600 listening to c.w. during National Field Day.

Fig. 5: Roger G3LOI using the '7600 during the Field Day.

Memory Operation

The IC-7600 is equipped with a very versatile memory mode with 101 channels, all tunable when selected (temporarily) with the main dial. They're programmed from the front panel buttons and the various locations can be monitored on the display screen, along with the contents of each memory. Again, each memory can be named and channels altered at any time.

There's also a memo pad with five memories, which can be expanded to ten if required. This is a temporary way of memorising a frequency and mode of a DX station for instant recall a bit later. Again, these are stored and recalled by a front panel button.

Comprehensive Scanning

A comprehensive scanning capability is available on the '7600 and this is programmable from another menu, with numerous ways of using this function. There are four main types of scan: programmed scan, selectable frequency range scan, memory scan and select memory scan. Scanning speed can be varied, along with other functions. Obviously this can provide hours of endless fun!

Other Functions

There are a number of ancillary functions on the '7600, which although they may possibly not used too often, are nevertheless useful. If you operate 5MHz for example, there are five spot frequencies, which I suspect would have to be enabled in the UK. This would need to be sorted prior to purchase.

The band edge warning beep could be useful, not that out-of-band operations would be used by Amateurs, but for contests that are only allowed in certain segments the edges to those segments could be programmed prior to the contest.

There's a built-in voice synthesiser, which announces operating frequency, mode and S-meter reading, plus others that can be enabled from the menu.

A two-stage pre-amplifier is available and also an attenuator using three selectable steps of attenuation.

The dual-watch facility allows for monitoring another frequency within the same band. Whilst perfectly adequate for most applications, such as working DXpeditions using 'split', it takes a little playing with the **XFC** and **Change** buttons to get it right. (I would have preferred a separate receiver or at least a separate v.f.o.).

A clock-set mode enables a variety of timing operations to be set, plus a clock and calendar if required.

Repeater operation is also available – for when we get decent propagation back on 28MHz!

I found the noise reduction facility quite useful. The processing power of the 32-bit DSP produces results you can hear, or not, if you get my point! The 16-step variable noise reduction significantly enhances the receiver's signal-to-noise ratio.

The triple-band stacking register quickly memorises and calls up the operating frequency and mode for three channels on each band. Just push the band key button (ten-key pad) and you can call up the last operating frequency and mode. This function is convenient, especially when switching bands during contests.

The **Set Mode** is used for setting infrequently used parameters, such as the audio tailoring I described earlier. This section **should be read thoroughly** because it will be needed in the initial setting up of the transceiver before using it on the air. I can't emphasise this enough because time spent on this procedure will produce extremely good results on the air. However, I suspect that some people will bow to human nature and will put the transceiver on the air first!

On The Air Performance

Apart from the superlative performance on NFD, I used the transceiver on the air at home for a while. Again, it was a great performer on c.w. and once I had tailored the audio parameters, it performed just as well on s.s.b.

I was fortunate enough to be using it during a good opening on 50MHz and managed 24 USA stations, 23 on c.w. and one on s.s.b. However, I would recommend an external speaker of reasonable quality as this would produce a better audio quality.

Data modes performed well, but I would prefer a PC based system anyway for these modes. I didn't try the '7600 on f.m., a.m. or on the l.f. broadcast bands.

Nothing Better!

With the same c.w. performance as the IC-756'PROIII and the IC-7800, in my opinion there's nothing better than the '7600. I've not had the opportunity of trying the new Yaesu FT-2000 as yet, but it would take a lot to top the IC-7600.

For operations on s.s.b., I would suggest either the SM-50 microphone or a Heil system microphone, the same as I use on my own rig. However, in testing on the air with **Walter Schreuer K1YZW**, a good friend and honest critic, he said there was no difference to my normal transmission, so that's good enough for me!

I do like the Spectrum Display and I feel it's something that all transceivers will adopt. The '7600 also has a screen saver. I also like the ability to tailor parameters whilst transmitting and the difference is immediately apparent immediately.

The IC-7600 is a considerable improvement on the 'PROIII – and I thought that was good! In fact two locals, **Dave Blake G3MWV** and **Doug Snelling G3NMY** both say that their '7600s are the best transceiver they have owned – and they both had 'PROIIIs before!

Note: The latest firmware can be downloaded from the Icom site.

Company Icom UK

Contact **Ian Lockyer M3INL** Icom UK Ltd. (Marketing Dept.)

Pros The IC-7600 is a considerable improvement on the 'PROIII – and I thought that was good! With the 104dB dynamic range, the 32bit DSP system and the larger display I think Icom now have a 'PRO IV' on their books! If you can, go and buy one!

Cons I have only one small criticism.....it's a pity that the seven arrow buttons (to the left of the display) aren't either back-lit or the arrows coloured in white, so they're easily seen.

Price The recommended retail price of the IC-7600 is £3895.95 (inc.VAT) and the SM-50 costs £229.95 (inc.VAT).

Contacts & Supplier
My thanks to Icom UK Ltd. for the loan of the of the transceiver for the NFD and for the review. Further details from **Icom UK Ltd.**,
Sea Street, **Herne Bay**,
Kent CT6 8LD.
Tel: (**01227**) **741741**. FAX (**01227**) **741742**.
E-mail **marketing@icomuk.co.uk**
Website **www.icomuk.co.uk**/

Small Criticism

I have only one small criticism, and it's also been made by several people who have seen the transceiver and by one local Amateur. We think that it's a pity that the seven arrow buttons (to the left of the display) aren't either back-lit or the arrows coloured in white, so they're easily seen.

Have A Read!

Have a read of the 170 page manual for the IC-7600, to see just what's available. There are bound to be some features that I haven't covered!

With the 104dB dynamic range, the 32bit DSP system and the larger display I think Icom now have a 'PRO IV' on their books! If you can, go and buy one!

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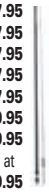

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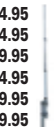

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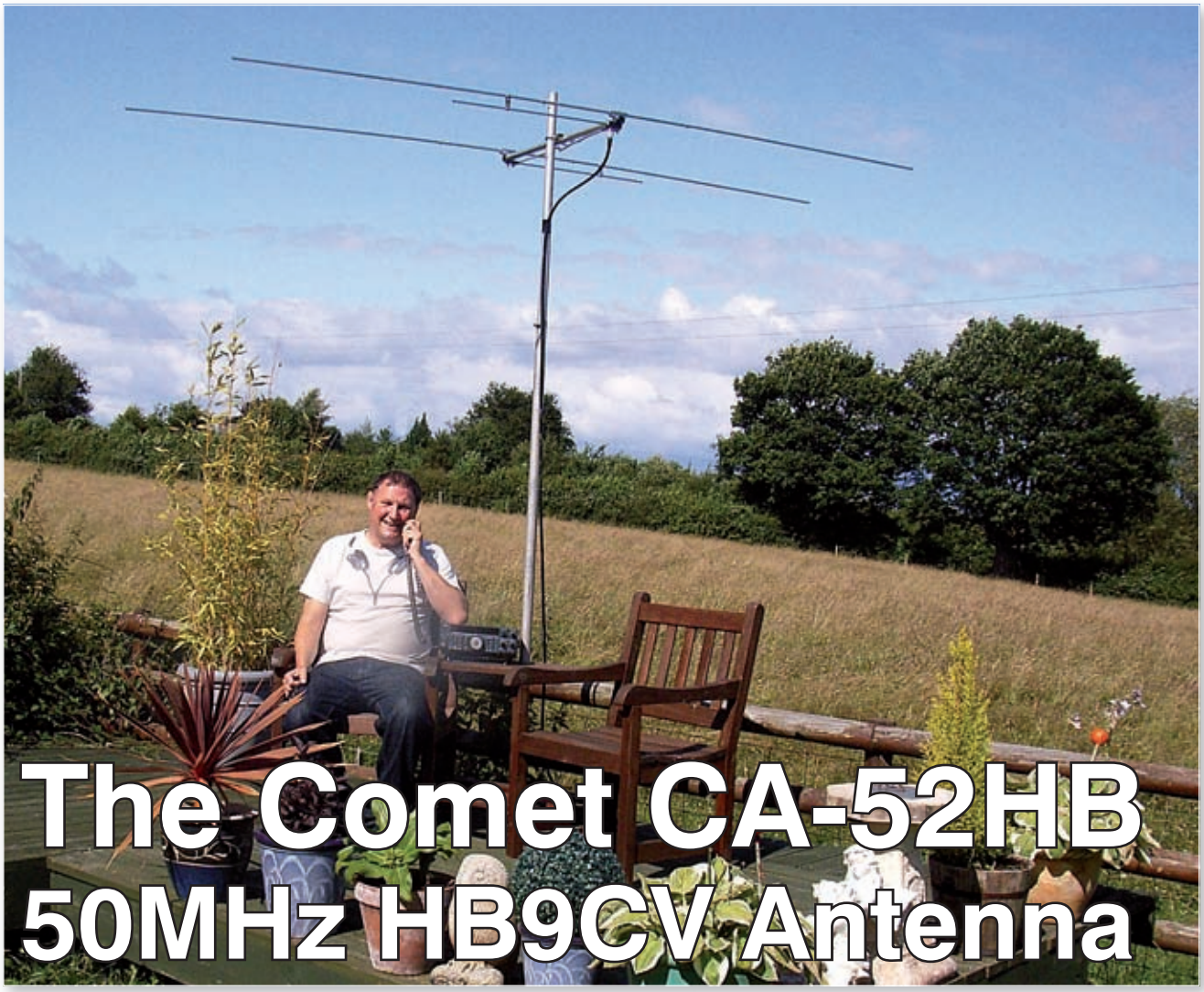
Testing the Comet CA-52Hb antenna 'al fresco'.



The Comet CA-52HB 50MHz HB9CV Antenna

Product Information:
Comet CA-52HB 50MHz 2-element antenna.

Company: (UK Agent) **Nevada Radio**

Pros & Cons
Pros: Lightweight and ideal for portable use, straightforward assembly, antenna works really well!

Cons: 'Busy' (photocopied) instruction sheet. No end caps supplied for elements.

Price: The 2-element version costs £79.95 plus £8 p&p. A 4-element version costs £119 plus £8 p&p.

Supplier: My thanks go to **Nevada Radio, Unit 1, Fitzherbert Spur, Farlington, Portsmouth, Hampshire PO6 1TT**. Tel: **023 9231 3090**, FAX **023 9231 309**.
E-Mail: **sales@nevada.co.uk**
Website: **www.nevadaradio.co.uk**

I'm a very active operator on the v.h.f. bands and when the *PW* Editor **Rob Mannion G3XFD** asked me if I would like to review the Comet CA-52HB 50MHz antenna – I leapt at the chance!

The reason why I particularly wanted to review this antenna is, that I'm a firm believer in encouraging stations to become active on the v.h.f. bands. But I also know that very few people have the opportunity and space to erect large 50MHz Yagi antennas in their gardens.

What many operators require is a small, lightweight beam that possesses a reasonable amount of gain without being too unsightly. Furthermore, one of the great advantages of the 50MHz band is that there are two modes, F2 propagation and Sporadic-E, that both produce very strong signals. F2-layer propagation takes place approximately every 11 years around the period of sun-spot maximum and produces worldwide communication.

Sporadic-E however, occurs each year during the summer months and occasionally at other times of the year. The signal levels during single-hop Sp-E

David Butler G4ASR our v.h.f. specialist author was very keen to try out a Comet 50MHz antenna!

openings and multi-hop F2 events can often be exceedingly high and during these types of propagation openings even a relatively low-gain antenna can be a great performer.

In fact sometimes, a high-gain and highly directive antenna can be a hindrance. Openings may occur in many directions at once and it's useful to have an antenna with a reasonably broad horizontal pattern for general searching. And that's where the Comet CA-52HB 2-element beam antenna comes in to play.

The HB9CV Design

The Comet CA-52HB is a 2-element antenna with two driven elements, a reflector and radiator, based upon the well known HB9CV design. The elements, in this Comet design, are fed out of phase by a pre-formed section of twin-wire cable.

Interestingly, there's no other antenna that has a better relationship between gain and expense than a 2-element beam. Adding one element to a dipole will provide just over 4dBd gain. Each additional element will increase the overall gain by only a further 1dB or so – but always at the expense of a longer boom and increased mechanical problems.

The CA-52HB has a useful gain of 4.1dBd (6.3dBi) with a horizontal half-power (3dB) beam-width of 68°. This beam-width is quite useful insofar that the beam could be left fixed on a south-easterly bearing and will cover much of the European Sp-E activity without having to be turned.

The antenna has an impedance of 50Ω, with an integral SO-239 connector and is designed to cover the band 50-52MHz with a v.s.w.r. of less than 1.5:1. The centre frequency for lowest v.s.w.r. is easily adjusted and this is very useful for c.w. and s.s.b. operators who only wish to operate in the bottom 250kHz of the band.

The front-to-back ratio is over 24dB, a very useful figure if the user needs to reduce interference or other signals from the rear of the beam. Of course, a further advantage of this HB9CV-type beam is the ability to make use of the significant nulls at 90° either side of the main lobe.

When mounted low down, as is often the case for many operators in either a fixed station or portable environment, it presents a relatively high takeoff angle and this is great for single-hop Sp-E contacts around Europe and hopefully beyond.

The quoted power handling is a healthy 200W continuous 100% duty cycle (using f.m. or JT6M) or 400W intermittent operation (using c.w. and s.s.b.).

Quality Aluminium

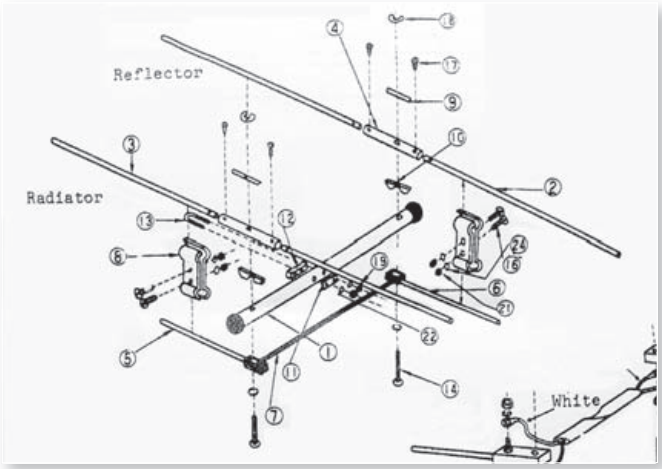
The CA-52HB is made from good quality aluminium and stainless steel hardware and is finished to the high standard that you would normally expect from Comet products. The main boom, made from 25mm diameter aluminium tubing, is 800mm long. Onto this are attached the reflector (2.97m), radiator (2.760m) and phasing elements. A centrally located mast clamp is incorporated allowing attachment to masts of 25-65mm diameter.

The total size is 800mm x 2.970m with a turning radius of 1.540m. Surprisingly, the beam only weighs 910g – making it perfect for field day and other outdoor operations.

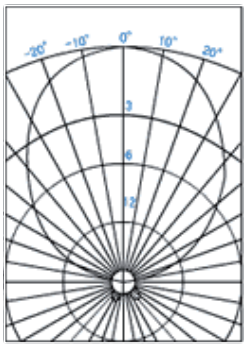
I unpacked the delivery box and all items were then checked off against the parts list. Assembly of the antenna should have been very straightforward but unfortunately the photocopied instruction sheet is rather 'busy' and not entirely clear!

However, I'm fortunate insofar that I've designed and built numerous antennas over the years and had a very good idea of how an HB9CV is put together. Others may not be so lucky! Nevertheless, with only a short boom, two elements and a pair of phasing rods there's not too many incorrect combinations! However, you do need to have a clear picture of what you're trying to achieve before launching yourself into the assembly. That said, it was reasonably straightforward and took me around 20 minutes to complete. All you'll need is a cross-head screwdriver, M4, M5 and M6 spanners and a tape measure.

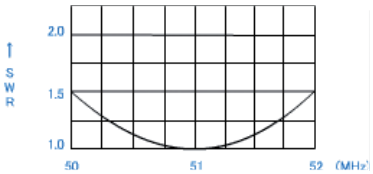
Two small centre element tubes are attached to the main



The diagram is just a bit 'busy' though clearer if you know what it should look like when finished.



The Manufacturer's forward beamwidth pattern is quite broad, but has enough gain to make it a useful antenna for Sp-E working.



David's tests indicated that the design is matched quite well into a 50Ω feeder. There's a degree of tuning to allow the lowest s.w.r. point to be moved around within the band.

boom simultaneously with the two phase adjustment bars. Then the radiator and reflector elements are slid into the centre support tubes and tightened with the supplied stainless steel M4 hardware. Then two shorting brackets are attached, one on the radiator and one on the reflector, to the distances specified in the instruction sheet.

Finally, I connected a pre-formed section of twin-wire cable terminated in crimped tags between both radiating elements. No soldering is required – it's simply a nut and bolt exercise throughout.

A close-up shot of the feed-point and one of the two matching elements.

My only criticism at this point is that there are no rubber caps supplied for sealing the ends of the two radiating elements and phase adjustment rods. It only cost pennies to supply six end caps and I'm surprised they weren't included.

One of the open-ended phase adjustment rods attaches directly to an SO-239 socket assembly. I simply poured water down the tube and it trickled out of the rear of the SO-239 socket! And if it can come out of the rear of the socket you can be sure that over time it will migrate through to the centre pin and into the coaxial cable feeder.

Testing & Performance

Then it was time to testing the antenna and see how it performed! I could have put the CA-52HB on top of one of my telescopic towers but I really wanted to try it out in a more conventional location. So, instead I put it on top of a 6m long aluminium scaffold pole, without a rotator, in the centre of the garden.

Having set up the matching bars to the dimensions given in the instruction sheet, I then checked the v.s.w.r. bandwidth. The results were very good with an almost unity response between 50-50.700MHz and then rising slightly as the transceiver was tuned up to 52MHz.

My measurement technique was hardly a professional measurement though – I was only using the built-in s.w.r. readout of my Kenwood TS-690S transceiver. Nevertheless, the results were excellent and the TS-690S produced its full 50W output over the entire band. So no need to drop the mast to tweak the matching bars. The results were most satisfactory!

There's only one problem with the 50MHz band. You have to wait for a Sporadic-E opening but fortunately I was able to test the antenna during the peak of this year's Sp-E season and I didn't have to wait very long at all. Running only 50W into the CA-52HB I easily made c.w. and s.s.b. contacts all over Europe and beyond, from TF8GX (Iceland) in the north, down to EA8YT (Canary Islands) in the south and as far east as 4X4DK (Israel). During the short period of testing I was able to make contact with 55 countries, mostly in Europe but a few in Africa and Asia. So the antenna really works well!

Interestingly perhaps, I thought there would be absolutely no comparison between the CA-52HB 2-element beam and my main station array consisting of a pair of 6-element DL6WU Yagis at 20m above ground. But I was quite wrong! I don't think there was a single station that I worked via single-hop or double-hop Sp-E that couldn't be worked on the smaller antenna. That's probably because the vertical radiation pattern from the CA-52HB is relatively high angle and this pretty much matches the Sp-E signals emanating from within Europe.

Very Impressed

I must report that I was very impressed with the performance of the CA-52HB beam. Okay, it doesn't possess oodles of gain, but that's not the point! At 50MHz you only need lots of gain to work DX signals that are just above the noise level. But if you want to work 95% of the stations active during the summer season or via F2-propagation in a few years time then the Comet CA-52HB will easily do the job for you.

With a boom length of only 800mm it really is unobtrusive. So much so you could mount it on a chimney stack and no-one would know it was there! If you do use it for fixed station operation I would make sure the ends of the open tubing were properly sealed and I would also apply self-amalgamating tape around the coaxial cable connector and the twin-wire phasing cable terminations.

For portable use this 2-element antenna is ideal as it can be broken down into fairly small component pieces and quickly re-assembled in the field. And because it's very lightweight you don't need a heavy duty mast to support it. So now there's really no excuse for not coinciding the annual family holiday with a DXpedition! ●

Mike Devereux G3SED, Managing Director of Nevada replies: "The review looks very good and very fair. I will feed back the comments about the instructions to Comet and see if we can get them improved, I'll also mention the end caps to Comet. Out of interest I assembled the 4-element version of this antenna, mounting it at just 14ft and was rewarded with KP4EIT as the first QSO! As a result I have decided to take one with me to Portugal in a few weeks where I can now operate on 50MHz as **CT7/G3SED**! Regards to you all." **Mike G3SED**.

Tony Nailer's

doing it by design

Tony Nailer G4CFY continues developing the *Poundbury* dual-band receiver. Read about the steps and problems he encounters as he

The *Poundbury* Receiver project is still evolving and, although I'd hoped to complete it with this article, it's not to be. As often happens in the real world of development, things don't quite work as anticipated and changes have to be made – often at a late stage.

When the development model is properly functioning, a tidying up exercise is often needed to produce a pre-production model of the printed circuit board (p.c.b.). If this version works the same as the 'untidy' one then the project can be completed. In the case where it doesn't, then changes have to be made again, before another tidying up exercise can be carried out.

The *Poundbury* receiver as described in *Doing it By Design* (*DiBD*) in the July issue *PW* was sensitive enough, but a little noisier than desired. The automatic gain control (a.g.c.) circuitry had been improved and the S-meter worked quite well up to about 50μV input before becoming linear. Also the configuration of the two boards created difficult interconnections with hardware on the front and rear panels.

New Mixer

My first step to improve the performance was to change the junction f.e.t. mixer of my original design, for a dual-gate metal oxide silicon field effect transistor (m.o.s.f.e.t.). The sensitivity then increased by 10dB and the signal-to-noise ratio was better, allowing a signal of 0.2μV to be discerned.

The circuit of the m.o.s.f.e.t. mixer included a 220Ω resistor from source to ground. Both gates were referenced to ground with 47kΩ resistors. I then experimented by replacing the source resistor with a 1kΩ trimpot variable resistor. Varying the trimpot did affect the conversion gain – but significantly – also affected the signal-to-noise-ratio. An optimum compromise was at a value of 700Ω, allowing a standard 680Ω resistor to be substituted.

However, after fitting the new mixer, there was then too much overall gain,

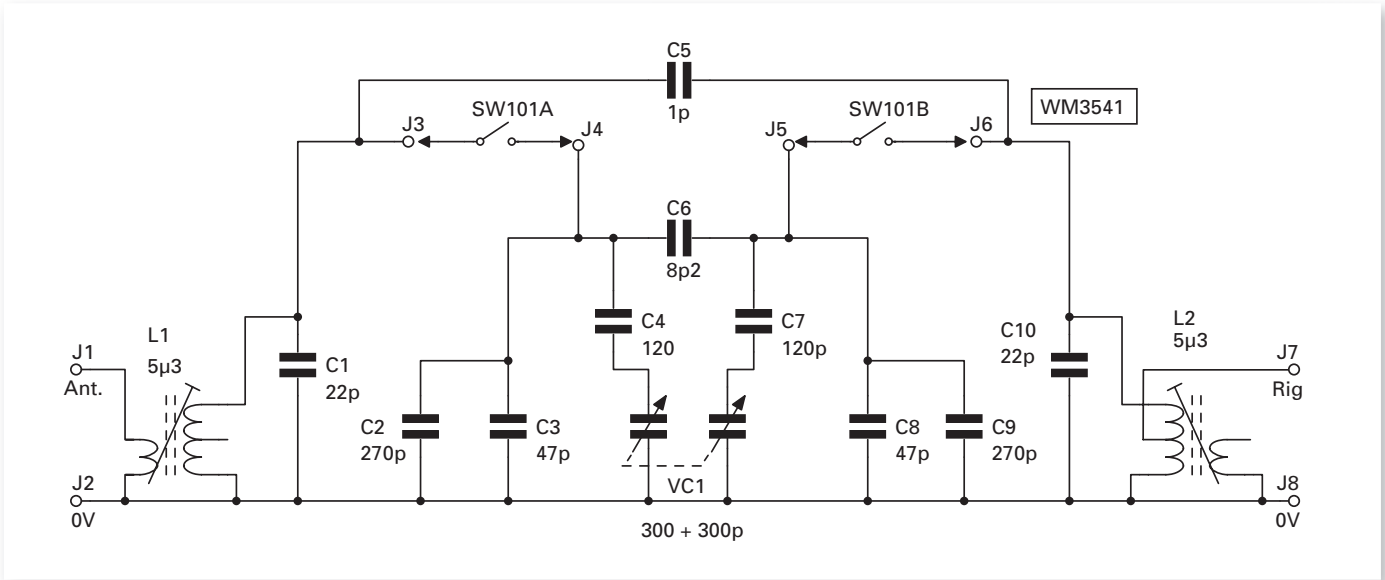


Fig. 1: The circuit diagram of the dual-band pre-selector with the new component values.

