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**HF + 6m, 2m, 70cm*
**CW, SSB, AM, FMN, FMW, PACKET, DIGITAL*
**HF/6m 100W, 2m 50W, 70cm 20W*

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This dual band mobile offers D-Star facillities with digital speech as well as normal FM at 50W

IC-E2820 Mobile FM **£384 C**
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160m - 6m 100W
SSB CW AM FM
IF DSP
Voice Memories
23 x 8.4 x 22 cm

Also get voice recorder and announcer!

W&S £589 D

Deal: *Get FREE Extra DC Lead!* Exclusive to PW Readers - Request when ordering

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£2069 D

FT-2000D 200W

£2639 D

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100W
160 - 6m

W&S £1099 D

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New 2m/70cm Mobile with Bluetooth option.

Bluetooth

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Deal: SP-20 Filter Spkr FREE **W&S £6599 D**

FT-817ND YAESU

*TX: 160-10m, 6m, 2m, 70cm
*USB, LSB, CW, AM, FM, WFM, Digital (AFSK), Packet (1200/9600 FM)

Deal: bhi DSP fitted **£549**

W&S £439 D

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KENWOOD

*100W All-mode
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*DX cluster QSY

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TS-480HX **£849 D**

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ICOM

HF + 6m 100W All-Mode

W&S £2068 D

Special Deals

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IC-7000

ICOM

HF/VHF/UHF All-Mode Transceiver

W&S £939 D

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Deal3: With TFT + Power-Mite PSU £1049

IC-7400 Deal 1

ICOM

HF - 70cms 100W transceiver plus SP-21 spkr and SM-20 mic **£1511 D**

IC-718 HF 100W transceiver **£449**

IC-706IIGDSP

ICOM

HF/VHF/UHF 100W Transceiver

Deal: IC-706 + New Power-Mite-NF FREE **W&S £739 D**

IC-703DSP

ICOM

10W QRP HF-6m built-in Auto ATU + DSP

W&S £524.95 D

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Rig not included!

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* *Self-Powered*

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"Noise Away" Amplified Noise Elimination Module. Fits in-line between the equipment & speaker.

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RX-403	125 - 525MHz 200W	**£49.95 B**
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Dual Band FM Mobile
*144-146MHz, 430-440MHz Tx *55/50W (3 pwr steps each band) *Wideband Rx 118-173, 230-549 & 810-999MHz **£254.95 D**

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2m/70cm 100W Base station all-modes Option for 23cm module (UX-910 £359)

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As Above but with 23cm Module ready fitted and a big saving as well.

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2m 55W FM mobile with rugged construction and with digital option.

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Kenwood VHF/UHF Mobiles/Base

TM-271E

2m FM 60W Mobile Transceiver. MIL-SPEC DTMF Mic. Built-in CTCSS & DCS encoder / decoder.

£165 D

TM-D710E *Low Price* **£429 C**
Dual band APRS 50W FM

Yaesu VHF/UHF Mobiles/Base

FT-7800E

*2m/70cm Dual Band Mobile *High power 50W 2m /40W 70cms *Wide receive inc. civil & military airband *CTCSS & DCS with direct keypad mic. *1000 memories **£189 D**

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*2m/70cm Dualband FM Mobile transceiver

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Programming Software For Your Radio

Programme Memories and all your radio's functions from your PC. Includes Windows software and serial lead with adaptor for your Radio.

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ADMS-1H for VX-2E / ADMS-1J for FT-60E
ADMS-2H for FT-8900 / ADMS-2I for FT-8800
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ADMS-3 Programming Kit for VR-500
ALL **£41.95** with FREE PC Radio Data Lead.
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IC-E92D NEW

ICOM

2m/70cm Handheld with Built-in DSTAR

* *144-146MHz / 430-440MHz*
* *FM FMN WFM AM (Rx) DV*
* *5W/2.5W/0.5W/0.1W*
* *1304 memories*
* *100 scan ranges*
* *Rx range 0.495kHz-999.9MHz*
* *CTCSS, DTCS, DTMF*

Includes antenna, and charger.

A fully fledged digital radio using D-Star as well as traditional dualband.

W&S £369.95 C

Icom VHF/UHF Handhelds

IC-E91 D-Star Ready

Latest dual-band handheld transceiver. receiver that covers 0.495 to 999MHz. **£269.95 C**

IC-E91	with D-Star	**£379.95 C**
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Kenwood VHF/UHF Handhelds

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* 144-146MHz Tx/Rx: FM
* 430-440MHz Tx/Rx: FM

Up to 6W out with Li-ion battery and **"scanner" style coverage from 100kHz to 1300MHz** including SSB on receive! **£229.95 C**

TH-K2E	2m 5W	**£159.95 C**
TH-K2ET	2m 5W FM	**£165.95 C**
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Yaesu VHF/UHF Handhelds

VX-7R

Black or Silver Available. Totally waterproof, Wide frequency coverage 500kHz-900MHz AM/FM.

£259 C

VX-6E	2m/70cm wide rx 5W	**£199.95 C**
FT-60E	2m/70cm wide rx 5W	**£142.95 C**
VX-3E	2m/70cm	**£139.95 C**
VX-170	2m 5W w/16-key pad	**£95.95 C**

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Official Distributer UK's Lowest Prices

Power-Mite-NF NEW

NOISE OFFSET POWER SUPPLY

22 Amps of continuous power output with variable voltage plus the new Noise Offset Function (NF).

W&S £69.95 C

Power-Max-45NF POWER SUPPLY NEW

40 Amp (45A Peak) continuous switch mode PSU with Noise Offset Function (NF). *Output 4-16V DC Variable *Input 100-260V AC *Short Circuit & Over Voltage Protection

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22 Amp Cont. (25A Peak) with Noise Offset.

W-3A	Output 3A, 13.8V DC, supply 230V AC	£24.95 C
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Pre-tuned & Weather Sealed Fibre-glass encapsulation

W-30 2m/70cms 3/6dB length 1.15m 150W SO-239 **£49.95 C**

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Watson mobile antennas are made to a high specification and employ stainless steel whip sections with SO-239 receptors. All models are pre-tuned and will withstand at least 100 Watts RF.

Watson - the name you know!

W-2LE	2m 0dBv length 0.48m	£10.95 C
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W-77LS	2m/70cm 0/2.4dBv length 0.43m	£14.95 C
W-770HB	2m/70cm 3/5.5dBv length 1.1m	£19.95 C
W-7900	2m/70cm 5/7.5dBv length 1.58m	£31.95 C
W-627	6/2/70cm 2/4.5/7.2dBv length 1.6m	£34.95 C

Antenna Time - FREE Carriage!

We are offer ***FREE*** carriage to PW readers who order antennas from this advert until 18th July. This applies to UK mainland only.

For full technical information go to www.wsplc.com and key in the antenna product code.

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6-BTV	£255.95 D	RM-10	£20.95 C
5-BTV	£224.95 D	RM-12	£20.95 C
4-BTV	£182.95 D	RM-15	£20.95 C
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MO-2	£34.95 C	RM-30	£28.95 C
MO-3	£28.95 A	RM-40	£29.95 C
MO-4	£24.95 A	RM-80	£30.95 C

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MA5V	£279.95 D
MA8040V	£319.95 D
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R8-GK	£54.95 D

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A4-S	£739.95 D
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D-3W	£299.95 D
D-4	£419.95 D
TEN-3	£259.95 D

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Voyager-DX 160-40m ~~£409.95~~ £349.95 D

Eagle-DX 40-10m ~~£349.95~~ £299.95 D

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AV-18AVQ	£269.95 D	**Hygain Beams**	
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AV-18VS	£109.95 D	TH-3Mk4	£532.95 D
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20089	£70.95 D	**Tonna 23cms Yagis**	
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Practical Wireless July 2009

contents

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Rob Mannion's

keylines

Rob joins a special 'club' that nobody wishes to join!

Unfortunately, overnight on Thursday/Friday March 26th–27th I joined a club that nobody really wants to join – when my back garden shack was broken into. I had taken a few days off after pass-for-press and my wife **Carol** alerted me when she saw the damaged shack door on going into the garden on Friday morning.

The door was ajar, at a drunken angle and had been torn off its heavyweight hinges with the help of a garden lawn edging tool (It was laying nearby – broken). Lesson one, don't leave tools handy for creatures of the night to use! Dorset Police officers responded very quickly indeed and – although I was later to be proved wrong – it appeared nothing had been taken. In fact, I didn't enter the shack until after the Scenes of Crime Officer had completed her work.

At the time, I thought myself lucky that perhaps the heavy right hand door (the shack has double doors) had fallen on to the thief's foot! At the time I was relieved that seemingly nothing had been taken. The wooden building stands on a concrete paving stone base and is very heavily constructed, fully lined and well insulated. The only really vulnerable points were the double doors and the windows, two of which are fully opening types. Needless to say – I've now made the double doors into a single opening type and strengthened the locks and hinges.

Within hours I had also fitted a passive infra-red (PIR) type security light. I'd actually been meaning to do this for some time, but then also decided to install a closed circuit TV system (CCTV) with recording facilities (more about that later!).

Slowly it dawned on me, as I checked the whereabouts of various items of equipment (some pieces were on loan to friends, etc.), that some items had gone. Fortunately, my newer Alinco DX-70TH wasn't taken as it wasn't on view, but my original **DX-70** (one of the earliest sold in the UK) a **Kenwood TM-V71E 144/430MHz** f.m. mobile rig (the property of Kenwood UK) and a old 144MHz f.m. hand-held of uncertain vintage and manufacture had gone. However, I have no doubt that other things have gone – when I come to need them! Losing things in a equipment-packed shack is a bit like 'Kim's Game' (spotting what's gone from a large tray of assorted items after a brief glimpse).

The serial number of the original Alinco DX-70 is **T00000723**, and the Kenwood serial number is **9050017**. Both rigs are minus power cables and manuals. The Crime number is **C:09:C:13073** and the officer handling the case, (at **Boscombe Police Station**, **Gloucester Road**, **Boscombe, Bournemouth**, **Dorset BH7 6JA**), is **PC Smith 13073**.

Maplin's Chinglish!

Years ago it was the Japanese-to-English translations (prepared with inadequate dictionaries) that caused amusement and confusion to English-speaking camera users. Nowadays though, almost without exception things are much better, including the Japanese Amateur Radio equipment manuals, which are very well presented. Unfortunately, the same can't be said about some of the instruction manuals provided by Maplin Electronics to accompany Chinese made equipment!

The CCTV system – with four day/night vision cameras and a 250GB hard disk recorder – I purchased from Maplin, was reasonably priced and well constructed. However, the instruction manual was absolutely appalling and a real barrier to setting the system up! So, I wrote to complain to **Keith Pacey**, Maplin's Managing Director at the company's Rotheram, South Yorkshire headquarters. The reply I received (not from Keith Pacey himself) basically apologised for the apalling manual, while 'wrapping up' the apology in 'corporate speak', saying that the manual had escaped their 'rigorous' standards' as it had been bought in, rather than being an actual Maplin named product.

My original letter to Keith Pacey reminded him that Maplin Electronics now hold an extremely important niche in the UK's specialist electronics market and that this position also brings responsibilities. Indeed, I consider that extremely poorly presented instruction manuals and less-than-technically-aware store staff (to help sort problems out) must be addressed if Maplin Electronics are to keep technically-informed radio-hobbyists as customers.

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*.

Appalling Amateur Radio Mobile Installations!

Dear Rob,
Over the years I have encountered some appalling Amateur Radio mobile installations. I've seen loose transceivers on dashboards with leads hanging all over the place, and even detachable front panels attached to gear levers with sticky tape! With this in mind, I think you and *PW* readers may be interested in my own mobile set up.

Modern cars don't lend themselves to Amateur Radio purposes very well. There was a time when there used to be a shelf under car dashboards, unfortunately this feature is no longer provided. What is good however, is that Amateur Radio rigs are getting smaller and this helps. I don't own a small modern rig, so I recently installed an ancient FDK-800D in my Vauxhall Astra car.

I decided – because of its size – the rig should go into the footwell and as far to the right as possible. A point to bear in mind here is that in the case of a serious accident it could be in line with a kneecap! (The reason why a lower shelf isn't fitted anymore!). The microphone hook is fitted to the driver's door, so opening it means that the curly lead swings out of the way, so I don't get tangled up as I get in and out.

Although the vehicle is old, it's new to me, so I was reluctant to drill holes in order to fit antennas. Magnetic mounts aren't for me as they can badly scratch paintwork or detach themselves – but most of all I dislike capacitive coupling. It's far better to make a proper mechanical connection!

The mount I made used an SO-239 chassis socket. This was attached to a section of aluminium angle that I drilled and tapped on the inside of the car's fore-and-aft mounted roof rails. I then used coaxial cable and sealed it at the antenna end using epoxy resin adhesive (I used Araldite). Incidentally, I've used this technique of keeping moisture out of coaxial cable for many years and consider it to be far superior than other methods of sealing.

For my mobile system I've found that RG58 coaxial cable is perfectly adequate and, being small, is easily hidden by the trim on my car. The antenna I use is the Watson 770HB, although the dual-band facility is wasted on my rig, the antenna is relatively low profile as it's finished in matt black

Power to my rig is taken (via a fuse) directly from the car's battery. Access to this meant that I had to going the the engine/passenger compartment bulkhead. I didn't want to drill holes, so I used the large hole

Star Letter

Cambridge Club Visit & Security Problems!

Dear Rob,
I hope you and Tex are both well and busy at *PW*? I must also must thank you Rob for a wonderful *PW* club visit to the **Cambridge and District Amateur Radio Club** on Friday April 24th, I very much enjoyed your talk and hope you had a good journey home.

However, I thought I'd share some recent events with you – the whole story goes like this. A few weeks ago I went out playing portable radio and testing a home-brewed version of the DMV Pro antenna that was featured in and *PW*. I chose an r.f. quiet location that's a large lay-by off a fen road near the town of Soham in Cambridgeshire. I then set up the antenna and radio (FT-897) and had a few s.s.b. contacts into Europe, Russia and one into Canada, then switched to PSK31 and continued until rain stopped play. Feeling pretty happy with the couple of hours operating, I then headed home and thought no more of it.

That was until about a 1500hrs today (May 11th), when there came a knock at the door. Upon answering it, I was greeted with a Police Officer (a Detective Constable from the CID) with a folder on me, (insert a very worried look here!). He explained that he was investigating me on behalf of the United States Air Force (USAF) as a possible security threat,

It transpired that some USAF personnel had driven past my portable station and instead of simply asking what I was doing and what was going on – they hit the panic button! So, after showing the Officer my antennas (G5RV and 9-element Tonna) the shack, the log book of the day's operating, my Licence and the portable antenna, he was happy all was well and we both giggled at the USAF's paranoia, while enjoying a coffee.

I must point out that I was over nine miles from the nearest USAF base (as the crow or jet flies), and some 16 miles by road – and my portable Amateur Radio station was hardly covert! I just wish these people would ask, as it would also give us a chance to promote the hobby a little.

Keep up the good work on *PW*!

Steve Norman 2E0MVB
Newmarket
Suffolk

Editor's comment: *I very much enjoyed the Cambridge club visit thank you Steve! Your Club made me very welcome indeed. However, bearing in mind just how high profile Amateur Radio is in the USA, compared to the UK, I read your comments on the police visit with great astonishment! Please join me on the* Topical Talk *page (81) for further discussion.*

(fitted with a rubber grommet) used by the wiring loom.

To back-track slightly, I drilled and tapped the antenna bracket to the ends of the roof rails. These, on my car, and presumably some others, are made from a solid aluminium alloy (check with a magnet) so there's no real problem. I think that the secret is to take time marking out before punch-marking and drilling with a sharp bit. My advice is always start drilling with small holes first, clearing the swarf regularly. Failure to do so will will most certainly in a broken drill bit. A dab of lubricant can be used to advantage (WD40 – or paraffin if handy – will work well). Then follow on with largest bits.

Always take extra care when you're drilling – at some rake angles the drill bits can pull themselves into the material very rapidly! I also recommend using a coarse tap, alternatively you could use self-tapping screws, again with a coarse thread and fix them with using star-washers. This approach should help produce a firmly mounted and reliable mobile antenna system. I hope readers find my letter helpful. Best wishes to everyone at *PW*.

Maurice Woolard G7USX
Elmstead Market
Colchester
Essex

Editor's comment: *Unfortunately, the photographs that Maurice G7USX provided on CDROM wouldn't reproduce for use on the letters pages. Incidentally, we very much appreciate photographs for this section of* PW *and I'd like to suggest that before providing photos that readers contact* ***Tex Swann G1TEX*** *here in the office to discuss the formats we can use. A few minutes discussing formats with Tex can reduce the inevitable stress otherwise induced by computer problems!*

The G5RV Antenna & Louis Varney Quotes!

Dear Rob,

The letter from **Dennis Dumbleton G3HCM** (April) concerning the correct feeding of the G5RV antenna had me digging out my November 1966 copy of the RSGB *Bulletin* and reading *The G5RV Aerial - Some Notes on Theory and Operation* by **Louis Varney G5RV**. The first figure, Fig.1, of the article shows the dimensions of the full size aerial fed at the bottom of the matching stub with *'Any length of 75 ohm twin lead (up to maximum of approx 100 ft) or 80 ohm coax'*. No balun is shown although later in the article he discusses the advantages of twin lead (feeder) over coaxial cable. He (G5RV) points out that the use of coaxial cable may induce currents in the braid and cause unwanted radiation. He also writes that the use of a broad-band balun with coaxial cable suggested by G3HZP *'…would be preferable …'*.

In his letter, Dennis G3HCM writes that he prefers an end-fed wire antenna to a G5RV. In fact, G5RV writes that the typical half wave dipole changes to that of *'a typical long wire at 14, 21 and 28 MHz'*. So, is G3HCM using a sort of covert G5RV?

Also, in the article G5RV discusses standing wave ratios (s.w.r.) with coaxial cable, stating that "*s.w.r.s can be as high as 10:1 on 3.5MHz and 5:1 on the higher bands, with 14MHz having the lowest s.w.r.*"

The last paragraph leads me neatly to the letter from **Tony Tuite GW0NSR** (same month) extolling the virtues of valved gear. No modern transmitter with a transistor power amplifier could stand an s.w.r. of more than (say) 3:1. The transmitter would simply close down. However, with an 807 in the p.a. stage and a pi-network there was no problem!

Louis G5RV's final paragraph discusses the half size version of his aerial, saying that '*…it is quite possible to scale all wire length dimensions… down to exactly half size… will work from 7 to 28MHz'*, and that "*optimum performance will occur on 28MHz.*"

As G5RV was writing before the 'WARC' bands were introduced, his aerial would not have been designed for use on the 10, 18, and 24MHz bands. I hope readers find this summary useful!

Bob Harry G3NRT
Harpenden
Hertfordshire

Codar Equipment & AM

Dear Rob,

I've only just recently started buying *PW* again and read **Steve Cook's** letter in the June edition regarding his Codar CR70A, reminded me of my introduction to Amateur Radio in 1971. My very first receiver was indeed the Codar CR70A and as I recall, it was also a bit deaf until I added the Codar PR-30 Pre-selector. I used to listen to the new G4s running the Codar AT5 on 160m a.m.

I know I purchased my Codar CR70A ready built, do I recall correctly that they were also available in kit form?

Incidentally, reading some recent past issues of *PW* I find that apart from Amateur Radio we also share another interest, that of British Railways! I rejoined the **British Railways Amateur Radio Society** (BRARS) at last year's Leicester Rally. I am mainly interested in BR (W) Steam during the late 1950s and early 1960s. I am also looking forward to doing a bit of railway modelling at some stage, so I will have plenty to do when I retire in around 10 years time! Regards to everyone at *PW*.

David Higgs G4NVB
Bletchley,
Milton Keynes

Editor's comment: *Nice to hear from you David! Perhaps there should be a net – in addition to BRAR's own nets – where we can all chat about railways (I'm banned from doing so in the* PW *offices!).*

Marine Ducting

Dear Rob,
First, thank all of you at *Practical Wireless* for a most excellent and practical magazine!

However, I'm actually writing concerning a letter on Page 7 of the March 2009 *PW* by **Bob Williams G1BCZ** regarding North Sea Propagation. He writes that although he was able to engage in QSOs with Holland and Germany, his friend up the coast at Hemsby with a 40ft tower and bigger antennas was unable to make contacts. In your comments at the bottom of the page you suggested that Bob was "fortunate enough to find a classic 'marine duct' on the band."

I was excited to read, both Bob's letter and your own comment. Many years ago when I was Novice (VK6MJS) living at Merredin in Western Australia. I had a 25ft tower and a 5-element home-brewed 2 metre beam. My friend **Lindsay Hirschausen VK6ANO**, lived at Kulin also in Western Australia. I guess we would have been about 150 miles apart as the crow flies. We would frequently work on 2 metres when the ducting was going north south. Lindsay could move his set-up very easily – he just hopped into his car and drive up a hill out of town. The amazing thing to both of us, was that often there were times when he left his house to drive up the hill, at a certain point we could no longer work. The signal would fade and that was that – until he moved back down the hill to his house. On another occasion, he was returning home and I was able to talk with him half way down the hill, but not at the top or the bottom! It was fascinating stuff and we would experiment each time we detected the ducting was available.

Please do feel free to publish this letter! I had a look to see if Bob Williams had E-mail, however, it appears he doesn't. We only ever have ducting when there is a heat trough just inland from the coast. But, I really want to try marine ducting to see if we can have QSOs between the mainland of Australia and Tasmania.

In your reply you commented that you thought my letter was exciting, and I can assure I was – and I'm still excited – to read of Bob's experience. Two metres is a fascinating band, it really has the best of everything. Especially in terms of physical antenna size for those of us who like to experiment with antennas. I often wished we had a big tower, say about 100ft that we could mount a beam on the side and move the beam up and down the tower to see if the ducting was like a tunnel and increased/decreased elevation. Unfortunately we both moved and so were never able to try the idea out.

Can I just add this little bit? One of the reasons I like *PW* so much is the practical nature of the magazine. I like to build things and your magazine presents the projects in clear concise language, with real pictures that show what each stage of the project should look like. For someone like me, this is so important. Kindest Regards from VK land, again, thank you all for a most excellent magazine.

Stanley Mitchell VK3BOT
Karingal
Victoria 3199
Australia

Editor's comment: *Thank you for your fascinating E-mails Stanley! I think we're both very much interested in what could be achieved with planned marine ducting QSOs (quite apart from the remarkable 'off chance', unplanned DX workings we hear about). Please join me on the* Topical Talk *page (81).*

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**

Send your letters to:

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Buying & Selling On eBay

Dear Rob,
As both a private buyer and seller on eBay I was rather saddened to read your editorial featuring eBay in the June edition of *Practical Wireless*, doubly so as Radio Amateurs were involved on both sides and we like to see ourselves as communicators and people of goodwill.

In any market a seller's good reputation is a delicate thing easily lost and hard to re-gain. The way to maintain that reputation is by being honest, being informative about your item and practising good communications. A quick E-mail costs nothing and can stop misunderstandings before they occur.

Before buying an item carefully check the description, if it says "it's a radio thing" or "not tested as I don't have a mains lead" you know you are taking a big risk – you may get an incredible bargain but you have to be prepared to end up with a dummy. Check the seller's feedback – look at what other people have said about their dealings with the seller. If 99% of buyers have good things to say about a seller then you are going to be okay. If more than, say, ten percent give negative feedback then perhaps the buyer should give that seller a miss.

On a personal level, I am mostly buying from and selling to other Radio Amateurs, I work on the basis that they are as honest as I am. I value the good reputation I have built up by being honest, prompt and communicating well. Occasionally things will go wrong, like the bag that arrived empty, or a person from India bidding on a UK only item – but prompt action and honest dealing will nip any potential bad will in the bud.

As to the disparaging remarks about *PW* you mentioned, I have to say that the balance and content of the magazine is just about right and makes for an enjoyable read! 73.

Charlie Ivermee M0WYM
Peartree Green
Southampton
Hampshire

Editor's comment: *Thank you for your wise eBay advice and comment on* PW *Charlie!*

news & products

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

Bletchley Park – A Celebration Of Radio Communications

Second World War Heritage Site Bletchley Park will be celebrating the essential contribution of radio to the war effort and it's subsequent significance at the family 'Wireless Waves' event on Saturday and Sunday August 1st and 2nd.

Various radio societies and other groups will demonstrate a range of equipment from the Second World War onwards, including the **Vintage and Military Amateur Radio Society**, **Milton Keynes Amateur Radio Society**, **Bletchley Park Radio Society** and a Second World War replica German field radio station. Experts will be giving lectures throughout the day and the Enigma Cinema will be showing documentary films on how communications changed the world.

Also look out for the wartime plotting table, re-enactors picnicking around the site and the Model Boat Club on the lake. Gates open at 10.30am and the event ends at 5.00pm. Normal admission prices apply. For visitor information, contact (**01908**) **640404**, **info@bletchleypark.org.uk** or visit the website **www.bletchleypark.org.uk**

Dundalk's 40 Years On The Air

The keen members of **Dundalk Amateur Radio Society**, based in County Louth in the Republic of Ireland, are running a station for the CW Field day, on 6/7th June and the call used will be their contest callsign – **EI0W**. The Society will also be activating their club callsign – **EI7DAR** – for the weekend of **June 20th–21st**, as part of their 40th anniversary. On the same weekend in June, this busy club will also be taking part in the 80 Metres counties contest (Summer) 2009 as **EI7DAR/P**. The latter operation will be including, as an exercise, the testing of emergency communications with the **Amateur Radio Emergency Network** (AREN) on 3.5MHz. See the website **www.aren.ie**

Video of the events will be relayed to the club web site **www.ei7dar.com and** if things go well, the club hopes to have 'live streaming' of the video of the activity. This will be a test of communications for the club's ATV enthusiasts, on both weekends.
Further details from **Peter Grant EI4HX, E-mail secretary@ewi7dar.com or ei4hxperimental@eircom.net**

Historic Irish 'Experimenter' To Be Retired

Newshound has heard that The **Commission for Communications Regulation – ComReg**, the official regulator in the Republic of Ireland, has announced that 'Lifetime' Licences are to be phased in at a price of €100 (with concessions) and the historic – very much cherished 'Experimenter' term will be replaced by the term Radio Amateur.
See **www.comreg.ie/**

Somerset Supper & Trains!

This year, **Walford Electronic's Somerset Supper** had the added attraction of the Somerset and Dorset railway! Diners brought their electronic construction projects for an informal display and competition judged by the internationally well known QRP enthusiast the **Rev. George Dobbs G3RJV**. Apart from members of the local **Yeovil** and **Blackmore Vale** radio clubs, **Steve Hartley G0FUW** of Bath Buildathon fame and RSGB author, **Rob Mannion G3XFD** Editor of *PW*, **Robert van de Zaal PA9RZ**, Chairman of the Netherlands QRP Club and **Chris Rees GU3TUX** from Alderney in the Channel Islands were also present. **Stewart Hunt F5VJJ** kindly brought the delicious wine over specially from France!

The Somerset Supper was held in *The Old Court Room* at Lower Farm near Somerton and after the buffet supper of locally produced food, George G3RJV had the difficult task of judging and presenting the prizes. Commenting that it was like judging a gardening show because he was bound to both make and lose friends, he awarded first prize to well known kit maker and *PW* author **Richard Booth G0TTL** for his dual band transceiver. Runners up were **Gerald Stancey G3MCK** with his valved crystal oscillator, power amplifier, c.w. transmitter, and Chris Rees GU3TUX with his portable antenna matching unit.

After the prize giving, Lower Farm owner and host **David Sedgman**, gave a demonstration of his very extensive 0 gauge model railway layout which is based on the nearby Evercreech Junction of the closed and much lamented Somerset and Dorset railway, which incidentally has its eastern end starting at Broadstone Junction, yards away from the *PW* offices. Many diners share interests in railways and radio, so the trains kept running well past the normal last service!

Tim Walford G3PCJ who hosted the event, commented that "Home Construction clearly prospers despite the ever decreasing cost of mass produced commercial equipment – being able to say that some aspect of the rig is home-built brings huge pleasure that money alone cannot buy."

Further information and any questions to: **Tim Walford G3PCJ**, **Walford Electronics**, **Upton Bridge Farm**, **Long Sutton**, **Langport**, **Somerset TA10 9NJ**. Tel: (**01458**) **241224**. FAX (**01458**) **241186**. E-mail **walfor@globalnet.co.uk**

Fig. 1: Richard Booth with his Amberg TCVR - 026.

Fig. 2: The valved CO/PA – 011.

Fig. 3: Chris Rees GU3TUX receiving his prize.

Fig. 4: Vintage steam operation at Nevercreech Junction!

Geoff's G-Whip Success!

Geoff Brown G4ICD, who now manufactures the famous G-Whip range of antennas, has announced a new addition to the popular antenna sysytem. Geoff reports, "Due to customer interest and demand, I have introduced a lighter base antenna called the 'G Whip Backpacker'– see the web pages **www.gwhip.co.uk** The antenna is available for 3.5 to 28MHz (80 to 10m) and is smaller, lighter and great for portable use!"