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begins to move the project onto just one p.c.b.

along with a tendency towards r.f/i.f instability. So, I moved the signal 'take-off point' of the second i.f. stage from the 'hot end' of the preceding i.f. coil, to the centre tap. The unit then became perfectly stable again.

Experiments With AGC

I started experiments with the a.g.c. again, conducted with my HP8640B signal generator, which revealed that the receiver a.g.c. performed well up to 50μV, but above that level the control had effectively run out of gain control range. This meant that the meter movement then increased in direct proportion with signal increase, rather than with a logarithmic increase.

The new receiver was again taken to the home of **Mike Carter G0NEV** and tested on his dipole antenna. However, strong signals caused the meter to hit the end-stop as well as causing an unpleasant thump on audio peaks.

Further tests on the receiver back in the laboratory revealed that the a.g.c. range was still inadequate. Previously (as described in the July 2009 *PW*), I'd added a transistor at the mixer input to supplement the a.g.c. to the i.f. stages. It became clear that it was still not enough and the i.f. stages were only contributing a total of 24-30dB of control.

Modifications To AGC

The a.g.c. feed to the i.f. stages were cut, and bias resistors were added to each gate 2, to produce a fixed voltage of 4V. A gating stage was added to the signal gate of the second i.f. amplifier, similar to the one employed at the mixer input.

The main board was, by then, looking a bit of a mess with numerous components fitted to the track side and a couple of sections hard-wired to the component side. Nevertheless, the signal handling had become excellent, and the S-meter and gain control could handle signal levels as high as 100mV.

Tests of the receiver with a four metre length of wire as an antenna just thrown out across the floor, were really encouraging. The set exhibited low background noise, good signal to noise ratio, no thumping of the audio and the S-meter handling everything smoothly without hitting the end-stop. However, audio output from the speaker was insufficient, even with the a.f. gain control set to maximum.

Having removed the a.g.c. feed to the m.o.s.f.e.t.s, the operational amplifier IC1D (p34 July *PW*) had become redundant. In the tidied up version I decided to employ this part of the device as a low gain audio amplifier, preceding the TBA820M main audio amplifier.

The Pre-selector

Before continuing the saga, I'll turn to looking at the pre-selector, which I described my design in the previous *DiBD* article. Unfortunately, I found that it didn't work correctly with the calculated values. Other circuits over the years have also given me problems by refusing to work as designed. (I'm sure we have all had this happen many times).

Considering the problem at length, I realised that I'd often had difficulties when using values of capacitance between 120pF and 820pF. Reading through the July 2009 *PW* again, I read the 'Note' on page 38 where, the Rev. **George Dobbs G3RJV** had his *Carrying On the Practical Way (CoTPW)* column. In the column,

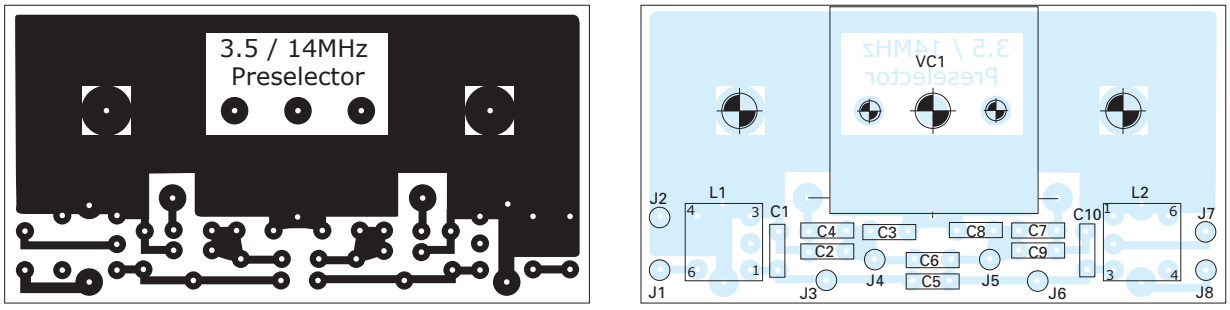

Fig. 2: The p.c.b. layout of the dual-band pre-selector.

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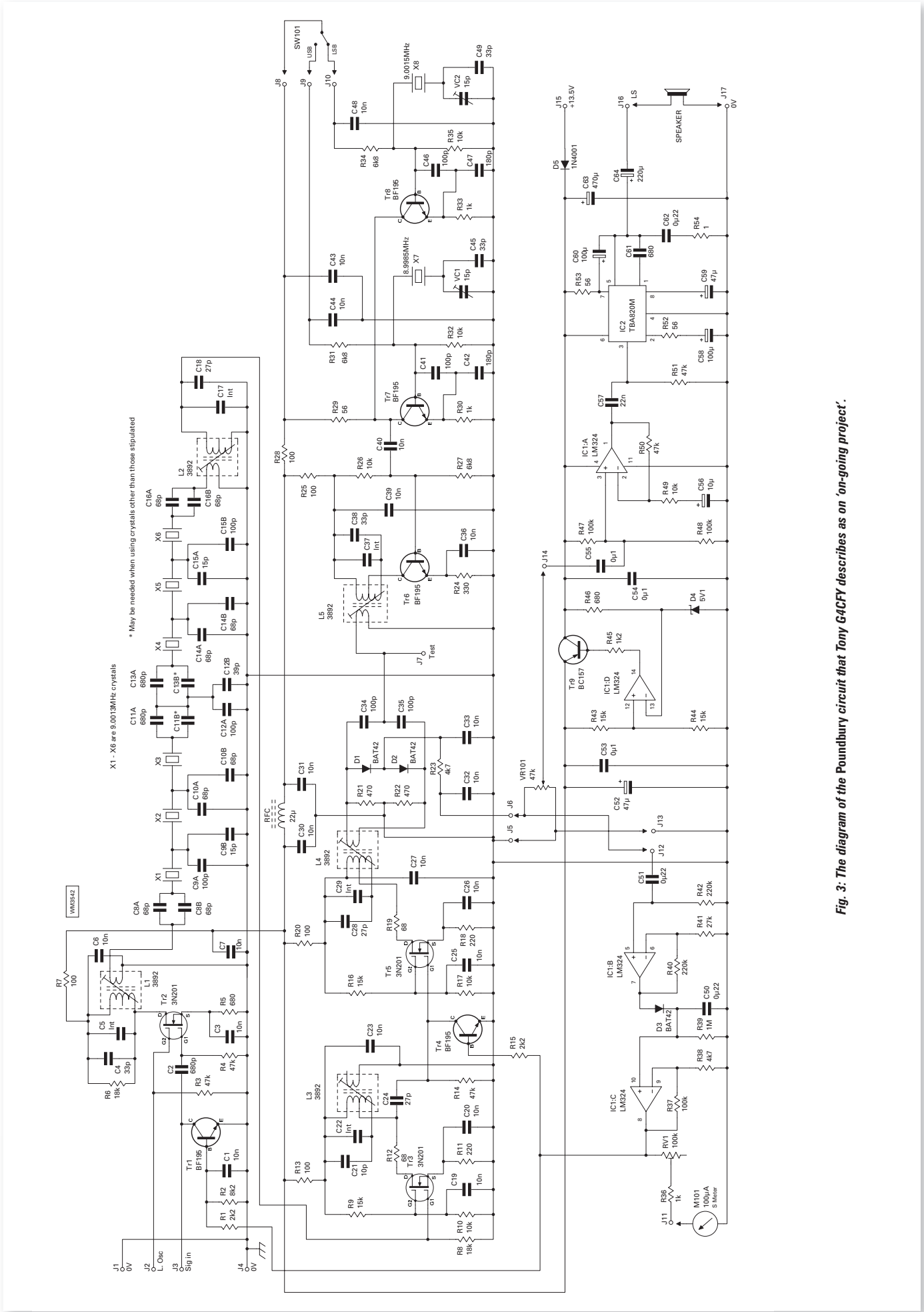

Fig. 3: The diagram of the* Poundbury *circuit that Tony G4CFY describes as an 'on-going project'.

George, referred to ceramic capacitors with a zero temperature coefficient, referring to them as 'NPO', identified with a black marker line.

I'd also read another article recently, where an author referred to 'N150' capacitors with their orange marker. Such capacitors have a temperature coefficient with a negative 150 parts per million characteristic, This set me thinking, on examination of my stock of ceramic capacitors I found that nearly all from 1pF to 100pF were NPO, with the exception of an additional tray of 68pF units with the N150 characteristic.

Above 100pF many of the capacitors were miniature types, found to be using Y5P dielectric with high losses and poor stability. They were intended for **coupling and de-coupling use only!**

Further research revealed that none of the major component suppliers in the UK supplied ceramic capacitors above 100pF as NPO. The dielectric material used in construction falls into several groups: Low K dielectric NPO type C for the range of 1-100pF, low K N150 type P for the range of 22-150pF, low K N750 type UJ for 180-330pF, medium K5S Y5P used with 390-4700pF ceramic capacitors, and high K Y5V for capacitors with values of 1-47nF.

Multilayer ceramic capacitors were also available with an NPO COG type dielectric in the range 10-1000pF, though not as good as C type, it was better than the others above 100pF that I had. Indidentally, now that I'm working more at h.f., in future I may well need supplies of N150 ceramic capacitors in the same range, for use with coils with positive temperature coefficients.

Being unable to find a suitable supplier in the UK, I searched the Internet and ordered a quantity of NPO ceramic capacitors from 120pF to 470pF, and multilayer COG types of 560, 680, and 820pF from a supplier in Taiwan.

Pre-selector PCB

The p.c.b. layout of the pre-selector, which had been created previously didn't work well with the front panel layout, so a new version of the board was created. The circuit diagram is shown in **Fig 1**, and the printed circuit layout and component placement is shown in **Fig. 2**.

Supplies of the new NPO capacitors and also samples of new 10mm coils arrived from the Far East. The appropriate components were then put onto the board in accordance with the original design.

The circuit was tested using my TF2370 spectrum analyser with its built in tracking generator. The coupling using the 1pF capacitor was just right and the bandpass characteristic was flat topped. The coils were tuned to 14.175MHz centre frequency, with 13.85 and 14.50MHz as the lower and upper –3dB points respectively.

Using wire links to change it to the 3.5MHz (80m) band, I found it to be tuning the range 3.8 – 4.2MHz. The parallel tuning capacitors were increased in value to bring it into the correct range. Including the 22pF already in circuit for the 14MHz band, the total fixed capacitance on the 3.5MHz band was 339pF.

A quick calculation, using L = 1/(39.5*F*F*C), where F = 3.5MHz, and C = 339pF gave a value of inductance of 6.1μH. Using this value of inductance, I then calculated that at 14.175MHz it would require 20.6pF to resonate it. This is so close to the 22pF actually used, so the theory is proved.

New Main board

All of the changes to the main receiver circuitry were added together and redrawn as a single unit. The new circuit is shown in **Fig. 3**. I made a rough sketch, indicating positions of the various sections of the circuit that would work best with the layout and wiring within the case.

The printed circuit layout took a long time but worked out much as I desired, though the component density is tight in some places and there are large unused areas. Nevertheless there's quite a lot of 'earth', which is always good for stability as well as saving etchant!

An artwork transparency was made and the p.c.b. manufactured, drilled and cropped. All new components were assembled onto it with the exception of the filter crystals and the carrier crystals, which were taken from the original boards.

After assembly and visual inspection, the box was drilled to accommodate fixings, and the board was fitted and wired into the case. The p.c.b. view is shown in **Fig. 4**.

Main Board Testing

After fitting the main board, it was now time for me to test it 'in place'. The bench supply was connected – and the result was a disaster! There was 'motor-boating' and squeaks, but no signals were heard. However, using my oscilloscope probe I then found that the drain of the second i.f. device had several volts peak-to-peak (p-p) of 9MHz signal, presumably picked up from the carrier oscillator.

The pick-up problem was traced to the fact that the sideband crystal frequencies hadn't been set, with both still within the passband of the i.f. filter. Setting them to their correct frequencies of 8.9985 and 9.0015MHz cured that! Even so, the carrier signal on the test point was still far too high at 8V p-p, so I removed the de-coupling capacitor from the emitter of the buffer stage and this reduced the pick-up to 2V p-p.

Trying to find the source of audio instability was tedious work, involving connecting and disconnecting the screens of cables, and trying to link various earth-points on the board. Although I tried many combinations, nothing stopped the problems.

I eventually reasoned that the problems were caused by a combination of the audio output stage together with the new audio pre-amplifier. It was either be a problem of a low frequency earth loop, or just too much audio gain. I simply wired the pre-amplifier stage out of circuit and stability returned once again.

With audio stability restored, it was then possible to discern r.f. signals and peak up the signal processing tuned circuits. The sensitivity was quite good but the audio level was really low. There was also insufficient recovered audio to activate the a.g.c. system. A test using the oscilloscope probe across the volume control revealed only 1mV p-p of audio, for 10μV of r.f. signal. There was also about 20mV p-p of other unidentified signals.

A 9MHz signal was applied directly to gate 1 of the first i.f. stage and the drain of the second stage was observed on the 'scope. There was a 200mV p-p 9MHz signal observed but it wasn't related directly to the applied signal. Tuning the coil of the carrier oscillator buffer stage varied the amplitude of this i.f. signal.

It seems that carrier oscillator pick-up in the i.f. stages is causing the

detector to malfunction. Also the i.f stages are not properly amplifying signals coming from the single-sideband filter. The effect was that instead of the i.f. stages together having a signal gain of as much as 60dB they only appeared only to be achieving 20dB! The single board as laid out was unusable and a new solution will need to be found.

Development Model

At the start of this article I explained the procedure whereby a development model is modified as required and when it's working well, is tidied up. Unfortunately, sometimes with r.f. circuits the procedure has to be repeated several times until a stable solution is reached.

The previous two-board development model worked nicely, except that the audio output was insufficient. In looking for a solution as a single board layout, it's also necessary to solve the low audio problem. (Adding another audio stage has been tried and found to cause audio instability).

The original circuit of this receiver, as detailed in *DIBD* in the March 2009 issue of *PW,* included a junction field effect transistor (j.f.e.t.) first i.f. stage followed by the two m.o.s.f.e.ts. It had too much gain and so, was removed from the first board. The second board had enough i.f. gain without the j.f.e.t. stage so, I must conclude that the two m.o.s.f.e.t stages are sufficient.

The receiver has no r.f. amplifier stage because the background, man-made and galactic noise on the 14MHz band is probably equivalent to a noise figure of around 15dB. On the 3.5MHz band it's much higher still. Adding an r.f. pre-amplifier might make up the shortage of gain but it would be at the expense of signal handling in the front-end mixer.

Another solution would be to change the passive product detector, which probably has a conversion loss of 10dB, for an active mixer, such as another dual-gate m.o.s.f.e.t., or an integrated circuit. Each of these choices has merit.

The first option, using a dual-gate m.o.s.f.e.t. with an audio transformer in its drain circuit will have maybe 10dB gain and produce several hundred millivolts of recovered audio. To be effective, its gate 2 will require about 1.5V p-p of carrier oscillator signal, which could be provided by the existing switched crystal oscillators, without the need of the buffer stage.

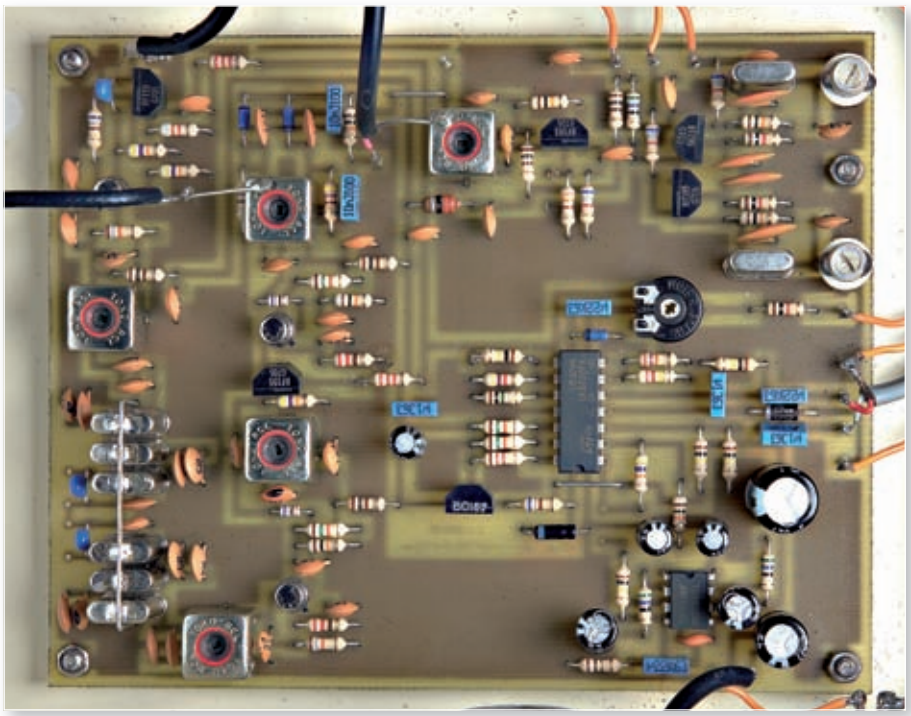

Fig. 4: The p.c.b., though neat, proved to have its problems – as described in the text.

Second Option

The second option of an i.c., such as the S042P, four-quadrant multiplier integrated circuit, will achieve about unity gain. It requires only about 180mV p-p of carrier oscillator signal, and it automatically suppresses the oscillator and i.f. signal from appearing at its output.

Use of the dual-gate m.o.s.f.e.t, with 10dB gain instead of the present 10dB loss gives a net increase of 20dB, which may be far too much. The S042P with a nominal 0dB conversion gain will give a net increase of 10dB, which may be just right!

I'm really pleased with the positions of the various sections on the main board and the relative ease of wiring. I now have to think of a way of preserving this, even if it ends up with a triple board solution.

The mixer, filter, i.f. sections, and full-wave detector are grouped together on a section of the board 55x100mm. It would be relatively easy to separate this area from the rest and remove the full-wave detector, to become a stand-alone board. It would have r.f. and local oscillator coaxial cable inputs, ground, +10V, and a.g.c. input, and have a 'twisted pair' for the i.f. output.

Similarly the LM324 as a supply regulator and a.g.c. generator, together with the audio amplifier circuitry is another obvious group, with full audio and variable audio input, ground, +13.5V input, +10V output, a.g.c. control voltage output, and loudspeaker output. This approach leaves the carrier oscillator and product detector separated as it was in the previous model, with the surplus board as a starting point.

Obvious Option

An obvious option, is to disable the carrier oscillator on the single board unit and remove the full-wave demodulator. I would then bring the i.f. signal out from the last i.f. coil on a twisted pair and couple it to the carrier oscillator demodulator board of the previous model.

Alternatively, I can revert to the previous two-board development model and make a new carrier oscillator and demodulator board trying the S042P solution first. Then (perhaps) try a breadboard demodulator with the dual-gate m.o.s.f.e.t demodulator.

When I find the best option, then comes the tricky job of creating a stable layout! I hope that the new version will be the last. If that's the case, then in the next *DIBD* column in *PW,* the receiver will be finished, fully documented, and available in kit form.

73

Tony G4CFY

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Colin Redwood's

what next?

Colin Redwood G6MXL starts with an apology and then continues with encouraging readers to try satellite operation.

Welcome to *What Next? (WN?)*, where this month I'm starting with an apology. This is because, as sharp-eyed readers may have already noticed, the August 2009 *WN?* bore a totally unintentional similarity to the August 2008 column. Unfortunately, by mistake, the August 2008 manuscript was re-used instead of the August 2009 manuscript.

Again, unfortunately, none of the team spotted that the error until August 2009's *PW* was already being distributed. Please accept our apologies and be assured that we are doing everything we can to prevent this embarrassing error happening again.

Receiving Satellites

In the July issue I looked at the basics of receiving satellites. This month I'm resuming the satellite theme, discussing ways to improve reception of satellite signals, and then looking at ways of transmitting through satellites so that QSOs can take place.

Those readers who tried my suggestions from last month may have heard some downlink signals which were very weak. At best there was probably lots of noise left on the signals, making it difficult to read callsigns, etc. So, what can be done to improve things? Let's take a look.

Antennas With Gain

It's important to make the most of these weak downlink signals by using antennas with forward gain. Likewise, when transmitting on the uplink frequency from the earth, we need to remember that most satellites have a simple receive antenna, so we need to make the most of our radio frequency output.

The 'rubber duck' antenna that comes with hand-held transceivers is unlikely to get a contact. Antennas with useful gain are much better!

The Arrow 146/437-10 dual-band hand-held beam antenna is recommended for beginners to use by many satellite operators (**Fig. 1**). According to Arrow, it has a forward gain of about 10.3dB on 430MHz (70cm) and 4.6dB on 144MHz (2m)

I obtained mine direct from the USA by mail order from **www.antennawarehouse.com** for US$139 plus p&p. I also had to pay import duty and VAT on top of the basic price.

The antenna is very compact, and can be very quickly assembled in just a few minutes without any tools. As supplied, I found that it would even fit into a small overnight suitcase. It comes complete with a 10W diplexer, enabling a feeder from a dual-band handheld such as the Kenwood TH-D7e to be used.

Readers wanting to run more power will need to run separate feeders. With the Arrow handheld antenna it's easy to change the polarisation to get the best results just by the flick of a wrist!

Feeder Losses

Feeder losses at 145MHz – and even more so at 435MHz – can be quite substantial. For example 10m (33ft) of RG58 will lose over half the signal at 435MHz. It will be worthwhile trying lower loss feeder such as UR67, RG213 or better still Westflex 103. However, to help there's a very useful feeder loss calculator on **WH Westlake Electronics** web site at **www.whwestlake.co.uk/**

A pre-amplifier can be useful in overcoming feeder loss on receive and the best place to put it is close to the antenna. However, this isn't always feasible, so if you have a pre-amplifier – try it in the shack if this is easier.

Fig. 1: The Arrow 144 and 430MHz hand-held antenna.