Best wishes to everyone at *PW*, **Geoff Brown G4ICD**

Editorial note: We hope to review one of Geoff's new antennas in *PW* as soon as he can supply one to us!

Send all your news to:
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Rayleigh Windmill 200 Years Old – GB2RWM Celebrates!

Rayleigh Windmill in Essex celebrates its 200th anniversary and during this year's **Mills on the Air Weekend (WOTA)** – **GB2RWM** (Rayleigh Windmill) was on the air. Members of the **South Essex Amateur Radio Society** (SEAR) participated over the weekend, Sat 9th May. The mill is located in Bellingham Lane, Rayleigh, Essex and as it's celebrating its 200th anniversary this year, attracted QSOs and interest from all over the UK, Europe and Internationally.

Further information from **Norman Crampton M0FZW, SEARS Publicity**.
Website **www.southessex.ars.btinternet.co.uk/**
Google Map: **www.windmillworld.com/millid/2709.htm**

Tyne & Wear Repeater Group Auction Sale

The repeater **GB3TW** is soon to be on the air at a new site at Sheriff Hill in Gateshead. It will give even better service to Amateurs in the area but the move will mean additional expense. The repeater GB3NT is still on the air at Wrekenton but needs repairs and the Repeater Group ask users to "Please help if you can with support and donations!"

To help keep the repeaters on the air, the Tyne and Wear Repeater Group are holding an Auction Sale at **Whitehall Road Methodist Church Hall** on Saturday July 11th 2009. Booking in will take place from 1030 hours onwards and auction itself starts at 1100 hours. Everyone will be welcome! Come and buy valuable items or sell junk (or the other way round!). Entry costs £1. Food and drink – including bacon butties – will be on sale.

Venue note: Whitehall Road Methodist Church Hall is at the corner of Whitehall Road and Coatsworth Road, Bensham, Gateshead NE8 4LH. Entrance to the hall is through the door leading from the car park. Entrance to the car park on Whitehall Road. Further details from the **Tyne & Wear Repeater Group Secretary**, **Nancy Bone G7UUR**, **217 Bensham Road**, **Gateshead NE8 1US**. Tel: (**0191**) **4770036** (Home): **07990 760920** (Mobile). E-mail **nancybone2001@yahoo.co.uk**

Boys' Brigade Foundation Course Success

Following the 2008 **GB125BB** Special Event station, celebrating 125 years of the Brigade, seven members of the **Grimsby & District Battalion** of the Boys' Brigade took and passed the Foundation Exam. And, as they enjoyed the Special Event station so much last year, they plan to repeat the event again over the weekend of October 2nd – 4th, using the call sign **GB1BB**, with M1BYQ. Also planning to joining them on air is **VP9400BB** the 1st Bermuda Company, whose Captain is also the president of **The Bermuda Radio Society**. The group are hoping that other Battalions/Companies will be given the opportunity to join in by help of the Amateur Radio community, so if any reader or your club can help – please visit the website **www.andy-glassman.me.uk/fwoa.htm** and click on the link near the bottom of the page to see if there any BB companies in your area. Many thanks and 73. **Andy Carlile G0MNI**

Pictured back row (left to right) are new Amateurs Kevin Young M6JKY, Matthew Austwick M6MJA, Adam Young M6GRN. Front row (l- r) Sam Hallam M6YKQ, Michael Lawrance M6MJL and Ryan Young M6FFS.

Pembrokeshire Coast Murder Arrest

Newshound reports: A 20 year-old unsolved murder mystery, featured nationally on the BBC's Crimewatch programme in 1989, has resurfaced. A man has been held (Thursday, May 14th) by Dyfed-Powys Police on suspicion of the murders of **Peter and Gwenda Dixon** on the **Pembrokeshire coastal** path in 1989. Mr Dixon – who is reported to have been a keen CB radio enthusiast – and his wife, on holiday from Oxfordshire, were murdered by someone using a shotgun. The alleged suspect has been held on remand and has also been charged with other crimes. (**To be continued**).

Digital Crime Fighting Course

Gateshead College's new Digital Forensics Lab will be training students the skills for detecting the types of crimes that are committed using technology such as computers and mobile phones. The new training facility in the north eastern English city puts IT on course to tackle the ever-growing Cybercrime menace. The College's new Digital Forensics Lab at its Baltic Campus site in Gatshead will offer the very latest courses to equip companies with the skills needed to track criminal activity and implement preventative measures.

The £75,000 lab is the first of its type in the region to use advanced PC-based software to teach in-house IT technical staff the latest in high tech digital investigation. Fraudulent activities including those committed by dishonest employees using computers, mobile phones and the internet – known as Cybercrime – could be costing regional business hundreds of thousands of pounds a year in lost revenue.

The Federation of Small Businesses (FSB) estimates that fraudulent internet transactions, the criminally-inspired E-mails known as 'phishing' and security problems caused by viruses and hackers costs an average small business £800 a year!

The Digital Forensics Lab was designed with support and guidance from Northumbria Police, who will have the opportunity to use this specialist resource for their own training purposes, and the North East Fraud Forum, which works with organisations to raise awareness of the latest techniques for fighting fraud.

The lab uses the latest forensics equipment and systems to replicate an industry-standard fraud protection and law enforcement facility. Using this, the college will be able to provide a range of courses delivered by fully trained lecturers covering all the important aspects of computer forensics like opening a case file, searching for evidence and preparing this for presentation in court.

Gateshead College offers a number of courses in the area of Fraud Management and Digital Forensics, with possible funding available to help companies meet the costs. For further information see the website at **www.gateshead.ac.uk** or contact Gateshead College on (**0191**) **490 2227**.

Essex Air Ambulance & The Chelmsford Award

The **Chelmsford Award** was conceived by **Martyn Metcalf G1EF** to promote the town of Chelmsford and to raise money for The **Essex Air Ambulance**. As result, 41of the certificates were issued Worldwide and this which resulted in a cheque for £500 for the Essex Air Ambulance.

Six committee members **John Bowen G8DET**, Martin G1EFL, **Brian Thwaites G3CVI**, **Colin Page G0TRM**, **Myra Davis M0MYR** and **David Davis G3SVI**, travelled through a very wet and windy day to meet at the airfield security gate to await escort onto the airfield. **Nezda Leigh** the Community Fundraiser Co-ordinator escorted our car convoy to the operation center where the group were introduced to Paramedic **Steve Dennehy**. Steve reported that they had just returned from a call to Hertford as their own helicopter had developed an oil leak. It costs about £2000 to get the helicopter to attend an incident and the Essex Air Ambulance is funded entirely by the public! and it often makes four trips a day. The maximum trips in any one day it has made to date is 13, although the Air Ambulance is a wonderful facility, which saves lives and one cannot put a price on that!

A break in the heavy rain permitted the group to pose in front of the helicopter for the formal hand-over of the cheque and the official photo shoot! Steve the Paramedic answered many questions from the committee including, ''What frequencies were used?'', ''How much space they needed to land?'' (about the size of a tennis court was the answer). The helicopter is a twin-engined two seater, the second engine being a requirment for safety reasons. Then Steve and Nezda were surprised to each be given a Chelmsford Club Baseball Cap by Martyn G1EFL.

Further information from Myra M0MYR **Myra.m0myr@yahoo.com** or David G3SVI **g3svi@yahoo.com**

Dover Remembers Brave Louis Bleriot!

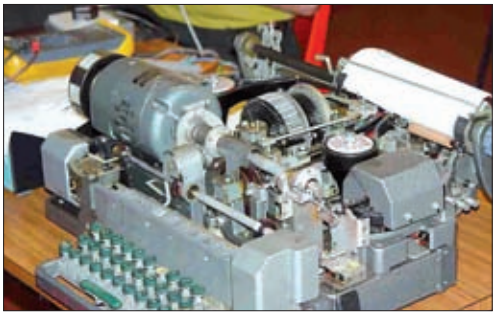
On the 25th of July 1909, Frenchman **Louis Bleriot** became the first person to fly a powered aircraft across the English Channel from Calais to Dover with the help of a brief rain shower near the Kent coast, that cooled his overheating engine, enabling him to complete his historic flight!

To mark this historic event, the **Dover Amateur Radio Club** will be operating on all bands with the special event call **GB100LB** on the July 25th and 26th. They are hoping to make as many contacts as possible with French Radio Amateurs, in particular, while also hopefully generating lots of global contacts. To celebrate the remarkable French achievement, there will be lots of other activities off the White Cliffs of Dover including, a display by the RAF's *Red Arrows* and a swarm of microlite aircraft crossing the Channel and an air race. Additionally, three replicas of Louis Bleriot's aircraft will also cross and land on the Duke of York's playing fields near to Dover Castle.

More information can be found at **www.dover2009.com** or readers can contact Peter Love G0KOK via E-mail at **g0kok@dsl.pipex.com** and **also** for information on the **Dover Amateur Radio Club** (callsign) **G3YMD**.

Peter Love G0KOK/8P9CC

The British Amateur Radio Teledata Group's Golden Jubilee



Roger Cooke G3LDI, the Chairman BARTG writes, "In 1959, **Arthur 'Doc' Gee G2UK** and **Bill Brennan G3CQE** – the first two UK Radio Amateurs to use RTTY on the h.f. bands – formed BARTG. In those days it was known as the **British Amateur Radio Teletype Group**, but the name later had to change to Teledata because of a copyright problem. The use of the mode literally 'exploded' and this year we are celebrating our 50th anniversary, a record which we are very proud to publicise and commemorate with a special award. Unfortunately, the two founder members are both Silent Keys now, but their original efforts are much appreciated by thousands of amateurs".

"The BARTG now encompasses all data modes and long gone are the nostalgic days of oily machinery, paper spewed out all over the shack and noise, sometimes unbearable after a 24 hour contest! These have been replaced with computer based equipment. However, the distinctive sound of 'jingle bells' will never change and is now more popular than ever, and still the most prevalent of the data modes".

To commemorate this occasion BARTG will be using a special call, **GB50ATG**. This call will be on the air for one year, starting July 1st 2009 and finishing on June 30th 2010. It will be operated by four of the BARTG committee on a rota basis. We will be as active as we can in order to supply as many QSLs as possible. The QSL manager will be **Andrew Thomas M5AEX** who is QTHR and is also on QRZ.com website.

Station details for GB50ATG

Roger Cooke G3LDI: July 2009, November 2009, March 2010
Address: The Old Nursery, The Drift, Swardeston, Norwich, Norfolk NR14 8LQ.
Equipment and antennas: FT-1000MP, linear, 4-element Steppir at 110ft, rhombic antenna, plus wire antennas. Operations on all h.f. bands.
John Barber GW4SKA: September 2009, February 2010, April 2010
Address: Llwyn Onn, 49 Blackmill Road, Bryncethin, Bridgend, South Wales CF32 9YN
Equipment and antennas: Yaesu FT-1000D, 4CX1000 linear amplifier, vertical and wire antennas. Operating on all h.f. bands.
Arthur Bard G1XKZ: August 2009, May 2010, June 2010
Address: 9 Linden Road, Oak Park, Cullompton, Devon EX15 1TE.
Equipment and antennas: Higain 3750, multi-band vertical plus wire antennas. Operations on all h.f. bands.
Andrew Thomas G8GNI/M5AEX: Oct 2009, Dec 2009, Jan 2010
Address: Dame School House, 103 High Street, Stony Stratford, Buckinghamshire MK11 1AT.
Equipment and antennas: IC-756PRO, ACOM 1000 linear, Steppir dipole (14 to 28MHz) wire dipoles 7 and 10MHz, plus Butternut HF2V 3.5MHz vertical. Operations on all h.f. bands.

The BARTG Golden Jubilee Award

There will be a BARTG award scheme, with wall plaques, certificates and special QSL cards to be won and we look forward to as many Amateurs and s.w.l.s as possible taking part. The details of the awards and requirements are available on the BARTG website. For further details of the rules and how to apply, contact the Awards Manager, please see **www.bartg.org.uk/GJAward.html**

Roger Cooke G3LDI,
E-mail:
roger@g3ldi.co.uk

Grimeton Alternator Transmitter

Arne Sikö SM6RUN writes, "The VLF transmitter near Grimeton, near Varberg in south west Sweden was originally built in 1923 and the historic (now unique) Alexanderson 200kW v.l.f. mechanical alternator transmitter was used until the 1950s for transatlantic radio telegraphy to **Radio Central in Long Island, New York,** USA. It uses a wire antenna hung from six 127m high freestanding towers that look like electricity pylons (see website). After the 1950s, it was used until 1996 for transmitting orders to the Swedish Navy's submarines. In 1968, a second transmitter was installed. This transmitter uses transistor and tube technology unlike the mechanical alternator transmitter, which works on 17.2kHz, and is designed for frequencies around 40kHz, but using the same antenna. In 1996, the machine transmitter became obsolete and went out of service. Because it's in good condition it was declared a Swedish national monument. On special occasions, such as **Alexanderson Day** (we honour the Swedish-American inventor on that day here in the country of his birth) it's used for transmitting Morse messages on 17.2kHz. Its signal for identification is SAQ.

Before the official transmission starts, the starting procedure takes 20 minutes or so. During this time, when the transmitter antenna system is tuned to 17.2kHz, the international Morse test signal V (dit dit di dah) is continously sent. The transmission starts fairly precisely on the times given above. It starts with a general call 'CQ CQ CQ de SAQ SAQ'. Good luck - I´ll be happy to hear your reports! Sunday June 28th 09:00 and 12:00 UTC. The duration of each transmission will probably be five to 10 minutes. Although confirmation with QSL card is not officially given for all the occasions the transmitter is on the air (see the website for up-to-date news), if you send me your reception report, I shall be happy to provide you with a QSL card!

The historic installation: Of the 20 or so 200kw Alexanderson transmitters, which were built in USA by General Electric and were installed all over the world, only the Grimeton unit is left. The uniqueness of Grimeton is the completness of the original equipment as almost everything that was built in the 1920s is still there. Besides the transmitter, visitors can find the well preserved buildings, the world unique antennas and the little 'radio village' for the staff. Even the old station truck, a well polished Chevrolet from 1931, is still in running condition. Another item is the petrol pump from Gulf, which can be seen in the station yard!

Arne SM6RUN, (contact me via **asiko43@gmail.com**)

Websites **http://en.wikipedia.org/wiki/VLF_transmitter_Grimeton** and the official Grimeton website is **www.grimetonradio.se/** (the site is available in English, German and Swedish, just select the language you wish to be displayed by clicking on the nation's flag).

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

June 14th
The Junction 28 QRP Rally
The South Normanton Alfreton and District Amateur Radio Club in association with the G-QRP Club will be holding the eighth Junction 28 QRP Rally at the Alfreton Leisure Centre, Church Street, Alfreton, Derbyshire DE55 7AH. This is just ten minutes from Junction 28 on the M1 on the A38. Doors will open at 10.00am and admission will be £2.50. There will be special interest groups, trade stands, catering and a Bring & Buy.
Russell Bradley G0OKD
Tel: 01773 783658
E-mail: russell.bradleyG0OKD@ntlworld.com
www.snadarc.com

June 14th (new date)
The Bangor & DARS Radio & Computer Rally
The Bangor & District Amateur Radio Society will hold a Radio & Computer Rally at the Country Club, Crawfordsburn, Co. Down BT19 1JE. Doors will open at 12 noon and entry will cost £2, which includes two raffle tickets. There will be trade stands, a free Bring & Buy and special interest groups.
Bill GI4AAM
Tel: 02891 816707
E-mail: bill.langtry@btinternet.com
www.bdars.com

June 14th
The Newhaven Fort Rally
The Newhaven Fort Amateur Radio Group will be holding a rally at the Newhaven Fort in East Sussex. Doors will open at 10.30am and entry will cost £2. There will be car parking, a car boot sale, family attractions, special interest groups, a camp site, catering and facilities for the disabled.
Eddie G0ECW
Tel: 01273 300772
E-mail: eddie@zamboodle.demon.co.uk

June 21st
The Newbury Radio Rally
The Newbury Radio Rally & Boot Sale will be held at the Newbury Showground, which is next to Junction 13 of the M4. Doors will open at 9.00am (8.00am for sellers) and the event will close at 3.30pm. Admission will be £2.00 and there will be talk-in on S22 and V44, free car parking, trade stands, special interest groups, catering, family attractions and facilities for the disabled.
E-mail: rally@nadars.org.uk
www.nadars.org.uk

June 26th – 29th
The Hamtronic Show
Europe's largest radio show, the Hamtronic Radio Show, will take place in the new exhibition centre on the edge of Friedrichshafen airport. Halls B1 and B2 will house the main show and there will be a large flea market in hall B3. The show will be open on Friday and Saturday from 9am to 6pm and on Sunday from 9am to 3pm.
www.hamradio-friedrichshafen.de

June 28th
The Ipswich Radio Rally
The Ipswich Radio Rally (the East Suffolk Wireless Revival) will be held in the Orwell Crossing Lorry Park on the A14 Eastbound, Nacton, Ipswich IP10 0DD. Doors will open at 9.30am and admission will be £1.00. There will be talk-in on S22, a car park, a Bring & Buy, a car boot sale, special interest groups and catering.
John Quarmby G3XDY
Tel: 07710 044858 or 01473 717830
www.eswr.org.uk

June 28th
The West of England Radio Rally
The West of England Radio Rally will be held at the Cheese & Grain Venue, Bridge Street, Frome, Somerset BA11 1BE. The doors will open at 10.00am and close at 3.00pm. Adult tickets will cost £2.00 and accompanied under 14s will be admitted free. There will be inside and outside trade stands, catering, free car parking and facilities for the disabled.
Shaun G8VPG
Tel: 01225 873098
E-mail: rallymanager@westrally.org.uk
www.westrally.org.uk

July

July 4th
The Reddish Rally
The Reddish Rally will be held at St Mary's Parish Church Hall, St Mary's Drive (off Reddish Road), Stockport, Cheshire SK5 7AX. Doors will open at 10.30am, admission will be £1 and there will be trade stands, parking and talk-in on S22 and V44.
Bernard G3SHF
Tel: 01625 850088 (day)
Nigel G0RXA
Tel: 0161 4288413 (evenings/weekends)
E-mail: info@reddishrally.co.uk
www.reddishrally.co.uk

July 5th
The York Radio Rally
The York Radio Rally will take place at the York Racecourse in Knavesmire. Doors will open at 10.30am (10.15 for the disabled) and there will be trade stands, free parking, a Bring & Buy, catering and talk-in on S22.
Arthur G8IMZ
Tel: 07841 120738
E-mail: apalg8@aol.com

July 12th
The Barford Radio Rally
The Norfolk Amateur Radio Club will hold the Barford Radio Rally in Barford, which is nine miles southwest of Norwich, close to the A11 and the A47. Doors will open at 9.00am (8.00am for traders) and there will be a car park, Talk-in on S22, a Bring & Buy, a car boot sale, catering and trade stands.
David G7URP
Tel: 01953 457322
E-mail: radio@dcpmicro.com
www.norfolkamateurradio.org

July 12th
The Cornish Mobile Rally
The Cornish Radio Amateur Club will hold their 46th Mobile Rally at Penair School, Truro, Cornwall TR1 1TN. Doors will open at 10.30am (10.15am for disabled) and there will be parking, trade stands, a Bring & Buy, catering and talk-in.
Ken G0FIC
Tel: 01209 821073
E-mail: ken@jtarry.freeserve.co.uk
www.cornishamateurradioclub.org.uk

July 12th
The McMichael Rally & Boot Sale
The McMichael Rally & Boot Sale will be held at the Reading Rugby Club, Holme Park Farm Lane (SU 753 747 for GPS users), Sonning Lane (the B4446), Sonning on Thames, Reading RG4 6ST, just off the A4, east of Reading. Doors will open at 9.30am (8.30am for traders), admission will be £2.00 and there will be talk-in, car parking, special interest groups, trade stands, a licensed bar, catering, a raffle, a car boot sale and a Bring & Buy.
Min G0JMS
Tel: 01189 723504
E-mail: g0jms@radarc.org
www.McMichaelRally.org.uk

July 19th
The MacMillan (Northampton) Rally
The MacMillan (Northampton) Rally will be held in Roade Village, Northants. There is no entry fee for visitors or traders but all donations offered will go to MacMillan, as will all refreshment monies.
G6NYH
Tel: 01604 234333
www.tetra2000.com

July 26th
The Horncastle Summer Rally
The Horncastle Summer Rally will be held at the Horncastle Youth Centre, Horncastle, Lincolnshire LN9 6DZ. Admission will be £1 and there will be facilities for the disabled and catering.
Tony G3ZPU
Tel: 01507 527835.
E-mail: G3ZPU@yahoo.co.uk

August

August 2nd
The King's Lynn Rally
The King's Lynn Amateur Radio Club Rally and Car Boot Sale will be held at the King's Gaywood Community Centre PE30 4DZ. The doors will open at 10.00am and admission will be £1.50. There will be trade stands, catering, a car boot sale and a campsite (by prior arrangement).
Ray G3RSV
Tel: 0155 367 1307
E-mail: ray-g3rsvsupanet.com
www.klarc.org.uk

August 2nd
The Lorne Radio Amateurs' Rally
The Lorne Radio Amateur Club will be holding its rally at the Crianlarich Village Hall, which is at the junction of the A85 and the A82. Doors open 10.30 and entry will be £1.00.
www.gm0lra.freeuk.com

August 9th
The Flight Refuelling ARS Rally*
Mike M0MJS
Tel: 01202 883479
E-mail: hamfest@frars.org.uk
www.frars.org.uk

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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.

Peter hart said in the May issue of RadCom "The changes introduced by this latest firmware are particularly significant and well worth having, with the overall receiver & transmitter sounding cleaner & improves the operating experience.

In fact it's so impressive, even Mr Henry Lewis G3GIQ uses one. And we all know how demanding the big signal from Ealing West London is.

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".

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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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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.

INTRODUCTORY PRICE: £365.94

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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
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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**

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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

NEW PRODUCT

CG SB-2000 USB Radio Interface

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.**

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

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AT-1KP 1200W Antenna Tuner	£395.95
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AT-2K (2000W) Antenna Tuner	£439.94
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
DL-2K (2kW)	£229.95
DL-5K (5kW)	£359.95
Palstar Receiver	
R30A Receiver Palstar R30A, fitted Collins filters for SSB & AM	£649.95
MW550P Active preselector & ATU for AM & 160M reception	£279.94
SP30 Matching Desk Speaker	£69.95
AA30 Active Antenna Matcher 300kHz-30MHz	£99.95

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

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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

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

Feature

It may seem unbelievable!

Operating 10GHz Portable from Indoors?

The 10GHz (3cm) microwave Amateur Radio band isn't one of those allocations that usually lends itself to portable operating – particularly if, like me, you have a house that's not on top of a hill and it's also surrounded by tall trees! So, it was that when I got active on the 3cm band last year I didn't give much thought to operating from home.

The portable operating on microwaves was great fun on those (few) hot sunny days and the 10GHz station was carried far and wide up hills across England, Wales and Scotland, **Fig. 1**. The rest of the time the gear just sat in the corner of the shack. That was until one day in February when I heard that **Mike Shackleton G0MJS** was active on 10GHz from his parent's home, near to Winter Hill in Lancashire.

Not expecting much, I set up my gear in a spare bedroom with a north facing window and we did a few tests. We get a weak Band IV u.h.f. TV signal here from the Winter Hill transmitter, which is 309.48m (1,015.4ft) high on the hilltop, so hearing a much less powerful signal from well below the summit of the hill seemed unlikely! However, after some alignment of antennas I was very surprised to hear a weak signal from Mike. No contact was made but the seed was sown – maybe I could make some microwave contacts from home after all?

Useful links
Met Office Rain Radar
http://www.metoffice.gov.uk/weather/uk/radar/

UK Microwave Group (lots of useful information)
http://www.microwavers.org/

ON4KST Microwave Chat facility
http://www.on4kst.com/chat/start.php

Rochdale GB3XGH Beacon

The next thing I did was to listen for the **GB3XGH** 10GHz beacon in Rochdale, Greater Manchester. The first time I heard nothing but the second time I tried I heard it weakly. The signal was very distorted – almost like an auroral signal. I soon realised that what I was hearing was signals via rainscatter. The rainscatter propagation modes is where 10GHz radio signals are scattered by raindrops – and this can be very helpful for propagating signals over difficult and obstructed pathways.

After Mike went home there was no-one nearby to work and so, I shelved the idea of 10GHz operating from home again. That was until we had a thunderstorm nearby. The storm was south of my house and, knowing that some thunderstorms can carry rain to well over 10,000 metres altitude, I tried to listen for signals from the Wolverhampton **GB3CEM** 10GHz beacon. For this to be even slightly possible I needed to elevate my antenna to around 30° to clear the nearby trees (trees effectively absorb 10GHz signals).

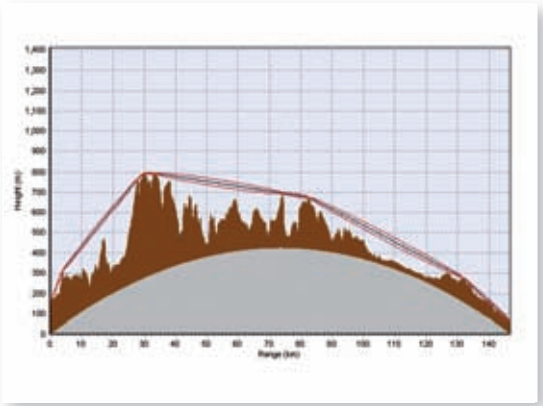
Sadly, there was no sign of the GB3CEM beacon but, while tuning around I suddenly heard a very strong signal indeed. What on earth was it? After a while it sent its Morse Code identification – it was **GB3XGH**, the Rochdale beacon! However, I was beaming south and it was north of me. I was puzzled for a minute until I realised that it was backscatter off the thunderstorm. This set me off listening for the Rochdale beacon (looking south) every time there was rain. I soon realised that I could hear it when there was even the slightest rain in the area. No thunderstorms were needed and it might even be dry at home – instead I just needed rain nearby!

Thundering Into Action

Again for some weeks nothing much happened. Then, once again, came the rumble of thunder to the south. I quickly logged onto the **ON4KST** microwave chat system and noticed that **Russ Stewart G4PBP** in Wolverhampton was on the air. I speedily arranged a 'sked' and dashed upstairs to turn the 10GHz gear on (the computer is downstairs while the gear was in a front bedroom).

Richard Newstead G3CWI has been busy proving that working indoors on 10GHz – from a poor location – really is feasible!

Richard G3CWI.



The Middlesborough (obstructed) pathway.

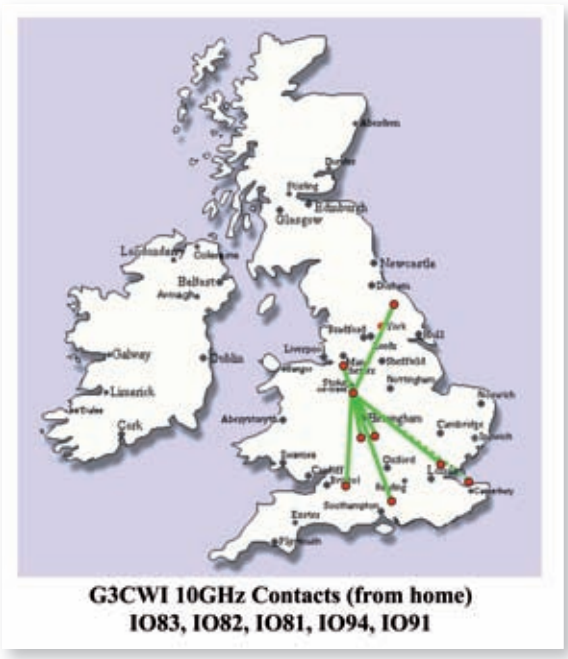
Within seconds I heard a huge signal from Russ and we exchanged reports easily on 10GHz over the 70km pathway. Seconds later **Martyn Vincent G3UKV** in Telford was calling me on 'KST for a test, as with Russ we completed easily – giving Martyn a new county on 10GHz. This was starting to get exciting!

A rumble of thunder one sunny day had me rushing to set the gear up in the back garden and completing a successful test with **Rob Swinbank M0DTS** near Middlesbrough – right across the Pennines (145km) (see pathway profile attached). Again I was beaming up at 30°! (see photo). After that success I began to get more confident and started to do tests with 'normal' rain – not just thunderstorms. I also upgraded the home system with an old *PW* Exe system dish (I had been using a horn antenna before) as shown in the photo.

The results were (to me at least) astounding. I found that with even the slightest rain I could work Russ G4PBB and even Rob M0DTS is workable in 'normal' rain. I have operate from a back bedroom when I want to contact Rob so the portability of my system is an advantage.