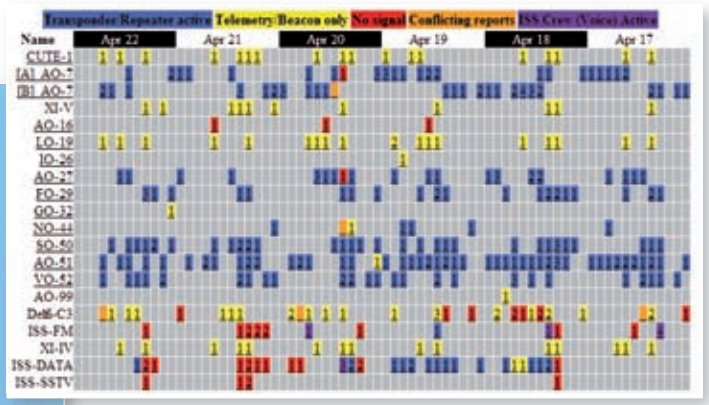

Fig. 2: Visit http://oscar.dcarr.org/ to see reports on various satellites from Amateurs around the world.

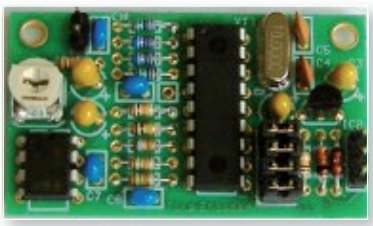

Fig. 3: The CTCSS Board from CS Technology measures just 49mm x 29mm.

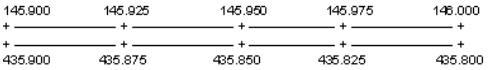

Fig. 4: A non-inverting transponder.

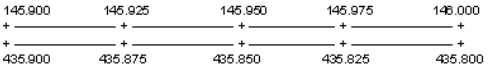

Fig. 5: An inverting transponder.

Colin Redwood G6MXL
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If the pre-amplifier provides a worthwhile improvement in the shack, then you'll see a bigger improvement if you mount it close to the antenna. Be careful never to transmit directly into an un-switched pre-amplifiers as the transistors in them are particularly sensitive!

Satellite Status

If you want to check the status of a satellite, then have a look at **http://oscar.dcarr.org/** This site shows reports of satellites that are likely to be of interest to readers (**Fig. 2**) from the last few days from Radio Amateurs around the world.

Highly Sophisticated?

Unfortunately, it's very easy to get the impression that highly sophisticated and expensive equipment is needed to enjoy satellite QSOs. Whilst there is some truth in this, **it is** possible to get started with little more than a dual-band hand-held f.m. transceiver and a small combined 144 and 430MHz (2m and 70cm) yagi – that can even be handheld initially!

Almost all satellite contacts are made by transmitting from earth to the satellite on one Amateur band, and receiving the satellite on a different band. Most satellites operate in the satellite parts of the 144 and 430MHz bands. In addition some satellites also operate on various microwave bands. (Some Russian Amateur satellites also operated on 28MHz (10m).

Fig. 6: The Kenwood TH-D7e dual-band f.m. transceiver can receive on one band whilst transmitting on the other band – making it ideal for f.m. satellites.

Satellites Using FM

As I discussed last month, satellites such as AO-51 ECHO and SO-50 SAUDISAT-1C operate as single-channel f.m. repeaters. The signal is received by the satellite in a single f.m. channel and re-transmitted in another single channel (usually on another band).

Note: When transmitting **and** receiving the International Space Station (ISS) also operates this way, although sometimes the uplink and downlink frequencies are both in the 144MHz band.

The AO-51 ECHO Satellite

The AO51 satellite has a couple of different modes of operation (that is permutations of up and downlink frequencies). The mode we are interested in is where we transmit from earth on 145.920MHz f.m. and listen on 435.350MHz f.m. (both frequencies are subject to Doppler shift).

The SO-50 SAUDISAT-1C

As I mentioned last month, the SO-50 satellite operates as a single channel cross-band repeater. From earth we transmit on 145.850MHz f.m. and receive on 436.795MHz f.m. (both frequencies subject to Doppler shift). **Note:** When we want to transmit through SO-50 to have a QSO, we need to be able to send (continuous tone coded squelch system) (CTCSS) tones.

To use SO50 requires a 74.4Hz CTCSS tone squelch (tone 03) on its uplink frequency. This tone then switches on the transmitter to give a 10 minute window of operation (a typical duration of a pass).

During the actual QSO you need to transmit using a 67Hz CTCSS tone squelch (tone 01) on its uplink (the frequency you are transmitting on). Sending the 74.4Hz CTCSS tone (tone 03) again within the 10 minute window will reset the 10 minute timer to allow a further 10 minute period of operation.

If you haven't previously used CTCSS tones, then I suggest that you refer to your transmitter's instruction manual. They are becoming increasingly common on UK repeaters, so it makes sense to familiarise yourself with them. If you have an older transmitter which doesn't have CTCSS built-in, there are several suppliers of CTCSS tone kits, including CS Technology. Their web site is at **www.cstech.co.uk (Fig. 3).**

Fig. 7: Kenwood's TS-2000 provides multi-band satellite operation on 144 and 430MHz, while the TS-2000X model also provides a 1.3GHz capability.

Transponding Satellites

Transponding satellites, instead of operating on a specific frequency, take a range of frequencies in one band and convert them and re-transmit them with a similar range on another band (a bit like a transverter). The range of frequencies involved is known as the pass-band of the transponder. These transponders can handle a number of QSOs simultaneously (a bit like you do when you receive multiple PSK31 signals).

Inverting & Non-Inverting Transponders

There are two types of transponders: non-inverting and inverting. Non-inverting transponders **(Fig. 4)** receive upper side band (u.s.b.) signals at the high end of the uplink pass-band and these appear as u.s.b. signals at the high end of the downlink pass band. With an inverting transponder **(Fig. 5)**, to receive that same high end u.s.b. signal, you would transmit a lower side band (l.s.b.) signal at the lower end of the uplink pass band.

Transceivers

Whether using an f.m. or linear transponder, readers will need to be able to listen on one band and transmit on the other. This can be done either by using two transceivers or one if it can transmit and receive on different bands at the same time.

For f.m. operation, many satellite operators recommend the Kenwood TH-D7e **(Fig. 6)** dual-band transceiver. Unlike many hand-helds, the TH-D7e can transmit on 144MHz at the same time as receiving on 430MHz. Just imagine having a satellite QSO with a station in another continent with a hand-held transceiver!

Over the years each of the main 'black-box' manufacturers have made multi-mode transceivers designed with the needs of the satellite operator in mind. These handle both non-inverting and inverting transponders. The uplink frequency is automatically adjusted either up or down as you adjust the downlink frequency for Doppler shift.

Current multi-mode transceivers include Kenwood's TS-2000/TS-2000X **(Fig. 7)** models and the Icom IC- 910H **(Fig. 8).**

The now discontinued FT-726 **(Fig. 9),** FT-736 **(Fig. 10)** and FT-847 models from Yaesu all have facilities for the keen satellite operator. None of the models mentioned can be described as entry level in terms of price, although some bargains do appear on the second-hand market from time to time.

International Space Station

From time to time there are Amateur Radio operators on board the International Space Station. Most operations have a downlink in the 144MHz band using f.m. for either voice or slow scan television (SSTV).
Note: The prediction techniques I discussed last month can also be applied to the ISS.

Operating Techniques

Generally speaking, QSOs on satellites are relatively brief. Chatting about your holiday plans for 10 minutes on a single channel f.m. repeater satellite will mean that nobody else in Europe gets a chance to use the satellite for a whole pass! So keep overs short and to the point (e.g. callsigns, reports and locators).

It's very tempting to run lots of power when transmitting into a satellite. This is certainly **not** good practice with a linear transponder satellite! The greater the power used by an uplink station, the stronger the signal will be received by the satellite. However, strong up-link signals will be transmitted back to earth with greater power on the downlink, and hence there will be a greater drain on the batteries in the satellite.

Fig. 8: Icom's IC-910H is a popular transceiver for satellite operators.

Fig. 9: Yaesu's discontinued FT-726.

Fig. 10: The Satellite switch on Yaesu's discontinued FT-736. Note the Normal and Reverse positions for non-inverting and inverting transponders respectively.

The satellite batteries are only charged by solar panels whilst the satellite is on the sunny side of the earth – if the panels are also facing the sun and not in the shadow of the satellite. So, it's good practice when using linear transponder satellites to listen for the satellite beacon or telemetry (data on the condition of the satellite) and make sure that your transponded signal is no stronger than the beacon or telemetry.

Takes Time!

When making contacts through a satellite well out into space, it takes time even for a radio signal travelling at the speed of light to reach the satellite and return to earth. If you're listening with headphones for your signal being transmitted back to earth (a good practice), as you speak you'll hear your voice delayed by a fraction of a second.
Note: The natural tendency is to reduce the speed at which you speak in the expectation that the sound of your voice will catch up. As it doesn't, you may find yourself speaking progressively slower!

Once you get hooked on Amateur Radio satellites, you'll soon discover that there are numerous ways of improving your station still further. Some of these includes low-loss feeder and the pre-amplifiers I've already mentioned.

Other improvements can include looking at the polarisation of the antenna and the use of electrical rotators that not only move directional antennas around 360°, but also up and down (elevation), keeping the antenna pointing at the satellite at all times during the pass.

Join AMSAT

If you use Amateur Radio satellites, please be prepared to pay something to the organisation which designs, builds and launches them – AMSAT. Enquiries and application forms for membership should be sent with an SASE to: **Jim Heck G3WGM, *Badgers*, Letton Close, Blandford Forum, Dorset DT11 7SS,** E-mail: **g3wgm@amsat.org**

To join AMSAT, a minimum donation of £15 per year is required (the maximum is as much as you can afford). If you prefer, this can be paid online at **http://www.uk.amsat.org** Satellites don't get built for nothing. Part of all donations goes towards building, launching and support funds for Amateur satellites.

Not Interested?

No doubt there will be some *WN?* readers who won't be interested in Amateur satellites. However, I would ask that these readers to show consideration to their fellow Amateur Radio enthusiasts and avoid transmitting in the parts of the bands allocated in the band plan for satellite operations. For example, the 145.800MHz to 145.999MHz part of the 2m band is reserved for satellite QSOs.

As we have seen, sometimes this part of the band can seem very quiet, even when a satellite is passing overhead. Please co-operate with those who are keen on using Amateur Radio satellites.

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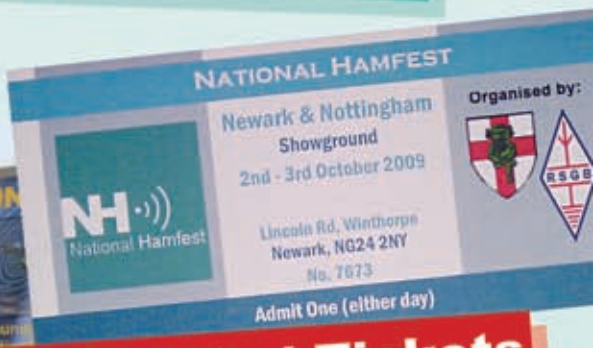

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The Rev. George Dobbs'

carrying on the practical way

The Rev. George Dobbs G3RJV says he's got, "Something for almost nothing!", after you've read the quotation!

"Light gives of itself freely, filling all available space. It does not seek anything in return; it asks not whether you are friend or foe. It gives of itself and is not thereby diminished."
Michael Strassfeld (American Rabbi and Writer)

Some years ago at the end of a visit to the Dayton Hamvention in Ohio in the USA, I visited the Henry Ford museum in Detroit. In his heyday, Henry Ford had added a very interesting selection of historically important buildings to the museum. These include a rebuilding of the Wright Brothers original cycle shop and moving the Thomas Edison Menlo Park laboratory from New Jersey to Detroit. The latter was fascinating and I have since returned to see it again.

On that original visit, one of our group was **Norman Field G4LQF**, who is quite an expert on Edison. In fact, the guide in the main laboratory room was so impressed by his questions, that after the main visitors had left she opened the "don't go any further" ropes and allowed us to have a closer look. An abiding memory is sitting in the actual chair in front of the mercury tube where Edison conducted his first carbon filament incandescent light bulb experiments.

The current trend to replace incandescent bulbs with compact fluorescent lamps (c.f.l.) has resulted in my workshop being as well lit as a Dickensian counting house. I must confess to adding extra lighting in the form of a 'Daylight' bulb, being an incandescent bulb, of course! Incidentally, I can commend these bulbs to those who require extra lighting for their Amateur Radio construction.

I suspect, and hope, the period of c.f.l. lighting may soon be drawing to a close to be replaced by a new generation of light emitting diode (l.e.d.) lighting. The British experimenter **H. J. Round**, who discovered the electroluminescence effect in 1907 using a crystal of silicon carbide and a cat's-whisker detector, could never have dreamed of the universal usage and development of the l.e.d.

Light Emitting Diode System

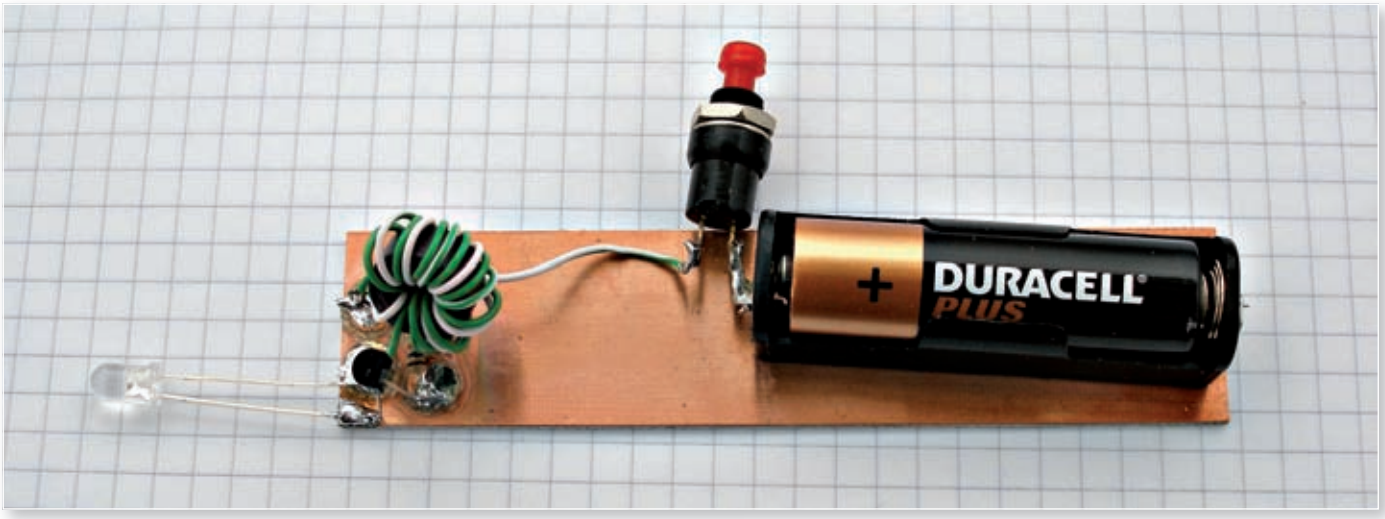
Some years ago, in an earlier incarnation of this column, I discussed making a 12V l.e.d. lighting system to use with a portable Amateur Radio station. It was nothing special, just a few series l.e.d.s and a limiting resistor. At that time white l.e.d.s weren't readily available and I suggested the use of bright l.e.d.s that emitted a very pale blue light – the type that is used in the cheaper l.e.d. torches.

These days a whole variety of white light l.e.d.s are available. I forget what my original portable shack lights were like but I suspect it was something like **Fig. 1a**.

However, I think this is a good time to pause and think of the some of the l.e.d. basics. Usually, l.e.d. ratings are specified by current rather than voltage. The common recommendation is to run each l.e.d. at a current around 20 to 30 milliamps (mA), although many l.e.d. torches run them at 50 or 60mA. In practice, they could be run up to about 100mA but this will result in a shorter life, albeit with greater light output.

So, some method of limiting the current is required. An easy method would be to have the correct number of l.e.d.s in series to match the supply voltage. White l.e.d.s have a voltage drop of some 3.6V (the voltage drops vary with the colour).

The diagram, Fig. 1a, shows a three l.e.d. version and a six l.e.d. version of the l.e.d. light. In **Fig. 1b**, each set of three white l.e.d.s is connected in series with its own series limiting resistor. The total voltage drop across each set of the three l.e.d.s will be 10.8V, which is a bit low for our 12V supply, so a series resistor (R1, 2 or 3) has to be added.



Using a small section of p.c.b. material as the 'body' of a torch.

Rev. George Dobbs G3RJV
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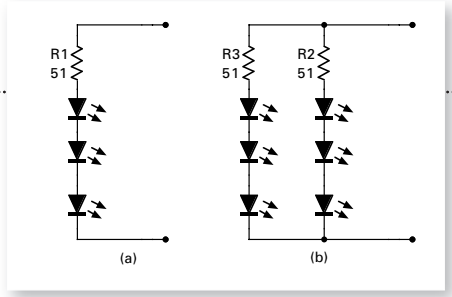


Fig. 1: A simple three l.e.d. light needs just three l.e.d.s and one limiting resistor, but when using more l.e.d.s, each chain of three l.e.d.s should have its own limiting resistor.

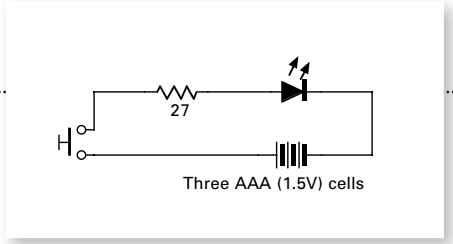


Fig. 2: Using three AAA cells and a single white l.e.d. with a limiting resistor makes a useful bright torch with a good working lifetime. It would also work with three button cells, although with reduced brightness.

Working out the required resistance is just an application of Ohm's Law; V=IR (the voltage (V) is equal to the resistance (R) multiplied by the current (I) flowing through it).. For the 12V supply we can use no more than three white l.e.d.s. The voltage drop is 10.8V, so the additional 1.2V must be dropped across R1. So, from a slight re-arrangement of Ohm's Law: R=V/I or 1.2V/0.025A (25mA), giving a resistance of 48Ω. So, a 47 or 51Ω (nearest common values) series resistor is required. For a current of 30mA a 40Ω resistor would be required – the nearest preferred value being 39Ω.

Using six l.e.d.s as in Fig. 1(b) requires a second series of three l.e.d.s with their own series resistor. Connecting l.e.d.s in parallel with just one series resistor is bad practice. If the l.e.d.s require slightly different voltages, the lowest voltage l.e.d. could be damaged by the larger current flowing through it. Resistors are cheap, so it's not worth the risk! Each resistor only dissipates about 27milliwatts (mW) so a 0.25W resistor will do the job.

A string of three or six white light l.e.d.s mounted in a transparent container and configured as in Fig. 1, could be connected to the 12V supply in a portable station to provide cheap and low energy consumption lighting for operating. For those who simply want to make their own l.e.d. light for whatever purpose the circuit in **Fig. 2** could be used. Here, three 1.5V AAA cells are used in series to power one white light l.e.d. This is a poor man's l.e.d. torch and would give many hours of illumination from one set of batteries.

Readers can work out their own combinations of power source and l.e.d.s. But remember it requires a minimum of 3.6V to illuminate one white light l.e.d.

Jim Stafford W4QO

Earlier I mentioned the Dayton Hamvention. On my visit the same event in May 2009, I met **Jim Stafford W4QO** an avid QRP enthusiast, who I have known for several years. Jim persuaded me to buy a small kit produced by his local club the **North Fulton Amateur Radio Club** in Georgia. The club had made up a simple to kit to sell for funding Amateur Radio books at the local town library. Much to my surprise the kit was a version of the *Joule Thief*.

Wanting to help his local radio club, I bought a kit and built it when I returned home. "So, what", you may ask, "is the *Joule Thief*?" To answer the obvious question, I first met the circuit in the *Trail-Friendly Radio* column written by **Richard Fisher KI6SN**, in *World Radio* online. It seemed an interesting idea so I looked it up using the Google search engine and found numerous web references to the *Joule Thief*, including at least three *You Tube* videos of how to build it!

Incidentally, as far as I've been able to find out, the *Joule Thief* is a British idea and first appeared as a reader's suggested circuit in *Everyday Practical Electronics*. Since that time it has appeared in several incarnations on many hobby websites.

The *Joule Thief* is a simple blocking oscillator circuit than enables a white light emitting diode (l.e.d.) to be fully illuminated using a single 1.5V AA cell. Even one that's too under powered to perform the normal functions of a 1.5V battery. In practice the *Joule Thief* will still illuminate the l.e.d. when the battery voltage is reduced to as low as 0.35V. Rejected AA or AAA cells can light up the l.e.d. when they are useless in other applications – a very eco-friendly circuit!

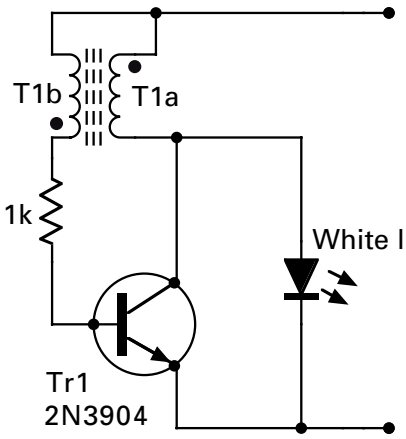
But why call it the *Joule Thief*? The answer is that the Joule is a unit of energy. A Joule (symbol J) is the derived unit of energy in the International System of Units. It's the energy exerted by a force of one Newton acting to move an object through a distance of one metre in one second.

The electrical equivalent is the energy required to move an electric charge of one coulomb through an electrical potential difference of one volt; or one *coulomb volt* (CV). (This relationship can be used to define the volt). It's also the energy required to continuously produce one watt of power for one second or one watt second (Ws) (compare this to the kilowatt hour of 3.6MJ or 1kW for 3600 seconds).

Basic Circuit

But let's forget about the physics for the moment and look at the basic circuit of the *Joule Thief* shown in **Fig. 3**. A 2N3904 *npn* transistor is the only active component. The circuit should work with a variety of similar transistors so, use whatever you have to hand. It is a very basic oscillator, the feedback to maintain oscillation is provided by a transformer, T1, which is bifiliar wound – but fear not as both the winding and the connections are very simple!

Once oscillation takes place, the transistor is switched on and off very abruptly and this change in magnetic flux in the windings produces a back e.m.f. (electromotive force) that's a much higher voltage than that being supplied to the circuit. But this isn't creating something for nothing and defying the laws of physics! The



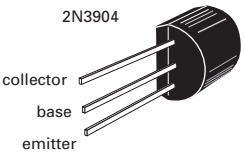


Fig. 3: Using the Joule Thief blocking oscillator circuit allows a white l.e.d. to be driven from a single, otherwise 'dead', 1.5V battery.

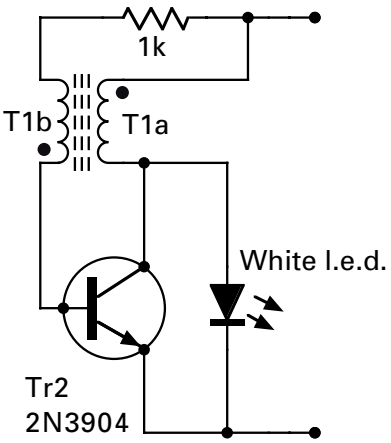


Fig. 4: An alternative layout for the Joule Thief circuit.

voltage will be higher but the average current supplied to the l.e.d. will be lower than the current drawn from the battery.

The higher voltage created enables the l.e.d. to illuminate. The voltage may be 10V or even more but the white l.e.d. has a characteristic voltage of about 3.6V. The l.e.d. begins to absorb energy at about 3.2V and the voltage across it does not get higher than 3.6V.

Winding The Transformer

The most difficult bit of the circuit is winding the transformer using toroidial core made of ferrite material. In my original, built from the kit, an FT50-61 core was used. The 'FT' designation shows that the core is made from ferrite material. It would probably work with any similar ferrite core but wouldn't work using the iron powder cores like the T50-2 or T50-6.

A bifilliar winding means that two wires pass through the core for every winding. The wires must be insulated, or enamelled, to prevent shorted turns. The kit provided small gauge *pvc* insulated wire although I used 26s.w.g. enamelled wire on a later version. Note: It's common in bifilliar windings to twist the wires together and then wind them like a single wire. In this application the two wires were wound parallel (side-by-side) through the core.

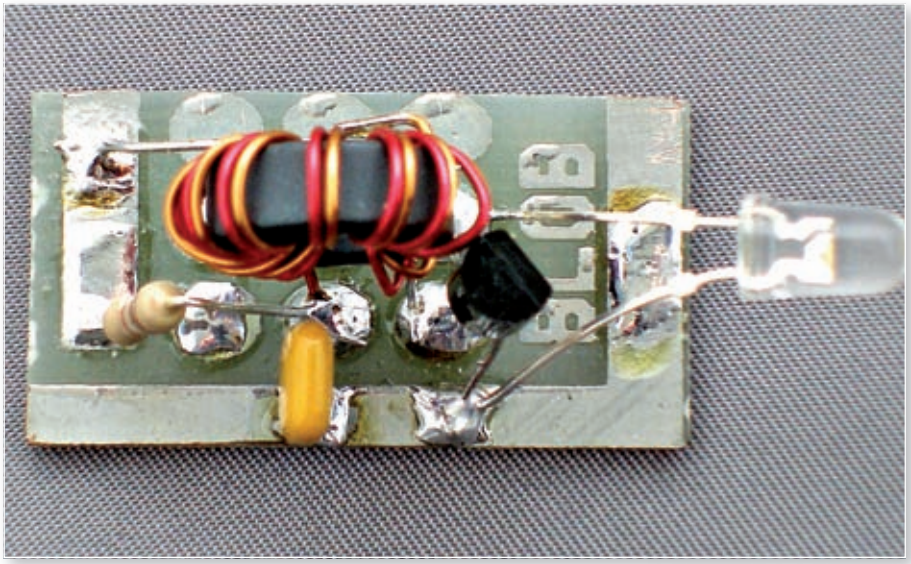
To wind the transformer take two pieces of wire about 300mm long and wind them, side by side, through the core. Each pass through the centre of the core represents one turn. It is a tight fit with the insulated wire but easier with the enamelled wire. Now for the important bit. Note that in Fig. 3, that one end of each winding has a large dot. The dot marks the start of the windings.

Suggested Improvement

The diagram, **Fig. 4** shows a suggested 'improvement'. The 1kΩ resistor is connected between the feedback winding and the positive of the supply. This seems to transfer the energy of the feedback winding directly to the base of the transistor. The supply current will drop and the brightness will increase. I also tried adding a 10nF capacitor between the junction of T1b and the resistor – but this made little difference.

In the *Joule Thief* circuit the two sides of the transformer must be out of phase to facilitate regenerative

A miniature version without a p.c.b. The two pin on the plug at just 5mm apart so, you have an idea of the size of the unit.



Using enamelled wire for the transformer, but this time on an off-cut from an old p.c.b.

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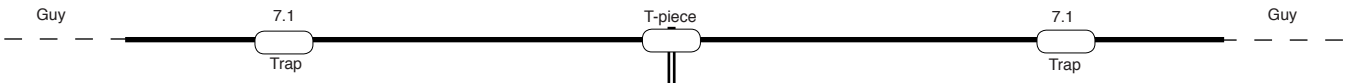

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feedback, so it's essential to connect them correctly. Thankfully this is very easy! Separate the two ends of the windings either side of the core. Use the Ohms scale on a multimeter to determine the beginning and end of each winding. Next, join one end of one wire from one side of the winding to the end of the other winding on the opposite side of the core. This is the junction that goes to the positive side of the battery. The other two single wire ends aren't critical as either can go to the resistor or the transistor collector.

Once the transformer, **Fig. 5**, is sorted out the rest of the circuit is very simple. It's essential to observe the correct polarity of the l.e.d. The longest lead of the l.e.d. goes to the positive side, where T1a is connected to the collector of the transistor.

The choice of l.e.d. is simple. A 5mm, or even 3mm, bright white l.e.d. should work well in the circuit.

Transformer T1 details
'Full size' 10t insulated (enamelled) wire bifilliar wound on an FT50-61 core

'Small size' 20t 36s.w.g. (enamelled) wire bifilliar wound on a ferrite bead

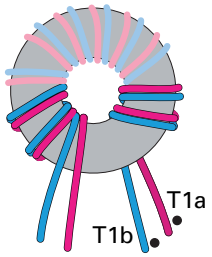

Fig. 5: How the windings for the transformer are created. See text for more detail.

These are available from all major electronic component outlets and my first prototype was tested using one the AA cells rejected as dead from a battery shaver. It was only capable of delivering about 0.7V but the l.e.d. glowed very brightly.

A Challenge

For those who like a challenge, it's possible to make a miniature version of the *Joule Thief* that could be fitted into a solar light or even a small single cell torch (I spotted this idea on one of the many *Joule Thief* websites). This small version uses a transformer wound on a ferrite bead. With patience I managed to get 20 bifilliar wound turns through a ferrite bead and built the circuit 'ugly style' around the leads of the transistor. The input voltage is taken to two header pins – it works well but isn't easy to make!

So, there it is – the *Joule Thief* is almost a 'something for nothing' idea! Battery cells that have been rejected as dead can illuminate white l.e.d.s until no more power can be drawn from them. Great fun and it's ecologically sound!

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
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I must offer my apologies that there's so little space for *Club News* this month as we've had so much to pack in the magazine. But here are just a few items of interest that we're aware of. *Editor*.

If you're going on holiday to Weston-super-Mare why not visit **Weston-super-Mare Radio Society** (WSMRS) a club that meets Meets every Monday at Devonshire Road social club BS23 4LG at 8pm. Main meetings, every 3rd Monday of the month, include talks by guest speakers. More details of activities and events are available from their secretary **Kirstie Jones M3UWI**, on **(01934) 613094** or via E-mail: **Kirstiejones1@msn.com** or you could visit their website at: **www.radioclubs.net/wsmrs/**

Thornton Cleveleys ARS
The committee and members of Thornton Cleveleys ARS congratulate **Daniel Wood** on passing his Foundation licence exam just a week after his 13th birthday. Not unusual perhaps, but Daniel, who has a form of autism, which makes learning difficult, when issued with his new callsign of **M6HUM**, became the fourth generation of his family to be licensed. Daniel's dad **Roger G0AJQ**, grandparents **Jen G8YOK** and **Dave G8KBH** are very proud of Daniel as would have been his late great-grandfather **Hap G1TXV**. Daniel was helped and taught by members of the club.
Upcoming meetings are: September 21st: Enigma by Ted & Ray, 28th: The Wellington Bomber, a video and talk by John G4FRK, October 5th: it's the Construction Contest!

South Bristol Amateur Radio Club
Now meet on Thursday evenings at 8pm at Novers Park Community Centre, at the rear of 122-124 Novers Park Road, Filwood, Bristol BS4 1RN.
During September the meetings are: 10th: 'What is D-Star?' a talk by Mark G4SDR, 17th: Members are asked to bring alog their photographs from their archives, and on the 24th it's an 'On The Air' evening.

Gloucester Amateur Radio & Electronics Society
Meetings for the club are as follows: Sep. 28th: Informal Evening, Oct. 5th: LUNDY, a talk by Brian G4CIB, Oct. 12th: Sale of 'Junk, and Books', Oct. 19th: Operating Club Equipment and on Oct. 26th: it's an Informal Evening. And don't forget Morse Practice with **Mike G0VWH**. More details may be found at: **www.G4AYM.ora.uk**

Lincoln Short Wave Club
The Club meets every Wednesday 8 p.m. at the BSA Social Club, Village Hall Lane, Aisthorpe, Lincoln, LN1 3SJ and some Saturday mornings in the shack for Foundation/ Intermediate course tuition and to air the club callsigns G5FZ and G6COL. Further details of the club can be obtained from **Pam Rose**, Secretary, on **01427 788356**, E-mail: **pamelagrose@tiscali.co.uk** or by visiting our website **www.g5fz.co.uk**. Details of our September meetings are as follows: Sep. 2nd: Final arrangements for SSB Field Day, 9th: QSL Card Design by Darren G7WAP, 16th: A night on Air and natter night, 23rd and 30th: Final Arrangements for National Hamfest on October 2nd and 3rd.

Horndean & District Amateur Radio Club
The club will be running its next Foundation Licence course and exam in October in the Waterlooville area. It is suitable for all ages, and success will enable you to become licensed for operating on the bands internationally allocated for Amateur Radio. Pre-registration is essential, and more details can be obtained from the club secretary, **Stuart Swain**, on **023-9247-2846** or E-mail: **stuart.swain@hotmail.co.uk** The club's website, for information about the club, its activities and about the hobby is: **www.hdarc.co.uk**

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Extra DC lead £17.00
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6m/2m70cm + wide RX. An amazing 6W water proof hand-held.
Available in black or silver
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2m/70cm Tx Rx:- 500kHz-1GHz. Includes:- battery/charger.
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New model. SALE PRICE **£345.99**

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(with up/down). Many amateurs (over 4000) have been pleased with it's performance. Includes 8-pin round Yaesu mic lead. Icom/Kenwood & other leads available. Phone (£19.99 each).
Replacement foam windshield £3.00 + P&P.

Truly remarkable audio on both SSB & FM/AM

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PSUs

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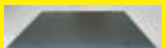

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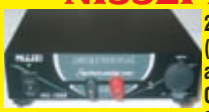

28A at 13.8V yet under 2kgs. (H 57mm, W 174mm, D 200mm approx). Fully voltage protected. Cigar socket & extra sockets at front/rear. Ultra slim.

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Features: ★ Over voltage protection ★ Short circuit current limited ★ Twin illuminated meters ★ Variable voltage (3-15V) latches 13.8V ★ Additional "push clip" DC power sockets at rear. Dim'ns: 256(W) x 135(H) x 280(D)mm.

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MFJ-260C 300W dummy load £49.99
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Easy to use ATU.

Fully automatic (1.8-30MHz). 300W SSB.
£235.99

MFJ-949E

WOW **£175.99**

● 1.8-30MHz 300W ATU ● Large cross needle meter ● 30/300W PEP power meter ● VSWR ● 3-way antenna selector ● Internal balun + dummy load.

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SGC MAC-200 New auto tuner 1.8-54MHz (200W) wire, vertical, dipole. You name it. (5 selectable outputs).
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A superb performance all mode synthesized world receiver with true SSB and 40Hz tunning for ultra clean reception. Other features include RDS facility, 306 memories and WFM. Incl's case/earphones/wind-out antenna. A truly remarkable receiver, especially on SSB – you'll be amazed.

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★ Selectable tuning steps
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(Requires ≈ 1m square cemented area).

(Can be hand/or pump errected) **£1199.99** Del £40.00.

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A superb (diamond quality) 6 band trap verticle antenna with trap radials – "rotary" trap system allows "flat wall" mounting. 80m/40m/20m/15m/10m/6m. 200W SSB, HT 4.6m (15ft tall).

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"We've sold 100s all over Europe"

★ 1.8 - 60MHz HF vertical ★ 15 foot high ★ No ATU or ground radials required ★ (200W PEP).

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Standard & Deluxe G5RV

P&P on either full/half size £7.50

Half size 51ft (now includes heavy duty 300Ω ribbon)	£24.95
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2 way CX-201 'N' (0-1GHz) 'N' £24.95

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4 way CX-401 'N' (0-500MHz) 'N' £89.95

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DC-1 Standard 6-pin/20A fits most HF £22.00

DC-2 Standard 2-pin/15A fits most VHF/UHF £10.00

DC-3 Fits Yaesu FT-7800/8800/8900, etc £17.50

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MH-4 4 pin fits older HF, etc. (4-pin round) £34.99

MH-31A8J 8 pin modular £34.99

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True military spec real UK coax

RG-58 Military spec x 100m.

£49.99 or 2 for £90.00

Coax stripping tool (for RG-58).....£4.99

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£129.99/100m or 2 for £229.99

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

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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 £10.00 or 6 for £25.00 (P&P £4.00)

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

£64.99 each. TWO FOR £125.00 DEL £15.00

NEW SWAGED MAST SETS

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

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18 foot – 6 x 3 foot (1½") slot together ally sections.

£42.99 each. TWO FOR £73.99 DEL DEL £13.00

NEW CAR BOOT MAST SET

Superb 18 foot (6 x 3 foot sections) that slot together.

Dia: 1¼" ideal to take anywhere.

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Heavy duty die-cast hanging pulley. Hook and go!

£24.99

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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

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

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

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500kg brake winch. BARGAIN PRICE

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DC High current distribution unit.....£59.99

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High current distribution unit £99.99

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£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

QS-300

A fully adjustable deluxe desktop stand for hand-helds. Includes BNC to SO-239 lead.

£19.99 P&P £4

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A superb, no mess, quick fit in-car holder (fits airvent) for hand-helds.

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Heavy duty universal mount. Includes 5m cable

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Heavy duty rotator for HF beams, etc. Supplied with circular display control box and 25m of rotator cable.

WOW **£295.00**

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GC-065 thrust bearing.....		£50.00
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Quality rotator for VHF/UHF. Superb for most VHF-UHF yagis, 3 core cable required. 3 core cable 50p per mtr.

OUR PRICE **£79.99**

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BNC 40cm flexible whip for the ultimate in gain. **£29.99** P&P £4.00

Tx:- 2m + 70cm (Rx:- 25MHz-2.9GHz).

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SMA 40cm flexible whip that is ideal as replacement. Tx:- 2m + 70cm.

Rx:- 25MHz-2.9GHz **£34.99** P&P £4.00

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No tuning required

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70cms/10 element	No tuning required	SO-239 feed..... £44.99
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X-300 GF 144/70,6.5/9dB (3m).....	£69.95
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DC-1000MHz (400W through power). SO-239 fitting.

£22.95 P&P £3.00

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£14.99 P&P £3.00

MS-107K Fits Kenwood handies.

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10 foot (collection only) 2".....	£29.99
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1m	1¾" £12.50	2" £15.00	Longer lengths
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New: 50m roll 'PTFE' coated, stranded antenna wire.	£19.99 P&P £7.50
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8-nut universal clamp (2" to 2")	£7.99
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30m pack (4.4m) 480kg B/F nylon guy	£12.50
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Nylon dog bone insulators	£1.00
Very large nylon insulators.....	£2.00
PL-259 (small of large entry)	£1.50
N-type plugs (high quality).....	£4.50
1¼" 6 foot ally poles.....	£13.00
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Phil Cadman's

valve & vintage

All-band antennas, talking drain-pipes and low voltage valves are all under discussion with Phil Cadman G4JCP .

Warm summer greetings from the *Valve and Vintage* 'shop'! Remember, now is an ideal time to work on antennas, while the weather is fine and sunny (other garden chores permitting, of course). So here's something to get you 'in the mood'.

Louis Varney's G5RV antenna continues to prove a subject for debate, despite it now being over 50 years old. The design first (I believe) appeared in print in the July 1958 issue of the *RSGB Bulletin* (the forerunner of the **Radio Society of Great Britain**'s *RadCom* magazine). Since then much has been written about the antenna, and it's been modelled and 'improved' many times.

Whilst looking through some old copies of *PW*, I came across an article in the January 1957 issue by **O.J. Russell G3BHJ**. Subtitled *Compact and Multiband Aerials,* it was part of the *Transmitting Topics* series. The first aerial G3BHJ mentions – given the name **All Band Special** – looks remarkably like G5RV's design, but it has a 100ft (30.3m) top and an open wire feeder length of 38ft (11.6m). I'm keeping to the original imperial measurements as most articles about the G5RV antenna give its dimensions in feet rather than in metres.

There's no mention of the 38ft feeder being for matching purposes. Instead, the feeder is assumed to be connected either directly to the transmitter, or to a matching unit. An accompanying table gives the tuning requirements – series or parallel – for all pre-WARC amateur bands from 1.8MHz to 28MHz. The All Band Special seems to have been widely known because G3BHJ talks of 'previous articles', so I wonder if this antenna could have inspired Louis G5RV to publish his design?

Either way, it might be worth trying the *All Band Special*, particularly as it includes 1.8MHz. Please note however, that a matching unit is essential, and it must have a balanced output. I'd guess the impedance looking into the 38ft feeder might be pretty extreme on some bands, so I'd personally rule out those antenna matching units that use torroidal ferrite baluns.

Low-Voltage Valves

My mention last time about low voltage valves designed for use in car radios brought back memories for one *PW* reader: Mr. **H. King** who wrote from the village of Rhewl in North Wales. In the late 1950s and early 1960s, he worked for a large concern dealing with car radio fitting and repair. Naturally he was familiar with those radios which used vibrator h.t. supplies, and the newer hybrid sets which used 12V h.t. valves and germanium transistors.

One day, after a particularly sleepless night (child trouble!), he accidentally put a 12V ECH83 into a vibrator set instead of an ECH81, yet all seemed well. He later tried both types of valves in both types of sets and came to the conclusion that there was no difference. Carefully dismantling two 'dud' ECH81 and ECH83 valves, he measured the physical dimensions of the electrodes, and again found no difference.

Mr. King also told me a rather interesting tale about a talking drainpipe! One day a group of young children were laughing around a gable-end drainpipe, from which emanated music and voices. The sounds – which were only heard on dry days – were 'cured' by scraping away the rust from the cast-iron gutter. The theory was that the gutter and long drainpipe picked up the local BBC transmitter, and the rusty joints formed a crude diode detector. The induced current then somehow energised the iron pipe, so producing the sounds! Thanks very much indeed for that intriguing tale Mr. King. Has anybody else had a similar experience?

On the subject of low voltage valves, I have an apology to make. Last time I said that getting sufficient audio power is a problem at low anode voltages. Well, that's true if you need 1W or more, but if 100–200mW will suffice, then there's no real difficulty, as I've recently discovered.

For A Change

Deciding to practise what I preach (for a change!), I thought I'd try adapting

Fig. 1: A typical a.c./d.c. 'short' superhet radio of the early 1950s (it's a Bush DAC41).

one of my a.c./d.c. sets to work at low voltages. The radio in question was a Bush DAC41 – see **Fig. 1** – a 'short' superhet made in 1954. The term 'Short' in this case means simply that the set only has a frequency changer, an intermediate frequency (i.f.) amplifier and audio output valves (plus rectifier). Normally there would be an audio voltage amplifier between the detector and the output valve, but in a short superhet, the a.f. amplifier valve isn't present. While saving money, the resulting setup can be a set that's lacking in sensitivity.

The diagram, **Fig. 2,** shows the power supply circuit of the DAC41 as taken from its *Trader* service sheet. It's basically quite conventional but the filter components L16, L17 and C30 are often missing, and there's the slight complication of the dial (scale) lamps being wired in the chassis return. By the way, I chose an a.c./d.c. set because of the ease with which it's possible to separate the heater supply from the h.t. supply. In addition, the valves are optimised for use with relatively low h.t. voltages, although nowhere near as low as the voltages I wished to try!

Isolating the heater supply from the h.t. supply involved simply disconnecting the flying lead mains adjustment wire. I could then apply the correct heater voltage to the valves while connecting a separate (adjustable) d.c. supply to the +ve terminal of C29. Bearing in mind that this set's nominal h.t. voltage is 140V, I was very surprised to find that the radio began working with an h.t. of just 16V!

Not Much Audio

While the set was very insensitive and there wasn't much audio, it **did** work, at least on Medium Wave and Long Wave. Increasing the h.t. to 24V brought an improvement in both sensitivity and audio output, making it possible to receive strong stations at reasonable volume. Still nothing on shortwave though. Finally, I tried 50V and that brought a further marked improvement, so much so that it became difficult to tell whether the set was working on normal voltage or reduced voltage. And I could hear shortwave stations too!

My hasty experiment had proved that 50V was perfectly sufficient for this particular set. Despite the relatively low audio power available

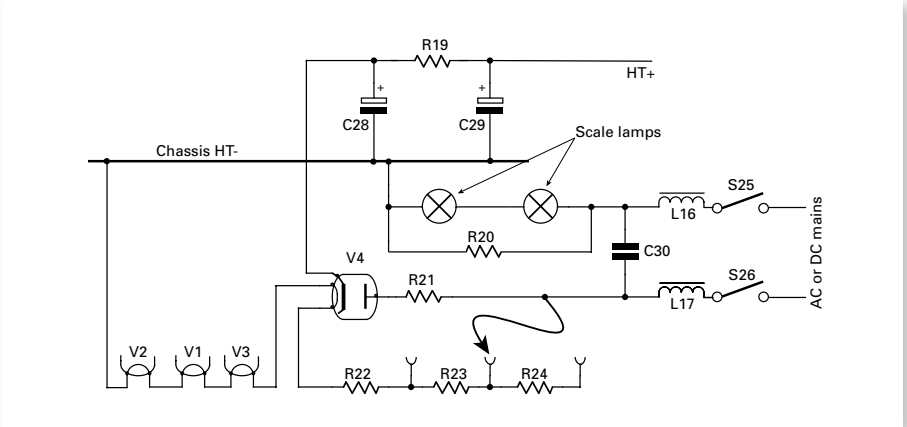

Fig. 2: The 'power supply' circuitry of the DAC41 reproduced from the service manual.

– probably no more than 200mW – it was more than adequate for listening in a normal domestic environment. Of course, these old sets do have reasonable sized loudspeaker drive units, and the size of the cabinet undoubtedly helps.

Only after I had returned the kitchen table to its normal use did I realise that running a.c./d.c. sets at low voltage is a excellent way of bringing them back into service. As their chassis is connected to one side of the mains supply these sets are very much frowned on in these safety conscious times. Running them from a mains isolating transformer makes them much safer, but such transformers are relatively costly. Low voltage transformers are cheaper and easy to obtain, and using a low h.t. makes the sets far safer than even when using an isolating transformer. Plus there is one other significant advantage!

Power Transformers

Mains radios which don't have a power transformer use resistors to drop the mains voltage to that required by the series connected heater chain. In the case of the DAC41, the four valves need a total of 107V. The difference between the mains voltage and the total heater voltage is absorbed by mains dropping resistors R22, 23 and 24. The latter two can be selected by a flying lead, thus allowing the set to operate on mains voltages between 200V and 250V. Remember the heater voltage (or current, in the case of series heater valves) should ideally be held within 5% of nominal.

All well and good, but with a mains supply of, say 240V, the dropping resistors will be dissipating a total of 13.3W. The valves in the DAC41 (and in almost all UK a.c./d.c. sets) have 100mA heaters: multiplying (240-

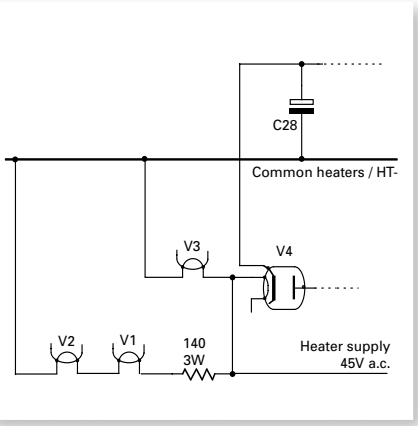

Fig. 3: The heater chain modified to work with 45V a.c. can also save some power too.