I then discovered that with the right rain I could work **Neil Whiting G4BRK** near Abingdon in Oxfordshire and have worked him several times. More contacts soon followed as I got more skilful in interpreting the Met Office's rain radar plots. Since then I have worked **Graham Jones G3VKV** in Cheltenham (twice) and **Bryan Harber G8DKK** in Letchworth. I have even worked **Thomas Jones G4TWJ** near Rochdale on f.m. while beaming south!

Since discovering how easy it is to work these pathways, I've made around 20 contacts from home on 10GHz. My best DX is just short of 200km although I have twice heard **John Wood G4EAT** in Essex at an amazing



253km – and all this from a poor location surrounded by trees!

The 10GHz band is a very surprising allocation and often outperforms v.h.f. – especially with rainscatter. For example I can't hear **Rob Swindbank M0DTS** on 144MHz but can contact him quite easily on 3cm (weather permitting).

It's an under-utilised band that is well worth trying. Some amazing DX is possible; you just have to get lucky. 'Indoor portable' means for me that come rain or shine, there is always something interesting to do on 10GHz! ●

Feature

One Letter At A Time!

The Russian Single Letter CW Beacons

When I was serving in the now defunct Diplomatic Wireless Service (DWS) that many older Radio Amateurs will remember, often had a recruiting stand at radio rallies. I was put in charge of setting up and contacting the various DWS radio posts overseas. In effect I would be the 'Control', getting solid (reliable) frequencies for contact before plugging the stations into the Communications Central Control and arranging frequency changes if required.

When on a night shift I found it helpful to see how radio conditions were changing and to know when to change stations from night frequencies onto their day frequencies. I would use a monitor receiver to listen to judge the best time when to change the out station's frequencies to be received at Hanslope Park, the main DWS station.

In particular I used one station, the old Radio Luxembourg powerful medium wave transmitter. In those days the Luxembourg frequencies were occupied by a German station. No worries, it was the reception of the station I was interested in. The two frequencies being used by that station were 1.440 and 6.090MHz.

On the night shift, as night turned slowly to day I would hear 1.440 begin to break up and 6.090MHz start to improve. This would be the time to start getting the stations onto day frequencies. Likewise on an evening shift, I would listen to those frequencies and as 6.090 began to degrade and 1.440MHz started to improve, that would be the time to change to night frequencies. I still use this system to estimate when 7MHz is going to 'die' and 3.5MHz starts to develop.

Single Letter Beacons

Nowadays, I've long retired from the DWS and having more teeth than hair these days, I use a slightly more refined way of checking the radio frequencies – the single letter Russian beacons that many Amateurs will have heard in action without knowing their purpose. In fact, these beacons transmit their single letter in Morse, slowly enough for anyone to read with ease.

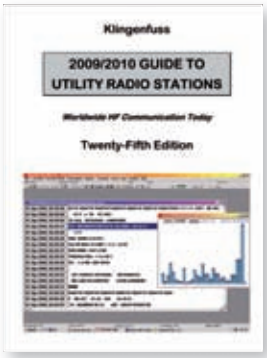
By programming the beacon frequencies into the memories of my Alinco DX-70 I can quickly click from frequency to frequency to check the various bands. These frequencies are: 7.039, 10.8718, 13.5278, 16.3318 and 20.0478MHz. All the beacons are either in or close enough to the 40, 30, 20, 17, 15 metre Amateur bands to give an indication of propagation conditions.
The stations that I have heard so far are:

A **Arkhangel**, this is suitable for the UA1/RA1 area.
C **Moscow**, this is suitable for the UA3/RA3 area.
D **Odessa**, this is suitable for the Ukraine and UA6 area.
P **Kaliningrad**, this is suitable for the UA2 area, Baltic States and Finland.
S **Murmansk**, this is suitable for the Northern UA1/RA1 area and when listening to Murmansk FAX broadcasts at 1330, 1445 and 2000 hours.

Stations I've not heard so far:

F **Gydnia**
F **Vladivostock**, being on the Pacific coast I'm unlikely to hear this one.
K **Peteropavlosk Kamchatski**, (also on the pacific coast of Russia).
L **St. Petersburg**, the letter L used to stand for Leningrad before1991 when it reverted.
M **Magadan**, (also on the pacific coast of Russia).
O **Moscow** (spare callsign?).
R **Izhevsk**.

Another way to check the bands to the west is to listen to the Canadian Volmet broadcasts; try listening to Gander on 10.051 or 13.270 MHz or even to Toronto at night on 6.604MHz. Finally, of course, there are the International Beacon Project beacons on 14.1, 18.110, 21.150, 24.930, and 28.200MHz that have been covered in previous *PW* articles. ●



References: *Klingenfuss Guide to Utility Stations. Available from the PW Radio Book Store – page 76.*

Ross Bradshaw G4DTD describes how useful he found the Russian single letter beacons – even before he became a Radio Amateur.

MOONRAKER

Manufacturers of radio communication antennas and associated products

Single Band Mobile Antennas

MR214 2 metre straight stainless 1/4 wave 3/8 fitting....**£4.95**
PL259 type....**£5.95**
MR214S-2 2 Metre stainless steel ¼ wave with built in spring PL259 fitting....**£9.95**
MR258 2 Metre 5/8 wave 3.2 dBd Gain (3/8 fitting) (Length 58")....**£12.95**
MR268S 2 Metre 5/8 wave 3.5dBd gain Length 51" S0239 fitting....**£19.95**
MR290 2 Metre (2 x 5/8 Gain: 7.0dBd) (Length: 100"). PL259 fitting, "the best it gets"....**£39.95**
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MR614 6 Metre loaded 1/4 wave (Length 56") (3/8 fitting)....**£14.95**
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VHF/UHF Mobile Antennas

MICRO MAG Dual band 2/70 antenna complete with 1" magnetic mount 5mtrs of mini coax terminated in BNC....**£19.95**

MR700 2m/70cm, 1/4 wave & 5/8, Gain 2m 0dB/3.0dB 70cm Length 20" 3/8 Fitting....**£9.95**

MR 777 2 Metre 70 cm 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (3/8 fitting)....**£17.95**

MRQ525 2m/70cm, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cm Length 17" PL259 fitting commercial quality....**£19.95**

MRQ500 2m/70cm, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8db 70cm Length 38" PL259 fitting commercial quality....**£24.95**

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MRQ800 6/2/70cm 1/4 6/8 & 3 x 5/8, Gain 6m3.0dBi/2m 5.0dB/70 7.5dB Length 60" PL259 fitting commercial quality....**£39.95**

GF151 Professional glass mount dual band antenna. Freq: 2/70 Gain: 2.9/4.3dB. Length: 31"....**£29.95**

Mobile Colinear Antennas

Ever wanted colinear performance from your mobile?
MR3-POWER ROD ★ Freq: 2/70cm ★ Gain: 3.5/6.5dBd ★ Length: 100cm ★ Fitting: PL259....**£29.95**
MR2-POWER ROD ★ Freq: 2/70cm ★ Gain: 2.0/3.5dBd ★ Length: 50cm ★ Fitting: PL259....**£24.95**

AM-Pro Mobile HF Whips (with 3/8 base fitting)

AM-PRO 6 metre *(Length 4.6' approx)*....**£17.95**
AM-PRO 10 metre *(Length 7' approx)*....**£17.95**
AM-PRO 17 metre *(Length 7' approx)*....**£17.95**
AM-PRO 20 metre *(Length 7' approx)*....**£17.95**
AM-PRO 40 metre *(Length 7' approx)*....**£17.95**
AM-PRO 80 metre *(Length 7' approx)*....**£19.95**
AM-PRO 160 metre *(Length 7' approx)*....**£49.95**
AM-PRO MB6 Multi band 6/10/15/20/40/80m can use 4 Bands at anyone time *(Length 250cm)*....**£69.95**

ATOM Multiband Mobile Antennas

ATOM-AT4 ★ Freq: 10/6/2/70cm ★ Gain: (2m 1.8dBd) (70cm 3.5dBd) ★ Length: 132cm ★ Power: 200w (2/70cm) 120w (10/6m) ★ Fitting:PL259....New low price **£49.95**
ATOM-AT5 ★ Freq: 40/15/6/2/70cm ★ Gain: (2m 1.5dBd) (70cm 3.5dBd) ★ Length: 129cm ★ Power:200w (2/70cm) 120w (40/6m) ★ Fitting:PL259....New low price **£59.95**
ATOM-AT7 ★ Freq: 40/20/15/10/6/2/70cm (5 bands at once) ★ Gain: (2m 1.8dBd) (70cm 3.5dBd) ★ Length: 200cm ★ Power: 200w (2/70cm) 120w (40/6m) ★ Fitting: PL259....New low price **£69.95**

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Little Tarheel II 3.5-54MHz 200W max length 48" ..**£349.95**
Tarheel 40A HP 7-34MHz 1.5Kw max length 8ft **£429.95**
Tarheel 75A 7-34MHz 250W max length 8ft....**£429.95**
Tarheel 100A 3.4-30MHz 1.5Kw max length 10.4ft **£449.95**
Tarheel 200A HP 3.4-28MHz 1.5Kw max length 12ft....**£479.95**
Tarheel 300A 1.7-30MHz 250W max length 11.4ft ..**£449.95**
Tarheel 400A 1.7-30MHz 250W max length 12ft **£479.95**

SPX Multiband Mobile Antennas

All these antennas have a unique flyleaf & socket to make band changing easy! Just plug-n' go!
SPX-100 ★ Portable 9 Band Plug n' Go HF mobile antenna ★ Freq: 6/10/12/15/17/20/30/40/80m ★ Length: 1.65m retractable to 0.5m ★ Power: 50w ★ Fitting: 3/8 or PL259 with adapter included....**£44.95**
SPX-200S ★ Mobile 6 band Plug 'n Go HF mobile antenna ★ Freq: 6/10/15/20/40/80 ★ Length: 130cm ★ Power:120w ★ Fitting: PL259....**£49.95**
SPX-300 ★ Mobile 9 band Plug 'n Go HF mobile antenna ★ Freq: 6/10/12/15/17/20/30/40/80m ★ Length: 165cm ★ Power: 200w ★ Fitting: 3/8 Thread....**£59.95**
SPX-300S ★ Mobile 9 band Plug 'n Go HF mobile antenna ★ Freq: 6/10/12/15/17/20/30/40/80m ★ Length:165cm ★ Power:200w ★ Fitting: PL259 ....**£64.95**

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2 metre ½ wave (Length 52") (Gain 2.5dB) (Radial free)....**£29.95**
4 metre ½ wave (Length 80") (Gain 2.5dB) (Radial free)....**£44.95**
6 metre ½ wave (Length 120") (Gain 2.5dB) (Radial free)....**£49.95**
6 metre ⅛ wave (Length 150") (Gain 4.5dB) (3 x 28" radials)..**£59.95**

Single Band Vertical Colinear Base Antenna

D-STAR All colinears D-Star compatible

BM33 70 cm 2 X 5/8 wave Length 39" 7.0 dBd Gain....**£44.95**
BM45 70cm 3 X 5/8 wave Length 62" 8.5 dBd Gain....**£54.95**
BM55 70cm 4 X 5/8 wave Length 100" 10 dBd Gain....**£79.95**
BM60 2m 5/8 Wave, Length 62", 5.5dBd Gain....**£54.95**
BM65 2m 2 X 5/8 Wave, Length 100", 8.0dBd Gain....**£79.95**
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New co-linear antennas with specially designed tubular vertical coils that now include wide band receive! Remember, all our co-linears come with high quality. N-type connections.

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SQBM105 Mk.2 Dual Bander Radial FREE!) ..**£39.95**
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SQBM110 Mk.2 Dual Bander (Radial FREE!) **£59.95**
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SQBM200 Mk.2 Dual Bander....**£54.95**
(2m 4.5dBd) (70cm 7.5dBd) (RX:25-2000 MHz) (Length 62")
SQBM223Mk.2 Tri Bander....**£69.95**
(2m 4.5dBd) (70cm 7.5dBd) (23cm 12.5dBd) (RX 25-2000MHz) Length: 62"
SQBM500 Mk.2 Dual Bander Super Gainer....**£69.95**
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(2m 8.5dBd) (70cm 12.5dBd) (RX:25-2000 MHz) (Length 5.2m)
SQBM1000 MK.2 Tri Bander....**£79.95**
(6m 3.0dBd) (2m 6.2dBd) (70cm 8.4dBd) (RX:25-2000 MHz) (Length 100")

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SJ-70 430-430MHz slimline design with PL259 connection. Length 1.00m with N-TYPE socket....**£19.95**
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HB9-10 10 metre (Boom 52")....**£69.95**
HB9-627 6/2/70 Triband....(Boom 45") **£69.95**

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These very popular antennas square folded di-pole type antennas

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YG4-2C 2 metre 4 Element (Boom 48") (Gain 7dBd)....**£29.95**
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YG8-2 2 metre 8 Element (Boom 125") (Gain 12dBd)....**£69.95**
YG11-2 2 metre 11 Element (Boom 185") (Gain 13dBd)....**£99.95**
YG3-4 4 metre 3 Element (Boom 45") (Gain 8dBd)....**£59.95**
YG5-4 4 metre 5 Element (Boom 104") (Gain 10dBd)....**£69.95**
YG3-6 6 metre 3 Element (Boom 72") (Gain 7.5dBd)....**£64.95**
YG5-6 6 metre 5 Element (Boom 142") (Gain 9.5dBd)....**£84.95**
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Crossed Yagi Beams (fittings stainless steel)

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Roy Walker GOTAK with an idea to make your own reasonably priced portable dipoles for operation on any h.f. band.

You may have read my article‡ about the differences (well similarities really) between the ATX-MkII antenna from **Sandpiper**, and the **Moonraker**-supplied SPX-100 portable multi-band telescopic antenna. Seeking as I do to improve what is placed on the market after a lot of R&D money has been spent on it, I got to wondering how the simple, and quite limited by design, telescopic vertical could be used to maximum effect. Well, two has got to be better than one, so why not use a pair of the verticals to make a portable dipole? Worth a try at least!

‡ *A tale of two whips* that appeared in the November 2008 issue of *PW*.

Modest Amount

A quick recap on the hardware for the antenna that you get for what's quite a modest amount of money. The antenna kit, as sold, consists of a base loading coil measuring a little under 300mm, but this includes a threaded section at both top and bottom, each of which is about 10mm long **Fig. 1**.

The base loading coil has one 'master' tapping point, and a further five taps along its length. This, of course, should be placed at the bottom of the coil. You're also supplied with a short length of wire with a mini-'banana' plug at each end, of the wire, which is used to change the operating band.

At the top of the loading coil there's the facility to connect a threaded

telescopic whip antenna with an overall length of just over 1.25m. At the base end of the loading coil the threaded section is a standard 3/8in thread which can be screwed into the supplied PL259 or BNC connector. For completeness you also get a right-angled PL259 connector.

When using the antenna as supplied, you choose the tapping point depending on your operating band, then the antenna is fine tuned by measurement and extension of the telescopic section. With care, it can produce excellent results. All the dimensions on the length/frequency chart that accompanies the supplied antenna, are printed in good old imperial inches.

The makers of any of the versions of this antenna all seem to recommend that, for best results the antenna is used with at least one λ/4 counterpoise for the band in use. Having to carry a series of counterpoise wires could take some of the fun out of portable working, especially if you want to use the kit on 3.5MHz as well as other bands.

A quick 'phone call to **Mike Collins M1IKE** and I borrowed his antenna, used for comparison a few months back. Now had two elements of a dipole antenna, but how could I mechanically connect them together to form a dipole?

Around The Shack

I'd already sorted through the items that I had laying around the shack and shed with which, I was intending to construct the centre section of a really useful portable dipole. But that didn't happen. What I'd found were a couple of metal boxes as used to terminate mains voltage wall sockets when using industrial tubular metal cable trunking. I believe the technical name for these items is a 'Pattress box' **Fig.**s **2** and **3**.

I'd also found and sorted out several PL259 sockets, some of which were screw fixing and some with mounting flanges. However, the item

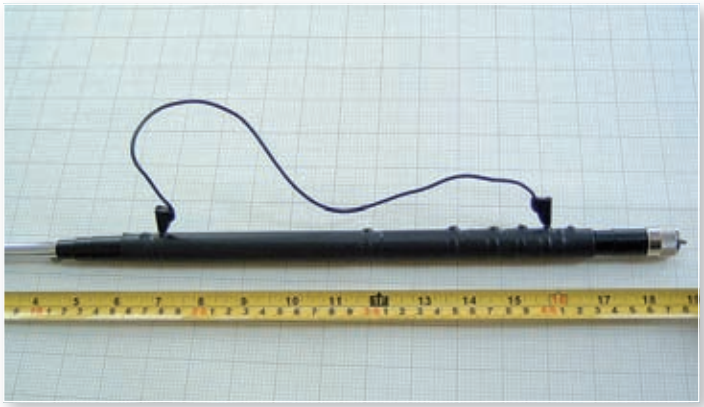

Fig. 1: There are several versions of this base-loaded multi-band antenna, that all seem to be to the same design.

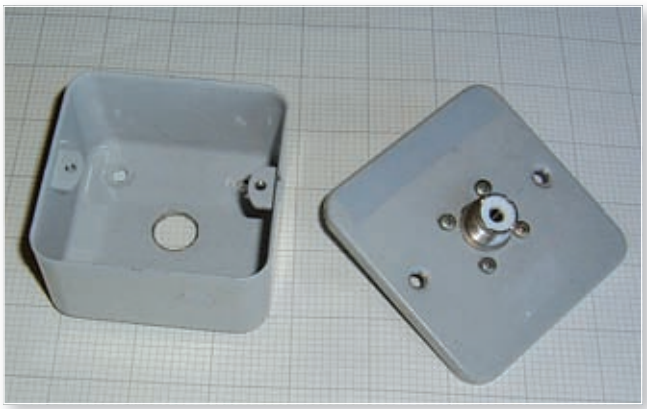

Fig. 2: A junction box that's made for wiring layouts using metal trunking on fitting the first of three SO239 sockets.

Fig. 3: After fitting the other two SO239 sockets to the patress box.

Fig. 4: The middle SO239 socket came from an antenna change-over switch, where the metal strip formed part of the switch.

that really caught my eye, and made the construction very much easier, was a PL259 that had been extracted from an antenna change-over switch.

The socket had, attached to the centre connector, a solid brass strip which originally formed the switch contact. Inset into the lid of the switch box there was another PL259 socket, but that would have to be removed. This I did, and put it on one side for future use.

Fig. 5: The patress box with box antenna screwed into the two side-mounted SO239 Sockets.

Construction Begins

So, now I had all these items to hand the construction could begin. The base of the box already had a large diameter hole drilled in it for cable access. This hole was reamed (opened) out a little so that it would accept the socket with the copper spring contact.

In two sides of the box there were marked and 'pre-weakened' places for the entry of cable conduits. These were removed and mounting holes were drilled and cleaned up for the two sockets with flanged bases. Now I had three sockets mounted to the box.

One word of explanation about these antennas, only the inner of the plug at the base of the antenna is connected. The outer, threaded part, of the PL259 is not connected to anything, it's merely a mechanical mounting point. It's therefore quite in order, indeed it's a required step, to take the feed from the outer of the feeder coaxial cable to the centre connector of one of the two telescopic antennas in order to create a dipole **Fig. 4**.

If you construct the supporting structure from anything but an electrically conductive material you will have to insert a feed from the outer of the 'in' PL259 direct to the centre of one of the dipole supports.

You will see from the picture that the centre connector on the right goes from pin to pin, but that on the left the feed to the pin is taken from the grounding point of the box. It is of course necessary to solder the connection on the right. Once that is done the lid can go on the box, **Fig. 5**.

Balanced Antenna

Of course, a dipole is a balanced antenna and it does not matter which 'element' goes on which side of the box. Though in this form, the antenna isn't a truly balanced device, being fed from unbalanced coaxial cable. I decided to try out the dipole in the garden supported by part of one of my fishing rod antenna supports, it seemed appropriate **Fig. 6**.

The coaxial cable was connected and the top of that part of the fishing rod was inserted through the hole in

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Fig. 6: Hoisted up on top one of Roy's favourite portable supports – a 'roach pole' fishing rod.

Fig. 7: And here's the operating position showing how Roy supports the bottom of his portable mast! Very quick to bring into operation.

the lid of the box as an 'interference fit' (take that to mean jammed in). For tidiness and to stop the dipole rotating of its own free will the coax was cable tied to the fishing rod just below the box. Measured and 'tuned' for 10.1MHz the dipole spans only 1.43m. (I tried it on 10MHz because it was contest time on all the more traditional bands.)

Testing times

The radio equipment was a typical QRP set-up of an FT-817 using a home made lectern, Palm key and RadioMate keypad. I find the RadioMate to be invaluable with this rig, it is small and wonderful, though I find it less than ergonomic. The operating position was our twin joined garden chairs with a table in between together with the pre-drilled holes to support the umbrella, could a guy ask for more **Fig. 7**.

Signals on initial switch-on were good and loud, the usual selection of S9 and some QRP stations around 10.116MHz. The band was busy because it was contest day on the normal h.f. bands. So, I knew it was going to be difficult to make myself heard!

Although it was obvious that the antenna was 'on tune' the '817 is prone to telling you that there's a high s.w.r. if there's the slightest discrepancy between the tuning of the antenna and the frequency in use.

Because of this s.w.r. problem, I included one of those compact, self powered auto tuners which seem to be so popular in-line with the antenna. Now with the addition of the auto, a.t.u., signal levels improved significantly and I was, with a little bit of persistence, able to provoke responses from some EU stations. Reports, though, were not good, but with only 2.5W into the feeder and a relatively small dipole, what more could I expect.

I am sure that, on a band with less traffic and, operating on the QRP calling frequencies, there would have been good results. One thing that I did notice that there was a significant difference in signal levels when the dipole was manually rotated, the effect was something that could be used to advantage.

The Pros

The antenna and support system is relatively easy to construct, light weight, costs less than0 the average multi band dipole, and is reasonably effective. In use it has the added advantage of being selectively rotate-able. And of course, being 'balanced', no counterpoise is necessary.

The Cons

Every time you need to change band, or frequency within one of the wider Amateur allocations you will need to lower the dipole, change the taping point and/or re-measure each of the elements, and re-erect the array. 'Tuning' the antenna in this manner will be affected by your individual location.

There will be minor variations of antenna 'tune' as locations aren't the same so, to get the best results from your set up it will be necessary to take great care in achieving a 'tune'. Using an auto a.t.u. will ease the load on the operator, it won't however actually 'tune' the antenna, it will merely ensure that the transmitter 'sees' the optimum s.w.r. that can be obtained.

Anyway, it's fun!

●

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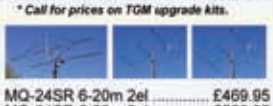

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Kenwood TS-140S HF Transceiver £299
Icom IC-718 HF All Band Transceiver £389.00
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IC-756PRO-MKIII Icom HF + 6m Trx £1,499.00
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Kenwood TS-850S /AT £699.00
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MF-500 Collins Mech 500Hz CW Filter for AR-5000-7030 £52.17
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ICOM FL-63A - CW Filter £50.00
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Kenwood TS-271E £165.00
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Yaesu FT-790 £159.00
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Yaesu FT-690R II 6m transceiver £275.00
Yaesu FT-736R 6m, 2m & 70cm Base £799.00
Yaesu FT-8800E Dual Band Mobile Transceiver £199.00
Yaesu FT-480R 2m Transceiver £220.00
Kenwood TS-790E Dual-Band Base / Mobile Transceiver £799.00
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Kenwood TR-251E 144-146 MHz £120.00
Icom IC-229H 144-146 MHz £119.00
ICOM IC-2200H 144–146 £175.00
Yaesu FT-1802E FM 2m Band Transceiver £99.95
The TINY-2 MK-II - With Open Squelch Board £109.00
AKD 2001 Amateur VHF FM transceiver £69.00
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ICOM IC-290D - 2M MULTIMODE TRANSCEIVER £220.00
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NEDSP-1061-KBD DSP module	£99.95
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Tony Nailer's

doing it by design

Tony Nailer G4CFY continues his description of the Poundbury 3.5/14MHz receiver.

I must apologise to the devoted followers of *DIBD* that there was no article in the May 2009 issue of *PW*. The development of the Poundbury Receiver was advancing rapidly and had evolved considerably from the article in the March 2009 issue of *PW*. I had sent a large number of drawings, some of which were rather late, and none of the board layouts had been proved.

Since then, I've had the opportunity to change things, now the mixer, matching transformer, ladder filter, and another matching transformer have migrated into the main board. The detector and crystal oscillator have migrated off the main board as a separate unit, although they may migrate back at some point in the future! A new block diagram is shown in **Fig. 1.**

Filter Development

In the March article, I showed a 9MHz ladder filter with capacitor values. Since then, further development to narrow the passband has resulted in increased values of capacitance. The development procedure that I used was from *Ladder Crystal Filter Design* by **J.A. Hardcastle** inthe RSGB's *Radio Communications* (*RadCom*) February 1979.

The initial filter circuit is shown in **Fig. 2**, with capacitors designated Ca having initial value of 33pF. The filter's input and output termination resistance is calculated by R = 3000 / F(MHz). In this case, R = 3000/9 = 333Ω. With source and load each nominally 50Ω, I used 100 and 180Ω resistors in series to add 280Ω. My experience with testing a variety of crystals, indicates a better starting capacitance would perhaps be 100pF.

My prototype filter was tested using a Hewlett Packard HP8640 signal generator, and a Marconi TF2370 spectrum analyser. The bandwidth (BW1) of the prototype filter at the –3dB points was found to be 4180Hz. This bandwidth was rather wide for s.s.b. and Morse, for which the desired bandwidth (BW2) is 2400Hz.

A new value of capacitance (Cb) was calculated,

Cb = Ca*(BW1/BW2)^2, Cb = 33*(4180/2400)^2 = 100.1pF

A new value of input and output termination was calculated,

R = 98000/(F*Cb) = 98000/(9*100) = 108.9Ω.

I used 56Ω in addition to the source and load resistances to make 106Ω.

The *RadCom* article gives the circuit arrangement for a six-crystal ladder filter with multiplier factors for each of the capacitors. The arrangement is shown in **Fig. 3** and the factors for capacitors C1, C3, C7 and C9 is 0.854. For capacitors C2 and C8 the factor is 0.716, while for C4 and C6 it's 4. Finally capacitor C5 has a factor of 0.872. Each of these factors is multiplied by the value of Cb to give the starting values in the six-crystal filter.

Built & Tested

A filter was built and tested with C1, C3, C7 and C9 as 86pF, C2 and C8 as 72pF, C4 and C6 as 390pF, and C5 as 86pF, with input and output series 56Ω. It produced a bandwidth of 3300Hz and centre frequency of 9.000500MHz.

A further change saw the capacitors multiplied by (3300/2400)^2 or 1.89 and new values put into place. The input and output resistance was now 300Ω including source and load. The bandwidth dropped to 2000Hz and the centre frequency was 150Hz below the frequency wanted.

Reducing the values of capacitors by 10% (by multiplying by 0.9) gives C1, C3, C7 and C9 as 136pF, C2 and C8 as 115pF, and C4 and C6 as 680pF, and C5 becomes 139pF. Using these new figures, a termination resistance (or impedance) of 150Ω was required. The resultant bandwidth was 2400Hz as near as I could measure.

The curve of the filter characteristic shown in **Fig. 4** revealing a flat top and sharp sides, an almost perfectly symmetrical shape and a centre frequency of 8.999945MHz. This frequency is just 55Hz from perfection!

It's normal practice to place the carrier insertion oscillator (c.i.o.) frequencies 20dB down each side of the passband, which in this case corresponding to 9.00136 and 8.99845MHz. The upper sideband then would be 350-2570Hz at the –3dB points, and the lower sideband would be 340-2570HZ at the –3dB points.

The non-standard values of capacitance can be made up using two capacitors in each position, and provision has been made on the receiver main board for this to be done. One aspect of this is that other filter frequencies could be accommodated just as easily. For instance filter frequencies, such as 10.7MHz, to allow the board much greater flexibility of use.

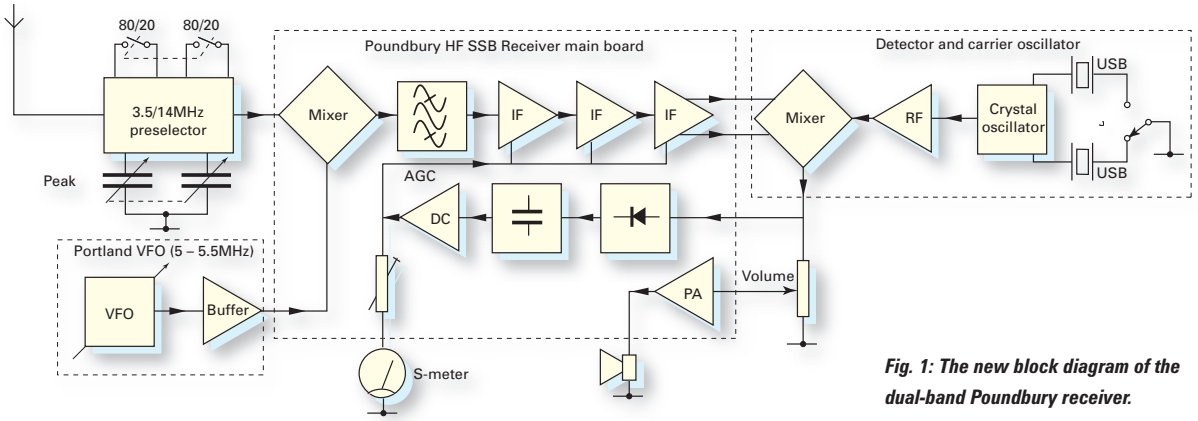

Fig. 1: The new block diagram of the dual-band Poundbury receiver.