107)V by 0.1A gives 13.3W. Supplying the set with the correct heater voltage avoids this wasted power. In addition, running the set with a low h.t. significantly reduces the dissipation in the audio output valve. Moreover, replacing the valve rectifier with a silicon diode (sacrilege, I know) saves both its heater power and the (h.t.) voltage drop across the valve.

To convert the DAC41 to low voltage operation and keep to a maximum 50V a.c. (or thereabouts) supply, we need to split the heater chain as shown in Fig. 3. Exactly where the chain needs to be cut depends on the number of valves in the chain and their heater voltages. In Fig. 3, V2 (UBF80) drops 17V, V1 (UCH42) drops 14V, and V3 (UL41) drops 45V. The rectifier V4 (UY41) drops 31V, but as it's not needed, we can effectively ignore it.

Clearly, the UL41 dictates the minimum voltage needed to run the set. Valves V2 and V1 only require a total of 31V, hence the additional series resistor shown in Fig. 3. Its value is found by dividing the difference in the two voltages above

by the heater current. A 140Ω resistor would be spot on, but a 150Ω 3W wirewound resistor would have to do in practise. Note that sets with more than four valves may need the heater chain split into three parallel circuits, resulting in a combined heater current of 300mA.

Perfectly Adequate

Half wave rectifying the 45V a.c. heater supply will provide a perfectly adequate h.t. supply. A 200V peak inverse voltage (p.i.v.) or more 1A rectifier, followed by a 220μF 100V electrolytic capacitor will do. The output is connected to the h.t. feed point in the set, which in the case of the DAC41, is the +ve terminal of C29. Generally, the new h.t. supply can be connected at the point where the audio output transformer is connected to the h.t. rail. Always put the new power supply in an external enclosure so the mains is kept safely away from the set itself.

I appreciate that 45V is a bit of an odd voltage, so it's perfectly acceptable to use a 50V (25-0-25V) transformer and a series resistor. Remember the total heater current is 2x100mA and we need to drop 5V. There's no need to take the h.t. current into consideration as the rectifier can be connected directly to the transformer. Alternatively, a 40V (or 20-0-20V) transformer may give close enough to 45V to be useable. Just ensure the heater current through each valve is between 95 and 100mA (I'm loathe to run the heaters over 100mA).

Saving power isn't that much of an issue with the relatively large DAC41, but take a look at the small table-top radio shown in **Fig. 4** and **5**. This is another of my a.c./d.c. sets and is an ideal candidate for conversion. In normal use, approximately 36W is dissipated inside the small case, and the set runs very hot. I estimate that after conversion (using a 50V a.c. supply) the dissipation would fall to around 12W. The two thirds decrease in power should result in a very much cooler running set.

A low voltage conversion is one way to bring an otherwise potentially dangerous a.c./d.c. radio into everyday use. The reduction in operating temperature and the under-running of both valves and passive components, means that the set should last a very long time. And as I've said before, there are still plenty of valves available so why not use them, because one day they'll lose their vacuum and become useless museum pieces.

Two points before I leave this topic: if designing from scratch, then use TV-type, 300mA series heater valves. Their heater voltages are lower, and there's a greater choice of valve types. And they're generally cheaper too. Secondly, if restoring a converted set back to mains operation, please remember to reform all the high voltage electrolytic capacitors first. The electrolytic capacitors can become accustomed to the lower voltage and may complain (noisily!) if suddenly subjected to their full working voltage.

And Finally

And finally, a regular *V&V* correspondent (who prefers to remain anonymous – and you'll see why) is amused at the BBC's current sympathetic treatment of the offshore pirate radio movement of the 1960s. Back then, this one–time BBC 'battery boy' – whose career peaked as a broadcasting engineer – was involved in activities not wholly sympathetic to the pirate stations.

To his credit, my correspondent quickly became disgusted at the BBC's stance on the pirates. How different to now, when the BBC are happy to broadcast lovingly nostalgic programmes about those same pirates!

Hmm! Perhaps this is a good time for me to sign off before I upset both the BBC and the Editor. So until next time, please send your comments and letters to me, either via Email to: **phil@g4jcp.freeserve.co.uk**, or by mail to: **21, Scotts Green Close, Scotts Green, Dudley, West Midlands DY1 2DX**.

73, Phil G4JCP ●

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

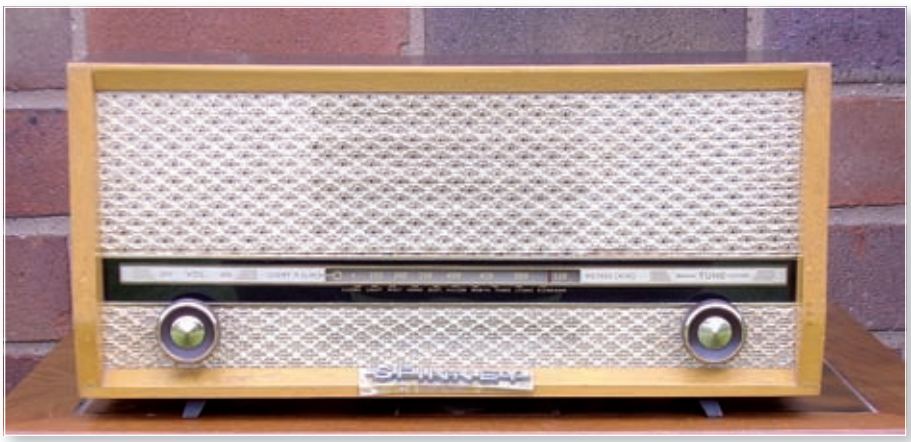

Fig. 4: A slightly larger table-top radio can show around 75% power saving by modifying the valves' heater circuitry to work on lower voltages.

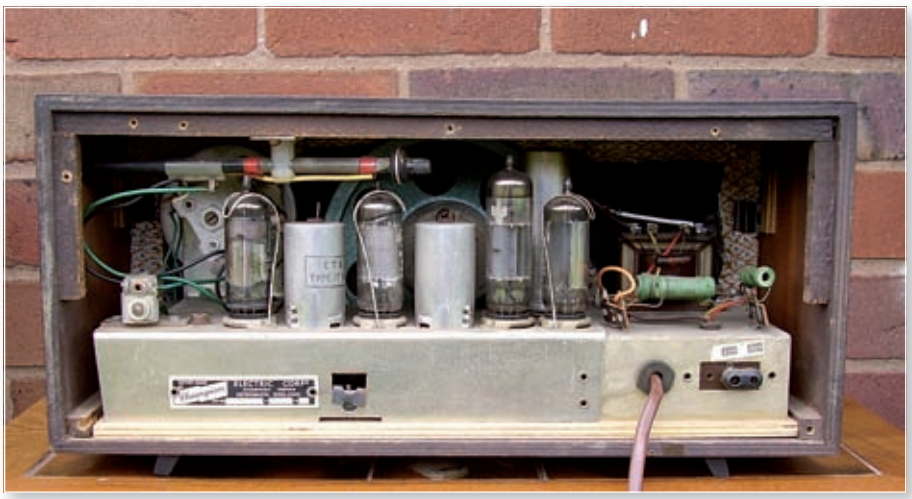

Fig. 5: Looking inside the radio of Fig. 4, it's not miniature by any means, but it is compact.

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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 has reports of great Sporadic-E openings on the 50, 70 and 144MHz bands.

Your reports this month show that Sporadic-E propagation was truly exceptional during June with many openings being reported on the 50, 70 and 144MHz bands. Indeed propagation was so good that at times that you could have mistaken the v.h.f. bands for 14MHz! Just to whet your appetite how about Brazil (PY), Japan (JA), Mexico (XE) and Nigeria (5N) on 50MHz, Crete (SV9), Dodecanese Islands (SV5) and Estonia (ES) on 70MHz coupled with Ceuta & Mellila (EA9), Gibraltar (ZB), Madeira Islands (CT3) and Morocco (CN) on the 144MHz band. And that was just a very small taster – it really was an exceptional month!

The 50MHz Band

Long distance Sporadic-E (Sp-E) openings were reported every day during June with normal single-hop paths up to 2000km being worked from all regions of the UK. However, in addition to the daily run-of-the-mill European contacts, there were also 16 days during June when multi-hop paths existed across the Atlantic Ocean, enabling QSOs to be made into South and North America – and the numerous Caribbean islands.

However, I'm not finished yet! There were also nine days when multi-hop Sp-E was reported deep into the African continent and three days with openings over the North Pole to Japan. In total, I calculated that at least 110 DXCC countries in five continents were worked from the UK in a four-week period – and that's really spectacular.

The majority of single-hop contacts were fairly 'routine' but even so, there were still some choice nuggets among them, such as the stations of C37LN (Andorra), CU3EQ (Azores), D44TD (Cape Verde Islands), ER1SS (Moldova), HV0A and HV5PUL (Vatican City), TA2ZAF (Turkey) and T77NM (San Marino). Another ionospheric hop away and stations located in the Middle East, Asia and northern Africa could also be contacted. Some of these 50MHz stations included A7/M0FGA (Qatar), JY4NE (Jordan), OD5KU (Lebanon), SU1SK (Egypt), UK9AA (Uzbekistan), ZC4TS (UK Bases, Cyprus), 4J9M (Azerbaijan), 4X4WN (Israel) and 7X2GX (Algeria).

But there was infinitely better DX to

Fig. 1: The 50, 70 and 144MHz antennas at the QTH of David Rumbold G4RYV.

David Butler G4ASR
Yew Tree Cottage
Lower Maescoed
Herefordshire HR2 0HP
Tel: (01873) 860679
E-mail: g4asr@btinternet.com

be had on the multi-hop transatlantic path to North and South America. These openings were reported on June 6th, 10th, 11th, 12th, 13th, 14th, 16th, 17th, 19th, 20th, 21st, 22nd, 24th, 27th, 28th and 29th – and that's more than 50% of the month when contacts could be made in the range 6000 to 8000km. Most of these openings commenced in the early evenings around 1800UTC and continued for a few hours until fading out around 2200-2300UTC.

A small number of openings however started up around 1200UTC and lasted for about four hours or so. All-in-all there was plenty of opportunity to pick up relatively rare countries and locator squares. So let's have a look at the mouthwatering DX that you might have missed down at the c.w. and s.s.b. end of the band.

Starting down in South America there were the stations of CX3LY (Uruguay), FY5LH (French Guiana), PU8TEP and PV8AZ (Brazil), YN2N (Nicaragua), YV4AB, YV4DDK and YV4DYJ (Venezuela), 8R1DB and 8R1TO (Guyana).

Next, moving up to the central Caribbean area, it was great to see so much activity from the 50MHz stations of CO8LY (Cuba), J39BS (Grenada), FG5GP (Guadeloupe), FJ5DX (St. Barthelemy), FM5AA (Martinique), FS/K9EL (St. Martin), HI3/LY3UM, HI3TEJ and HI8LAM (Dominican Republic), KP4EIT, KP4SQ, NP3CW, NP4A, WP3UX, WP4G, WP4JCF, WP4NIX and WP4U (Puerto Rico), PJ2BVU and PJ4NX (Netherlands Antilles), PJ7/K2GSJ (Saint Maarten), P43A (Aruba), VP2MRT (Montserrat), V29JKV (Antigua), V44KAI (St. Kitts & Nevis), 9Y4D, 9Y4VU, 9Z4BM and 9Z4CT (Trinidad & Tobago).

In mainland North America, there were large numbers of USA stations in the W1, W2, W3, W4, W5, W8, W9 call areas, Canadian station in the VE1, VE3 and VO (Newfoundland) call areas and a solitary but rare station of XE2WWW (Mexico). One of the best 50MHz openings occurred on June 26th, commencing at 1125UTC and continued for over 12 hours before petering out at around 0030UTC on June 27th. During this event stations in all UK call regions reported contacting stations in Antigua, Dominican Republic, Guyana, Martinique, Mexico, Puerto Rico, Trinidad, Venezuela, Canada and the USA .

But there was more! Multi-hop paths also existed to the south of the UK with openings allowing contacts deep into Africa up to 6500km, on June 1st, 7th, 10th, 13th, 14th, 19th, 20th, 28th and 29th. Most of these openings occurred around 1500-1900UTC and if you were really observant you could have contacted the stations of TN5SN (JI75 Congo), TZ6EI (IK62 Mali), 5N0OCH (JJ38 Nigeria) and 6W1SJ (IK14 Senegal).

Even better, as it's a very difficult path over the North Pole, were three openings on June 11th, 20th and 21st to Japan (JA). As is normal for this type of opening, all contacts occurred in the time frame 0700-0900UTC using c.w. around 50.080 – 50.120MHz. Signals are often quite weak, hence the use of c.w. but can (at times) be surprisingly strong. The stations worked from the UK up to 9500km distant included JE1BMJ, JA3EGE, JH4CPC, JH4IFF, JA7QVI, JL8GFB, JH0INP and JH0RNN.

David Rumbold G4RYV (Surrey IO91) reports that he has managed to get some decent v.h.f. antennas erected just in time for the Sp-E season. These are shown in the photograph, **Fig. 1**, and consist of a 9-element Tonna Yagi for 144MHz, a home-made DK7ZB design 5-element Yagi for 70MHz and a similar home-made 4-element Yagi for the 50MHz band. Incidentally, I did mention to David the perils of mounting a large antenna array onto a chimney stack but he informed me that the weight of the mast, rotator and antennas is actually supported by the flat roof of the bungalow.

It's difficult to see from the photograph but the mast is supported by a stub mast, holding a Yaesu G-400 Rotator and a Yaesu GS-065 thrust bearing at the top, comprising of a 50mm (2in) steel scaffold pole with support brackets. The bottom end of the scaffold pole has a flanged section that rests on an off-cut of floorboard, which helps to spread the loading onto the flat roof. The top end of the scaffold pole is supported in the vertical plane by a double chimney lashing kit to provide a very secure and safe antenna structure.

On June 20th, David tried out the new antenna system in the RSGB 50MHz Trophy Contest but didn't expect the band to be wide open as a result of a large Sp-E event. Running 100W from an Icom IC-706 transceiver he managed to make 107 contacts that included the stations of EA8CCG (IL18) and EA8AQV (IL28) in the Canary Islands and 5B4AIF (KM64) in Cyprus. Later in the month he made many more c.w. and s.s.b. contacts that also included the stations of CN8KD (Morocco IM63), EA5AJX (Spain IM98), EA6SA (Balearic Islands JM19), SA3ANZ (Sweden JP93), SM200PAX (KP03) and SV9CVY (Crete KM25). On June 26th he made his first transatlantic contact when he received an RST 579 report from the station of K1KI (USA FN32).

The 144MHz Band

Propagation conditions on the 144MHz band during June were also excellent with many days of extended tropospheric openings into Scandinavia (OZ, LA,SM) and southern Europe (EA, I) and a significant number of days, during which Sporadic-E openings were reported.

It was very noticeable that Sporadic-E openings on the 144MHz band were much more prolific than in previous years and I hope you all took my advice and got everything prepared in time for this year's Sp-E season? Openings were reported on June 1st, 6th, 7th, 9th, 11th, 14th, 20th, 21st, 22nd, 24th and 28th, a total of 11 days, which is a reasonably high number.

Surprisingly the vast majority of openings at 144MHz were in a southerly direction towards the Canary Islands (EA8), Madeira (CT3), Spain (EA), Portugal (CT), Gibraltar (ZB),

Morocco (CN) and Ceuta and Melilla (EA9). Only a very few openings were in the more traditional south-easterly direction into deepest Europe – Bulgaria, Romania, Greece etc.

So let's look at those openings in a little more detail. The 144MHz event on June 1st was one of those in the traditional direction towards south-east Europe. Between 1530-1600UTC operators in southern England reported making s.s.b. contacts with many stations that included LZ1KG (Bulgaria), YO4RFD (Romania), YU1IO (Serbia) and 9A3GL (Croatia).

A two-hour opening between 1145-1350UTC was reported on June 6th. Propagation was mainly to Portugal but contacts were also made into Spain and the Canary Islands. The 'holiday' station of CT7/DL8LAQ (Portugal IM57) remarked that the pile-ups on 144MHz were unbelievable and that he made s.s.b. contacts with 25 G-stations and six GW-stations in a one hour period.

Two openings were reported on June 7th, the first between 1010-1200UTC to Portugal, Spain, Gibraltar, Morocco, Ceuta & Melilla. The second opening was between 1220-1255UTC to the Canary Islands, a very intense affair with the maximum usable frequency (m.u.f.) peaking over 250MHz. Some of the 144MHz stations worked from the UK during the first event included CN8AT (IM63), CN8LI (IM63), CN8SG (IM64), EA9IB (IM85) and ZB3B. Propagation was so good that the Moroccan stations of CN8FF, CN8QN, CN8SR and CN8YM were also contacted on 145.500MHz, the f.m. calling channel.

During the second phase, to the Canary Islands nearly 3000km distant, the stations of EA8ACW/P, EA8AVI, EA8BPX, EA8BRZ, EA8BWY/P and EA8TX were heard making s.s.b. QSOs into southern England.

Four separate openings were reported on June 9th between 1135-1540UTC. Surprisingly, the events were either to Morocco (CN) or the Madeira Islands (CT3). Again signals were sufficiently strong to enable f.m. contacts to be made with the stations of CN8AT CN8QN, CN8TY, CN8VX/M, CN8WJ/M and CT3KD (IM12). Other stations worked on s.s.b. from southern UK included CN8LI, CN8SG, EA7AIL and EA7AT. The CS3BTM beacon (Madeira IM12) operating on 144.481MHz was also heard by a few stations over a path in excess of 2500km.

There were two openings on June 11th, the first occurring between 0850-0905UTC with contacts being made with E73EDT and E73O (Bosnia-Herzegovina), HA1FV (Hungary), I3MEK (Italy), YT3I and YU7MS (Serbia) and 9A3LH (Croatia). A little later in the day, between 1140-1400UTC, there was a very intense and stable opening to Portugal and Spain, with numerous s.s.b. contacts being made. The station of EA4KR (Spain IN80) running a TS-790E transceiver and a pair of 9-element Yagi antennas, reported working 36 G, 20 GM and two GW stations.

The next 144MHz Sp-E opening was reported on Sunday June 14th, the very day of the ***PW* QRP Contest**! As that contest ran between 0900-1600UTC there was a good chance that portable stations may possibly have made Sp-E contacts during the event that took place between 1050-1135UTC. However, you did need to be located in southern England (IO70, IO80, IO90, JO00 and JO01) to be in with a chance of working the Greek stations of SV2DCD (KN00), SV3BSF (KM08) and SW4LRJ/2 (KN10).

A tremendous evening opening on June 20th between 1620-2205UTC enabled stations as far as the north-east of England to make 144MHz s.s.b. contacts into the Canary Islands, Gibraltar, Madeira Islands, Morocco, Portugal and Spain. Probably one of the longest distance contacts was made between the stations of G4KUX (County Durham IO94) and EA8BPX (Canary Islands IL18) at 3085km as shown in the diagram, **Fig. 2**.

On the following morning of the 21st between 0830-1100UTC there was yet another southerly opening. Contacts were made by operators in the Midlands to stations such as CN8IG, CT2GUR, EA7GV, EA8AVI, EA9IB and ZB3B. Incidentally CN, EA8 and EA9 are all located in the African continent.

A Sp-E opening around 1015UTC on June 22nd was a very brief affair with only the stations of CT1HZE and EA7TN being contacted. However, there was a much better event on June 24th between 1445-1530UTC. And for a change, the propagation path was towards the easterly parts of Europe. Contacts on the 144MHz band were made with many stations that included DK5RQ (Germany), E73O (Bosnia-Herzegovina), HA5LV (Hungary), I8MPO (Italy), OE5OLL (Austria), OK1TEH (Czech Republic), SP6MLK (Poland), S57EA (Slovenia), YT3I (Serbia) and 9A4NF (Croatia).

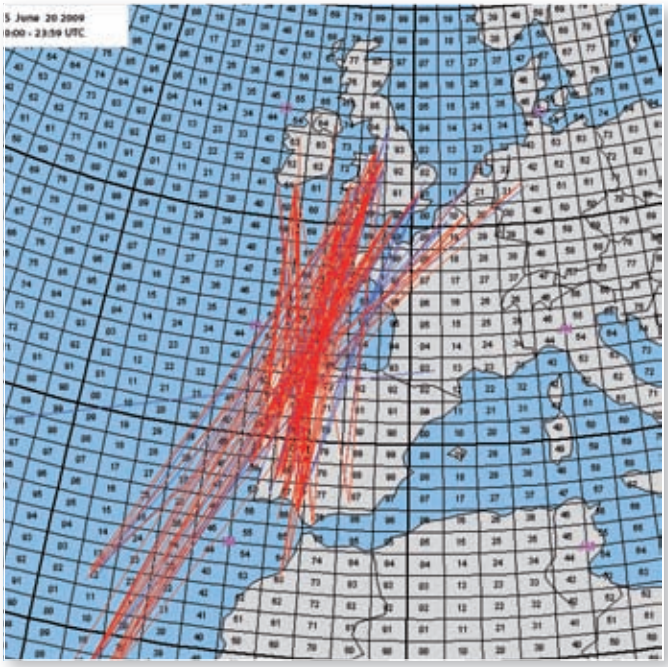

Fig. 2: The contacts that were made during the 144MHz Sporadic-E opening on June 20th.

The final opening of the month was reported on June 28 between 1555-1700UTC with contacts yet again being made into the Canary Islands. The stations of EA8AVI, EB8BRZ, EA8TX and EA8YT reported making s.s.b. QSOs into Devon and Cornwall.

Deadlines

So, that's it again for this month and what a DX-filled month it was! The summer Sporadic-E season is now virtually over, although you can still expect occasional openings on both the 50 and 70MHz bands.

Openings on the 144MHz band in August are quite rare though not impossible so, keep your receiver tuned to 144.300MHz. Good luck! And if you do hear or work any DX stations on the v.h.f., u.h.f. or microwave bands then please send me your reports – or any other news – to reach me before the last Saturday of the month.

73 David G4ASR

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www.kenwood-electronics.co.uk

Feature

Signal Detraction

Or – my radio can't hear through the window any more!

Have you noticed that your handheld radio can't receive the local repeater as well as it used to do, or indoor antennas aren't working so well? Maybe your mobile phone isn't quite as useful as it was? So, what's happening? Have you had double glazing fitted recently? If the answer is "Yes" – it's the most likely culprit!

Going back a few years, if you wanted a stronger signal on a hand-held radio at very high frequencies (v.h.f.) or ultra high frequencies (u.h.f.), you probably found it useful to go over to a window. Of course, there were other effects to take into account – notably the location of the repeater or station you were working.

The early mobile phones were the same, especially the brick-sized analogue types. More recently, the GSM standard includes power stepping to try to ensure workable link strength, so you may not notice the effect so much. However, both the 'phone and the base station will have ramped up the power, so you're wasting energy at the transmitter and in your 'phone!

Emissivity Levels

In 2002, a new emissivity level for domestic housing, for both new build and replacement work, was introduced. This was an energy saving initiative, aimed at emissivities of less than 2W/m^2. But, of course, this was for **thermal emissivity**.