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Effective Bandpass Filter

In the March issue *PW,* I suggested that maybe the Amateur band from 14.000 to 14.35MHz is narrow enough to use a bandpass coupled pair as an effective bandpass filter. The bandwidth is 0.35MHz and the centre frequency 14.175MHz, giving a *Q* of 14.175/0.35 = 40.5.

I chose the TOKO coil 3334R with an inductance of 5.5μH. The capacitor required to resonate it on 14.175MHz is C = 1/(39.5*14.175*14.175*5.5)μF. C = 23pF.

Two coils were put on a breadboard and a 22pF capacitor wired across each one. The earthy ends were linked to the ground plane and a coupling capacitor of 1pF was added between the 'tops' of the windings.

The circuit was tested using my TF2370 spectrum analyser, which has a built in tracking generator. It was clear that the coupling was too light, so the coupling capacitor was increased to 2pF. The circuit was then critically coupled and quite impressively steep sided away from the wanted band.

I wondered if I could use the same coil with its 22pF in parallel together with additional capacitors including a polyvaricon to work on the 3.5-3.8MHz band. To resonate 5μH at 3.5MHz requires a capacitor of C = 1/(39.5*3.5*3.5*5) μF. C = 376pF.

To resonate the circuit at 3.8MHz requires C = 1/(39.5*3.8*3.8*5.5) μF. C = 319pF. So, the capacitance change is 57pF.

The polyvaricon capacitors I have stock of, are 20pF to 300pF. By trying various values in the series capacitance formula, I found that 120pF in series with each gang would give a 17-85pF swing. The additional capacitance of 300pF was made up from two 150pF capacitors in parallel to give a total of 317-385pF. When tested it didn't quite work out like that, and the additional value had to be increased to 330pF. Then it tuned the proper range as observed on the spectrum analyser. The circuit as developed, together with the responses on the 3.5 and 14MHz bands, is shown in **Fig. 5**.

In conversation with **'Tex' Swann G1TEX** at *PW*, he pointed out that the 3334R had poor primary to secondary turns ratio to match to a 50Ω source and load. The alternative part, with a better turns ratio is the 3337R. Unfortunately like most TOKO coils, they are obsolete.

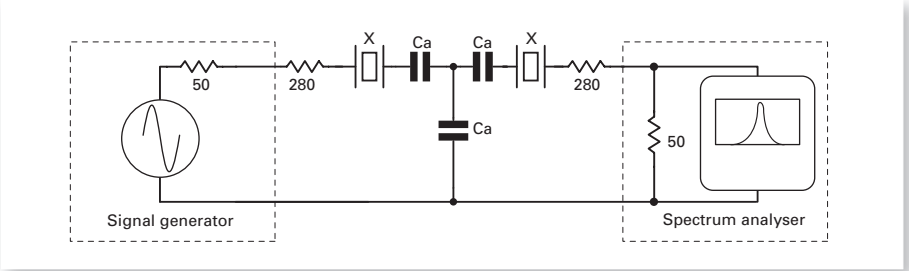

Fig. 2: The initial filter test circuit. Capacitors marked Ca were set to 33pF.

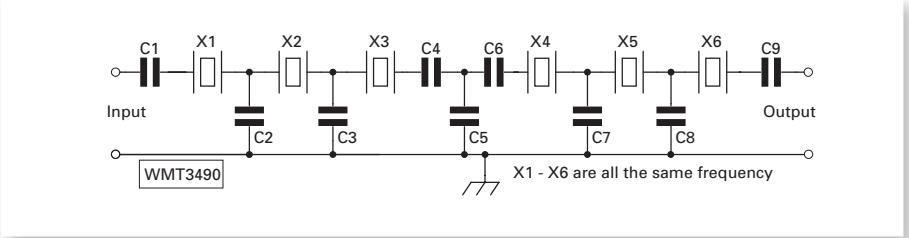

Fig. 3: The theoretical layout of a six-crystal filter from a RadCom article.

However, it's my intention soon to introduce my own range of 10mm coils, which will include replacements for both these coils, with more usable turns ratios.

Portland VFO

The Portland variable frequency oscillator (v.f.o.) developed in a previous *DIBD* was modified as detailed in the March issue *PW*. With the chosen coil of 23μH inductance, the only capacitors in the oscillatory circuit are the coupling capacitor C4 and the feedback capacitors C5 and C6, as shown in **Fig. 6.**

The revised circuit now uses a three terminal 5V regulator and is even more stable than its predecessor, which had zener supply stabilisation. I believe that changes in the zener voltage, as it warmed up, was responsible for nearly all the of the minute drift of the previous version.

The link winding on the v.f.o. coil is only a few turns so the output level was too small. For this version then, the values of emitter resistors in the buffer were changed to reduce the degenerative feedback and increase its gain. A signal of 2V p-p was achieved with a second harmonic 40dB down.

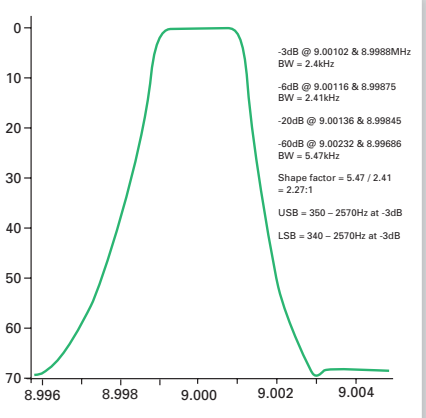

Fig. 4: The response curve of the final design of crystal filter is almost perfect!

The CIO & Demodulator

The c.i.o. shown in the March column is typical of many designs going right back to the 1970s. One feature I have noticed with all similar designs is that the oscillator continues to run on a nearby frequency when neither crystal is switched in!

The oscillation is usually at a frequency just a few kilohertz higher than the crystal frequency, and is due to the circuit being switched at a high impedance point, and the crystals both being partially connected through stray capacitance.

After thinking about this at length, I reasoned that two separate oscillators would about the same number of components as the single oscillator with switching components.

I then bread-boarded a pair of oscillators as conjoined twins, connected at the collectors, with switching by means of the base bias. It worked fine and when neither base was selected, there was no oscillation. The new circuit is shown as part of a separate module in **Fig. 7.**

The demodulator and carrier oscillator were put on a separate board, because I anticipated a problem with the carrier oscillator signal getting into the very sensitive input of the i.f. stages.

I laid out the board to fit into an r.f. proof nickel-coated plastic box. When the receiver modules were completed, I tested the receiver with and without the screening box, and it didn't make any difference!

I chose to put the demodulator in with the carrier oscillator, so that carrier signal would not be taken from one board to another by screened cable. To minimise pick up and radiation of the amplified i.f. signal, I arranged for a balanced output from the i.f. amplifier, and the use of twisted pair to the demodulator.

Main Receiver Circuit

For the main receiver circuit I chose to use a j.f.e.t. as a mixer for simplicity, and because it would have lower gain than a dual gate m.o.s.f.e.t. A test circuit was built with the j.f.e.t. in a common source arrangement with untuned gate input, capacitive input to the source for local oscillator, and drain output via a 10.7MHz intermediate frequency (i.f.) transformer. Tests using two signal generators and a spectrum analyser revealed unity gain/loss and a flat conversion response over the range 1MHz to 100MHz.

To match the mixer output to the filter I chose a TOKO 3892 coil with 14 turns primary, centre tapped, and a 2 turn secondary. The coil was normally resonant at 10.7MHz and was tuned by an internal 82pF capacitor. To make it resonate at 9MHz it is necessary to increase the tuning capacitor by the square of the frequency change.

So C = 82 * $(10.7/9)^2$ pF = 115.9pF.

This can be achieved by adding 33pF across the main winding.

The coil has a *Q* of about 80.

Now Xc = 1/(2*Pi*F*C),

Xc = 1/(2*Pi*9*116) * 10^6,

Xc = 1,000,000/6560 = 152Ω.

The dynamic resistance will be,

Rd = *Q**Xc = 80*152 = 12160Ω.

The centre tap will be a quarter of this, 3040Ω, which is a good load to feed the mixer into.

The resistance of the secondary Rs will be the dynamic resistance Rd divided by the square of the turns ratio. Rs = Rd/$(14/2)^2$, Rs = 12160/49 = 248Ω. The filter input should see about 150Ω, so the dynamic resistance needs to be reduced by a factor of 248/150 = 1.65. The new Rd needs to be 12160/1.65 = 7370Ω. Using the formula for resistors in parallel and trying 22kΩ initially achieved 7890Ω, too high. Trying 18kΩ gave 7257Ω, probably close enough!

The Poundbury main board circuit is shown in **Fig. 8**, and shows the new mixer, with the i.f. transformer as the drain load feeding into the six-crystal ladder filter. At the other end of the filter is another 3892 coil again loaded by 18kΩ by R15.

Main Board Test

The i.f. amplifier was originally as in the March column including a j.f.e.t. stage prior to the first m.o.s.f.e.t. stage. But evaluation revealed too much gain, with an i.f instability when all the coils were peaked. The j.f.e.t. stage was removed and the circuit reconfigured by 'bodging' the original printed circuit board (p.c.b.).

A new main board p.c.b. was laid out and the components transferred to it. This worked really well and is the one in the photograph. Nevertheless, this board was also a bit touchy, and to cure it I had to reposition the de-coupling capacitors from the ground one side of the

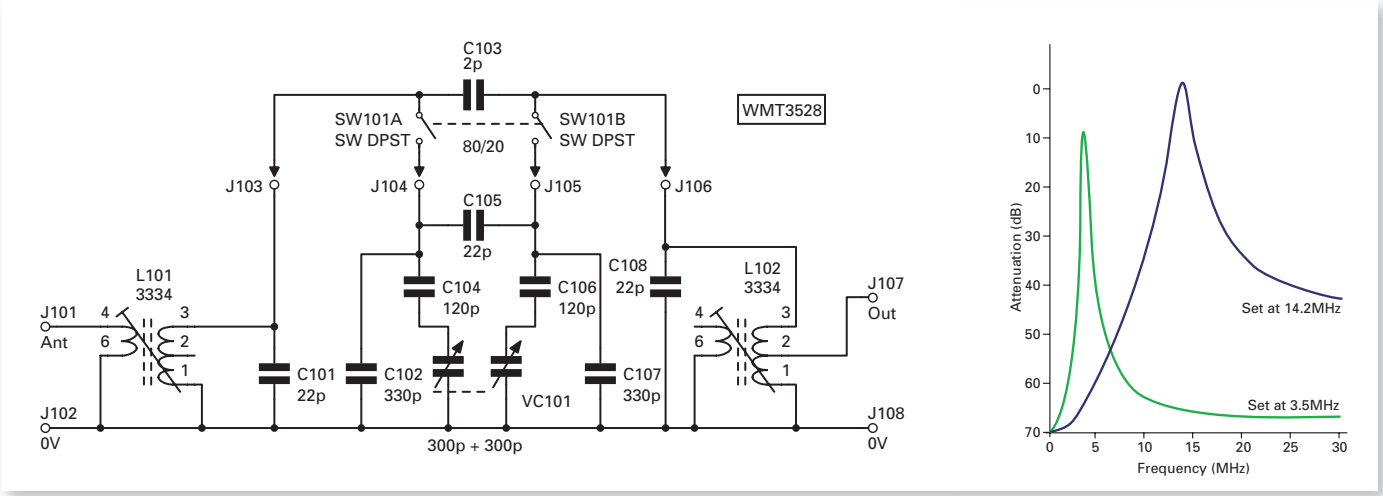

Fig. 5: The circuit of the pre-selector and its final responses in both bands.

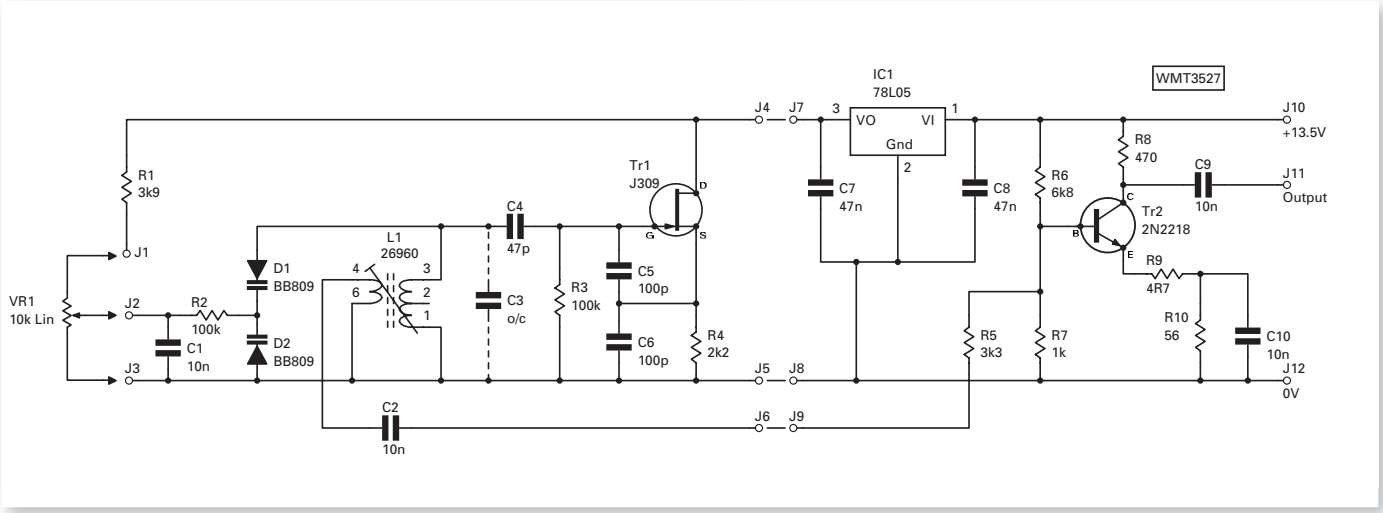

Fig. 6: The Portland v.f.o. modified for 5 to 5.5MHz.

amplifiers to the ground on the opposite side. (These cannot be seen as they are on the underside).

With all the modules connected up and laid out on the bench, the sensitivity was determined using a signal generator and found that 1μV was barely discernible. Then, using a 5m length of equipment wire laid across the floor as a test antenna – connected to the pre-selector input on the 3.5MHz band – the first signal I heard was a local Amateur talking about bringing his rig to Spectrum a year or two ago for repair. (Now that was spooky!).

Further tests were done on both the 3.5 and 14MHz bands but tuning was a little difficult without a slow motion drive. Also at that time the v.f.o. and its buffer board were just connected together loosely on the bench, and was prone to frequency shift when moved.

Being reasonably happy with the unit I then drilled a box for the v.f.o. and buffer and assembled it. Then I placed the various modules in the chosen case, marked it out and drilled it up. All the boards and hardware were then assembled into and onto the box and wired up.

Unit Evaluation

On evaluating the built-up unit, I found that at switch-on, it worked straight away and a 1μV signal on either 3.5 or 14MHz could just be discerned. Then, a 5m wire was connected to the antenna socket and signals were heard on both bands. Stability was really good with no noticeable drift, even from switch-on!

I noticed that a really strong signal on 14.2MHz caused a chopping effect, whilst weaker signals were fine. Tests using the signal generator revealed that from 1μV to about 10μV the S-meter climbed steadily, after which it jumped to S9 and didn't move from there. Measurements of the automatic gain control (a.g.c.) line showed that it had dropped from 4.5V no signal to 0V at 10μV input. Thereafter there was no further a.g.c. control.

I took the receiver to the home of **Mike Carter G0NEV** and tried it on his dipole antenna. On the 3.5MHz band there were lots of strong signals, which caused the chopping effect. The conclusion of course was that the a.g.c. range was inadequate as I had overlooked the fact that the a.g.c. range of a m.o.s.f.e.t. was of the order of 15 to 20dB. Two stages therefore gave me between 30 and 40dB a.g.c. range.

An S-meter reading should be near logarithmic, and each S-point represents 6dB so, from S0–S9 is 54dB. The S9 level normally represents 50μV. The receiver needs to cope with a signal up to 500μV, which is a further 20dB. The ideal a.g.c. range then needs to be about 74dB.

I needed a way to include an additional gain control stage without further amplification. It also didn't really need to start action until the input signal was approaching 10μV. Of several ideas, I chose to try an r.f transistor as a variable attenuator. A BF199 was connected at the input of the main board, with emitter to ground, collector to r.f input. The base was de-coupled by 10nF and fed via from the wiper of a 10kΩ trimpot driven from the S-meter driver.

It worked well and the trimpot allowed adjustment of the position of onset of the additional a.g.c. action. I chose a point of onset just below an input of 10μV and measured the resistance above and below the wiper.

The trimpot was then replaced with 2.2kΩ and 8.2kΩ resistors, and the receiver was tested again with the signal generator and on-air. The problem was solved and the a.g.c. range then coped

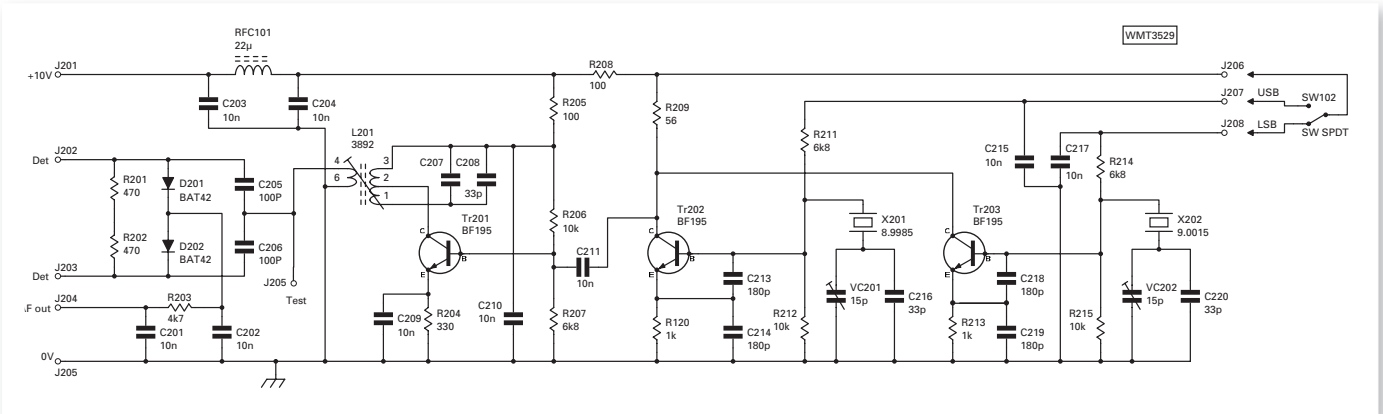

Fig. 7: The circuit of the dual sideband carrier insertion oscillators and detector.

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properly with signals over the range 0 to 1mV. The additional components of the front end a.g.c. stage have been incorporated into in **Fig. 8** as shown.

Final Remarks

This version of the receiver is a success, and it is really quite exciting to tune the 3.5 and 14MHz bands using it. There are no spurious responses, signal handling is now very good, image rejection is about 65dB, and it is incredibly stable. The firm slow-motion drive makes it quite easy to tune s.s.b. signals properly and quickly.

I had anticipated pick up of the carrier oscillator by the i.f. amplifier, but it didn't happen. Clearly, the main board needs to incorporate the input a.g.c circuit, and at the same time I will merge the demodulator and carrier oscillator back onto it as well. If that is successful it will simplify assembly and wiring.

The preselector will be even more effective using the proposed new Spectrum 5.2μH coils, though damping resistors may then need to be added, to achieve the necessary *Q* and bandwidth on the 14MHz band.

Hopefully the final circuit, p.c.b. layouts, box drilling, and assembly will appear in a concluding article on the Poundbury Receiver in *DIDB* in the September issue of *PW*. ●

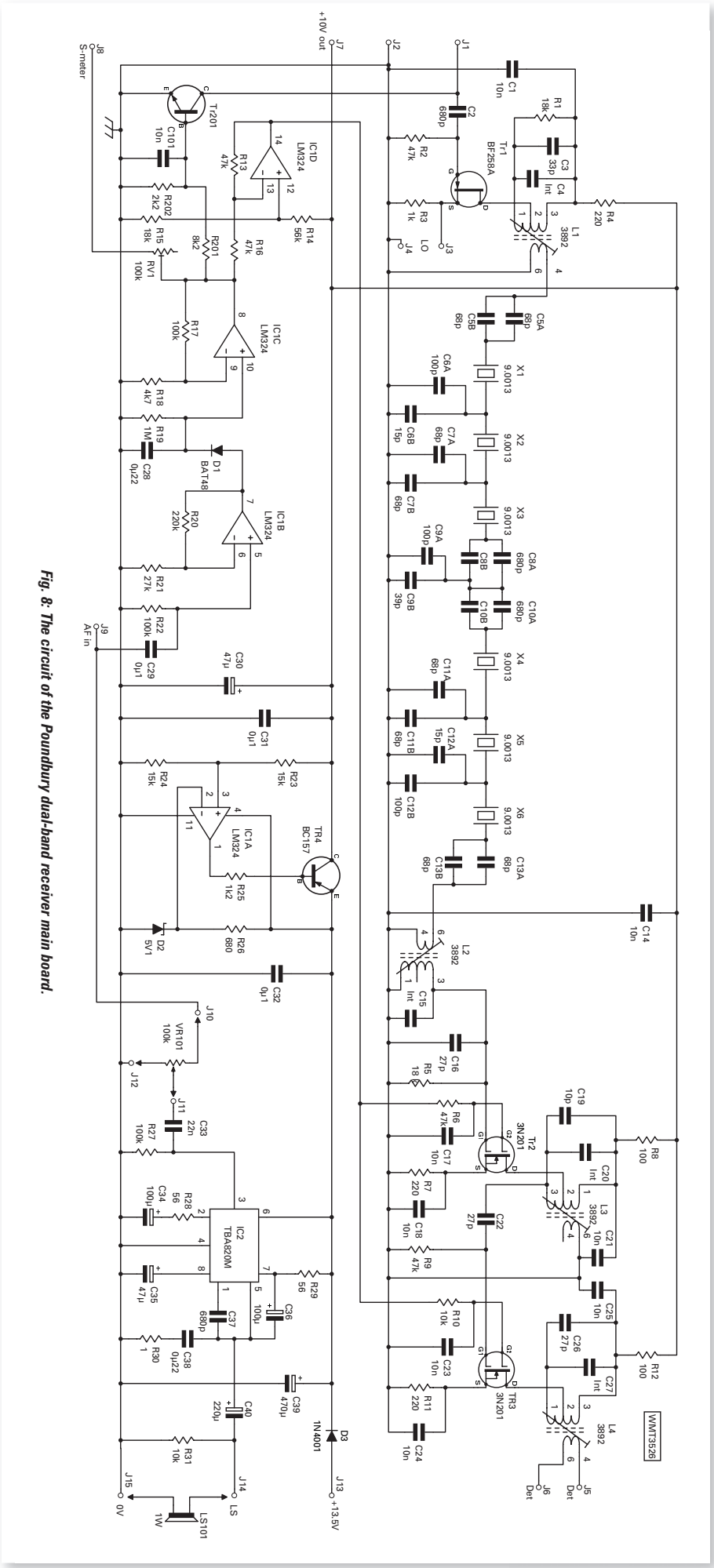

Fig. 8: The circuit of the Poundbury dual-band receiver main board.

PW G4CFY discussion group

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When you receive confirmation from the server, you can send an E-mail to the list using: **pw_g4cfy@pwpublishing.ltd.uk** and your comments will be answered by the *PW* team or by myself. I will also still respond to a private E-mail directed to **tony@pwpublishing.ltd.uk**

The Rev. George Dobbs'

carrying on the practical way

This month the Rev. George Dobbs G3RJV describes some novel uses for transistors – after the appropriate quote!

"Novelty has charms that our minds can hardly withstand"
William Makepeace Thackeray
(1811 – 1863)

From time to time ideas appear in the Amateur Radio literature that use component parts in novel ways. Recently, I was working on a project for a 'Buildathon' at the Dayton Hamvention in the USA. Incidentally, a Buildathon is an occasion when a number of less-experienced radio constructors build a common project under the guidance of more experienced constructors.

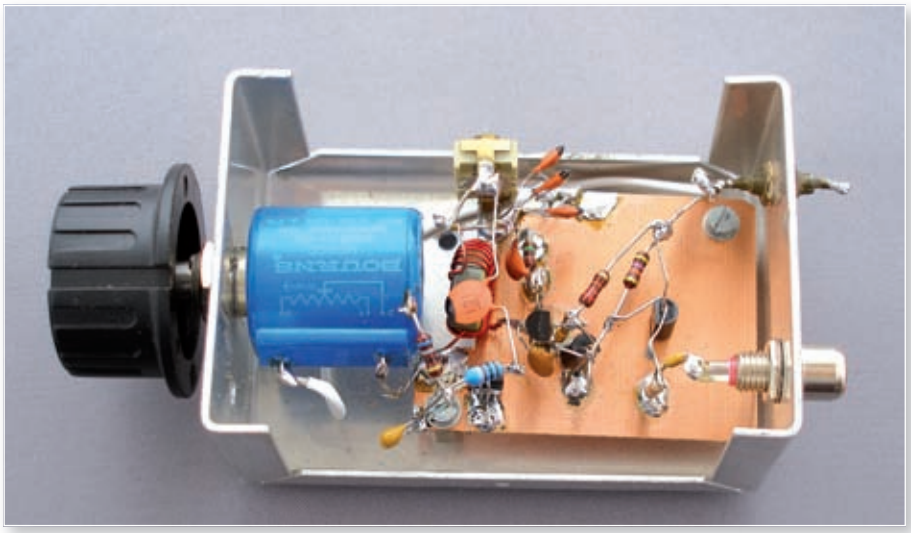
The project was a varicap (variable capacitance diode) tuned version of the *Sudden* receiver. We decided to use a conventional diode in place of a varicap diode and got excellent results from high power silicon diodes and even very acceptable results from using a light emitting diode (l.e.d.). Neither of these was intended for the job but both served the purpose well.

The transistor is commonly used as an amplifier, an oscillator or a switch but it's also ideal for many diode related functions. After all it is really two diodes in the same case! Measurements with a multi-meter reveal that a transistor can been regarded as two diodes; one connected from base to emitter and the other between base and collector. Either of these can be used as a conventional diode by connecting to the two appropriate leads.

It's also possible to connect the base of the transistor to the collector, using this connection as one side of a diode and the emitter as the other connection. Which side is anode or cathode depends upon the transistor type; *npn* or *pnp*. This is sometimes called a 'super diode' and has been described in the past for use in a crystal radio as the forward voltage drop in such a diode is low.

The Super Diode

The diagram, **Fig. 1a**, shows the 'super diode' arrangement used for another application, that of a zener diode. The zener diode is a specialist type of diode, which permits current to flow in the forward direction as normal, but will also allows current flow in the reverse direction when the voltage is above a certain value known as the Zener Voltage. Because of this property, the zener diode is used regulate voltages in electronic circuits.



The diagram in Fig. 1a shows how a transistor can be used as a low current voltage regulator. A positive voltage is applied through a limiting resistor to produce a regulated voltage at the emitter of the transistor. The resultant regulated voltage will depend upon the characteristics of the transistor used in the circuit.

I set up a little test circuit with three 0.1 inch spaced sockets, the limiting resistor and a 12V d.c. supply. I found that individual examples of the same type of transistor gave slightly differing results. My average results for a few common transistor types are shown in **Table 1**. The maximum power handling will probably be similar to that of a 400mW zener diode; ideal for small and medium current supplies.

Table 1

Transistor Type	Regulated Voltage (average of five samples)
2N3904	7.8V
2N2222A	7.5V
BC182	8.1V
BC546	7.3V

The diagram Fig. 1**b**, suggests a way of using a transistor to produce a higher regulated voltage. The voltage can be increased by adding diodes in the grounded side of the transistor

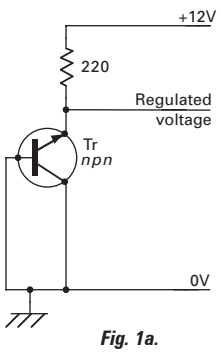


Fig. 1a.

Fig. 1: A transistor used as a 'Super Diode'.

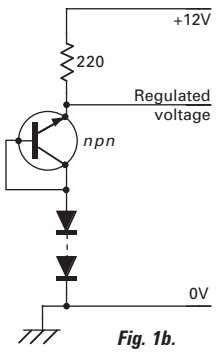


Fig. 1b.

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regulator. Each diode will raise the regulated voltage by about 0.7V.

It should be possible to raise the voltage up to about 1.5V below the input voltage in 0.7V steps. So, if you want a regulated voltage of about 7.5V or so and don't have a suitable zener diode, then a common *npn* transistor can be used.

Tuning Diode

A transistor can also be used as a tuning diode in variable frequency oscillators. The diagram, **Fig. 2**, shows basic circuits for variable capacitance (varicap) tuning. Varicap diodes are also called 'varactor diodes'.

Varicap diodes exhibit a variable capacitance when they are reverse biased with a variable voltage. This means that a linear potentiometer, to supply a variable voltage, can be used in place of an expensive variable capacitor to control the frequency of an oscillator.

The diagram, Fig. 2**a** shows the practical application of a single varicap diode to alter the frequency of a tuned circuit. The varicap diode (CD) forms part of the tuned circuit with the inductor. Fig. 2**b** shows perhaps a more typical circuit using two varicap diodes. Some types of varicap diode come with two diodes in the same casing. In both examples the required variable voltage is supplied by a linear track potentiometer with a series resistor (R1). It's also common to use a small radio frequency choke (r.f.c.) in place of R1.

The most important characteristic of a varicap diode is the range of capacitance that can be achieve and usually two voltage points are specified; one at the top of the capacitance range and the other at the minimum useable voltage. One slight drawback is that varicap diodes are not linear over the whole tuning range; but neither are most variable capacitors!

Good control of the capacitance range depends upon the smooth operation of the potentiometer supplying the variable voltage. Ideally, it should have a carbon track, as wire-wound potentiometers will introduce unwanted inductance into the circuit. A large, clean, track will also help to give a better voltage control. The ideal choice is a multi-turn linear potentiometer but these can be very expensive. Having said that, I have seen several examples of surplus control panels and odd items of equipment with ten-turn potentiometers being offered for sale at low prices at radio rallies. If you see any such examples – buy them! I once bought a control panel with four good quality 10kΩ ten-turn potentiometers for 50p. The usual price for one new ten-turn potentiometer is in the order of £20.

The diagram, Fig. 2**c**, shows a transistor being used as a tuning diode. Again, a linear potentiometer supplies a variable voltage. The resistor and capacitor provide radio frequency (r.f.) decoupling to prevent stray r.f. signals being present in the tuning control circuitry. This is also aided by having a r.f.c. in place of the series resistor used in Fig. 2a and b. The transistor, Tr1, enables frequency control because of the change in its junction capacitance as the variable voltage is applied to the emitter.

A voltage will be reached when the transistor current levels off and changes in capacitance will cease. Although I've shown the potentiometer connected across the whole of the available supply, it can be a good idea to reduce the voltage range by adding series resistors at both ends of the potentiometer. Measure the voltage on the slider of the potentiometer at either end of the useful range and then add resistors at each end of the track to achieve the useful range with a full excursion of the track. The series capacitor, C1, is chosen to give the desired range of capacitance change.

Practical Application

Now it's time to look at practical applications of transistors as zener diodes and varicap diodes. To this end, **Fig. 3** shows a variable frequency oscillator (v.f.o.) for the 7MHz Amateur band. Initially, I thought of trying a v.f.o. using the Colpitts configuration until I looked for a suitable enclosure for the v.f.o.

The one I found already had a v.f.o. built in it from a previous article. So, rather than building something new, an obvious way forward was to see if I could incorporate zener and varicap transistors into what I already had. A wise radio constructor always tries to make use of what it to hand!

The particular v.f.o. I had to hand

Fig. 2: Using a transistor as a replacement for variable capacitance (varicap) diode.

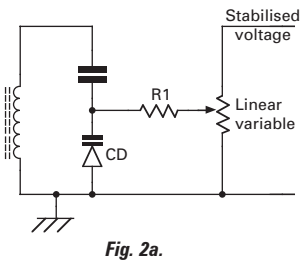

Fig. 2a.

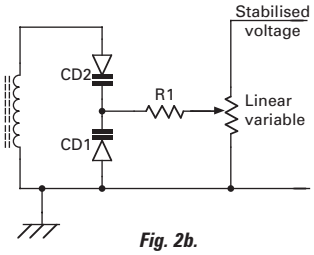

Fig. 2b.

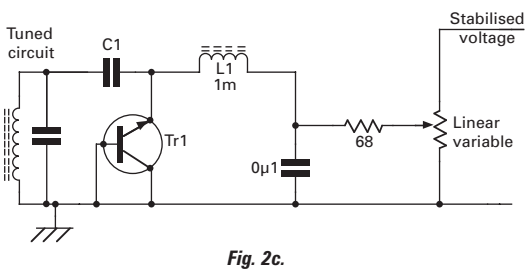

Fig. 2c.

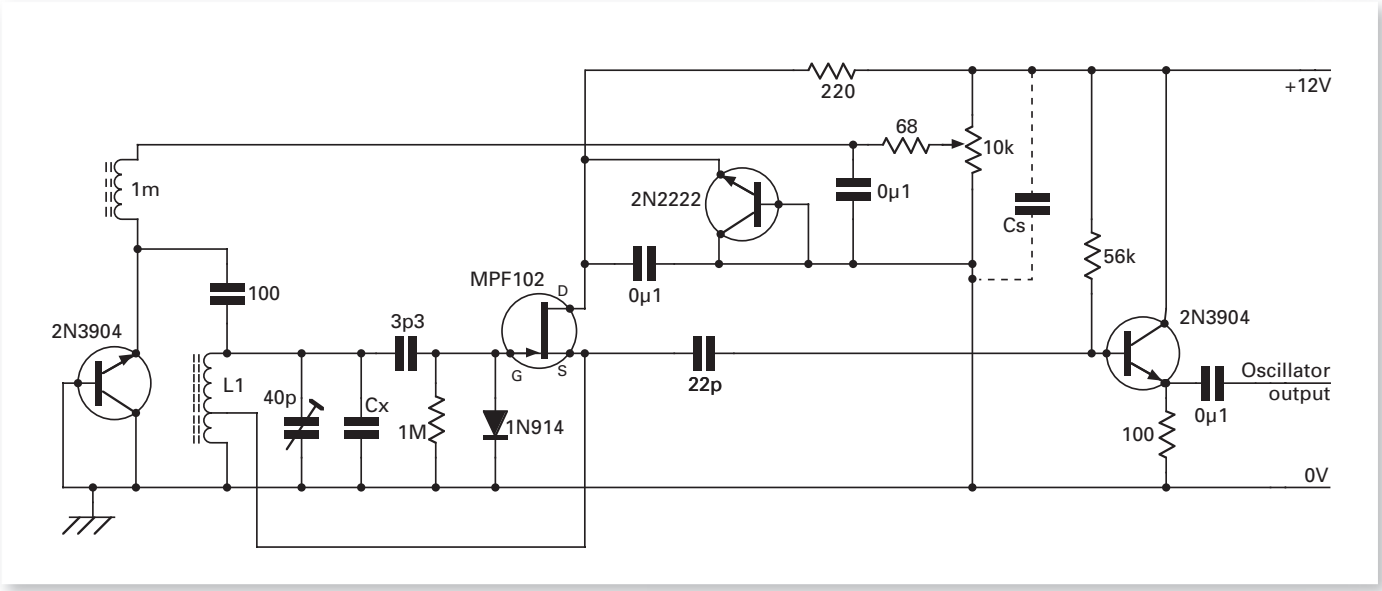

Fig. 3: A practical v.f.o. using a transistor as a varicap for tuning.

used the Hartley configuration. The oscillator is an MPF102 field effect transistor (f.e.t.) where L1 with the associated parallel capacitors form the tuned circuit.

In a Hartley oscillator the feedback to maintain the oscillation is derived from a tap in the tuning inductor. This tap feeds back a little of the signal to the source of the f.e.t. The turns ratio of the tapping point to the total number of turns on the coil quite critical. If the tapping point has too few turns, oscillation cannot be maintained, but increasing the number of turns much above the point where oscillation begins can result in frequency instability.

In this case the inductor is 27 turns of 24s.w.g. enamelled copper wire wound a T50-6 toroid former. The tap is made seven turns from the ground end of the coil. The best way to make this inductor is to wind turns through the core. Remember, each pass through the centre of the core counts as one turn. Then pull out a loop of wire, about 20mm long, away from the core.

Next, form a twist at the core end of the loop to hold it firmly in place. Then complete the winding by adding the remaining 20 turns. The coil is close wound – each turn just touching the next turn, and should occupy about two-thirds of the core circumference. Turns may be held in place by applying a little melted bees wax.

The enamel coating should be scraped off the wire at each end of the coil and the leads tinned using a hot soldering iron and solder. The best way to tin the tapping point is to cut the loop at the end, leaving two wires held in place by the twist at the core. Then scrape the enamel from the wires, twist them completely together and tin them as if they are one wire.

The basic parallel capacitors to set the v.f.o. frequency in the tuned circuit are Cx and the 40pF trimmer. The value of 40pF for the trimmer is rather large but it gives enough range to set the frequency easily. Ideally the variablevtrimmer should be an air-spaced type, but I could only find a compression trimmer of suitable value.

Note: The component Cx is made up from three capacitors. This is an old dodge to help temperature stability. Cx, the 100pF series capacitor from the tuning transistor and the 3.3pF capacitor to the gate of the f.e.t. should all be capacitors with good temperature stability.

I've often use polystyrene capacitors in a v.f.o. In this case I used ceramic n.p.o. capacitors which have a zero negative and positive temperature coefficient. In fact the designation n.p.o. should really read n.p.zero (Negative – Positive – Zero). Such capacitors will either have 'NPO' marked on them or have a large black dot on the edge opposite the leads.

The three other transistors in Fig. 3 can all be the common 2N3904 types, although I did try a 2N2222A for the transistor acting as the zener diode. One of the transistors forms a very simple buffer amplifier to follow the oscillator and is fed via a 22pF capacitor from the source of the MPF102.

The transistor acting as the zener diode gives the drain of the MFP102 a stablised supply voltage. The transistor used as a varicap tuning device follows the circuit shown in Fig. 2c. A 100pF capacitor to the tuned circuit gave me roughly the tuning range I required. Note that the tuning potentiometer is fed directly from the main 12V supply. In my case this was a stabilised supply. If the 12V supply is not stablised, another transistor can added, configured as a zener diode with diodes added as shown in Fig.1b.

Tuning Range

An easy way to set the best tuning range is to set the tuning potentiometer at about half range and adjust the trimmer to bring the oscillator frequency within the 7MHz band. It should be possible to tune most, or all, of the band using the potentiometer.

For the best frequency stability, avoid using the highest or lowest voltages from the potentiometer. Experiment for the best compromise between the tuning voltage and the trimmer. A large, good quality, potentiometer helps a lot – I used one of my surplus 10-turn potentiometers.

Transistors **are not** designed for varicap tuning and I had doubts about how frequency stable the oscillator might be. In fact though, the long term stability was more than adequate. I may not want to use the oscillator for a transmitter but it would be very acceptable for a direct conversion receiver. Perhaps the conclusion is – transistors as zener diodes are good, transistors as varicap diodes are acceptable! ●

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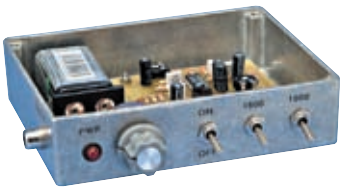

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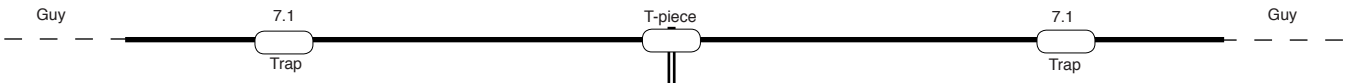

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Project

Guard That Shack With A PIR Alarm

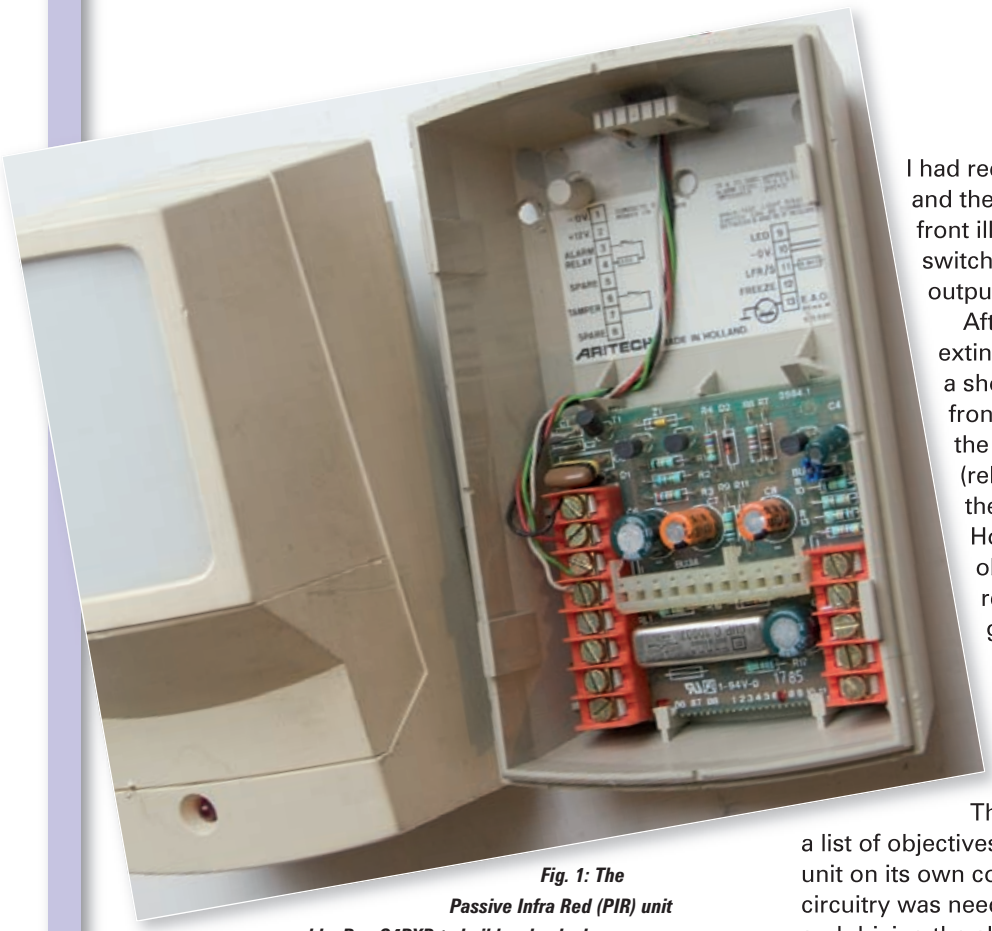

Fig. 1: The Passive Infra Red (PIR) unit used by Ben G4BXD to build a shack alarm.

Being one of those people who just hates to throw anything away it was while sorting through some boxes I found a Passive Infra Red (PIR) unit. I had acquired it some time ago, considering it ideal for a swish alarm system. It was duly 'stored' away in that box and quickly forgotten about – another project bit the dust.

Even though I was trying to clear some junk and clutter I couldn't bring myself to bin the unit right away. I'll test it first I thought, if it's not working then in the bin it goes! This particular PIR, **Fig. 1**, was the type where the front, housing the actual detector, pulled off leaving the section that was wall mounted, containing a small circuit board. This board housed the relay and block connector for wiring into an alarm system. Once I had reconnected it, I applied 12V to the unit and the red light emitting diode (l.e.d.) on the front illuminated. I then put my test meter, switched to the ohms range, across the output terminals.

After a short period the l.e.d. extinguished and the contacts showed a short circuit (relay closed). I moved in front of the unit and the led came on and the output contacts went to open circuit (relay open). After a short wait, off went the l.e.d. and the contacts closed again. However, I had a problem – the unit was obviously working fine and I couldn't really throw it away! So, I decided to get on and build that alarm system after all, something not quite so grand as first envisaged – but something ideal for the radio shack or garden shed.

Design Requirement

The first task in any project is to draw up a list of objectives, things the project should do. The PIR unit on its own couldn't be used as the alarm, as extra circuitry was needed for things like exit delay and timing and driving the alarm sounder.

An exit delay is also required as I needed to be able to turn the alarm on from within the secure area, leave and close the door, before the alarm is activated. Timing of the alarm is also needed to ensure the alarm goes off after a period of time and resets, if a further activation is detected the alarm goes off again. To make the project slightly more versatile the alarm drives a relay, this can then be used to sound a bell, flash lights, etc., to suit the builder's needs.

Circuit Design

The circuit diagram and design for the completed alarm is shown in **Fig. 2**. I'll now detail the operation of the various stages.

A simple choice for the timing control is to use a type 555 integrated circuit (i.c.) in a monostable configuration. In this circuit a small negative pulse,

Ben Nock G4BXD describes an effective alarm suitable to protect an outdoor shack triggered by the intruder's own body heat!

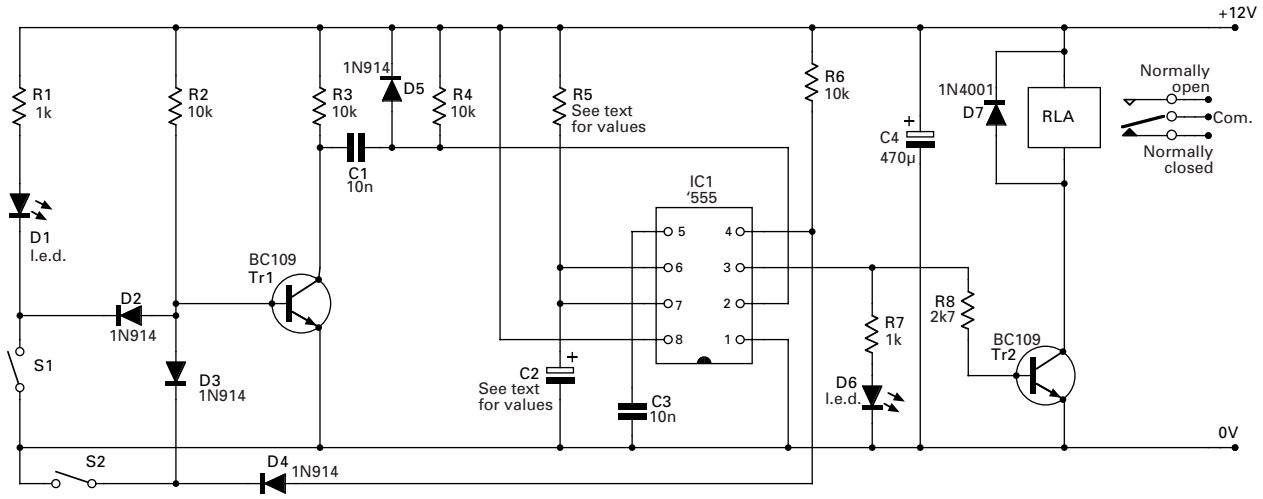

Fig. 2: The final circuit diagram of the PIR unit based alarm.

called the trigger, or drop in voltage applied to pin 2, will start the 555 timer. The output pin of the 555 will go to a 'high' state and remain there for a period set by the choice of a resistor and capacitor (R5, C2) in the circuit.

After the set time period has passed, the output falls to a low state. This high and low state, or in reality a high or low voltage level, can be used to switch on and off a transistor that drives the output relay.

Assuming the circuit is powered from around 10V or so this high state simply means the output of the i.c. rises to near the full supply voltage, 8V or so, measured against ground. A low state means the output will be near the 0V level. This change in voltage level can be used to turn on or off other i.c.s or transistors – in effect making an electronic switch.

The output of the particular PIR I've used, is short circuit or low resistance when at rest, when motion is detected the internal relay opens and the output goes to high resistance. It's done this way so that if anyone (the intruder) simply cuts the wires then the alarm state will also be activated. As the trigger input to the 555 requires the opposite transition, i.e. the triggering pulse is needed to go from high to low, a transistor needs to be included between the PIR and the 555.

There can be some problems with the trigger pulse. For example, if the trigger input is still less than a third of the supply voltage at the end of the time period, the output will remain high until the trigger is greater than one third. This situation can sometimes occur if the input signal is from an on-off switch or sensor.

However, the monostable can be made so it's edge triggered – responding only to changes of an input signal – by connecting the trigger signal through a capacitor to the trigger input. The capacitor passes sudden changes (the pulse) but blocks a constant voltage signal. The circuit is 'negative edge triggered' because it responds to a sudden fall in the input signal.

Pin 4 on the 555 i.c. is the re-set pin, and as there could be a situation where false activation of the alarm might occur, to eliminate this I routed the re-set pin to the main **On**/**Off** switch so that when the alarm is switched off the timer is also switched off. This will ensure the alarm doesn't sound until it's meant to.

Circuit Summary

So, summing up and running through the circuit from start to finish, R1 and the l.e.d. the diode, D1, are used to indicate that the PIR has set its relay (shown as S1) on the circuit and that you can then activate the alarm. Incidentally, the led is mounted so it can be seen from outside the area being protected, either through a window or by drilling a small hole in the shed wall and pushing the led through until it can be seen from the outside.

The switch, S2, is the main On/Off switch. I suggest either using a hidden switch somewhere, or one of the key switches we all used years ago when fitting alarms to our cars (still available from Maplin). The function of diodes D3 and D4 is to hold the pulse transistor, Tr1 and the 555 via pin 4 off until needed. I used a BC109 here but any small signal *npn* transistor should suffice. The diode, D2, allows the PIR switch to do the same job until activated.

The resistor R3, and C1, resistor R4 and diode D5 convert the opening of the PIR relay to the triggering pulse needed by the 555. The important bit (of how long the alarm runs for) is controlled by the combination of R5 and C2, the timing components for the 555.

The time the output of the 555 stays high and (thus turning on the relay transistor Tr2 (is calculated by the formula T = 1.1 x R x C, where R is in Ω and **C** is in farads (F). The answer to this is the time (T) in seconds.

As an example, let's use a 100kΩ resistor and a 100µF capacitor. So that's 1.1 x 100,000 x 0.0001, which equals 11 seconds. Values of 220kΩ and 470µF would provide 113 seconds, or just under Two minutes. **Note:** It should be remembered that the maximum reliable time period of a 555 in monostable use is about 10 minutes due to the accuracy of electrolytic capacitors and their leakage effect.

Having chosen your time period, the l.e.d., D6, gives a visual indication of the on period so that during testing you do not have to have the alarm bell (or sounder) actually deafening you! The relay transistor, Tr2, controls the relay, RLY, and the choice of device will depend upon the relay used. If you intend to switch something with high current the relay might be quite beefy, so something like a BD131 or such can be used. If it's a small relay – requiring less current – then a BC109 might suffice. The diode, D7, just adds a degree of protection to the switching transistor, Tr2.

Alternative Ideas

The circuit I've used is by no means definitive and alternatives can be applied. For example, once you have the second l.e.d. going on and off at the time interval required, then that signal can be used to drive all sorts of things, such as high power field effect transistors (f.e.t.s), other digital components, etc.

The layout of the circuit, **Fig. 3**, shouldn't cause a problem. Veroboard could be used or a small printed circuit board (p.c.b.) made. I found a real easy way to make p.c.b.s suitable for this project by using a piece of copper clad board and drawing the circuit with components life size on the board in pencil. I then fill in the connections between them, draw over in etch resist pen and then dissolve the unprotected copper in the etching solution. The components are mounted on the copper side, this saves any drilling, etc.

I would suggest that if the circuit is used to protect your shed or such, and it's anywhere near transmitting equipment, that it's built into a good screened box. Screened leads should also be used between the PIR and alarm. **Note:** If you find that your radio signals do trigger the alarm a few de-coupler capacitors, 100nF or such, across the supply and PIR leads in conjunction with miniature ferrite beads might do the trick.

Once you have the circuit built and installed the operation is simple. Ensuring the key switch is closed, the power will then be applied to the alarm and PIR. On closing the shed door, watch for the l.e.d. to illuminate – when it does, it will mean the PIR has settled down and its relay has closed. You can then turn the key switch and the alarm will be armed. If the PIR then detects infra red heat (from the human body), the relay opens, the 555 is triggered, the alarm relay closes and the siren or bell sounds. The 555 will not re-trigger until the timed period is up.

At the end of the alarm's sounding, if the PIR has detected no further infra-red its relay will be closed and the alarm will be off. However, if the PIR detects further infra-red input the alarm will sound for another set period, and so on. Turning your key switch (removing power) will 'dis-arm' the alarm and reset the system.

Extra Coverage

Once you've built one unit, it's possible to increase the area or even number of rooms covered by the alarm by wiring further PIR detectors in series. The diagram, **Fig. 4**. shows four PIR units with their switches wired in series then connected to the alarm. If any one of the detectors detects infra-red it will trigger the system.

Each PIR unit will need a 12V d.c. supply or such so you will need a length of 3 core cable between each unit. One note though, In the PIR I have there was a resistor in series with the relay contacts. I actually shorted this one out and if connecting several PIR units together you will also need to do this to provide the series circuit.

Power Supply

You can power the alarm off a suitable 12V output mains power supply. The current drawn by the alarm is quite small but the sounder or bell chosen might use more current. In this case, a battery – of the type used in commercial alarms – would be okay and it can be either trickle-charged or simply connected to the charger at regular intervals.

While many of the high street shops now sell bubble packed shed alarms, I feel this is a good easy exercise in project building, has practical use and could lead to bigger projects in the future. Happy building!

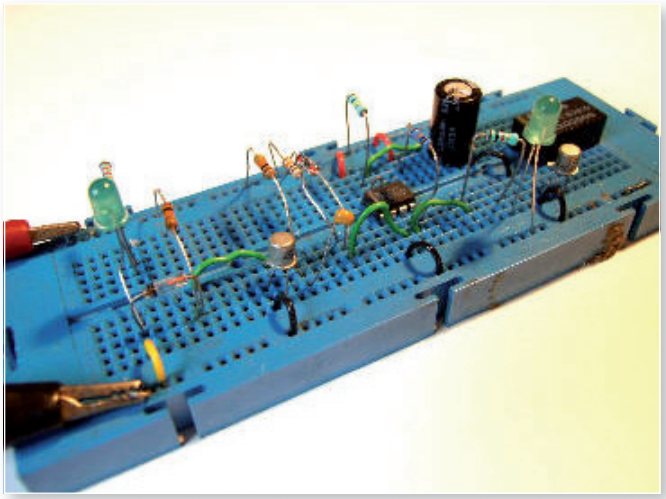

Fig. 3: Physical lay-out of the alarm.

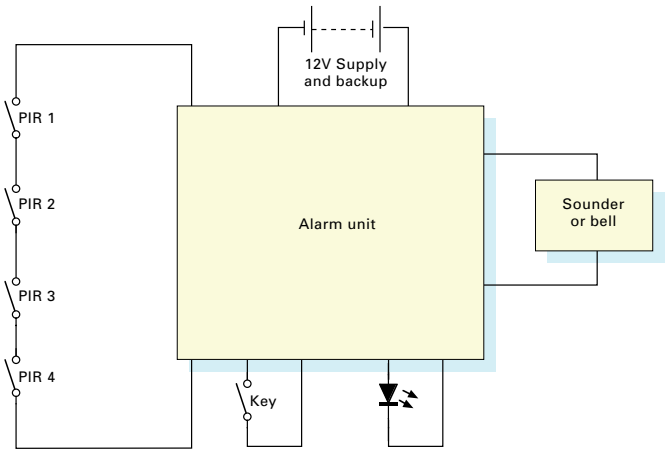

Fig. 4: Adding extra PIR units to provide security coverage in more than one location.

Component values

R1, 7	1kΩ	R5/C2 to suit
R2,3,4,6	10kΩ	
R8	2.7kΩ	
C1,3	10nF	
C4	470μF 25V	
D2, 3, 4, 5	1N914	
D1, 6	l.e.d.	
D7	IN4001	
Tr1, 2	BC109	
IC	NE555	

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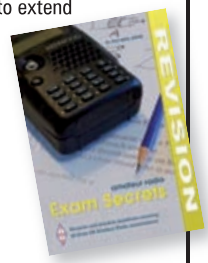

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HEAVY DUTY SWAGED MAST SET

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**

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

H/DUTY CAR BOOT MAST SET

18 foot (1½" dia).
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.

£39.99

2 for £69.99 del £13.00

HANGING PULLY

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

£24.99

MAST HEAD PULLEY

A simple to fit but very handy mast pulley with rope guides to avoid tangling.