The method used was to coat the window glass with a reflective layer, primarily Tin Oxide. The dominant trade name for this glass is **Pilkington K™**, although other brands exist. Tin oxide has been known for many years as a reflective material, which reflects heat but is fairly transparent at optical wavelengths. It is also an electrical conductor and this is where the problem comes in for radio!

An older conventional window with single clear glass shows very little signal attenuation, typically about 2dB. However, a double-glazed pane, with reflective coating on the inside of each sheet, shows **at least 12dB**.

Some time ago, I carried out some measurements of attenuation of building materials, in the context of professional communications. Incidentally, very little information is available in the literature on this topic and such as there is, relates to materials made in the USA and operating at around 2.4GHz.

I carried out tests using UK/European building materials. A strong external transmission at 400MHz was used, from a distant source believed to be an aeronautical beacon, to avoid range effects. The results should be applicable to the 144 and 430MHz bands with reasonable accuracy and give an indication for lower frequencies.

Table 1.

Obstacle	Attenuation
Glass window 4MM	2dB
Double glazed Window (Pilkington 'K'™)	12dB
Brick+block cavity Wall	7dB
Roof tiles, dry	2dB
Roof tiles, wet	~7dB
Plasterboard wall	6dB
Interior door	<2dB
Wooden cabinet	~2dB

Attenuation Confirmed

The attenuation due to the Pilkington 'K'™ glass confirmed earlier approximate measurements; this glass type has heavy losses at all radio frequencies (r.f.) . There's a possibility that some of the signal was transmitted around the window through the brickwork, i.e. 12dB may be an underestimate.

Interior doors and furniture presented low losses at 400MHz, although plasterboard, i.e. two layers of Gypsum plus paper (non-metallic) linings, wall was similar to brick+block. The latter was measured dry; wet walls

Peter Saul G8EUX discusses radio frequency attenuation problems that can accompany double-glazed windows!

have higher losses. Roof tiles gave fairly low loss, about 2dB, when dry, but much more when wet.

Modern roof tile material is basically concrete, and about 20mm thick, though corrugated. The slope of the roof determines run-off times – the attenuation due to rain can persist for hours.

My house had replacement double-glazing about three years ago. There are 10 windows, a total of 27 double-glazed units.

Resistance measurements on all but one of these, on both sides, showed (as expected) an open circuit. One pane, on the inside, showed quite a low resistance, repeatable anywhere on its surface. I interpret this to mean that the factory intended that the tin oxide layer (assuming that is what they used) should be on the inside, i.e. within the cavity section of the double glazed unit, but made an error in this instance.

The exception enabled a measurement of resistance to be made. A gap resistance was fashioned using aluminium foil, with a gap 100mm wide and 10mm long. This showed 38Ω. The gap presented 1/10th of a square of resistance, so the resistivity was 380Ω per square.

Just placing the multimeter probes on the glass about 20mm apart gave resistances in the 50Ω region, due to spreading resistances around the points. This would be an easy method to carry out a quick check, but ideally your units would show open-circuit, i.e. the panels correctly fitted.

Conventional Terms

I've used the conventional terms and nomenclature for sheet resistances; no units are needed, since the square can be any dimension and still show the same resistance "per square". Thus, the resistivity was low enough to provide shielding, but high enough that some signal could penetrate.

Some walls include insulating foam, ('cavity wall insulation') which has negligible loss, unless lined with aluminium foil, as in some recently built housing. A house built with foil-lined insulation in the cavities, a foil-backed loft insulating layer and K glass windows would be an effective Faraday cage. When such houses become commonplace, it is to be expected that mobile 'phones will give problems inside the house.

The available signals will be due to leakage effects where the metal surfaces are not bonded together. Paradoxically, DECT or similar phones will operate better inside the house, due to reflections and multi-pathing, but not to locations in the garden or adjoining buildings! ●

Carl Mason's

hf highlights

Share your news, views and reports with fellow readers. Reports to Carl by the 15th of each month please.

Carl Mason GW0VSW brings news of the 7MHz band expansion in South Africa, strange callsigns from Australia and your band condition reports.

In March every year the **Chiltern DX Club** or **CDXC** runs its '**LF Challenge**' to encourage operation on the 1.8, 3.5 and 7MHz bands. **Gary Hinson ZL2IFB** has used CDXC's good idea and set up an '**HF DX Challenge'** to take place annually in September on the higher h.f. bands. The CDXC Committee is aware of this and is giving it their full support.

The 'activity period' is intended as a friendly competition for DXers and not a contest as such. It will run from 0000 on the 1st until 2359UTC on the September 30th using the 21, 24, 28, 50 and 144MHz bands where permitted and using any mode allowed by your licence.

The scoring will be one single point per DXCC Entity worked regardless of the band or mode. Further information and the official rules can be found at **www.g4ifb.com/html/hf_dx_challenge.html** and Gary says "There is a distinct possibility that CDXC will take up the promotion of this DX Challenge from 2010 if it's a success, so this year we have to try out the rules and prove, through entries and activity, that the HF DX Challenge is worth holding as an annual event."

Weekends are likely to be the busiest and most productive periods during the challenge so why not have a go and send in an entry. Who knows, you may even work some new DX.

The **CDXC** is the UK's premier DX Foundation and was formed to encourage excellence in DXing/contest operating. It now has over 700 members and publishes its own bi-monthly digest, which is sent out to members. The digest is full of news and articles on a wide variety of subjects that will be of interest to all DXers. Their web site can be found at **www.cdxc.org.uk/** and it contains a host of useful information as well as membership details and an application form.

The DX News

Let's have a look at this month's DX news now. **The Hong Kong Amateur Radio DX Association** will be active until the 31st December, with the special call **VR2009EAG** to promote the 5th edition of the East Asia Games (EAG) to be hosted by Hong Kong from December 5th to 13th. The games are held once every four years and are a major event in the Asian international sports arena. The first was held in Shanghai, China in 1993, followed by Pusan in Korea in 1997, then in Osaka, Japan in 2001 before being held last in Macau, China in 2005.

Hong Kong won the hosting right of this year's event in November 2003. You can expect activity to be on all bands from 7MHz upwards using s.s.b., RTTY, PSK31 and SSTV. There are to be some colourful QSL cards available and you can get these direct via **Charlie C.M. Ho, POB 900, Fanling Post Office, Honk Kong** who said

there will be no e-QSLing or use of *Log-book of The World* (*LoTW*) for this operation.

Nearer to home now! Situated in the heart of the Gulf Stream in the North Atlantic, the Faroe Islands EU-018.lie north west of Scotland, between Iceland and Norway The group consists of 18 islands that are on average 300m (980 feet) above sea level with the group highest point at 882m (2883 feet). It's from here, that **Janusz Szymanski OY/SP6IXF** and **Mek Golembowski OY/SP7VC** will operate until August 16th. They plan to be active on all h.f. bands using power amplifiers, which they hope will allow them to put out a good signal. Your QSLs should be via the bureau or direct to their home calls.

In Austria the **Vienna International Centre Amateur Radio Club 4U1VIC** will operate the special event station **4U30VIC** on all bands until the end of December. So, there is plenty of time to work them! The call celebrates the International Centre's 30th anniversary and the QSL routes are via 4U1VIC, through the bureau or direct to **Vienna International Centre**, **POB 500, A-1400 Vienna**, **Austria**.

There are three activations from Greece this month, which may be of interest. The first is by **Ron Bosco WB2GAI** who is celebrating his Golden Jubilee in Amateur Radio. To mark the occasion will be active again as **SV9/WB2GAI/P** on the island of Crete EU-015 from the August 21st to October 5th, operating c.w. on 3.5 to 18MHz only, with any QSL going via the bureau.

The second Greek activation is by **Nick Porihis SV1CEI** who will be active as **SV1CEI/8** from Kea Island EU-067 until August 25th. He will be operating holiday-style with the possibility of some activity from a couple of lighthouses somewhere on the 7–28MHz bands using s.s.b. and c.w. only.

Finally, **Gabi Draskovits HA1YA** will be active as **J48YA** from Thassos Island EU-174 from August 25th to September 8th operating on all the h.f. bands. He says he will QSL via his home call.

Carl Mason GW0VSW
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Other News

Some other news now. In South Africa, where Amateur Radio operators now have full access to the 7MHz band of 7-7.2MHz. And Amateur holding 'ZR' licensees are allowed to operate on 14.225-14.350MHz, giving you a better chance of working the Southern tip of Africa. Incidentally, the **South African Radio League** has a very interesting website at **www.sarl.org.za** and contains details of all their band allocations as well as all their latest news.

There are also changes in Belarus where access has been gained to the extended 7MHz band. In the 7.1–7.2MHz frequency range They're allowed to use up to 500W maximum on s.s.b. and c.w. with up to 1kW in contests with special authorisation. Their State Commission for Radio Frequencies recently extended the use of the 1.8MHz band with 1.810 to 2.0MHz now available to the country's Amateur population.

Callsign Confusion

There appears to be a callsign confusion problem or two for one Australian operator who has the call **VK4FRAJ**. This callsign is neither a pirate nor a commercial station, but that of properly licenced **Raj DeYoung** who is the 14-year-old son of **Eddie DeYoung VK4AN**. It seems that there still is confusion amongst Amateurs regarding the 'VK'+four letter suffix calls and Eddie says "My son is probably the only VK with a four letter suffix who operates on c.w. and is very frustrated when other Amateurs – and especially contesters – keep asking if his call is two or three letters!

"**Note:** in Australia a four letter suffix callsigns have been issued to Foundation Licence holders since 2005. They can only use commercially manufactured equipment and are allowed to operate using s.s.b., a.m. and f.m. or 'hand keyed' Morse on the 3.5, 7, 14, 21 and 28MHz bands with power restrictions. All Foundation class suffixes begin with an 'F' plus the addition of three more letters."

I'm sure we've all heard an unfamiliar or unusual call at one time or another and waited a while before trying to work it. If in doubt, I work the station first and then worry about its validity later, as it's always possible a rare or unusual call might otherwise not make it into your log!

Your Reports

On to your reports now and we begin with the log of **Martin Addison 2E0MCA** in East Finchley, North London who tried 3.5MHz for a change working F6KRK (France) 1838 and DL0WER (Germany) at 2123 using a Yaesu FT-2000 and 50W to a new purchase, a Sandpiper mono band vertical which stands close to 10m high and was bought to allow operation on the band. It still needs some fine tuning plus a few more radials – but initial impressions so far are "good".

Moving to 7MHz and using a half size G5RV Martin managed SP1QXK (Poland) 0532, II2ERBA (Italy) 0652 a special call celebrating 20 years of the Radio Club Sezione Di Erba QSL via IQ2ER, DL0BRF (Germany) 0848, F/ON7VA (France) 1127 and YP1WFF (Romania) a special call for the National Parks of Romania at 2020UTC.

Also on the band was **Peter Leng ZL4TE** in Cambridge the Waikito, New Zealand who uses a Yaesu FT-1000MP Mk5 Field, Ranger 811 amplifier with a low G5RV for most of his h.f. operating who logged s.s.b. stations DU9RG (Philippines) 0949 QSL direct to 818 Acacia Avenue, Ayala Alabang, Muntinlupa City 1780, KN5O (USA) in Covington, Louisiana at 0956 and one QSO using c.w. with W1XX in South Kingstown, Rhode Island at 0955UTC.

The 14MHz Band

Moving to 14MHz and resurrecting an 'old' Cushcraft AV3 vertical using 500W Pete logged CT1HZU (Portugal) 0005, SV9CVY (Crete) EU-015 at 0227, N0QO (USA) in Longmont, Colarado at 0331, IK4WKU (Italy) 2040, HB9OAB (Switzerland) 2106, RZ3OV (European Russia) 2156, ER4DX (Moldova) 2157, EA3GE (Spain) and DL9RDM (Germany) 2207UTC using s.s.b. once again and is very pleased with the antenna.

Welcome now to new reporters

Peter Leng ZL4TE's shack.

Keith Morrison M1VHT in Hadston, Northumberland who has "gone back to basics" and fired up an old Kenwood Trio TS-530SP transceiver and salvaged the driven element of a TB3 antenna to make a rotatable dipole. This is working very well as in the first few days of operating, and using under 100W, Keith worked 5B/LY4LF (Cyprus) AS-004 at 2013, 4Z5LA (Israel) 2021, A61SA (United Arab Emirates) 2023 and VK3MO (Australia) in Kyneton, Victoria at 2336UTC.

In Chelmsford, Essex **Martyn Medcalf M3VAM** is very happy with his Comet CHA-250BX antenna and had a spell on 14MHz before heading off to 'GU' land for a well deserved holiday. Contacts this month include S51ZZ (Slovenia) 0923, OZ4Z (Denmark) on Amanger Island EU-029 at 0952, IR5MDC (Italy) 1531 QSL via IK2VUC, DK7RF (Germany) 1931, EW6GF (Belarus) 1937, CT3FT (Madeira Island) AF-014 at 1945, UN7MMM (Kazakhstan) 2011 QSL via EA7FTR, EC8ADW (Canary Islands) AF-004 at 2023 and RV3OA (European Russia) at 2035UTC using a Icom IC-746 and 10W.

Back in East Finchley, Martin 2E0MCA logged SY2WT (Greece) the White Tower Lighthouse DXpedition QSL via SV2FPU at 0537, OD5NH (Lebanon) 0945, RP1N (European Russia) 1049, CS2GVA (Portugal) at 1113, a special callsign for students studying at "EB2 Gouveia School" who are operating for technical experiences and scientific studies QSL via CT1FUH, OH0/SM3TLG (Aland Islands) EU-002 at 1214, S51ZZ (Slovenia) 1216, 9A430KA (Croatia) 1248, Radio Club Karlovac celebrating 430 years of Karlovac City QSL via 9A6Z, IZ1LBG (Italy) 1320, EN500I (Ukraine) 1437 a special call for 'Holy mountains 500 years'. Just one contact enables you to claim an award with applications going via E-mail to **EN500I@mail.ru** and OE5CSP (Austria) at 1451UTC.

The 24 & 28MHz Bands

The 24MHz band was open for short periods this month and provided Martin with his first ever contact on the band as T77C (San Marino) was heard and entered his log at 1554UTC. There was also more activity on 28MHz with s.s.b. stations SP6JOE (Poland) 1226, YT2T (Serbia) 1313, DR60BLN (Germany) at 1316, a special call to mark 60 years of the DARC Berlin Section, HA8UT (Hungary) 1352 and IK4VET (Italy) at 1527UTC all making it into his log.

In Northern Ireland **Peter Lowrie MI5JYK** in Newtownabbey, County Antrim enjoyed operating with his Albrecht AE485S on f.m. and using a horizontal dipole worked F4EIT (France) 0907, OK2OC (Czech Republic) 0913, DJ7AQ (Germany) 0925, SQ6DXP (Poland) 0940, PD1DTH (Netherlands) 0945, LA8IY (Norway) 1745 and SM6CRZ (Sweden) 1750UTC running just 10W.

Having spent a good deal of time on 24MHz s.s.b. working European stations including Estonia, Germany, Italy and Slovakia with his Kenwood TS-570 and W3EDP antenna at 100W **Eric Masters G0KRT** in Worcester Park, Surrey was pleased to find 28MHz open and many stations calling "CQ". Those that made his s.s.b. log include SA3ANZ (Sweden) 0745, EA7/G1WUU (Spain) 1011, T77C (San Marino) 1510, dropping down to 5W c.w. he worked C4I (Cyprus) AS-004 at 1528 and 9A2A (Croatia) 1544 before pushing the power back up to 100W s.s.b. again logging S51DX (Slovenia) 1557, F8DNX (France) and IZ6BXV (Italy) at 2038. A change to f.m. at 50W found DJ7CG (Germany) 0834, EA3NU (Spain) 1252 and PD1GT (Netherlands) at 1621UTC.

Finally, there were two voice contacts on the band for Keith M1VHT who worked 4O3A (Montenegro) at 1428 followed by 17-year old Amateur Evandro Guedes PU5OGE (Brazil) on Santa Catarina Island SA-088, part of the Araucaria Dx Group, at 1954UTC.

Signing Off

Well that is it for another month and it's nice to see a few more reports for the higher bands again and with a variety of modes. Hopefully, this trend will continue as we climb out of the bottom of this current sunspot cycle. Don't forget, just because a band has no activity **does not** necessarily mean that the band is closed. Try putting out a few "CQ" calls. You never know who is listening and may call you back!

As usual my thanks to all our reporters for their logbooks 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

As usual, information, reports and photographs to me please by the 15th of each month.

rallies

Radio rallies are held throughout the UK. They're hard work to organise so, visit one soon and support your clubs and organisations. PW Publishing Ltd. is attending at rallies marked *.

Send all your rally info to

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

August

August 23rd

The Andover Boot Sale

The Andover Radio Club Boot Sale will be held in the Wildhern Village Hall and Playing Field SP11 0JE, which is north of Andover, just off the A343. Admission will be £1.50 and there will be talk-in on S22, car parking, catering and facilities for the disabled.

Martin M0MWS
Tel: 01980 612070
www.arac.co.uk

August 29th

The Rugby Radio Rally

The Rugby Amateur Transmitting Society Rally will take place in Stanford Hall, Lutterworth LE17 6DH. There will be talk-in on S22 (GB5RRR), doors will open at 10.00am and admission will be £2.00.

Tel: 07759 684411
www.rugbyats.co.uk

August 30th

The Milton Keynes Rally & Boot Sale

The Milton Keynes 51st Annual Rally & Boot Sale will be held at Holne Chase School, Buckingham Road, Bletchley MK3 5HP. It will be open from 9.00am to 4.00pm and entry will cost £2.00. There will be talk-in on S22, catering and Morse tests.

Mike G3LFR
Tel: 07866 673192,
www.mkars.org.uk/rally.html

August 31st

The Huntingdonshire Rally

The Huntingdonshire Amateur Radio Society Bank Holiday Monday Rally will be held in St Neots Community College, Barford Rd, St Neots PE19 2SH. Doors will open at 10.00am, admission will be £2.00 and there will be talk-in, car parking, a car boot sale, trade stands, catering and a Bring & Buy.

Julie M1JUL
Tel: 07905 052127
E-mail: hunts-hams@yahoo.co.uk
www.hunts-hams.co.uk

September

September 6th (New Date)

The Telford Hamfest

The Telford Hamfest will take place at the Enginuity Technology Centre in Telford, Shropshire TF8 7DU. Doors will open at 10.30am, and there will be talk-in on S22 and GB3TF 433.200MHz. There will the usual mix of traders, special interest groups and exhibitors along with family attractions and discounted admission to the Enginuity Centre.

Martyn G3UKV
Tel: 01952 255416
E-mail: info@telfordhamfest.co.uk
http://tinyurl.com/3232sl

September 12th/13th (New Date & Venue)

The Leicester Amateur Radio Show*

The Leicester Amateur Radio Show will now be held at Loughborough University.

Geoff 01455 823344
E-mail: geoffg4afj@aol.com
www.lars.org.uk

September 13th

The Torbay Annual Communications Fair

The Torbay Annual Communications Fair will take place at Newton Abbot Racecourse, Newton Abbot, Devon TQ12 3AF. Doors will open at 10.30am (10.00am for disabled) and admission will be £2.00. There will be trade stands, a Bring & Buy, a raffle, catering and facilities for the disabled.

E-mail: rally@tars.org.uk

September 20th

The Hornsea Rally

The Hornsea Amateur Radio Club Rally will take place in the Floral Hall, 7 The Esplanade, Hornsea, East Yorkshire HU18 1NQ. Doors will open at 10.30am, admission will be £2.00 and there will be car parking, trade stands, catering with a licensed bar, special interest groups, a Bring & Buy and facilities for the disabled.

Rick M0CZR
E-mail: R106221@aol.com
Duncan G3TLI
E-mail: g3tli@hotmail.co.uk
www.hornseaarc.co.uk

September 27th

The West London Radio & Electronics Show*

The West London Radio & Electronics Show will take place at Kempton Park Racecourse, Sunbury-on-Thames, Surrey. The will be free car parking, the doors will open at 10.00am and there will be talk-in on S22 & V44, trade stands, a Bring & Buy, a flea market, catering, special interest groups and facilities for the disabled.

Paul.
Tel: 0845 1650351
E-mail: paul@radiofairs.co.uk
www.radiofairs.co.uk

October

October 2nd/3rd (New Event)

The National Hamfest *

The Lincoln Short Wave Club/RSGB National Hamfest will be held in the George Stephenson Pavilion, Newark and Nottinghamshire Showground, Lincoln Road, Winthorpe, Newark NG24 2NY (close to the junction of the A1, A46 and A17). There will be trade stands, a Bring & Buy, catering, special interest groups, and facilities for the disabled.

www.nationalhamfest.org.uk

October 4th

The Autumn Hangar Sale

The Autumn Militaria, Electronics and Radio Amateur Hangar Sale will take place at the Hack Green Secret Nuclear Bunker, French Lane, Nantwich, Cheshire CW5 8AL. The Bunker is situated just off the A530 Whitchurch Road, a few miles outside Nantwich, 30 minutes from Chester. From Junction 16 on the M6 motorway, follow the signs to Nantwich, then Whitchurch on the A530 (follow the brown Secret Bunker signs). The doors will open at 10.00am and admission will be £2.50.

Rod Siebert
Tel: 01270 623353
E-mail: coldwar@hackgreen.co.uk
www.hackgreen.co.uk

October 10th

The Chesterfield Radio Rally

The third Chesterfield Radio Rally is to be held at Hasland Village Hall, Eastwood Park, Hasland, Chesterfield S41 0AY (this is less than 5 minutes from Junctions 29 and 29a of the M1). There will be talk-in on 145.525 & 433.525MHz (CTCSS 71.9Hz), parking and refreshments.

Tel: 0844 4142056 or
0870 7669104
www.chesterfieldrally.com

October 11th

The Great Lumley Rally

Great Lumley Amateur Radio and Electronics Society Rally will be held in the Great Lumley Community Centre, Front Street, Chester-le-Street DH3 4JD. Doors will open at 10.30am and admission will be £2.00. There will be trade stands, a Bring & Buy, catering and facilities for the disabled.

David Barclay M0BPM
Tel: 0191 3888113
E-mail: m0bpm@btinternet.com

FREE COMPETITION!

Our free-to-enter competition is very simple – if you've already read **Chris Lorek G4HCL**'s review of the British-made G-Whip Backpacker h.f. portable antenna system, published in the August issue of *PW*. The antenna has been generously donated by **Geoff Brown G4ICD**, who now manufactures the modern G-Whip antennas.

The prize:
The winner will receive the G-Whip Backpacker system, ready to go and which fits neatly into the lightweight carrying case. It's absolutely ideal for portable operating!

In his review summary, Chris Lorek G4HCL said, *"I was very impressed with both the quality of construction and the on-air performance of the G-Whip Backpacker. The supplied lightweight carry tube was very handy in transporting the antenna and in use it took just a few minutes to assemble and tune the antenna ready for on-air operation."*

Just imagine what fun you could have operating portable – or from home – with your own G-Whip Backpacker! You could take it on holiday with you, or just use it on a day out. You could be 'up and running' on the air within five minutes! Breathe new life into your Amateur Radio with the amazingly versatile Backpacker Antenna!

WORTH £199!

To enter our competition, all you have to do is answer three simple questions and send it in to the *PW* offices complete with the corner flash by **September 21st.**

The first entry, with **all three questions answered correctly**, will be drawn out of the Editor's (outsize!) hat after the closing date. The winner will be notified by telephone, post or via E-mail.