(Fits up to 2" mast) **£12.99** + P&P £4.50

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

NEW EASY FIT WALL PULLEY

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

£12.99 + P&P £4.50

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

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

BARGAIN WINCH

500kg brake winch. BARGAIN PRICE

£79.99 Del £10.00

(Now includes cable grip)
Winch wall bracket £22.99

MFJ-1117

DC High current distribution unit £59.99

MFJ-1118 metered

High current distribution unit £99.99

LOW LOSS PATCH LEADS £3.50 P&P

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

QS-300

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

£19.99 P&P £4

QS-200

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

£6.99 P&P £3

MT-3302

Heavy duty universal mount. Includes 5m cable

£29.99

MT-6601

Adjustable roof rack/window bar mount

£19.99

RH-9000

BNC 40cm flexible whip for the ultimate in gain. **£29.99** P&P £4.00
Tx:- 2m + 70cm (Rx:- 25MHz-2.9GHz).

RH-9090

SMA 40cm flexible whip that is ideal as replacement. Tx:- 2m + 70cm.
Rx:- 25MHz-2.9GHz **£34.99** P&P £4.00

YAESU G-450C

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

WOW **£295.00**

G-650C	WOW £329.99
G-1000DXC	WOW £395.00
G-5500 (azimuth/elevation) rotator	our price £459.99
GC-065 thrust bearing	£50.00
GC-038 lower mast clamps	£29.00
G-250 lightweight rotator	£95.00

AR788

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**

AE-201 thrust bearing £24.99

MOBILE ANTENNAS Del £10.00

DB-7900 2m/70cm (5.5/7.2dB) 1.6m (PL-259)	£39.99
DB-770M 2m/70cm (3.5/5.5dB) 1m (PL-259)	£24.99
PL-62M 6m/2m 1.4m (PL-259)	£23.99
PL-627 6m/2m/70cm (1.7m) up to 7.2dB (PL-259)	£44.99

Q-TEK COLINEARS (VHF/UHF) Del £12.50

X-30 GF 144/70, 3/6dB (1.1m)	£39.95
X-50 GF 144/70, 4.5/7.2dB (1.7m)	£54.95
X-300 GF 144/70,6.5/9dB (3m)	£69.95
X-510H GF 144/70, 8.5/11dB (5.4m)	£120.00
X-627 GF 50/144/70, 2.15/6.2/8.4dBi (2.4m)	£79.95

LIGHTNING ARRESTOR

SP-350V Replacement fuses £5.00

DC-1000MHz (400W through power). SO-239 fitting.

£22.95 P&P £3.00

SPEAKER MICS

M-U120 Fits most handies. Alinco, Kenwood, Yaesu.

£14.99 P&P £3.00

MS-107K Fits Kenwood handies.

£14.99 P&P £3.00

ALLUMINIUM POLES

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

FIBRE GLASS POLES *Del £10.00*

1m	1¾" £12.50	2" £15.00	Longer lengths
2m	1¾" £25.00	2" £30.00	available – phone

COPPER ANTENNA WIRE ETC

Hard drawn (50m roll)	£16.95 P&P £7.50
Multi-Stranded (Grey PVC) (50m roll)	£13.95 P&P £7.50
Flexweave (H/duty 50 mtrs)	£39.99 P&P £7.50
Flexweave H/duty (18 mtrs)	£18.95 P&P £7.50
Flexweave (PVC coated 18 mtrs)	£19.95 P&P £7.50
Flexweave (PVC coated 50 mtrs)	£50.00 P&P £7.50
Special 200mtr roll PVC coated flexweave	£150.00 P&P £10.00
Copper plated earth rod (4ft)	£14.99 P&P £8.00
Copper plated earth rod (4ft) + earth wire	£24.99 P&P £8.00
New RF grounding wire (10m pack) PVC coated	£14.99 P&P £5

METALWORK & BITS (Del Phone)

2" mast-floor base plate	£14.99
6" stand off brackets (no U-bolts)	£8.99
9" stand off brackets (no U-bolts)	£10.99
12" T & K brackets (pair)	£18.99
18" T & K brackets (pair)	£22.99
24" T & K brackets (pair)	£26.99
U-bolts (1.5" or 2") each	£1.50
8mm screw bolt wall fixings	£1.70
8-nut universal clamp (2" to 2")	£7.99
2" extra long U-bolt/clamp	£5.50
2" crossover plate with U-bolts	£14.99
15" long (2") sleeve joiner	£18.99
3-way guy ring	£5.99
4-way guy ring	£6.99
Heavy duty guy kit (wire clamp, etc.)	£39.99
Set of 3 powder coated heavy duty fixing spikes (~0.7m long)	£29.99
30m pack (4.4m) 480kg B/F nylon guy	£12.50
Roll of self-amalgamating tape	£7.99
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
1¼" 6 foot "cranked" ally pole	£14.99

Feature

Emerging Technology

Chris Lorek G4HCL not only takes his regular look into his crystal ball – but also investigates what's happening right now!

Remember?

The wristwatch Phone? Dick Tracy (for those of us old enough to remember) eat your heart out! The 'wristwatch communicator' has been hyped for some time, but it's now a reality. Although the manufacturers LG are usually known to produce 'middle of the road' electronics – it looks like this has now changed! As I write this they've just launched their very first 3G-enabled wrist phone, in the form of the LG-GD910. It may not look like anything spectacular but it's a fully functional mobile phone with video calling facilities (like many phones nowadays,

but then have you used this facility on yours? I haven't!).

The difference is that this phone is very thin, just 13.9mm (0.5in), and it has a fully touch-screen liquid crystal display (l.c.d.) so you can use it without a button-based keypad. Yet, like the 'Dick Tracy' phone it also has voice recognition, as well as a text to speech feature so you can listen to what others have sent you by text, and a front-facing camera for two-way video calling! Oh yes, there's also built-in music player and built-in Bluetooth, so you can listen to your music using your car or home music system, and communicate with your in-car Bluetooth hands-free unit.

Finally there's a high speed digital packet access (HSDPA) facility with download speeds of up to 7.2 Mbps, which is often faster than a home broadband connection! The future as revealed by comic books several tens of years ago really is now an emerging reality.

Universal Charger

A universal charger is the sort of thing you'd think, "Why hasn't anyone thought of this before?" There are so many portable communication devices such as handheld transceivers, portable 'phones and so on, and depending on who you buy from they all use a different charging connector! After all standardisation is possible – Amateur Radio accessories produced worldwide have for many years used a small coaxial d.c. socket for the provision of external 12V d.c. supply.

So why not things like cellphones? Well someone's obviously had a brainstorm, as at the recent Mobile World Congress no less than 17 mobile operators and handset manufacturers announced that they wanted to create a universal standard for new mobile phones!

The chargers themselves will be designed to be energy-efficient, drawing about half the standby power of those being used right now. Of course they'll also stop the waste of disposing of the charger when you get a new phone. The group envisage micro-USB being used as the universal interface, and they hope that by 2012, i.e. in three years time, most new mobile phones will have this charging facility.

With many Amateur Radio handhelds and scanner receivers already having PC connectivity for remote control or channel upload/download, it's very likely that this will also be a standard for handheld transceivers as well as personal MP3 players and the like. One charger for all – yes, it's strange that no-one has thought of it before!

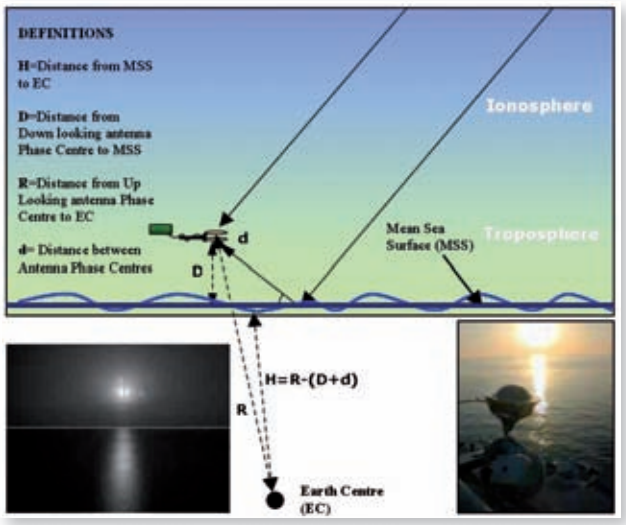
Measuring Ocean Waves From Space

The University of Surrey are no strangers to Radio Amateurs, having been involved in amateur satellites virtually since day one. They've now teamed up with scientists at the National Oceanography Centre in Southampton and the University of Sannio in Italy and have just successfully used signals from GPS satellites to measure the roughness of our world's sea surface from space.

The new technique uses signals from navigational satellites, such as GPS, GLOSNASS or Gallileo constellations, after the radio waves are reflected from the ocean's surface. The concept is known as Global Navigational Satellite System Reflectometry (GNSS-R) and carries data about the directional 'roughness' of the sea surface related to wind speed, wave height and wind plus wave direction together with the mean sea level.

This is the first time that such information has been reliably received and processed, and hopefully thorough this use of emerging radio technology it will be a useful safety factor for sailors worldwide.

Built-In Radio Coverage



Some years ago we were only just beginning to use radio for short-range communications, with the domestic cordless phone probably being one of the most popular uses for built-in radio features, or of course from indoors to outside in the garden or garage. Such use is, of course, increasing at a very high rate, and besides cordless phones we also have radio car key fobs, Bluetooth communication between different units such as cellphones and ancillaries, wireless speakers and baby monitors. There are also video senders, and CCTV around the house to see who is at the door at the door or on your driveway, and wireless broadband modems and printers for in-building use.

Digressing slightly, we can show how Radio Amateurs were once again pioneers, is the fact that before cellphones or even cordless phones were invented, Amateurs – particularly in the USA where such interconnection was allowed by their licensing authorities – were using 'phone patches' to link high frequency (h.f.) radio transceivers and very high frequency (v.h.f.) and ultra high frequency (u.h.f.) repeaters to a fixed phone line.

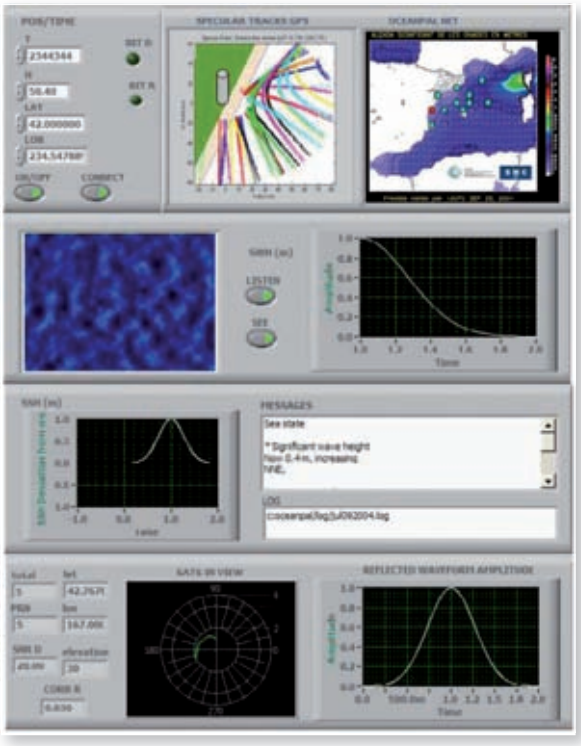
Nowadays, many domestic users employ a mobile 'phone, either cordless linked to the home landline, or a cellphone making use of inclusive minutes, to primarily make and receive calls. This is usually satisfactory in an individual house, but what about a larger area, such as a block of flats or a hotel where you may want coverage wherever you are? As buildings become more and more 'solid' radio frequency (r.f.) wise, getting radio signals in and out of buildings as well as all around them can sometimes be a challenge! Enter the 'Mesh' network.

A 'Mesh' network is where several low power base station units are interconnected in a given building or area to form a wireless network, communicating between themselves and other fixed and mobile radio-based units. Data communication is used with various forms of communication being suitably digitised, such as speech, video, or just r.f. identification (RFID). Hang on a moment! Didn't we Amateurs start doing this over 20 years ago with packet radio and network nodes communicating with each other?

Returning to the present we can, by using very low power devices, enable people wandering around a building to communicate whenever they're in range of a suitable network 'node'. Another is that they can be tracked if they are carrying, say, a key fob with an RFID chip embedded. Besides the 'big brother is watching you' element here, some uses could be that of locating medical staff within a hospital to find the nearest doctor during an in-ward emergency. Also, in a hotel environment the technology could make sure the room lights are switched on ready for when the guest with their RFID-equipped key fob approaches the room and, of course, switched off after they've left.

Don't think this isn't already happening – it is! In fact in this year's run of 'Celebrity Big Brother' on TV, the 'housemates' had RFID tags in the radio microphones they wore, and were tracked using 15 RFID readers around the location! This allowed the producers to ascertain where the contestants spent most of their time and which other 'housemates' they were nearest to during their stay.

Zigbee, another low power 'mesh' system, is becoming increasing used to control heating, ventilation, air conditioning and the like, as well as remotely monitoring equipment such as fire extinguishers and smoke alarms to make sure they're in full working order and ready for emergency use. But please remember who pioneered all this – Radio Amateurs using packet radio!



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Plant Feeding

Do you remember the early 'electronic experimenter kits' where you could wire up such simple projects as a burglar alarm to detect if a door contact has been opened, or a soil moisture detector to show you when your plants need watering? I remember experimenting with my Philips Electronics Engineers Kit over 30 years ago, and again by using Tandy kits over 20 years ago. Well, this technology has been revived – with a new twist!

If you're one of the many on 'Twitter' network on the Internet, you may possibly have heard that some people have wired up their pot plants to send them 'tweets' when they're thirsty. It's called Pothos. The people behind the tweeting plant dreamed up a device that allows plants to tell owners when they need water or if they've had too much!

Rob Faludi, one of the tech-obsessed plant loving founders said: "Obviously plants can't talk or Twitter directly, so we have to help them along. In fact, the plant's social media enabler is made of soil-moisture sensors that are connected to a circuit board. They measure the level of moisture, and then communicate the information to a microcontroller. The device determines whether moisture levels are too low, or too high, and then transmits a wireless signal to Twitter as a plaintive tweet for sustenance."

Kate Hartman, another member of Botanicalls (the company behind the scheme), said "There's always a basic 'I'm thirsty, could you please water me' message. But they also accelerate in terms of need, so there's an urgent message: 'I'm desperately thirsty, please water me'."

Well, that's one use for technology developed several tens of years ago, and is now emerging in a new application!

Alternative To GPS Tracking

It seems that nowadays we rely very much on global positioning satellite (GPS) tracking to help us where we're going. Whether this is to a destination in the car, or a forest or fell walk in the middle of the wilderness, or even on a golf course to either the next hole or to the final '19th hole' after a good round, it can help us get there. Most of the time!

However just a small pocket-sized device can jam GPS signals over a few hundred metres, and many diplomatic protection agencies as well as VIPs use these to (hopefully) prevent remote detonation of devices based on the proximity of these individuals. Besides intentional jamming, accidental interference can also occur – indeed a faulty TV sender used in a marina once caused total blocking of GPS signals in that area.

Researchers at BAE systems have now developed an alternative technology; one that uses a 'backup' of other signals for positioning, such as TV and radio broadcast transmitters, cellphone sites, even maybe Amateur repeaters. The advantage to this is that, say, if you're indoors with no GPS receive coverage, you're still likely to receive signals from these other services.

As the mobile positioning unit 'knows' the exact location of the transmitters and by using the time delay receiving these signals, your location can again be calculated and stored in your unit, ready for transmission to whoever you choose to allow it to be transmitted to. The company's main initial focus involves unmanned ground stations, which are naturally heavily reliant on satellite positioning. It's still early days of course, and the system relies on a lot of local knowledge, but the system's getting there, so maybe soon we won't rely solely on GPS for positioning.

Portable Power

Rechargeable battery power for portable devices such as hand-held transceivers has come a long way in the last few decades. Hand-helds have increasingly become smaller but up until now even the best batteries have had their limitations, with long charge times meaning they're not always ready to use when needed.

So, will a new breakthrough change the way we think about technology? It relates to a technique known as 'Beltway' which allows a battery to charge and discharge much quicker than current devices.

Now this means not hours or minutes, but 10-20 seconds for small Lithium Ion cells as used in many two-way hand-held transcivers nowadays. Rechargeable batteries at the moment are limited by the speed at which the ions move through the Lithium phosphate. However, a research team have discovered that by coating particles of lithium iron phosphate in lithium phosphate-glass, the ions managed to find the passage through much quicker, allowing the battery to charge and discharge at super-fast speed.

The good news is that production of these batteries could be put in place within two years as the manufacturing process is relatively similar to current methods. So, we may not have to wait too long until then to see for certain if 'Beltway' batteries really do change the way we think about technology. A full hand-held transceiver re-charge in 20 seconds does sound good!

See you soon as I explore the future on behalf of *PW* readers. Chris G4HCL.

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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!

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E-mail: newsdesk@pwpublishing.ltd.uk

BEDFORDSHIRE

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

BERKSHIRE

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

CAMBRIDGESHIRE

Huntingdonshire ARS
Gerald G8AKL. Tel: (01487) 740794
E-mail: hunts.hams@yahoo.co.uk
www.hunts-hams.co.uk
Huntingdonshire ARS meets at the Medway Centre, Medway Road, Huntingdon PE29 1SF. Meetings are from 7.30pm until 10pm on the 2nd & 4th Thursday of the month.

Petrborough & DARC
G4EHW.
www.radioclubs.net/padarc
Meets on 4th Wednesday of the month at Southfields Community Centre, Stanground, Peterborough. PE2 8RZ. Directions and full details on website.

CHESHIRE

Chester & DRS
Barbara Green.
Tel: (07957) 870770
E-mail:
barbara@rutland.go-plus.net
www.chesterdars.org.uk
The Chester & District Radio Society meets on Tuesday evenings at the Burley Memorial Hall, Common Lane, Waverton, Chester CH3 7QN.

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

Macclesfield & DRS
Adie Dodd. Tel: 0795 7765511
www.gx4mws.com
The Macclesfield & District Radio Society meets every Monday at the Pack Horse Bowling Club, Westminster Road, Macclesfield SK10 3AT at 8pm. Licence courses are run year round and visitors are always welcome.

Stockport RS
David Simcock. Tel: 0161 456 7832
E-mail: secretary@gx4mws.com
www.stockportradiosociety.co.uk
The Stockport Radio Society meets on the first and third Tuesdays at the Bramhall Air Scouts HQ, Leewood Hall, Benja Fold off Ack Lane East, Bramhall, Stockport SK7 2BX.

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

CORNWALL

Cornish RAC
Contact: Steven G7VOH
Tel: (01209)844939
E-mail: g7voh@btinternet.com
www.cornishradioamateurclub.org.uk
The Cornish Radio Amateur Club meets at the Church Hall, Church Road, Perranarworthal, Truro TR3 7QE on the first Wednesday of every month at 7.30pm. There is also a Computer Section that meets at the same venue and time on the second Monday of every month, except December.

Newquay and District ARS
Joe Bell. Tel: (01726) 891557
E-mail: joe_bell@btinternet.com
www.btinternet.com/~kevin.francks/index.html
The Newquay and District ARS meets every other Thursday at Treviglas Community College, Bradley Road, Newquay. TR7 3JA with either arranged talks on the evening or just a general chit chat amongst members. Also the club offers training towards the Foundation Exam on club nights and then the opportunity to take the Foundation Exam.

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

COUNTY DOWN

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

COUNTY DURHAM

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

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

DERBYSHIRE

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

DEVON

Exemouth ARS
Mike G1GZG. Tel: (01395) 274172
E-mail: micael.newport1@btinternet.com
The club meets on the 1st and 3rd Wednesdays of each month at 'The Scout Hut', Marpool Hill, Exmouth Devon EX8 1TD.

Exeter ARS
Contact: Phil 2E0PCJ
Tel: (01392) 877413
E-mail: philcjays@aol.com
The Exeter Amateur Radio Society meets on the 2nd and the 4th Monday at 7.30pm in the Moose Centre, Spinning Path Lane, Blackboy Road, Exeter EX2 5RP. Tuition for Foundation, Intermediate and Advanced licence is available. The club is registered as an RSGB examination centre.

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

DORSET

Blackmore Vale ARS (BVARS)
Nick Perrin. Tel: (01747) 838936
E-Mail: bnperrin@theiet.org
www.radioclubs.net/bvars/
BVARS meets in The Youth Club, Coppice Street, Shaftesbury Dorset SP7-8PF each Tuesday evening at 7.30pm. The Club callsign is G4RBV. The main meeting is the second Tuesday of the month and details of events and full details of the Club can be found on the website.

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

Poole Radio Society G4PRS
'Tex' G1TEX. Tel: 07966 460 552
www.g4prs.org.uk
Meetings are every Friday at 19:30 for 20:00 at the The Old Chapel Hall, Cabot Lane, Creekmoor, Poole BH17 7BX, the second meeting of each month is the formal evening, all others are basically shack and Natter nights. After the recent successful Intermediate course, training begins again in September.

DUMFRIES & GALLOWAY (Scotland)

The Wigtownshire Amateur Radio Club
Ellis Gaston. Tel: (01776) 820413
Web: www.gm4riv.co.uk
The club meets every Thursday from 19:00 Hrs at the The Aird Unit, Stranraer Academy, Stranraer, DG9 8BQ, South West Scotland.

EAST SUSSEX

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

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

ESSEX

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

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

Chelmsford ARS
Martyn Medcalf. Tel: (01245) 469008
E-mail: info2007@g0mwt.org.uk

www.g0mwt.org.uk
The Chelmsford Amateur Radio Society meets on the first Tuesday of each month in the Marconi Sports & Social Centre, Beehive Lane, Great Baddow, Chelmsford, Essex CM2 9RX at 7.30pm. - All welcome. August 4th "Where do our wavelengths come from?" - The work of the IARU by Peter Chadwick G3RZP. Sep. 1st "D Star" by Murray Niman G6JYB and Clive Ward G1EUC.

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

South Essex Amateur Radio Society
Contact: Dave (G4UVJ)
Tel: (01268) 697978
E-mail: southessex.ars@btinternet.com
www.southessex.ars.btinternet.co.uk
Local Network: 145.225MHz
Meets: Meet at 8pm on the second wednesdays of each month at South Benfleet Primary School, High Rd, South Benfleet, Essex SS7 5HA. (Entrance: 51°33'10.45N 0°33'39.65E), (Opp. Smiths Wood Yard). All welcome. Meetings are: July 26th we're holding the Waterside Farm Railway Special Event Station.

FIFE (Scotland)
Glenrothes & DARS GM4GRC
D Francis MM0DYX.
Tel: 01383 823878
Meet Wednesdays at the Football Pavillion, Station Rd. Thornton Fife. Club Chairman Ken GM3YBQ runs course at all licence levels.

GLOUSCESTERSHIRE

Cheltenham ARC G5BK (CARA)
Derek G3NKS 01242 241 099
E-mail: g3nks@blueyonder.co.uk
www.caranet.co.uk
The club meetings are held on the first Friday of each month, starting at 8p.m. at Prestbury Library, The Burgage, Cheltenham, Gloucestershire, GL52 3DN.

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

Gwnedd (Mid-Wales)
Merion ARS
Tel: John (07824) 562656
Email : tawelfan@talk21.com
http://meirionars.multiply.com/
Meirion amateur radio society meet on the first Thursday of each month at The Royal Ship Hotel in Dolgellau Gwynedd LL40 1AR at 19.30. Visitors and new members are very welcome. Regular talks, all the details for meetings and special events can be seen on the club website. July 10th BUNKERS on the AIR –Meriden, Haseley Knob & Church Lawford, 17th 3rd Round G2FDC Trophy
24th Video night 31st Radio workshop VHF/UHF Operating 6m, 4m, satellites. 8.30 p.m. for 8.45 p.m. start

HAMPSHIRE

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

Fareham & District ARC
Alastair Sinclair Tel: 01329 235397
E-mail: secretary@fareham-darc.co.uk
www.fareham-darc.co.uk/
The Fareham & District Amateur Radio Club meets on Wednesdays evenings from 7.30pm in the Fareham Sailing & Motor Boat Club, The Boathouse, Lower Quay, Fareham. PO16 0RA

Farnborough & District Radio Society (FDRS)
Derek G3OFA E-mail: mail@fdrs.org.uk
www.fdrs.org.uk
Meets every 2nd and 4th Wednesday in the month at 7:30 for 8:00 pm in the Farnborough Community Centre, Meudon Avenue, Farnborough, Hampshire, GU14 7LE Visitors and new members are always most welcome. July 22nd Construction Contest and Junk Sale.

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

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

Itchen Valley ARC
Contact: Charlie M0WYM
Tel: (02380) 439560
E-mail: secretary@ivarc.org.uk
www.ivarc.org.uk
The Itchen Valley ARC meets on the second and fourth Friday of each month at The Scout Hut, Brickfield Lane, Chandlers Ford, SO53 4DP, doors open 7.30 pm. See website for our programme, visitors welcome. Join our club net on 145.550, Thursday evenings at 8.30 pm. The club is a registered as an RSGB examination centre.

Lymington Community Association Radio Club
Keith G8MZF Tel:(01590) 672337 (work)
(02380) 849395 (evenings)
Email: lymcomass@aol.com
The club meets at Lymington Community Centre, New Street/ Cannon Street, Lymington SO41 9BQ, on friday nights. Talk-in on the night on or near 145.550 club call M0LCC. All are welcome. Start time hopefully 7.30pm bar open from 7.00pm. Plenty of free parking nearby.

HERTFORDSHIRE

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

Stevanage & District ARS
John. Tel: (01462) 459254
Secretary E-mail: jmccutcheon@freeuk.com
www.sadars.org/
The Stevenage and District Amateur Radio Society meet every Tuesday 7.30pm, at the Stevenage Resource Centre, Chells Way, Stevenage, SG2 0LT. Regular talks and demonstrations. Registered centre for Foundation/Intermediate/ Advanced exam courses (40+ passes last year). Club Net last Friday of month 7.30pm on 145.450MHz. All welcome, see website for further details.

HUMBERSIDE

Hull & District ARS
Contact: Keith Shaw.
Tel: 01482 217776
E-mail m3shw@yahoo.co.uk
raymond penny Tel: 01482 376835
E-mail penibs@penibs.karoo.co.uk
Hull & DARS meet every friday night at 1930 – 2200 at the walton street leisure centre, goathland close, walton street hull, East Yorks HU3 6NG.

JERSEY

Jersey Amateur Radio Society GJ3DVC
Rob Luscombe (secretary)
2J0RZD. Tel: 07797 923916
E-mail: gj3dvc@gj3dvc.org.je
http://www.radioclubs.net/gj3dvc/
The Jersey Amateur Radio Society meets every Friday at 7.30pm at The German Signal Station, Rue Baal, La Moye, St. Brelade, Jersey, JE3 8HQ, also on a Wednesday evening from time to time to maintain, alter and improve the shack, antennas etc. and also for club training. Coffee and car parking available, visitors are always welcome, shack rental available. See our website for further information.

KENT

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

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

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

LANARKSHIRE (Scotland)

Mid-Lanark ARS
Dennis. Tel: 07505529335
Email: mm0dnx@yahoo.co.uk
www.mlars.org.uk/
The Mid-Lanark ARS meets on Friday evenings at the Newarthill Community Education Centre, 288 High Street, Newarthill, Motherwell ML1 5JU. Visitors and new members are very welcome. The club has HF and VHF shacks for use on club evenings. Courses for foundation, intermediate and full licences are also run at the club. See web site for details of our upcoming meetings.

LANCASHIRE

Oldham RC
Christopher Cunliffe.
Tel: 07749347142
E-mail: secretaryoarc@btinternet.com
www.oarc.org.uk
The Oldham Radio Club meets on Thursdays at Royton Air Training Corps, Hillside Avenue, Royton, Oldham OL2 6RF at 7:30pm.

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

Morecambe Bay ARS
Martin Hazel Tel: (01524) 848193
Email: martin@mbars.internationalham.com
www.mbars.internationalham.com
Morecambe Bay Amateur Radio Society meet at the Trimpell Sports and Leisure Club, Out Moss Lane Morecambe, every Tuesday evening from 1930. They also have a new website at all of their events calendar for the next year is to be found there.

Thornton Cleveleys ARS (G4ATH, & G6GMW)
John Tel: (01253) 399377,
E-mail: m3waz@hotmail.co.uk
www.tcars.org.uk
Meet monday evenings at the Frank Townend Center, Kensington road, Cleveleys, Lancashire FY5 1ER startring from around 7.30pm.

LEICESTERSHIRE

Loughborough & District ARC
Chris Walker. Tel: (01509) 504319
Email g1etz@aol.com
www.radioclubs.net/ladarc
Loughborough & District Amateur Radio Club meets at the Glenmore Community Centre, Thorpe Road, Shepshed, LE12 9LU on a Tuesday evening from 7.30pm. The clubs programme of events can be found on our websites. Visitors and new members most welcome.

LINCOLNSHIRE

Franklin ARC
Contact: Brendan.
Tel: (01754) 820204
E-mail:
bren.sykes@btinternet.com
The Franklin Amateur Radio Club meets the last Wednesday of every month at the Victoria Inn Wainfleet Road Skegness Lincolnshire PE25 3RG. @19:30hrs. all visitors to the area and residence are welcome to join us. We also have regular nets, on the first and third Tuesday of every month on 145.550± @20:00hrs. once again come and join us. The club is registered as an RSGB examination center for Foundation, Intermediate Advanced licenses, run by G0OTH Robert. The club has recently moved from its home of conception, Spilsby to Skegness, and this has proven to be a positive re-location for the members. We are organizing special events, field days and our own rally (See Rallies Section) this year so listen out for us, our call sign is M0FRC.

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

Stenigot "Chainhome" Amateur Radio Club
Steve Burke M5ZZZ.
Tel: (01507) 600202
E-mail m5zzz@btinternet.com
www.stenigotchainhomearc.co.uk
Meetings are held on the third Friday of the month commencing 19.30 at Gayton le Marsh Village Hall, Gayton le Marsh, Lincolnshire. LN130NW.

LONDON

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

Edgware & District Radio Society
Michael G4RNW.
Tel: 020 8950 0658
E-mail: michael.stewart5@ntlworld.com
Edgeware &District radio Society meet at the Watling Community Centre, 145 Orange Hill Road, Burnt oak, Edgware HA8 0TR.

Radio Society Harrow
Linda Casey Tel: 020 8386 8586
Email: lcasey@imperial.ac.uk
www.g3efx.org.uk
The Society meets on friday at 20.00 on the 2nd and 4th weeks of every month, at The Elsie Fisher Room, St Lawrence Centre, St. Lawrence Church, 2, Bridle Road, Eastcote, Pinner HA5 2SJ. All welcome! We also run exam courses - see website for details

Southgate ARC
David Sharp. Tel: 01992 422622
E-mail: david.sharp1@tesco.net
The Southgate Amateur Radio Club meets on the second Wednesday of the month at Hazelwood Lawn Tennis and Squash Club, Ridge Avenue, Winchmore Hill, London N21 2AJ at 7.30 for 8 pm.

Wimbledon and District ARS
Jim Bell M0CON
Tel: 020 8874 7456
E-Mail: jamesm0con@o2.co.uk
http://www.gx3wim.org.uk
The Wimbledon & District Amateur Radio Society welcomes new comers to our meetings whether they are licensed or not. We hold our meetings the second and last Friday of each month at Martin Way Methodist Church, Buckleigh Avenue, Merton Park, London SW19 9JZ. The church is on the corner of Martin Way and Buckleigh Avenue.

THE LOTHIANS (Scotland)

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

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

MERSEYSIDE

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

NORFOLK

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

Norfolk ARC
Mark Taylor. Tel: (01362) 691099
E-mail: narc@g0lgj.co.uk
www.norfolkamateurradio.org
The Norfolk Amateur Radio Club meets every Wednesday at the Eaton CNS School, Eaton Road, Norwich, NR4 6PP, where it meets weekly,from 7-10pm, usually in 6th form centre at front of school, every Wednesday from 7-10pm.

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

NORTHAMPTONSHIRE

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

SHROPSHIRE

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

Telford & District ARS
Mike Street. Tel: (01952) 299677
E-mail: mjstreetg3jkx@blueyonder.co.uk
www.tdars.org
The Telford & District Amateur Radio Society meets on Wednesdays at the Little Wenlock Village Hall, Malthouse Bank, Little Wenlock. Telford TF6 5BG at 8pm.

NOTINGHAMSHIRE

Worksop Amateur Radio Society (W.A.R.S.)
'Daz' Spence. Tel: (01623) 747314
Email- g3rcw@qsl.net
www.qsl.net/g3rcw/
Meets every Tuesday at 7:00 pm. Our cubhouse is located at 59 - 61 west street, Worksop, Nottinghamshire. S80 1JP. Exams and courses run frequently for all licence levels. Licensed bar & hot food available on club meet nights. Membership fee for the year is £10.

SOMERSET

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

South Bristol ARC
Len Baker. Tel: (01275) 834282
E-mail: g4rzy@msn.com
www.sbarc.co.uk
The South Bristol Amateur Radio Club meets every Wednesday evening at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol BS14 0LN.

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

SOUTH GLOUCESTERSHIRE

Thornbury and South Gloucestershire ARC
Tony. Tel: (01454) 417048
E-mail: tonytsgarc@sky.com
The Thornbury and South Gloucestershire Amateur Radio Club meets in the United Reformed Church Hall, on the corner of Chapel Street and Rock Street, Thornbury BS35 2BA at 7.30 - 9.30pm.
ight.

SOUTH WALES

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

SOUTH YORKSHIRE

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

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

the Foundation, Intermediate and Advance levels of licensing.

STAFFORDSHIRE

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

SUFFOLK

Bury St Edmund's ARS
George Woods G3LPT.
Tel:01359 259518
Darren Coe G7SDC
Tel: (01284) 701732
storno@yahoo.co.uk
www.radioclubs.net/bsears/
The Club meets on the third Wednesday of the month (except August and December) at the Culford school, Culford, Bury St. Edmunds, Suffolk IP28 6TX at 7.30PM. Visitors are welcome. Please see our web site for further details.

SURREY

Coulsden Amateur Transmitting Society
Steve Conway G7SYO
Tel: (01737) 353517
E-mail: steve.conway@landg.com
www.sthost.co.uk/webspace/cats/
Regular meetings are held on the second Monday in each month at-: St. Swithun's Church Hall, Grovelands Road, Purley, Surrey CR8 4LA at 20:00 to 22:00hrs. On the first Saturday of month at 1715 Crescenta Valley / CATS Net on Echolink Normally via MB7IPL node on 145.2875 MHz.

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

TYNE & WEAR

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

Tynemouth ARC
Tony Regnart G8YFA.
Tel: 0191 280 1981
E-mail: mail@g0nwm.com
www.g0nwm.co.uk
The Tynemouth Amateur Radio Club meets each Friday from 7 to 9pm at St. Hilda's Church, Stanton Rd, North Shields, Tyne & Wear NE29 9QB. It's known locally as 'the church near the fire station'.

WARWICKSHIRE

Coventry Amateur Radio Society
Contact: John Beech G8SEQ.
Tel: 079 58777 363
www.coventryradio.org.uk
Coventry Amateur Radio Society meets most Fridays at 2030hrs in St Bartholomew's Church Hall, Brinklow Road, Binley, Coventry CV3 2DT. Further details on CARS activities can be obtained from the Secretary – John G8SEQ

WEST MIDLANDS

Aldridge & Barr Beacon ARC
Ted Roberts. Tel:(01922) 614169
E-mail: albertg0kfs@raynet-uk.net
www.radioclubs.net/aldridgearc
The Aldridge & Barr Beacon Amateur Radio Club is a daytime club and meets at the Aldridge Community Centre, Middlemore Lane, Aldridge, Walsall WS9 8AN on the first and third Monday of every month at 2pm to 4pm. They have a long wire and a v.h.f. antenna for radio operation using the club callsign M0GRX.

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

South Midlands RS
Don Tel: 0121 458 1603
South Midlands RS meet in the West Heath Community Centre, Condover Rd., West Heath Birmingham B31 3QY. macrh 13th and 20th are construction evenings. 223rd is a 'ragchewing' evening.

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

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

Wythall Radio Club
Chris Pettitt. Tel: (07710) 412 819
E-mail: g0eyo@wythallradioclub.co.uk
www.wythallradioclub.co.uk
The Wythall Radio Club is based at Wythall House, Silver Street, Wythall, near Birmingham B47 6LZ. They meet every Tuesday at 8pm and meetings are informal and friendly.

WEST SUSSEX

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

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

WEST YORKSHIRE

Denby Dale Amateur Radio Club
Gerald, G3SDY.
Tel: (01484) 602905
www.g4cdd.net/
The Denby Dale club meat at Pie Hall, Denby Dale, Huddersfield HD8 8RX. On Wednesday April 1st the club holds its spring mini-rally and grand auction of surplus items. Doors open at 7pm.

Pontefract & District Radio Club
Colin. Tel: (01977) 677006
E-mail:
info@pontefractradioclub.org
www.pdars.com
The Pontefract & District Radio Club meets every Tuesday from 7pm and Thursday from 8pm at the Carleton Centre, Carleton Grange, Carleton Road, Pontefract, West Yorkshire WF8 3RJ.

WIGTOWNSHIRE (s.w. Scotland)

Ellis Gaston 01776 820413
www.gm4riv.co.uk
Wigtownshire ARC meet weekly at The Aird Unit, Stranraer Academy, Stranraer DG9 8BQ. Visitors always most welcome

WILTSHIRE

Trowbridge & District AR
Ian Carter. Tel: (01225) 864698
E-mail: ian.l.carter@btinternet.com
http://uk.geocities.com/tdarc@btinternet.com
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Martin Carter. Tel: (07976) 917987
E-mail: secretary@m0zoo.co.uk
www.wraa.co.uk
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Colin Redwood's

what next?

Colin Redwood G6MXL gazes towards the sky with his introduction to operation via Amateur Radio satellites.

This month I'm starting to look at Amateur Radio satellites, and yes, I know it's very easy to get the impression that highly sophisticated and expensive equipment is needed to enjoy satellite QSOs! However, while there is some truth in this opinion, **it is** possible to get started with quite a basic set-up. So, here are the *What Next?* (*WN?*) absolute essentials to listening to a satellite – by using little more than a v.h.f. or u.h.f. hand-held!

Almost all satellite contacts are made by transmitting from earth to the satellite on one Amateur band, and receiving the satellites signals on a different band. Most satellites operate in the satellite parts of the 144MHz (2m) and 430MHz (70cm) bands, although some satellites also operate on various microwave bands.

Satellite Orbits

The main difference between Amateur Radio satellites and commercial satellites used for domestic television is the way that they orbit (go round) the earth. Commercial satellites used for broadcasting purposes are in what are known as geostationary orbits. Geostationary means that the satellite stays in the same position in space relative to the earth. This way we can put microwave dish antennas on our houses pointing at a satellite to receive satellite TV and don't have to move the dish around.

Amateur radio satellites are **not** in geostationary orbit. They move around in the sky, so that they're never in the same place in the sky relative to the earth. In fact, at times Amateur Radio satellites might be over the far side of the earth, below the horizon from where we are, so that we don't even have a line of sight view of them, and hence we are unable to make contact using them on the v.h.f. and u.h.f. bands.

Height Above Earth

The height of the satellite above the earth will affect the area of the earth that can see the satellite at any single point in time (known as the footprint) – the higher the satellite, the larger the footprint. Some satellites have a very elliptical orbit, so that part of the time they are close to the earth with a small footprint, and at other times they are a long way out into space, with a much larger footprint. The larger the footprint, the further you can work.

A Few Challenges

Of course, there are a few challenges to overcome in order to receive signals from Amateur satellites. The first challenge we face is to know where a particular satellite is, and when it will be above the horizon where we are on the planet, and therefore when we are in its footprint.

There are a number of ways of predicting when a particular satellite will be above the horizon where we are. One way is to use a computer program, and provide it with the parameters of the orbit of each satellite we are interested in. These parameters are known as Keplerian Elements (often abbreviated as Keps). In addition, we'll need to provide our location on earth in latitude and longitude. Programs and Keps can be obtained from the **AMSAT organisation** – a worldwide group of Amateur Radio Operators who share an active interest in building, launching and then communicating with each other through satellites.

To start I suggest readers use the AMSAT web site to do all the work. A visit to **www.amsat.org/amsat-new/tools/predict/ (Fig 1)** will provide all the information needed. This site has up-to-date Keps already loaded for the satellites we might be interested in. Readers can enter either their locator (e.g. IO80XR) or latitude and longitude. **Note:** I described how to find your latitude and longitude together with your locator in the April 2008 issue of *PW*. Back numbers are available from the PW Publishing office in Broadstone if you missed the issue.

Fig. 1: A screen shot of AMSAT's online Satellite Pass Predictor. Select a satellite, enter you locator or latitude and longitude, then press 'Predict'.

AMSAT Online Satellite Pass Predictions - AO-51

View the current location of AO-51

Date (UTC)	AOS (UTC)	Duration	AOS Azimuth	Maximum Elevation	Max El Azimuth	LOS Azimuth	LOS (UTC)
23 Dec 08	16:03:13	00:11:46	102	13	43	358	16:14:59
23 Dec 08	17:39:35	00:14:52	153	62	74	349	17:54:27
23 Dec 08	19:19:30	00:13:36	204	22	264	336	19:33:06
24 Dec 08	05:42:17	00:13:00	27	16	85	145	05:55:17
24 Dec 08	07:20:43	00:15:23	13	88	293	197	07:36:06
24 Dec 08	09:00:02	00:12:59	4	18	306	246	09:13:01
24 Dec 08	10:40:17	00:06:14	352	2	339	303	10:46:31
24 Dec 08	15:25:51	00:09:21	80	6	55	2	15:35:12
24 Dec 08	17:00:49	00:14:09	133	31	78	352	17:14:58
24 Dec 08	18:39:16	00:14:39	183	44	271	342	18:53:55

Fig. 2: Predictions for ten passes of AO51 in late December 2008.

Colin Redwood G6MXL
PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: what.next@pwpublishing.ltd.uk

Fig. 3: A screen shot of **Orbitron** *from the website at www.stoff.pl/ Notice how it has prompted for updates to the Keps.*

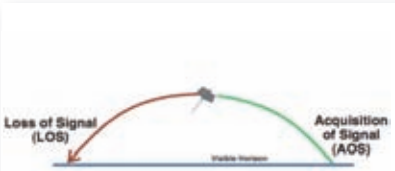

Fig. 4: Acquisition of Signal (AOS) and Loss of Signal (LOS). Note that a satellite will only be audible when it is above the horizon between AOS and LOS.

It's important to understand some of the key information that is presented in Satellite Predictions **(Fig 2),** otherwise we will be missing some very important tricks! Unless stated to the contrary, all times will be in UTC. In the UK during the summer months our clocks are **one hour ahead of UTC**, so that when it's 1400 UTC it's 1500 British Summer Time BST.

For readers wanting to operate without constant access to the Internet, I can recommend downloading *Orbitron* from **www.stoff.pl**/ I've found this to be an excellent program.

When connected to the Internet, it is possible to update the Keplerian Elements at the push of a button **(Fig 3)**. In the meantime it can be used off-line – making it an excellent choice for someone taking their lap-top on holiday with them. In addition to providing predictions, Orbitron also includes some vital information on each of the satellites, including frequencies and modes.

Satellite Jargon

As with most aspects of our hobby, there's some jargon associated with satellites. However, once the key pieces of jargon are understood, interpreting satellite predictions becomes much easier. So, to help I'll list a few.

Pass: Each time a satellite goes round the earth is called an orbit. Each time the satellite's footprint passes within range of a particular point on the earth it's referred to as a pass.

AOS and LOS: For each pass, the time at which the signal from the satellite can be expected to be audible (assuming there are no visible obstructions) is known as the Acquisition of Signal (AOS). Readers with memories going back to the manned moon landings may remember the tense moments awaiting AOS as the space craft came back into sight of the earth from behind the moon. The time at which the signal is lost is known as the Loss of Signal (LOS). See **Fig. 4**.

The angle, and thus the apparent height above the horizon is also a consideration. The predictions all assume that the earth is a smooth sphere. If there are hills or other obstructions like houses and trees between your station and the smooth horizon, AOS may be after the predicted time, and LOS may be before the predicted time. Unless the satellite is at least a few degrees above the horizon, you may miss out completely on some passes. At best, we can only hear a satellite between AOS and LOS.

AOS and LOS Azimuth: During a pass, the satellite will move across the sky. The AOS Azimuth (or bearing) is the angle (in degrees) clockwise from North that the satellite will appear above the horizon. So in Fig. 2, the first pass of the AO50 satellite will rise above the horizon at 102° from north, which is just south of east. Likewise the LOS Azimuth (or bearing) is the angle from north that the satellite will disappear below the horizon. So the first pass of AO50 will disappear below the horizon at 358°, which is almost due north. This will be particularly important when using a directional antenna.

Maximum Elevation: The maximum elevation gives information on how high in the sky the satellite will reach. In the case of the first pass of the satellite in Fig. 2, the AO50 will reach just 13° above the horizon. This will occur at azimuth 43° clockwise round from north (i.e. north east).

In Practice

Having looked at the various parameters that make up a pass, what do this means in practice? To help, I'm going to look again at the first line of the predictions in Fig. 2.

On 23rd December 23rd 2008 at 1603 UTC, the AO50 Satellite appeared above the horizon just south of east (102°). It moved round the sky to the north via the north east, and was at its highest at just 13° above the horizon in the north east, before dropping down to below the horizon in the north just before 1615. So, the satellite was above the horizon for 11 minutes and 46 seconds. The highest point was reached half-way through the pass. (See **Fig. 5**). Hopefully, the example I've will have helped readers visualise the path

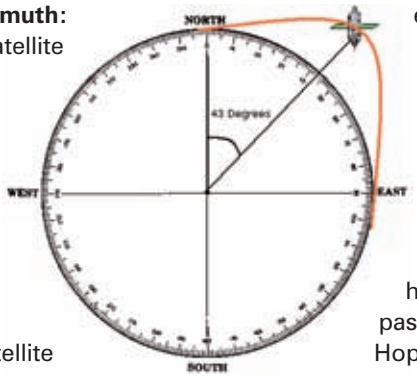

Fig. 5: A visualisation of the satellite pass described in the text.

Fig. 6: **Orbitron** *shows each pass as three lines, AOS, Maximum Elevation and LOS.*

Fig. 7: **Orbitron** *showing some of the information visible during a pass including displaying the frequency taking into account Doppler frequency shift.*

of the satellite in the sky. Actually, you may find that taking a compass and a protractor outside and working through the example will help further. Readers using *Orbiton* should note that for each pass it shows one line for AOS, one line for maximum elevation and one line of LOS (**Fig 6**).

For those more used to the vagaries of public transport time-keeping, the reliability with which satellites appear above the horizon and later disappear can take a bit of getting used to!

Uplink & Downlink

So, now we know how to interpret the satellite predictions, we now need to decide which satellite to use. Here, our choice will probably be determined by the equipment we have.

The uplink is the transmission from earth up to the satellite, whilst the downlink is the transmission from the satellite down to earth. The various satellites operate on different frequencies.

A common way is to use an uplink frequency in the 144MHz band, and a downlink frequency in the 430MHz band. Whilst s.s.b. and c.w. are the most common modes used, I'm going to cover a couple of satellites that use f.m., as I think this is a good choice for absolute beginners to satellites. **Note:** I'm going to assume that a 430MHz frequency modulation (f.m. mode receiver is available.

AO-51 ECHO: The AO51satellite has a couple of different modes of operation (that is permutations of uplink and downlink frequencies). We are interested in the one where we listen on 435.350MHz f.m.

SO-50 SAUDISAT-1C: The SO-50 satellite operates as a single channel cross band repeater. From earth we listen on 436.795MHz f.m.

Suitable Antennas

Next, I'll look at antennas suitable for satellite operations. Signals from satellites are generally much weaker than signals from the local f.m. repeater, so don't expect 5 by 9 signals, in fact 3 by 4 is much more likely – so open the squelch fully.

An antenna with gain is needed to make the most of the weak signals. The 'rubber duck' antenna that comes with your hand-held might just allow a strong downlink signal from the International Space Station (ISS) on 144.850MHz to be heard if it's operational, but you'll probably struggle to hear passes of other satellites except under the best conditions.

Then we must consider the feeder and with weak signals feeder loss can be quite significant. A low noise pre-amplifier may be worth trying if you have one and maximum benefit will be obtained by mounting this at the antenna rather than having it in the shack.

Doppler Frequency Shift

The frequencies mentioned above for the satellites don't take into account Doppler frequency shift, which many readers may not have come across before. This can result in the satellite appearing to be slightly off frequency. As the satellite approaches, it will be higher in frequency, then as it moves away, it will be lower in frequency (a useful analogy is the apparent changing and lowering tonal pitch of a train (or car horn) as it approaches you (the frequency getting higher) and lower tonal pitch (frequency getting lower) as it moves away from you.

With SO-50, for example, at AOS the satellite will be on 436.805MHz, on approach dropping down to the nominal frequency of 436.795MHz at its highest point of the pass, and then dropping down to 436.785 MHz as it moves away from you.

You'll need to be able to tune your receiver so that you can hear the other stations clearly. I find that *Orbitron* is very helpful during a pass in giving the correct frequency taking into account the Doppler frequency shift. (**Fig 7**).

Give It A Try!

Even if your equipment doesn't meet all my suggestions, before spending money on anything else, it might be worth trying what you have, to see what you can hear. For example, if your transceiver will only tune in 12.5kHz steps, you might still be able to hear SO50 on 436.800MHz for part of the pass. On a good pass it might even be audible on the 'rubber duck' antenna or half-wave whip. In fact, I would suggest trying several passes with different maximum elevations to find which yield the best results with your particular location and antenna.

Incidentally, I could just hear stations calling through SO51 on a small 50, 144 and 430MHz (6m/2m/70cm) triple-band omni-directional vertical antenna, when the satellite was about 14° above the horizon. The signal was certainly not 'fully quieting', but I could read a Spanish station's callsign. With other passes I found that the best results with my simple set-up were when the satellite was between 15 and 25° above the horizon. **Please note:** Local obstructions such as nearby houses, trees can attenuate the signals so that they become unreadable.

Next month I will be looking at ways to improve reception of satellite signals and how to transmit on the uplink into a satellite so that readers can have a QSO through a satellite. See you next time! ●

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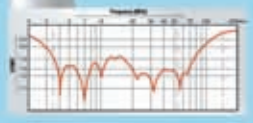

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David Butler's

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 enhanced propagation on the v.h.f. and u.h.f. bands.

Looking back I've noticed that this July issue marks exactly 20 years that I've been writing this monthly v.h.f. column! That's 240 issues and I've not missed one yet – although I actually started writing this one from Hereford General Hospital where I was incarcerated for a few weeks following surgery. Surprisingly, I managed to get broadband access enabling me to keep up to speed with recent developments!

A few green shoots of propagation enhancement were displayed on the v.h.f. bands during April. A number of stations reported some very brief Sporadic-E openings that occurred on the 50MHz band and on two occasions as high as the 70MHz band. Tropospheric propagation was also reported to be excellent on the 144MHz band with s.s.b. contacts being made towards the end of April with stations up to 2600km away. Enhanced tropo propagation was also reported during the same period on all bands from 430MHz through to 10GHz. With a few RSGB activity contests, an ARRL moon-bounce contest and the Lyrids meteor shower it was very noticeable that the v.h.f. bands are rapidly recovering after the winter doldrums.

The 50MHz Band

Most of the DX traffic on the 50MHz band during April was accomplished by meteor scatter (m.s.). There were though, also reports of local contacts being made by tropo propagation and worldwide contacts via moon-bounce (e.m.e.). Some very brief Sporadic-E (Sp-E) openings were also reported but these mainly consisted of propagation beacon reports.

The Earth passed through the Lyrids meteor shower between April 16th to 25th and created a much wanted increase in activity. The peak of the shower (that's when the maximum number of meteors is recorded) occurred on Wednesday April 22nd. Your reports show that m.s. contacts were made with the stations of 9A5CW (Croatia), CT1FJC (Portugal), DK3WG (Germany), EA3AKY (Spain), EA6SA (Balearic Islands), F1VS (France), HA7UG (Hungary), IC8TEM (Italy) and IS0AWZ (Sardinia). All these QSOs were made using the digi-mode of JT6M.

The JT6M weak-signal modulation system has proved to be extremely effective and enables contacts to be made with relatively low power. Other contacts made from the UK during the Lyrids shower also included the stations of LA8NK (Norway), OE5MPL (Austria), OM5KM (Slovakia), OY3JE (Faroe Islands), OZ8ZS (Denmark), S57TW (Slovenia), SM2CKR (Sweden), SP9HWY (Poland), UZ5DU (Ukraine) and YT1AR (Serbia).

Daran Josey MW0HMV (Carmarthenshire IO71) reports that he has been busy over the winter period putting up a mast for his new 50MHz 6-element Yagi and 70MHz 5-element Yagi. His old antennas were close to the house and not very high so they were prone to pick up all sorts of local electrical noise. Now that the antennas are located away from the house and way above the local interference it makes operating on the v.h.f. bands a real pleasure. He mentions that his tropo performance has been significantly enhanced with most of the UK 50MHz and 70MHz propagation beacons being audible all of the time. During the RSGB 70MHz contest held on April 5th Daran contacted 45 stations around the UK and 39 stations during a 50MHz contest held on April 12th.

In April, Daran MW0HMV, made m.s. contacts on the 50MHz band with the stations of CT1DHM, CT1JFC, DK3WG, EB1EHO, EB2FJN, EA3AKY, EA3LL, EA5EF, EB5GP, EA6SA, EA7HG, F1VS, F8RZ, HA2RD, IK1PAG, IW4BET, IS0AWZ, LA7AJ, LA8NK, OE5MPL, ON4IQ, OY3JE, OZ8ZS, PE1CZG, PA5JS, PC7M, SM7SJR, SP9HWY, S59F, UZ5DU, GM4WJA and GS3PYE/P. The station of UZ5DU was his furthest distance contact at 1966km but Daran is hoping to crack the 2000km mark very soon. Activity on the 70MHz band during April was understandably less but even so m.s. contacts were made with the stations of EA5EF, EA6SX, GM4ISM and GS3PYE/P. He also made some 70MHz to 50MHz cross-band contacts with the stations of IW4BET and OE5MPL.

Tropo on 50MHz?

Because of the longer wavelength of signals on the 50MHz (6m) band compared to say the 144MHz band (2m) there are virtually no instances of tropospheric enhancements reported on the 'Magic Band'. For example, there's often tropo openings on the 144MHz band into Germany (DL), Norway (LA) and Spain (EA) and considerably further. But when was the last time you've noticed a tropo opening to those countries on the 50MHz band?

The answer to the tropo opening question is never! Stations located near the coast will occasionally make contacts across the North Sea or English Channel into Belgium (ON), France (F), Netherlands (PA) and Denmark (OZ) but these are at relatively short distances and certainly not caused by tropo enhancement in the traditional sense. Some of the tropo contacts made over these types of marine paths during April included the stations of LX2LA (Luxembourg), ON5LGS, ON7USB, ON7YSB, ON8DM (Belgium) and PC7M (Netherlands).

Perversely, working countries such as the Benelux countries from the UK is often quite difficult. They are located far too close for most ionospheric modes, with the possible exception of E-layer back-scatter or Auroral back-scatter modes. The difficulties are because the skip-distance for E-layer ionospheric modes is generally in the range between 1000-2000km. From my QTH in Herefordshire (IO81) the distance to the Netherlands for example is a minimum of 500km and

The Isle of Harris is situated in the Outer Hebrides group of islands in IO67 'square'. See story under 'Outer Hebrides'.

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Members of the Camb-Hams Isle of Harris group from left to right: Rob Chipperfield M0VFC, Bob Warner G1SAA, Neil Whiteside G4HUN.

therefore almost impossible to contact via ionospheric propagation.

Currently we are experiencing a very deep solar minimum and it is not expected that solar maximum will occur until 2012 or 2013. This means that you will have to wait for at least 3 more years before getting the chance of making world-wide DX contacts via F2-propagation on the 50MHz band. However there is one way of contacting stations around the world at solar minimum and that is by reflecting (or bouncing) your signal off the surface of the Moon.

Mounbounce or Earth-Moon-Earth (e.m.e.) operation does require a very good antenna system and high or at least higher power but the results can be quite spectacular. During April the stations of G4IGO, G5WQ, G8BCG, GM4WJA, MM0AMW and MW0HMV reported making e.m.e. contacts with DX stations that included N8JX (USA), W7GJ (USA), JR6EXN (Japan) and ZL3NW (New Zealand).

A few brief Sp-E openings were reported on April 6th, 13th, 14th 22n, 26th and 30th but apart from the stations of CT1HZE (Portugal) and S57RR (Slovenia) all the other reports were of propagation beacons. Because beacons transmit continuously they make very useful propagation indicators whenever the band opens up.

During April the beacon stations of CS1RLA (Portugal 50.076MHz), OH1SIX (Finland 50.025MHz) and TF3SIX (Iceland 50.057MHz) were reported by a few UK operators. By the time you read this the summer Sp-E season will be in full flow with daily openings expected on both the 50MHz and 70MHz bands. Even more exciting are the occasional Sp-E openings experienced on the 144MHz band. Hearing stations with 59+ signals from over 2000km away really gets the adrenalin going!

The 144MHz Band

Interestingly Sp-E propagation isn't the only way of working very long distances on the 144MHz band. Operators located in the UK are very fortunate as the British Isles are surrounded by water and on many occasions during the year, tropo paths form that enable contacts to be made over some otherwise, quite unimaginable distances.

Tropo paths over water are much more efficient than over land. That's because the ground topography often disrupts the enhancements, which many are typically caused by temperature inversions. There are two main sea paths from the UK, either across the North Sea to Scandinavia or in a south-westerly direction towards Portugal and Spain. The latter path offers more DX capabilities, as many stations in southern England, Wales, Scotland and Ireland have a pretty clear 'shot' towards the Iberian Peninsular, the Azores and Canary Islands.