Question 1:
With the coil units supplied, what Amateur bands will the Backpacker operate on?

Question 2:
How many coil units are supplied with the Backpacker?

Question 3:
What is the stated maximum p.e.p. rating of the antenna?

Question 1 answer:

.....

Question 2 answer:

.....

Question 3 answer:

.....

Name & Callsign (if applicable):

.....

Full address with postcode:

.....

.....

.....

.....

E-mail address: .....

Telephone number: .....

Send your entry to:

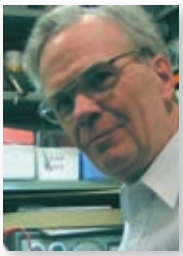
The G-Whip Backpacker Competition,
***Practical Wireless*,**
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW.

Closing date September 21st.
The winner will be notified by E-mail, post or by telephone. **The Editor's decision will be final and no correspondence will be entered into.**

Photocopies of this form are acceptable, but you must send in the corner flash as proof of purchase please.

Note: The information provided above will not be passed on to third parties and will only be used to contact you if you win.

Backpacker Competition September 2009



Harry Leeming's

in the shop

Harry Leeming G3LLL looks back to his days running an Amateur Radio and Hi-Fi shop and adventures with customers!

Welcome to this month's *In The Shop* with the latest collection of memories from my days in business. '**Tom**' sent me an E-mail. "I'm looking for a cheap h.f. base rig that I can also use mobile, and I have been offered an FT-747, do you know anything about it?"

My answer was, of course, "Yes!" The FT-747 was marketed as an economy rig and is a bit of an odd ball. An identical rig was also sold by the American kit manufacturer Heathkit, and as its appearance is different to other pieces of gear made by Yaesu, I wonder who actually made it?

An FT-747 in good working order can be quite a nice piece of kit, but there have been a few problems to watch out for. Mobile operation is normally okay – until you stop the car engine, and the battery voltage falls to around 12V. At this point, especially if you use the full length of 12V d.c. power cord, sometimes the voltage stabilisers don't have enough 'headroom' and single sideband (s.s.b.) transmissions become very distorted.

The tuning control may also cause problems. Some of these have become very unreliable, and so you should check the operation of this before purchase.

Weird Fault

A few FT-747s I've come across, have developed a rather weird fault. When I have checked them out into a 50Ω dummy load, they've worked perfectly – but when the time has come to try to tune up into an antenna via an antenna tuning unit (a.t.u.), as the a.t.u. controls have been adjusted the standing wave ratio (s.w.r.) would suddenly shoot sky high! Some samples of FT-747 will function without this effect into one type of a.t.u., but have problems with others and even the length of connecting (patch) lead can effect them.

On checking the suspect rig with a receiver or a spectrum analyser, I've seen that when the s.w.r. goes high, the FT-747 is throwing out a wide spectrum of parasitics. Many cures have been suggested for this effect, but I found one to be effective.

My effective cure was to test a selection of output and driver transistors, pick the ones with the lowest gain, and then fit them. To do this I needed to be able to sort through a few hundred pounds worth of transistors and so it's not cost effective!

When I was in business at Blackburn the same FT-747 was passed round and brought to me with this fault by several different people. They were all rather upset when they learnt that the cost of repair to the rig they'd just bought would be more that it was worth!

On Commission?

While I was running the shop, "Harry, why did you always sell second hand goods on commission?" was a question I was often asked. In the 1970s VAT was introduced and we were told that it was to be a tax on the value we added to goods, fair enough. Unfortunately though, with second-hand goods purchased from private customers – it didn't work out like this though!

If I part exchanged or purchased goods from a private customer, the VAT office wanted their 20%, or what ever the VAT rate was, on the full selling price. Hence, if you allowed (let's say £400) for a rig, cleaned it up, gave it a guarantee and sold it for £480 – I made no profit, ran the risk of having to do a repair under guarantee and had to cough up £80 to the VAT office for the privilege! Obviously, this was a non-starter and various dealers got themselves into trouble trying

Fig. 1: Marketed as an economy rig, the FT-747 was and is a bit of an oddball from the Yaesu stables and had some interesting faults.

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Fig. 2: These may look like they're the same, but the polarity is important too. Get it wrong by using the wrong lead and the rig could be irreparably damaged.

to get round it by doing 'under the counter' cash deals.

The only legal way out of the difficulty was to make sure that no secondhand items became your own property and hence that's why many dealers started to offer to sell goods on behalf of customers, in other words a 'commission sale'.

Fortunately for today's dealers there are now ways around this stupid arrangement, (if you can cope with the paperwork!). But as happens so often in the UK, the powers that be do seem to try hard to discourage anyone who wants to run a business!

Secondhand HF Linears

Customers were sometimes rather taken aback when I refused to sell second hand h.f. linear amplifiers. The difficulty was that the extremely expensive valves in these were very easily damaged, especially if the user was not conversant with tuning up such high power beasts!

I could think of quite a few customers who I certainly wouldn't have liked to let loose with a second-hand linear. But how could I politely say, "Sorry mate you're too stupid to buy one of these, you'll either blow it up or kill yourself?"

I often wonder at times, what twisted, evil genius has managed to apply his influence, to ensure that there is always some trap door through which users of equipment can fall? I think the Irish call it 'Murphy's Law'!

Thinking of problems, it sounds obvious of course, but you should always ensure that the correct fuse is fitted to whatever equipment is in use. However, to give us the **maximum possible chance of fitting the wrong one** – most manufacturers supply a few spares. Unfortunately users do not always check the value of these and many times I've examined a burnt-out hulk, only to find that the spare 20A d.c. fuse, or the 6A fuse intended for 115V operation has been fitted in place of a 3A 230V mains fuse.

To really put us on the wrong foot, some rigs have the fuse value stamped on the chassis next to the fuse holder. As most rigs are sold in 115V areas however, the value was sometime correct for these counties but almost twice the size of that needed for safe operation in Europe!

Next, there are d.c. leads and polarity to consider. And here, it may seem hard to credit, but there's no standard for polarity on power leads, **Fig. 2**! Grab the lead for your KDK 144MHz mobile, plug it into your Yaesu rig and the polarity will be reversed. At the best the fuse will pop – at the worst the fuse will be too big and your rig might then not be worth the cost of repair!

If you really want to run up a repair bill, try plugging the a.c. lead for a Yaesu FT-101E, into a Trio/Kenwood TS-520, or the other way round. The plug is the same but the connections are entirely different, resulting in the mains supply being applied to all the wrong places.

Now, I think it's just about understandable that two different manufacturers should use the same plug and wire it different ways. But if all the equipment in a particular shack is from the same maker, then the operator will know they're are safe – but are they?

The Yaesu FC-700 a.t.u. power lead uses exactly the same 12V d.c. coaxial plug as the FT-290. However, the '290 has the positive connection on the outside, while the a.t.u. has the positive (+) terminal on the inside. Please don't swap them over!

Fortunately, the manufacturers have at last seen sense, and the d.c. lead for most h.f. rigs is now the same. These leads use a multiway plug, some of the pins not being connected in circuit. Safe at last?

Safe at last? Well – no! All is

fine until you try to use an Icom power supply with a Yaesu rig. The Yaesu p.s.u. has an **On**/**Off** switch incorporated on the front panel – but the Icom p.s.u. is wired so that the rig's On/Off switch also kills the power supply. The spare pins on the DC plug are used by Icom to carry the mains switching, but Yaesu use the same pins inside some of their rigs as an anchor point for various components in the power amplifier stage. This results in a big bang if you (**unthinkingly**) try to run a Yaesu rig from the d.c. output lead of an Icom p.s.u.

The Self-destruct Socket

Now, I've got time to go back to the FT-747! '**Fred**' turned up with an FT-747 and the rig was completely dead except that it lit up and the S-meter went hard over as soon as it was switched on. Checking around with a test meter soon located that several voltage rails had disappeared and the fault was eventually traced to a strip of printed circuit that had completely fused.

So, why had the fault occurred? To answer the question, this particular strip of circuit, as well as passing 12V around various parts in the set, also feeds the 12V output socket on the rear of the FT-747, **which isn't fused**.

If you own an FT-747, try connecting your speech processor, or a.t.u. lamps to this point, and you leave the lead dangling so that it touches something, or incorrectly insert it in the socket and wham, you'll have over 20A passing through your rig's printed circuit!

In fact, I've had quite a few different models of Yaesu rigs in for repair with fused printed circuits, and melted wiring harnesses, as a result of a short on these 12V output sockets. Frankly, whoever decided to fit un-fused 12V output sockets on the rear of Yaesu rigs should be eliminated using the traditional Japanese method! (Perhaps they could then get a better head?). In fact, I always told my customers to either fit a 1A fuse to any lead, or better still not to use these all too convenient outlets at all.

Datong Equipment

Many readers will remember Datong equipment and that this company made available a mains adaptor for use with their really excellent audio filters, speech processors and other add on units – and if you use it you'll have no problems. If however, you decide to connect one of their units to your normal 12V supply – take care! The d.c. connection is made by a 3.5mm jack plug and so – with the plug halfway out of its socket – the live tip will touch the chassis.

Push the plug in, or pull it out of your speech processor (for example), while the p.s.u. is switched on, and you'll have a short to chassis – via the microphone socket of your rig. If the lead isn't fused the full current of your p.s.u. will then pass via your rig's internal microphone wiring. Some of the thinner ribbon cables may well melt and this is a particularly effective way of putting some Icom rigs out of action. Oh well, someone had to keep my service department going!

Assorted Hints & Tips

Many of the following hints and tips are dead obvious, but they're still well worth repeating. If you have any more that you'd like to pass on to readers, please drop me an E-mail.

Before you can attempt to repair a piece of electronic equipment, or even replace its supply lead, you have to dismantle it. Some manufacturers seem to take a sadistic pleasure in making this as difficult as possible by hiding the screws and the same people seem to design motor vehicles too! But, before you give up and reach for the hammer, do check that the pretty label giving the maker's details, or warning you about the dangers of electricity is not covering the screws you need to remove.

Undoing the screws can be difficult! I weigh under 10 stone and I'm by no means a 'Pocket Hercules', but I seemed to be able to loosen screws that other people at twice my size had great difficulty with. There are two secrets, I first got a screwdriver that fits the screw correctly.

However, 30 years ago a 144MHz rig arrived that no driver I had would fit correctly! So, instead of damaging the screw heads I took the rig it into a tool shop, where I tried a section of screwdrivers, and paid a few pounds for a good quality one that fitted properly and I'm still using it!

The second secret is not to slowly force a reluctant screw but to press down on the head as hard as possible, and then to suddenly jerk it. It's amazing as how 'catching the screw unawares' and apparently 'surprising it' with a jerk, does the trick. Just like the 'snatch' power tools they use changing wheels at the local garage.

When on your own, you often need something to hold an item in place while you work on it, or something to act as a heat sink. You can of course purchase many devices made for just these purposes, but for free go into the street, collect a few of the postman's discarded Royal Mail rubber bands, **Fig. 3** and use these on the handles of a pair of pliers.

See you next month! ●

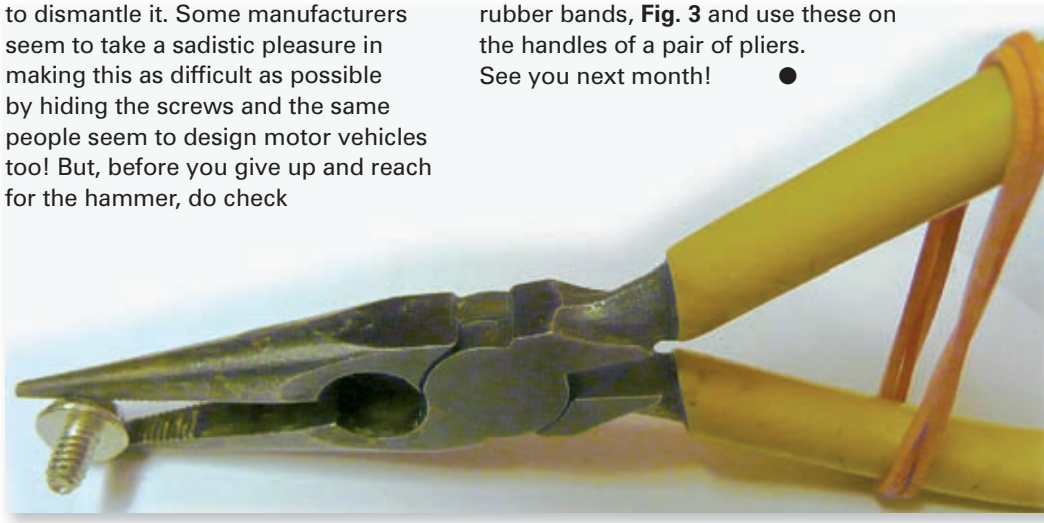

Fig. 3: Dropped and lost in their thousands by your local postman, the red rubber-bands can be put to good use keeping a grip on an item, held in the jaws of a set of pliers.

Problems. I like to hear about problems with older equipment, particularly pre 1990 Yaesu rigs. Please email 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 is plugged into the mains. (Switching off at the wall socket does not necessarily make equipment safe).

Roger Cooke's

morse mode

Roger Cooke G3LDI
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Roger Cooke G3LDI explores the often funny (to him) role of Morse Code in films and makes a plea for volunteer teachers and assessors!

The DX bands are not good for voice operations at present. Especially so, if you're limited to a wire antenna and 10–50W of output. The struggle for DX is easier on c.w. however. So why not make a point of regularly listening down on the c.w. end of the bands.

The 7MHz (40m) band is one that's very productive for DX most of the time. Some people are now calling it the "new 20m band".

There's sure to be some good DX on 7MHz c.w. and it's a good time to build up your country score on that band. The 28MHz band could produce some Sporadic E (Sp-E) propagation plus some 'Te' (trans-equatorial) down into Africa, as could 21MHz. Keep an eye on the beacons.

Morse & The Movies

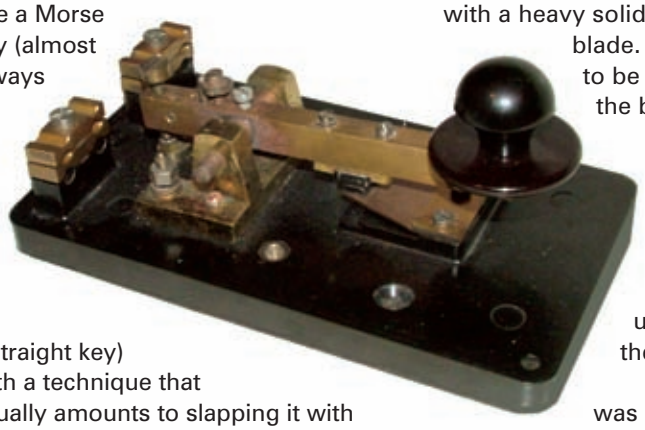
Bruce Trayhurn M0ZOR, brought to my attention just how much Morse Code is used in the Movies. On the **www.arrl.org** website, there's a feature, which talks about Morse code in the movies. The story refers to Robbie Burnett's *Morse Goes to the Movies* website, which has recently been re-established on the internet by **Jeerasak Pitiwatsakul E20TCM** and can be found at **www.qsl.net/e20tcm/morse.html**

Take a look at the list of films here for example, in which Morse Code has been used: **http://www.qsl.net/e20tcm/repo/MovA_D.html**

If you are like me, 'a Learned Elderly Gentleman', or as I prefer, a 'Grumpy Old Man', you'll remember when RKO films were about. There was an excellent Morse sequence at the introduction to their films. However, some film makers just haven't a clue when it comes to using Morse!

In some films there's often just a few slow dots and dashes, usually meaningless and badly sent. Then the supposed recipient of this 'message' reads out loud, a passage which included the situation, medical reports, life history and full dietary details of the sender!

I'm sure you know what I mean and I often laugh when this happens, only to be jumped on! The other thing that annoys me is watching somebody use a Morse key (almost always a straight key) with a technique that usually amounts to slapping it with a full hand or fist! Again, this causes another laugh from me I'm afraid!



However, looking at the list of films on the site, there were some very acceptable sequences and I often wondered if they were arranged by someone who actually knew what he (or she) was doing. I used to watch some of the *Star Trek – The Next Generation* films and they've used Morse on occasions, but the one effect they liked to use was RTTY. One enterprising Amateur happened to record the program and fed the audio into his RTTY modem to decode it, to find that it was a W6 station calling "CQ"! Obviously there was an Amateur on the set!

Learning The Code

If you're new to Morse and fancy learning the code – and why not! Fortunately there's another good link on the ARRL site. Take a look at: **http://www.arrl.org/FandES/ead/learncw/**

There's some very good advice in the pages, with good suggestions as to how to learn the code in the first place. Putting it together is the difficult bit, but that's where the practice comes in – of course!

Knife Morse

Terry Owen G4PSH, was looking back at his time in the armed forces as a c.w. operator. He mentioned that really experienced operators would liberate a knife from the mess and use it with the key. It had to be a knife with a heavy solid handle and springy blade. First, a groove had to be filed in the end of the blade to make sure it couldn't slip out. Then after loosening the knob on the key, they'd slip the end of the knife blade under it and tighten the screw up again.

In use, the Morse was sent as usual, but when coming to a series of dots, they'd hit the blade and let go. This would have a 'Vibroplex' effect and sent a decaying string of dots, though controlling them took some practice! Judging by the picture that Terry sent of his straight key, it's the same as mine, which makes it a Model D.

Many people starting out with Morse, begin by learning and using a simple straight key. Perhaps it would be a good idea for the RSGB to instigate a similar event to the Straight Key Night run by the ARRL – an event otherwise known as the SKN!

Plea For Volunteers

But before I sign off, I must make a plea for GB2CW volunteers and also this time for some more assessors. If you look at the RSGB web site, you will see that there are several regions that could use an Assessor or two. Please do consider this, it's a worthwhile job. **www.rsgb.org**

73 and May the Morse be with you!
Roger, G3LDI

TRADERS TABLE

The equipment for sale on this page is secondhand or ex-demonstration

Disclaimer

Advertisements from traders for equipment that is illegal to possess, use or which cannot be licensed in the U.K, will not be accepted. While the publishers will give whatever assistance they can to readers or buyers having complaints, under no circumstance will the magazine accept liability for non-receipt of goods ordered, late delivery or faults in manufacture.

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ALINCO DJ-V5.....£200
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ALINCO DJ-S11.....£75
ICOM M11 Marine H/H.....£75
ICOM PMR 446x2Water Resist/w.charg.....£200
STANDARD HX260E Marine H/H New.....£99

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ICOM IC-R20 Ex Demo.....£275
JRC NRD-545 with Wideband converter.....£799
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YAESU VR500.....£145
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YAESU MH35A2B SPEAKER MIC.....£19

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ICOM R5 HANDHELD SCANNER.....£165
MAYCOM AR108 AIRBAND/MARINE H/H.....£54
MIDLAND 98PLUS CB RADIO.....£59
NEVADA SINFONIE DAB (WHITE).....£49
NEVADA SINFONIE DAB (BLUE).....£49
PURE EVOKE 1XT DAB RADIO.....£75
PURE TEMPUS 1XT DAB RADIO.....£49
ROBERTS RD41 DAB RADIO.....£99
TEAM ROADCOM CB RADIO.....£89

WATERS & STANTON
01702 206835

Uniden UBC-60XLT 66-512MHz (with gaps) FM Hand Held Receiver 80Ch. 4 x AA cells....£55
Revex P-300E 12V 30A (max) Over Volts/Current Protected PSU....£79
WinRadio WR-G313i 9kHz-30MHz All Mode PCI Internal Computer Controlled Communications Receiver....£479
Kenwood IF-232C RS 232 Interface for Kenwood transceivers....£59
Microset PT-1012 13.5V 10A (12A max) Stabilized PSU with Cigar Lighter Socket....£49
Yaesu FP-700 13.5V Matching PSU with Extension Speaker....£89
Yaesu FT-726R 2m,70cm + 10m All Mode Base Transceiver 10W Mains....£399
Yaesu CT-58 Quadra Lead interface cable for FT-100....£19
Icom IC-A22E Airband H/Held + NAV/COM....£199
Timewave DSP-599 Audio Noise Reduction Unit....£149
Alinco EDX-1 1.8-30MHz Manual ATU for DX-70, DX-77...£115
Uniden UBC-120XLT 66-512MHz (with gaps) AM, FM Hand Held Receiver 100Ch. + NiCad....£65
Icom IC-A3E Airband H/Held + NAV/COM 50ch Alphanumeric & Headset Adapter....£180
Diamond SX-100 1.6-60MHZ SWR,PWR meter 3kW....£69
Aiwa WR-A100 Analogue FM,MW & 7-band SW Portable Radio....£29
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Maycom AR-108 108-180MHz AM,FM 99Ch. Mini Hand Held Receiver 2 x AA or 3V DC....£49
Yaesu MH-31 Dynamic Microphone For FT-897....£21
WinRadio WR-G313i 9kHz-30MHz All Mode PCI Internal Computer Controlled Communications Receiver....£479
Icom IC-E90 6m,2m,70cm FM + DTMF keypad CTCSS & wide RX....£194
MFJ MFJ-903 6m ATU 200W SSB (100W FM)....£49
Ameritron ARB-704 Universal Transceiver to Linear Amplifier Interface Unit....£45
Watson W-620 1.6-200, 118-530MHz SWR/PWR meter 200W....£69
Optoelectronics Optolinx TTL to RS-232 Interface (supports 4 devices)....£65
Kenwood MB-11 Mounting Brackets for the TM-731E as new....£15
Kenwood MB-11 Mounting Brackets for the TM-731E AS NEW....£15
Yaesu FL-2025 2m clip-on 25W Linear (for FT-290R II)....£99
Icom MB-58 Mounting bracket for the IC-207....£10
Icom IC-R2500 10kHz-3300MHz All Mode PC Controlled Dualwatch Receiver with Control Head USB 12V + psu .£349
Kenwood TH-F7E 2m,70cm FM Palm Held Transceiver + 0.1-1300MHz All Mode RX....£149
Trio TM-211E 2m FM Mobile Transceiver with Adjustable Head 1750Hz 25W....£69
Kenwood MC-60 Electret Desk Mic with Dual Impedence....£79
Kenwood MC-60 Electret Desk Mic with Dual Impedence....£79
Kenwood TM-732E 2m,70cm FM Mobile Transceiver with Remote Head 50W,35W....£99
GRE PSR-255 26-512MHz (with gaps) FM only Hand Held Receiver 50Ch. 6 x AA cells....£39
GRE PSR-282 66-512MHz (with gaps) AM, FM Hand Held Receiver + 8.33MHz 200Ch. 4 x AA cells....£45
Samlex RPS-1206HQ 12V Regulated 6A PSU....£15
Yaesu VX-6E 2m,70cm FM Waterproof Micro Hand Held Transceiver 5W + Full CTCSS & Wide RX....£129
Icom IC-E90 6m,2m,70cm FM + DTMF keypad CTCSS & wide RX....£194
Icom IC-T81E 6m,2m,70cm & 23cm FM Transceiver + wide RX & DTMF keypad....£199
Yaesu FT-790R 70cm All Mode Portable Transceiver 1W 8x C Cells or 12V DC with MMB-11 Mount....£149
Icom IC-E90 6m,2m,70cm FM + DTMF keypad CTCSS & wide RX....£149
Midland Alan-48 80ch 4w UK/CEPT CB Mobile Transceiver....£59
Albercht AE-485-S 10M Fm/Am/Usb/Lsb mobile + repeater shift + 1750Hz Tone....£139
Yaesu TS-480HX HF + 6m All Mode Base/Mobile Transceiver with Gen.Cov. RX & DSP Filter 200W 12V....£529
Sangean ATS-818 Portable Communications Receiver + FM stereo & SSB via BFO Dual Time batteries or 6V....£69
Roberts RD-59 Digital radio FM, Portable Radio....£45
Ameritron AL-82 10-160m 1.5kW Linear Valve Amplifier with 2x 3-500 Tubes....£1,699
Kenwood TM-V71E VHF/UHF Mobile transceiver....£229
Yupiteru MVT-7300 521kHz-1320MHz All Mode Hand Held Receiver 1000Ch. + 8.33kHz step....£139
MFJ MFJ-993B 1.8-30MHz Auto ATU + meter, Balun & Display 300W....£209
Icom IC-PCR1500 10kHz-3300MHz All Mode PC Controlled Receiver with USB, CDROM 12V + psu....£319
Kenwood TS-2000E HF,6m,2m,70cm All Mode Transceiver + Gen.Cov., Auto ATU & DSP....£1,199
Icom IC-T81E 6m,2m,70cm & 23cm FM Transceiver + wide RX, DTMF keypad & Cigar Lead....£199
ADI AT-200 2m FM Hand Held Transceiver with NiCd Battery, Charger & Speaker Mic....£59
Yaesu FT-897 HF,6m,2m,70cm All Mode Transceiver, DSP, Gen.Cov.RX + optional 2x FNB-78 & CD-24....£560
Yaesu FT-857 HF,6m,2m,70cm All Mode Transceiver + Gen. Cov.RX 12V + optional YSK-857....£440
Diamond BB7V 2-30MHz HF Ground Plane Antenna 6.7m Long with No Radials....£125
Icom IC-R3 0.5-2450MHz AM,FM,WFM Hand Held Receiver 450Ch. + 2" TFT colour TV....£149
Kenwood TH-75E 2m / 70cm H/Held Transceiver....£65
AOR AR-5000A 10kHz-3GHz All Mode Communications Receiver with TXCO 2000Ch. 12V + psu....£1,049

RADIOWORLD
01922 414796

Trio R-1000 HF RX....£170
Kenwood AT-50 ATU....£175
Kenwood VC-20 VHF Converter....£175
ICOM IC-2200H 144–146....£175
8-BAND W2IHY Audio Processor....£189
AOR AR-8000....£189
IC-E208 2m / 70cm FM Mobile....£189
ATAS-120A Active Tuning Antenna System for FT-897, F....£199
Yaesu FV-101DM Digital Memory VFO....£199
AOR AR-2002 Receiver....£199
Yaesu FT-8800E Dual Band Mobile Transceiver....£199
FT-90R - Transceiver....£199
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AOR 8200 Mk I....£220
Kenwood TR-9000 2m Multi mode....£220
Yaesu FT-480R 2m Transceiver....£220
ICOM IC-290D - 2M MULTIMODE TRANSCEIVER....£220
Yaesu FRG-7700 HF Receiver....£225
Yaesu FT-8900 Quad Band Mobile Transceiver....£229
Icom IC-R3 Hand held Scanner....£250
Icom IC-490E 70cms Mobile....£250
Yaesu FT-290MkII 2m Multi-mode transceiver....£250
PT-50A Microset 50A 13.5V PSU....£272.13
Kenwood TR-751E 2m Multi-mode transceiver....£275
Yaesu FT-690R II 6m transceiver....£275
Kenwood TR-751E VHF Transceiver....£275
MFJ-989D 1500W ATU....£279
Kenwood TS-140S HF Transceiver....£299
Icom IC-735 HF all mode transceiver....£299
Icom IC-R70 HF Rx....£299
Yaesu FRG-100 HF Receiver....£299
Kenwood TM-255E 2m Mobile....£329
Yaesu FT-817ND HF 6m VHF UHF 5W Transceiver....£329
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Icom IC-R1500 Receiver....£349
AOR AR-3000 Wide Band Receiver....£350
Icom IC-718 HF Transceiver....£359
Alinco DX-77E HF Transceiver....£379
Alinco DX-77E HF Transceiver....£379
Icom IC-718 HF All Band Transceiver....£389
Yaesu VR-5000 Scanning Receiver....£389
Alinco DX-70TH HF & 6m transceiver....£399
Icom IC-R72 Receiver....£399
Yaesu VR-5000....£399
Drake R8E HF Receiver....£425
Kenwood TS-690S HF -6m Transceiver....£449
AOR AR-3000A Wideband Receiver....£450
Kenwood R-5000 Communications Receiver HF....£450
Yaesu FT-897D Multiband Portable Transceiver....£459
AOR AR-8600MkII....£499
Kenwood TS-570DG/E....£549
AOR AR-3000A+ Wide Band Receiver....£549
Rode Classic 1 studio condenser microphone....£550
Kenwood TS-570DG/E....£575
TS-480HX....£599
Yaesu FT-736R 2m/70cm Base Multimode....£599
Icom IC-756....£699
Kenwood TS-850S /AT....£699
Kenwood TS-850S /AT....£699
Yaesu FT-920....£799
Kenwood TS-870S HF Transceiver....£799
Yaesu FT-736R 6m, 2m & 70cm Base....£799
Kenwood TS-790E Dual-Band Base / Mobile Transceiver....£799
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OptoElectronics X Sweeper....£1,199
Kenwood TS-950SDX HF Transceiver....£1,399
Yaesu FT-1000 "CLASSIC" HF Transceiver....£1,399
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IC-7800 Icom HF + 6m Trx....£4,995
Icom IC-7800 mk 2 with roofing filters....£5,395

Classified Ads

To advertise on this page see the booking form below. **DISCLAIMER** Some of the products offered for sale in advertisements in this magazine may have been obtained from abroad or from unauthorised sources. ***Practical Wireless*** advises readers contemplating mail order to enquire whether the products are suitable for use in the UK and have full after-sales back-up available. The publishers of ***Practical Wireless*** wish to point out that it is the responsibility of readers to ascertain the legality or otherwise of items offered for sale by advertisers in this magazine.

Aerials

GAREX ELECTRONICS VHF/UHF accessories and aerials, PMR equipment and spares. Tel: 0771 4198 374
www.garex.co.uk
PO Box 52, Exeter EX4 5FD.

G2DYM/G4CFY AERIALS Custom made low noise, low TVI dipoles and trap dipoles. PVC covered stranded wire and 75 ohm feeder properly made-off. Epoxy potted traps. Centre piece and dog-bone insulators included.
Spectrum Communications.
Tel 01305 262 250.
www.spectrumcomms.co.uk

G-WHIP ANTENNAS Mobile, base, backpacker and commercial models. WWW.gwhip.co.uk or telephone 02380 445212 after 6pm.

COOPER LOOPS rolled for magnetic aerials 1-1.27m x 22mm for DIY projects. M. Richards Eng. Wayside, Penwithick Road, St. Austell PL26 8UH. Tel: 01726 850808.

Whilst prices of goods shown in advertisements are correct at the time of going to press, readers are advised to check both prices and availability of goods with the advertiser before ordering from non-current issues of the magazine.

Valves

VALVES AND ALLIED COMPONENTS IN STOCK Ring for free list. Valves/books/magazines wanted. Geoff Davies (Radio). Tel: 01788 574774.

TOP PRICES PAID
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Unit 4, Daux Road, Billingshurst, W. Sussex RH14 9SJ
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www.langrex.co.uk

QSL cards

FULL COLOUR QSL CARDS for all your QSL needs. Shirts and caps with callsigns and also ham cartoons by GW3COI. For free samples contact Chris M0DOL.
E-mail: qslers@aol.com
P.O. Box 184 Northampton NN3 9JH.

For sale

Qtz x-tals 455kHz to 150MHz Std 10.106, 10.245, 10.7, 11.155MHz £1.00/unit. Callg 3.56, 7.030, 21.06, 28.06 £1.00/unit. 1.4MHz fltrs £14.00. 10.7MHz 10kHz fltrs £3.25 P&P £1.00 + VAT. IQ Electo
Tel: 0208 391 0545.
E-mail: vincent@jakomin.fsnet.co.uk

Repairs

REPAIRS TO ALL AMATEUR AND VINTAGE Rx/Tx Cost effective service. Phone or call in for details. Kent Rigs, 52 Salisbury Road, Chatham, Kent ME4 5NN.
Tel: 07903 023437.

RELIABLE REPAIRS for all amateur and vintage equipment. Professional service, reasonable rates. Tel: 01807 580376.
E-mail: radiorepairs@btconnect.com

Wanted

UK SUPPLIER of Calogic SD-8901 quad-fet DBM. IC supplier of JB style air-spaced variable capacitors 10pF min. 50 to 350pF (Max). Box No. 809, PW Publishing Ltd, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

ORDER FORM FOR CLASSIFIED ADS

PLEASE WRITE IN BLOCK CAPITALS

The prepaid rate for classified advertisements is 42 pence per word (minimum 12 words), box number 70p extra. Semi-display setting £13.90 per single column centimetre (minimum 3cm). Please add 15% VAT to the total. All cheques, postal orders, etc., to be made payable to PW Publishing Ltd. Advertisements, together with remittance, should be sent to the Classified Advertisement Dept., Practical Wireless, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Tel: 0845 803 1979, Fax: 01202 659950.

Please insert this advertisement in the ..... **issue of *Practical Wireless*** (if you do not specify an issue we will insert it in the next available issue of *PW*) for ..... insertion/s. I enclose Cheque/P.O. for £.....(42p per word, 12 minimum, please add 15% VAT to total).

Name: .....

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Telephone No.:.....

Box Number @ 70p: Tick if appropriate

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Please photocopy this form or write on a separate sheet if you prefer

BARGAIN BASEMENT

SEND YOUR ADVERT TO:-

PRACTICAL WIRELESS, BARGAIN BASEMENT, ARROWSMITH COURT, STATION APPROACH, BROADSTONE, DORSET BH18 8PW

For your advert in Bargain Basement please remember to include your dated, coloured corner flash from this page along with your entry.

BARGAIN BASEMENT RULES - £4 per advert

Please write your advert **clearly** in **BLOCK CAPITALS** up to a maximum of **30 words**, plus **12 words f**or your contact details on the form provided and send -it together with the dated corner flash and your **payment of £4 (subscribers** can place their advert **free of charge** as long as they provide their **subs number and corner flash),** cheques should be made payable to **PW Publishing Ltd.**, credit card payments also accepted.

Send your advert to **Bargain Basement, Practical Wireless, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW** or E-mail your advert to **peter@pwpublishing.ltd.uk** (If you don't want to include your credit card details on your E-mail, just 'phone us on **0845 803 1979**.

Please help us to help you by preparing your advert carefully. Any advert which contains **??** marks indicates that the advertiseing dept. could not read/interpret the wording.

Please avoid FAXing your advert - it could delay publication.

Advertisements from traders or for equipment that it is illegal to possess, use or which cannot be licensed in the UK, will not be accepted. **No responsibility will be taken for errors and no correspondence will be entered into on any decision taken by the Editor on any of these conditions.**

You should state clearly in your advert whether equipment is professionally built, home-brewed or modified.

The Publishers of *Practical Wireless* also wish to point out that it is the responsibility of the buyer to ascertain the suitability of goods offered for purchase.

FOR SALE

AVO-8 Mk6 as new. Leather ever-ready case and leads, £60 + P&P. Belco wide-band signal generator ARF-300, excellent condition, £25 + P&P. Tel: Stuart 0780 360 1176 (Gainsborough).

BLACK STAR JUPITER 500 function generator 0.1Hz-500kHz, £25. Thandar TP-600 600MHz pre-scaler, £10. Hacker P-18 mains PSU, £10. All excellent condition and all plus postage at cost. Tel: Stuart 0780 360 1176 (Gainsborough).

EDDYSTONE 2273A and army R-209 and advance Hi audio generator. All clean and working. Two radios, one generator. The lot, £50. Must be collected.Tel: Peter Howell 01282 439275 (Lancashire).

ETON AVIATOR G6 Buzz Aldrin edition. Still boxed, AM/FM airband, shortwave with SSB and 700 memories. Batteries/mains, world time zone check. 117-137MHz, shortwave 0-30MHz. Unsued, only £70. Includes post. Tel: 01608 663745 (Warwickshire).

FREE MARCONI SIGNAL GENs TF-144H/45 1-72MHz. AM/CW TF-995/2, 1.5-220MHz. FM/AM/CW regular use 3 years ago. Tel: 01745 592070 (Denbighshire).

HAMEG 203-4 SCOPE 20MHz, dual-channel component tester, £100, £20 P&P. Tel: 01457 762799 (Cheshire).

HRO MX RECEIVER PSU 17 coil packs, £240. V55R look-alike 1155 mains, £70. 1155F complete PSU, needs attention, £60. BC-348 PSU fitted, £70. Hambander Amateur Radio 1948? £45, buyer collects, offers taken. For further info tel John 01634 817846 (Kent).

ICOM R-8500 with high stability crystal and one CW filter. AOR SDU5500, Icom PCR-1500, Watson Supersearcher, Watson Nearfield tester. All excellent condition, c/w boxes, manuals, etc. Hardly used, now retiring, updating amateur station, sensible offer only. Tel: Mike M3YMG 07905 212969 (Canterbury). E-mail csc.int@care4free.net

KENWOOD R-5000 RECEIVER bought 2-9-08. Excellent condition. P.W.O. instr's manual, original box with c.w. filter, hardly used, £340. Tel: William 01524 310382 (Morecombe).

LOWE HF-235 all filters and options. In 19 inch case. Dial lights blown, otherwise okay, £250 plus postage. Tel: Jonathan 0207 536 0466.(London). E-mail: jonathan.kempster@gmail.com

PIRATE RADIO 1960s, 1970's, 72 Cds of Caroline, London 270, Scotland City 208, Manx Radio, RNI transferred from tapes from 99p. Real memories of the off-shore stations in jewel case. Tel: Dave 01244 316673 (Chester). E-mail: g8zre@hotmail.com

VINTAGE MARCONI TEST GEAR two signal generators. Models TF-144G and TF-801A. Vacuum tube voltmeter TF-1041. Grundig VS2, VHF, UHF converter Hewlet Packard model 411A millivoltmeter. All for spares or renovation. Reasonable offers. Tel: Mike 0795 4576 683 anytime (Kent).

YAESU FT-897D in perfect condition. FM use only in original package, £430, saving of over £200. Power Mite NF for the above, £40. Tel: Jim 01242 692667. E-mail: g0ndurs@tiscali.co.uk

WANTED

HEATHKIT DX-100U for rebuild project. Incomplete or just parts considered. Manuals for OS-2 and AO-7U receivers KW-77 SB-301. CRT 1CP1. Tel: 01692 538794 (North Walsham). E-mail: g3wce@supanet.com

OLD HALF INCH FERRITE RODS must be half inch, 12.7mm, in diameter and be six inches long or more. Will pay very good money for the rods. Tel: Peter Tankard 0114 2316321 between 9am and 10pm (Sheffield).

WW2 Army Wireless set such as WS19, WS53, WS52 WS22 and any other ex WD radio's ie T1154 R1155 at reasonable costs for newly retired person with renewed interest in WW2 Radio's
Tel: Anthony 01908 373114. E-mail: howard.anthony@tesco.net

XTAL FILTER for HRO or scrap RX with good filter, KW160 AM TX. Tel: 01248 722041 after 5pm please (Anglesey).

EXCHANGE

BOUND VOLUMES of the Radio Constructor Vol. 25 and Radio and Electronics constructor Vol. 27. Exchange both for bound volumes of 1956/57 Short Wave Magazine. Tel: Ron Sharp 01793 331585 (Swindon).

Please make any cheques for Bargain Basement adverts made payable to PW Publishing Ltd.

Bargain Basement order form

Please insert this advertisement in the next available issue of Practical Wireless.

☐ For Sale ☐ Wanted ☐ Exchange

PLEASE NOTE: as a security measure, you must include your house number and postcode.

Name .....

Address .....

.....

..... Post code .....

Telephone Number .....

PLEASE WRITE IN BLOCK CAPITALS

CARD NUMBER

Signature ..... Security number

LAST THREE DIGITS ON THE BACK OF THE CARD

Switch issue number (if on card) .....

Start date of card ..... Expiry date of card .....

My Subs Number is .....(or mailer label) .....

		(30)	

CONTACT DETAILS FOR ADVERT. Please only write in the contact details you wish to be published with your advert, ie. do you want your name & address, or just your telephone number? Your advert, you decide! **PLEASE - No FAXed Ads!** (12)

B.B. Sept '09

THE PW PUBLISHING RADIO BOOKSTORE

mail order...huge range in stock...fast delivery

PASSPORT TO WORLD BAND RADIO 2009

THE PUBLISHER OF THIS BOOK HAS PROMISED DELIVERY TO US FOR FOUR MONTHS NOW AND STILL NONE HAVE ARRIVED SO WE'VE NOW CANCELLED OUR ORDER AS THE 2010 EDITION WILL BE ON SALE IN NOVEMBER!

THE UK & IRELAND AIRBAND FREQUENCY GUIDE 13th Edition

Includes ALL Airports in England, Scotland, Wales, Channel Island, Northern Ireland and the Republic of Ireland, ACARS Frequencies, Alphabetical Airfields & Airport Frequencies with Company Frequencies, Numerical Frequency Listing, ICAO Airfield Designator Decodes, Radio Call signs, 2 & 3 Letter airline Prefixes, Civil Aircraft HF (SSB) Frequencies, OACC HF (SSB) & VHF Frequencies, Abbreviation List, Phonetic Alphabet & Morse Code. VOLMET frequencies.
INCLUDES REPUBLIC OF IRELAND

146 pages A5 spiral bound "Lay Flat"

£8.99

IN STOCK NOW

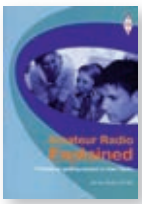
THE UK & IRELAND FLIGHT ROUTES SUMMER 2009

NEW FORMAT EASIER TO READ

Lists around 11,000 flights which originate or terminate in the UK,N I. and the Rep. of Ireland. In excess of 170 Airline Companies are listed together with Airport of departure and arrival with approximate times of operation. Types of aircraft in use on a given route are included as are both ATC (where available) and company flight numbers. The trend towards the unpredictable use of Alpha/numeric non airline flight numbers has been addressed. Example THOMSON FLIGHT TOM 4XK is revealed as TOM1753 from Zakinthos to Glasgow. Thomson are the most prolific but many many others are shown, Ryanair, EasyJet, FlyBe to name but three, many other airlines seem to be also using this type of radio callsign.
The 200 plus pages are A5 wire "lay flat" bound

£12.95

AMATEUR RADIO EXPLAINED



Written by well-known author and radio amateur Ian Poole, G3YWX, this book provides the ideal introduction to the wonderful world of amateur radio. Amateur Radio Explained is for people first taking an interest in amateur radio and those ready to move on from Foundation level. Written in a readable and easy-to-understand fashion, Amateur Radio Explained is the perfect introduction to the exciting world of amateur radio. 80 pages.

£5.79

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The UK's most comprehensive and up to date airband frequency directory. For the first time, Airwaves 2009 includes a new European section containing the air traffic control centre and airfield frequencies for 18 European countries.

This is the 16th published edition of AIRWAVES. As always, the frequencies, maps and other information have been fully updated for 2009. There has been an above average number of frequency changes in the past year, with a significant number of new frequencies added.

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NEW IN STOCK NOW

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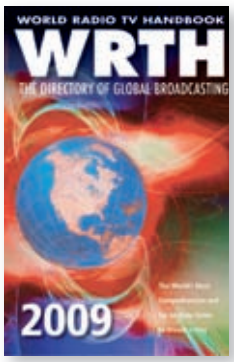

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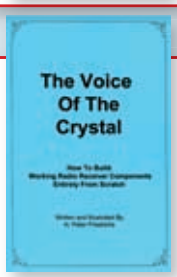

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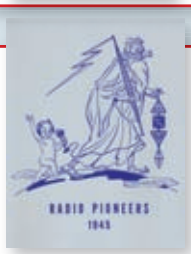

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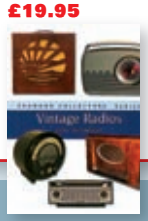

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Rob Mannion's

topical talk

Chatting about everything from installation techniques to police radio techniques!

The letter (this month) from **Steve Ward G4MVL** regarding equipment installation techniques was one of many I've received from *PW* readers since we first aired the topic. It seems that everyone has an opinion when the subject of radio communication equipment in vehicles is raised! Indeed, all the letters that have come in to the *PW* office on the subject – including those where the author didn't want their comments published – have shown much interest!

However, Steve Ward G4MVL was professionally involved in the radio communications and electronics installation industry, so I've invited him to write an article on the subject for *PW*. And, judging by Steve's response, I'm sure we'll all benefit from his years of experience and the article will provide fascinating reading!

One point regarding radio communication equipment raised by two readers who are police officers (serving in widely different parts of the UK) concerned the use of hand-held microphones in police cars. Anyone who has watched BBC 1 TV's *Traffic Cops* programme, will realise that it's incredibly difficult for the officers involved to drive, navigate and provide a running commentary to headquarters. For example, there must be a reasons why hands-free communication equipment isn't used by the programme's legendary **PC Tim Scothern** and his colleagues during their important and dangerous work. On the other hand, the **South Yorkshire Police** helicopter **Sierra Yankee 99**, complete with Tim's sister-in-law **Inspector Helen Scothern**, offers every operating convenience to the crew! However, I'm sure **someone** will explain the official reasons for the apparent lack of 'hands-free' equipment in police vehicles!

Calibrating Home-brewed Equipment

The letter from **Ian Wilkinson M3FQW** this month, highlights a problem many of us have faced when building simpler receivers and variable frequency oscillators (v.f.o.s). In fact, many years ago, when using my simple receivers, I often had no idea to which band I was really tuned into, let along which frequency!

Eventually, I built a very simple crystal calibrator circuit published in *Short Wave Magazine*. I then spent all my pocket money on a 3.5MHz crystal, then using the harmonic signals to mark the lower band edges on the (then) all harmonically related bands. Later, I managed to get a 100kHz crystal, which provided calibration 'pips' all the way from 1.8 to 28.9MHz. Later still, I used a carefully calibrated dip meter to set the tuning.

Keep up with the construction work Ian! We'll see what advice comes from our readers and authors to help you and others!

Loch Rannoch TV Reception

Bill Jarvis GM8APX (Letters this month) really brought back the memories for me when we started chatting about his 'non-line-of-sight' u.h.f. pathway from the Angus TV transmitter in Scotland. In fact, it took me back to my time at the **Independent Broadcasting Authority** (IBA) headquarters in Winchester, where we used radio propagational planning charts, which allowed for the standard refractive index in the troposphere. These clearly indicated when, or when you couldn't expect a signal from a known source when a plot was made. In practice, they were remarkably accurate.

When my family and I lived in the village of Badcaul, above Little Loch Broom in Wester Ross, the nearest Band IV transmitter, Eitshal, on the Isle of Lewis was badly obstructed. However, after using the special charts and doing some field strength tests, I found that the completely obstructed pathway from the Band V Rosemarkie transmitter on the Black Isle (near Inverness), did provide a usable (but far from perfect) service on all four channels. The special propagational profiling charts showed it was possible due to the refractive index, the natural 'bending of the u.h.f. signals through the troposphere and the field strength tests proved it. Yes, it's a truly fascinating subject Bill!

Rob Mannion G3XFD/EI5IW

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