Tropospheric propagation on the 144MHz band was reported to be excellent in the period April 22nd - 23rd with c.w. and s.s.b. contacts being made with stations located in Spain (EA) and Portugal (CT). Chief amongst the DX stations worked were EA1CGN, EA1MX, EB1EHO, EB1LA and CT2GUR.

If you were fortunate enough to be located in the south-west of the UK during the period, then some even better DX could be worked. **Tim Fern G4LOH** (Cornwall IO70) mentions that from his QTH the tropo path extended to the Canary Islands. His s.s.b. contacts on April 23rd included the 144MHz stations of EA8AVI at 2,598km, EA8TX at 2,604km and best DX of the opening EB8BRZ at 2,606km.

Surprisingly, between April and September, the marine path to the Canary Islands usually opens up quite

The 70MHz transverter and Pye A200 amplifier used on the Isle of Harris DXpedition.

often. In most instances the tropo signals dissipate rapidly once hitting the mainland. However, there are often two or three openings during the summer season when signals from EA8 do travel for some considerable distances inland, to produce contacts well in excess of 3000km.

It's useful to note that unless you live near the coast (and that can be south-west England, Wales, Scotland and Ireland) then signals will often be weak, around S2-3 with considerable fading. Signals often peak for five minutes or so and then may disappear for up to 20 minutes before appearing again. So if you want to make that elusive 3000km tropo contact, the answer is to carefully monitor around 144.300MHz when the 144MHz band is known to be open to the Canary Islands.

Outer Hebrides Expedition

After a very successful DXpedition in 2008 to the Island of Mull the **Cambridgeshire Radio Group** (**Camb-Hams**) decided on another trip during 2009. This year from April 18th to 25th they went to the Island of Harris (IO67) in the Outer Hebrides located off the north-west coast of Scotland.

Although the expedition was primarily focussed on the l.f. and h.f. bands the group also included stations on the 50, 70 and 144MHz bands. The callsign for the v.h.f. stations was GS3PYE/P taken from the Cambridgeshire Repeater Group (CRG) call sign G3PYE. The 50MHz station consisted of an Icom IC-756 ProIII transceiver and this radio was also used for the 70MHz band with the addition of an OZ2M transverter and a Pye A200 solid-state amplifier (pictured).

The antenna for these bands was a 4-element dual-band Jaybeam Yagi, which was very convenient as only two antennas could be mounted on the 10m high trailer mast used for the v.h.f. bands. The 144MHz system consisted of an Icom IC-910H transceiver running 100W into a 17-element Tonna Yagi.

Most activity was accomplished using digi-modes, JT6M on the 50 and 70MHz bands and FSK441 on the 144MHz bands. The trip fortunately coincided with the Lyrids meteor shower enabling 17 JT6M QSOs to be made on the 50MHz band and 10 JT6M contacts on the 70MHz band. A significant time was spent during the shower on the 144MHz band with a total of 47 FSK441 m.s. contacts being achieved. The group mentioned that if you've never visited the Outer Hebrides then you have seriously missed out on one of the most beautiful and unspoilt areas of the UK. So do yourself a favour and promise yourself that one day you'll go there!

Deadlines

That's it again for this month. The summer Sporadic-E season is now underway with daily openings on the 50MHz and 70MHz band to all parts of Europe and beyond. Openings on the 144MHz band can be expected between late May and the first week of August. Last year was particularly poor with only 2 days of 144MHz Sp-E openings in May, 5 days in June, 5 days in July and 1 day in August. Hopefully this year will be better! When 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

The v.h.f. and h.f. antennas used at the location of GS3PYE on The Isle of Harris.

Carl Mason's

hf highlights

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

A short while ago *PW* Reader **Basil D'Oliveira** asked for some information regarding 'Maritime Mobile' nets. He wanted to know the frequencies used, the times they operated and what information they carried. A short search on the internet came up with several lists and one **www.mayaparadise.com/mmfreq1.htm** otherwise known as: **Captain Nemo's h.f. Frequencies for boaters** run by **Phil Landmeier KW2P**.

The site seems to cover a large number of the questions asked by Basil, as it provides a comprehensive list of all nets, frequencies, times, what areas are covered and the contact for each net. Information on these includes weather, messaging or 'roll' calls for those travelling in flotillas, etc. and the page also includes a list of emergency net frequencies. Two that should be easy to copy are the **Med Sea Cruisers Net** at 0700 on 7.085MHz and the **UK Maritime Net** at 0800/1800UTC on 14.303MHz.

Beam Headings

For those of you who are not sure exactly the direction a particular country lies in, or how far away from you it is (both long and short path) will be interested to know that the **North Jersey DX Association** is providing a personalized beam headings/distance table centered on your location to every current DXCC entity. Just enter your information on the web page and a list is immediately generated for you to print off and keep for future reference. The page can be found at **http://njdxa.org/dx-tools/beam-headings.php**

New Callsigns

The United Arab Emirates is a federation of seven states situated in the southeast of the Arabian Peninsula on the Persian Gulf bordering Oman and Saudi Arabia. It has issued the following foreign Amateurs residing in the country callsigns, G4BWP is A65BD QSL via G5LP, G3XHZ is A65BE QSL via G3XHZ, G4THN is A65BF, PA5M is A65BG QSL via PA7FM, F8CUP is A65BH QSL via F8CUP and F5LTB is A65BK QSL via SM5DJZ. Normal prefixes used in the UAE are A61 for nationals, A62 for clubs and A60 for special event stations.

Reply Coupons

Most of us have used International Reply Coupons (IRCs) at sometime and the new 'Nairobi model' will go on sale this month. They're expected to remain valid until December 31st 2013 so, now is the time to check your coupons and send off for those much needed QSL cards before the current IRCs expire at the end of the year.

World Castles Awards

Earlier this year, on January 14th a, a new group called the **World Castle Award** was formed to activate castles and historical buildings around the world. There are currently nine diplomas for working special event calls. Awards are issued to any licenced Radio Amateur or s.w.l. who submits proof of radio contact with 100, 200, 300, 500, 700, 1000, 1500, 2000, 2500 fortresses from not less than three countries participating in the programme.

The highest award is the 'Honour Roll' issued for QSOs with 3000 fortresses and there's a special trophy for contacts with 5000 fortresses. There are currently 15 countries involved at this time, Belarus, Belgium, Czech Republic, France, Germany, Great Britain, Ireland, Italy, Poland, Portugal, Russia, Slovakia, Switzerland and Ukraine. Here in the UK, we have Castles and Stately Homes on the Air or **CASHOTA** for short and the manager is **Arthur Clerk MM0DHQ**. Further details of WCA and its awards can be found at **www.wcagroup.org/ENG/main.html**

The DX News

On to this months DX news and to Bangladesh in Southern Asia where **Ramon Anquilan DU1UGZ** has been posted as a Customs Administration Expert with the Modernization and Automation Project of the National Board of Revenue. He will be active as **S21UGZ** from Dhaka until the June 20th and will operate in his spare time using a low band dipole and will concentrate on 3.5 and 7MHz using s.s.b. and RTTY. He hopes to install a beam for 14 to 28MHz in due course and hopefully a linear amplifier, so there should be a good chance of working him!

Bodo Fritzche DL3OCH (KT3Q) will be working in Nigeria, Western Africa, a country bordering the Gulf of Guinea between Benin and Cameroon, until July 24th and plans to operate on the h.f. bands including 1.8MHz as **5N/KT3Q**. He also hopes to operate from the IOTA group AF-076 if time permits and a QSL card is good via his home call.

The land-locked Republic of Chad in central Africa will see **Franck Claude**

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F4BQO active again as **TT8CF** until July 1st. While there he plans to operate both s.s.b. and c.w. on the h.f. bands and your QSLs should go via F4BQO either through the bureau or direct to **178 Rue Armand Duvivier, Bat le Ciceron, F-83600 Frejus, France**.

Finally, celebrating the 100th anniversary of the Nobel Prize in physics awarded to **Guglielmo Marconi**, special event station **IY1GMN** will be operating until June 28th from Sanremo where the activity will coincide with a vintage radio exhibition entitled 'From Marconi to Nowadays' to be hosted at Villa Nobel. This house is the property of the Province of Imperia and was home to Alfred Nobel the Swedish scientist.

On November 27th 1895, Alfred Nobel willed his estate, assigning nearly all his properties, to the creation of a foundation whose proceeds should be given every year to award those who had done the best service to humanity in the fields of Physics, Chemistry, Physiology, Medicine, Literature and Peace. He passed away on the December 10th the following year, aged just 63. Further information can be found at **www.arisanremo.it** and you QSL via the operator's instructions.

Other News

Although propagation and conditions were not at their best **Rachid Cadersa 3B8CF** made 1500 c.w. QSOs during his February activity from St. Brandon AF-015, operating for just a few hours each day. These periods were during breaks between maintenance duties on the meteorological equipment based on the island. He concentrated on the 10 and 18MHz bands with some limited activity on 7 and 14MHz but by the tenth day, his battery was not recharging properly, which resulted in reduced power and operating with a hand key.

Colour QSL cards have been produced and are being mailed now. The QSL manager for all of Rachid's operations including 3B8FQ and 3B6FQ is **Ron Evans K5XK, 2 Pembroke Drive, Bella Vista, AR 72715-8823, USA**. There may be some more activity in July on 7-28MHz including the WARC bands when Rachid returns for a short holiday.

The DXexpedition to the Western Sahara, using the callsign SO4R ceased operation around 0500UTC on April 18th after five days of operating, having made 37005 QSOs (20,274 c.w., 14,342 s.s.b. and 2,389 using RTTY). The most productive band was 14MHz where 7,650 contacts were logged. On 10MHz they had 6,389 contacts and the 18MHz band, with 6,914 wasn't far behind. If you worked them and want to check your in the log look up **www.dxfriends.com/s04r/index.php**

Your Reports

Time for your reports now. And the first comes from **Eric Masters G0KRT** in Worcester Park, Surrey who used his Kenwood TS-570D, a modified W3EDP antenna tuned with a SGC-230 Smartuner to work s.s.b. stations SN3A (Slovenia) at 1934UTC with 100W. On 7MHz Eric used c.w. to find DJ3GS (Germany) with 5W QRP at 1628 and then s.s.b. at 100W to work UT5SA (Ukraine) 1959, IZ1MDJ (Italy) 2021 and RU2FA (Kaliningrad) at 2050UTC.

Also on the band was **Peter Leng ZL4TE** in Cambridge the Waikito, New Zealand who used a Yaesu FT1000MP MkV Field and low-slung G5RV to log s.s.b. stations LP1H (Argentina) 0700, VK9LA (Australia) the Oceania Amateur Radio DX Group Inc. in Queensland at 0707, VE3GL (Canada) 0753, JH4CSP (Japan) 0826, PY0FF (Brazil) 0829 and W7ETR (U.S.A.) in Newcastle, Wyoming at 0906UTC. Peter says "...even though the antenna is in a far from ideal location working South America is fairly straightforward. Some of those 'rare' DX calls like those for Norfolk and Lord Howe Islands which I could not work from the UK are easy for me now and it is Europe that is much harder to work!"

Ted Trowell G2HKU on the Isle of Sheppy used c.w. again logging HB0/LX9EG/P (Liechtenstein) at 1610 and then changed to 10MHz where he worked 9M2TO (West Malaysia), EA8TT (Canary Islands) AF-004 and 4K0CW (Azerbaijan) until 1700UTC using a Ten Tec Omni V at 70W to a G5RV antenna.

The 14 & 21MHz Bands

In Chelmsford, Essex **Martyn Medcalf M3VAM** has been using a new Comet CHA-250BX antenna mounted about 6m above ground and without radials has been very pleased with the results. His 14MHz s.s.b. contacts include YT1BB (Serbia) 1035, AO5R (Spain) 1046, EO5M (Ukraine) 1049, LY9Y (Lithuania) 1104, 9A5W (Croatia) 1140, OL4A (Czech Republic) 1149, IT9RGY (Italy) 1735, CT3/DF7ZS (Madeira Island) AF-014 at 1751, 3V8BB (Tunisia) 1838, KI1G (U.S.A.) in Hope, Rhode Island at 1846, CT1JLZ (Portugal) 1859, SV9GPV (Crete) EU-015 at 1906 and EA8/OH6CS (Canary Islands) AF-004 at 1921UTC using an Icom IC-746 and 10W.

Also on the 14MHz band was **Jos van Gelder PA3ANF** in Utrecht,

Netherlands who found s.s.b. propagation "good" working D44TXQ (Cape Verde) AF-005 at 1555, 9Z4AM (Trinidad & Tobago) SA-011 at 2030, VA3PL (Canada) 2039, V25OP (Antigua & Barbuda) NA-100 at 2046, FG/FR1AN (Guadeloupe) NA-102 at 2058, YV2BYT (Venezuela) 2106, HI3K (Dominican republic) at 2117, HK3W (Colombia) 2135, CO6LC (Cuba) NA-015 2157, PJ4NX (Netherlands Antilles) SA-006 at 2204UTC using a Yaesu FT-2000D and 180W to a 2-element tri-band beam.

On to **Martin Addison 2E0MCA** in East Finchley, North London who also found the band in good shape and open for most of the day particularly between 2000 and 2100 when propagation to America was at its best. Stations logged using s.s.b. this month included UY6IM (Ukraine) 0910, EH7H (Spain), the Mazagon Beach Contest Team at 1105, 9A3B (Croatia) 1109, ES5RW (Estonia) 1114, KB1H (U.S.A.) in East Killingly, Connecticut at 1118, CN2R (Morocco) 1125, 4O3O (Montenegro) 1136, E73EPA (Bosnia & Herzegovina)1217, YU/HB9EDB (Serbia) 1310, SZ3P (Greece), the Radio Amateur Association West at 1313 QSL via SV3DCX, ED5GUI (Spain) a call to celebrate 'Las Fallas' the Festival of fire and noise in Valencia at 1321 QSL via EA5GUI, TA3AX (Turkey) 1408, LZ5K (Bulgaria) Radio Club LK1KKZ at 1438 QSL via LZ1RAY, A73A (Qatar) 1459 QSL via EA7FTR, 6W1SJ (Senegal) 1501 QSL via E73Y, P33W (Cyprus) AS-004 at 1503 QSL via RA3AAU, 3V8BB (Tunisia) 1549, SV9IOI (Crete) 1606, CT1JLZ (Portugal) 1630, VE3KZ (Canada) 1756, CT9L (Madeira Island) 1926 QSL via DJ6QT, ZW5B (Brazil) 2019, the Araucaria DX Group QSL via K3IRV and TO2T (Guadeloupe) NA-102 at 2115UTC using a Yaesu FT-2000 and 50W to a G5RV antenna.

In Silverstone, Northamptonshire, **Paul Morrison G0VHT** spent some time using his 'Phoenix' home-brew transceiver and wire dipole working EO5M (Ukraine), 5D4A (Morocco) 0830, LZ131GO (Bulgaria) 0900 QSL via LZ1KZA, CT/PA0GDK (Portugal) 1015, UN7QF (Kazakhstan) 1105, LA6KOA (Norway) 1120, R150B (European Russia) a special callsign aired during March and April to celebrate the 150th anniversary of the birth of A.S. Popov and operated from the St.Petersburg Electrotechnical

University at 1150 QSL via RK1B, YR9P (Romania) the contest call of YO9HP at 1620, CT9L (Madeira Island) 1550, 4O4O (Montenegro) 1622 and V26F (Antigua & Barbuda) at 1850UTC.

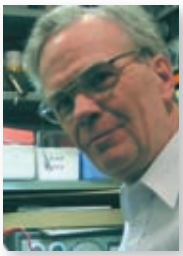
Back on the Isle of Sheppy, Ted G2HKU managed VE3EJ (Canada), 6Y8XF (Jamaica) NA-097, 7X4AN (Algeria), 6W1SE (Senegal), VU2PTT (India), CT3/DL3KWF (Madeira Island) and 9H3JT (Malta) EU-023 around 1600 while Eric G0KRT used 5W to get OH8MNM (Finland) 0958, SP4NDU (Poland) 1101, W3BP (U.S.A.) in Warsaw, Virginia at 1617and KU1CW Lexena, Kansas at 1631 while 100W got him PR7AR (Brazil) 1544, 7X5ST (Algeria) 1601, VA2PW (Canada) 1609, and CT3FT (Madeira Island) at 1742. On 21MHz there were occasional openings to Europe and Eric found EF8R (Canary Islands) the contest call of EA8CAC at 1154 and EA7ZY (Spain) at 1409UTC.

Signing Off

That's your lot for this month. The bands have not been open all the time but, both 7&14MHz have had good openings and even the lower powered stations have managed some good DX on them! 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.



Harry Leeming's

in the shop

Harry G3LLL solves a mystery - when is a Sommerkamp a Yaesu rig?

Welcome to *In The Shop* where I look back to my days in the Amateur Radio, Hi-Fi and photography dealership days. Looking back, I remember the often asked question, "It looks like a Yaesu FT-200, but it's labelled as a Sommerkamp FT-250, so what is it?"

In reply I told enquirers that in the late 1960s, 1970s and 1980s Yaesu sold some of their equipment re-badged with the name of an importer. In the United States for instance, the FT-200 became the Henry Radio 'Tempo One'. In continental Europe the older Yaesu equipment was mainly sold under the Sommerkamp brand. As I understand it Sommerkamp was a Swiss/German company that manufactured CB and Amateur Radio equipment itself, and also imported Yaesu.

The FT-200 became the Sommerkamp FT-250, the FT-101 series became the FT-277, FT-277B, FT-277E, FT-277ZD. etc., and the Yaesu FT-400/FL 400 series became the Sommerkamp FT500/FL500. All very confusing!

Even more confusion arose with the Yaesu FT-707, which was a mobile high frequency (h.f.) rig. Unfortunately, by the time the Yaesu FT-767, which was a base h.f. rig with slots in it for 50, 144 and 430MHz (6 and 2m and 70cm) units, was introduced, however, Sommerkamp had already used this number for their version of the FT-707 mobile rig, which came fully crystalled up from 27 to 29.7MHz; and guess who bought these?

So, if you see an FT-767 advertised with all options for (let's say £200), don't just think you have spotted a bargain! Instead, check as to whether it really is a very cheap Yaesu FT-767, or possibly a rather expensive Sommerkamp version of the FT-707!

Later Sommerkamp equipment usually had the same model number as the Yaesu equivalent. However, two difference should be noted. First, Sommerkamp almost invariably included all the optional extras in the price, and the rigs were factory-set at 220V.

Some Sommerkamp equipment was imported into the UK by importers who didn't trouble to reset the mains voltage taps and often these would become unreliable if they were operated in an area where the mains voltage was a little on the top side of 240V. In other words the transformers burnt out – and I still get the burnt out remains brought to me! Incidentally, Sommerkamp also sold a range of 144MHz and CB equipment not made by Yaesu, some of which were imported into the UK.

Even though I thought that Sommerkamp were long out of the Amateur Radio business, in the last year or so the name 'Sommerkamp' reappeared on a new range of amplifiers imported by **Martin Lynch**. What connection, if any, these have with the original Sommerkamp is not clear. However, one thing seems certain, I'm sure that Martin won't be offering to patch up any of the 30 year-old Sommerkamp 'Coffee Warmer' CB multimode rigs, which still turn up with requests for repair! (No thank you, **I don't want them either!**).

Input Impedance?

In previous *In The Shop* articles I've referred to the input impedance or input resistance of – let's say– a microphone socket or test meter. In many cases the manufacturers will quote this, but if they don't, or if you want to confirm that what they say is correct, how do you go about it? First, let's clarify as to what I mean by impedance and how it differs from resistance.

The effective resistance of a capacitor or inductor **at a particular frequency** is known as its reactance. Reactance varies with frequency, double the frequency and the reactance of a capacitor halves, whilst the reactance of an inductor doubles. Any circuit that contains inductance or capacity as well as resistance, is referred to as having impedance, this being the effective resistance of the combination at a particular frequency.

Of course, checking input resistance or impedance is quite simple – if you have access to an electronics laboratory. Despite this, approximate measurements can be made without any elaborate equipment, as is shown when checking the input resistance of a test meter, on a direct current (d.c.) range in **Fig. 1**.

Using the test meter with Rx shorted out, measure the voltage of the battery and note it down (perhaps around 1.5V). Next, try a value of Rx that you think might be equal to the input resistance of the meter. If you are correct and the meter is left on the same range, it will then read exactly half of the voltage that you noted previously. If it doesn't, either try a selection of resistors, (or fit a variable one and adjust this) until it does – that resistor will then be equivalent to the input resistance of the meter.

It's simple enough process when checking the meter at d.c., but at higher frequencies the input of a device is then more correctly quoted as having an input impedance rather than an input resistance. This is particularly so with a microphone socket on a transmitter, which will have r.f. suppression components fitted to it, hence its impedance will vary somewhat over the audio frequency range.

To check the approximate impedance of a microphone socket on a transmitter connect an audio generator to it with a tone in the centre of the voice range, of around 1kHz. With the transmitter in the s.s.b. mode set the level of the output of the generator so that the transmitter gives a steady output in to a dummy load at a power level that it can safely handle continuously, perhaps 10W with a 100W transmitter.

Then, connect a resistor in series with the live lead feeding the microphone socket, and adjust its value until the power output drops to a quarter of the previous level, 2.5W in this case. (Note that square law

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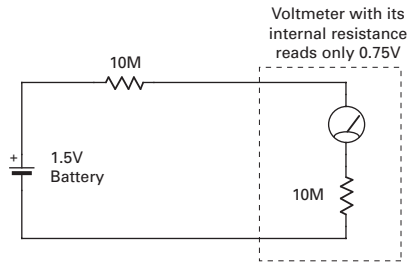

Fig. 1: Checking input resistance.

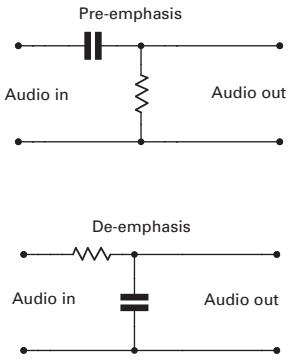

Fig. 2: Band II f.m. de-emphasis techniques.

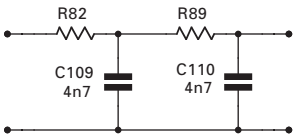

Fig. 3: The circuit of the circuit of the de-emphasis network on the FT-290.

applies and half voltage gives quarter power). The resistor you have fitted will be equal to the microphone socket input impedance at the frequency of the audio generator.

If you do not happen to have an audio generator, you can still do a rough test. Place the transmitter's microphone near to the speaker of an s.s.b. receiver, and tune this until you get a steady beat note from a crystal calibrator. Use this note to modulate the transmitter, and then find a value of resistance that (when it's connected in series with the live microphone lead) drops the power output to a quarter of its value as above.

Harry Added Brightness?

Harry G3LLL Adds Brightness? Sorry about the pun, but we borrowed this from a toothpaste advert, when we were selling modified versions of the FT-290 and FT-230 in the 1980s! On domestic radios you must have noted that you can reduce the background hiss when receiving a weak transmission, if you turn the treble control down. So, wouldn't it be great if you could leave the tone turned down, get rid of the hiss, but still get a full Hi-Fi sound?

In a way you can almost get full Hi-Fi sound, as this is one of the properties of the Band II v.h.f. f.m. broadcasting transmitters, intended for high quality broadcasting. They incoprate pre-emphasis (i.e. boost) to the higher audio frequencies during transmission, boosted by a fixed amount.

On reception your f.m. stereo receiver de-emphasises the signal by the same amount, see **Fig. 2**. By doing this you still end up with a flat frequency response, but with very much less hiss. **Note:** Unfortunately, in the USA the pre-emphasis standard is different to that used in Europe, and so American stereo f.m. receivers sound somewhat short of 'top' when used here, unless the treble control is set at about 'ten past' (using the clock face analogy).

The same idea is used with Amateur Radio v.h.f. f.m. transmitters, but in this case there doesn't seem to be any standard. For example, if the

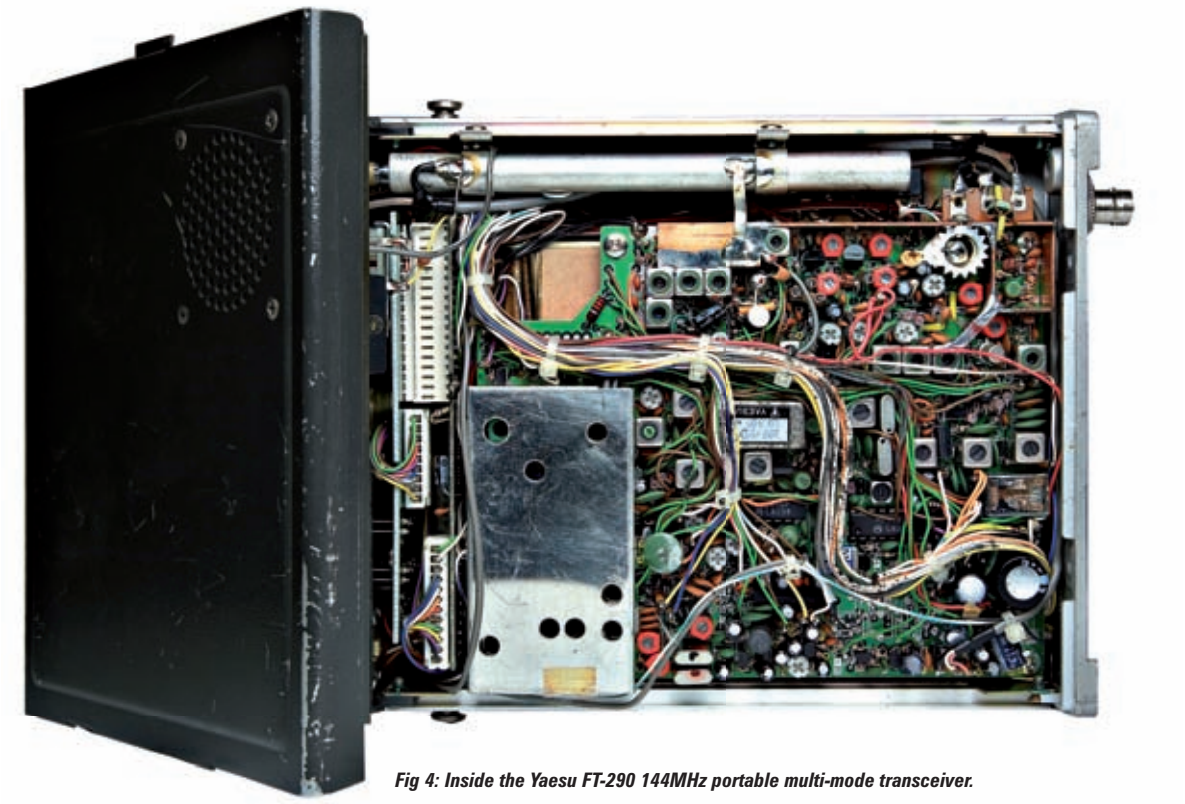

Fig 4: Inside the Yaesu FT-290 144MHz portable multi-mode transceiver.

station you're trying to work does not pre-emphasis their transmission by the same amount as you de-emphasis it, the sound will either seem be too 'dull' or too 'bright'. In practice voice signals that have the high frequency response over emphasised are perfectly readable, but muffled signals are difficult to interpret.

The problem of the required frequency response is made more difficult by the fact that Japanese voices and the language are very different to ours. Indeed, what might be an optimum communication frequency response to a native Japanese speaker, tends to sound muffled to Europeans and Americans! This was particularly noticeable on some of the early f.m. mobile rigs, which seemed to use far too much de-emphasis, and sounded muffled to my north-west English ears!

Problem Enhanced

The problem is enhanced when trying to use a portable rig, such as the FT-290, in a noisy environment such as a car. The audio is short of mid and high frequencies so you turn up the volume; this results in the low frequencies overloading the small loudspeaker causing distortion. The answer is to alter the de-emphasis network so as to boost the frequencies that provide most of the information in male speech.

I did my original experimenting years ago with quite a large Uniden crystal-controlled 144MHz rig, which was easy to get at. However, swapping capacitors on modern circuit boards that are full of closely spaced components is not that easy. Fortunately with the FT-290 and some other similar rigs there are easier ways.

The diagram, **Fig. 3**, shows the circuit of the circuit of the de-emphasis network on the FT-290, C109 and C110 being the components that attenuate the higher audio frequencies. By a bit of trial and error we found that if C110 was removed, the clarity and 'brightness' of the received audio was much improved

Fig 4a: Removing C110 'brightens' up the audio of an FT-290.

in the f.m. mode, and fortunately this modification is very easy to carry out. The diagram also shows the top of the FT-290.

If someone has not already carried out our modification, in front of the relay you will find two green ceramic capacitors. Grab the one nearest to the relay with a pair of long nosed pliers and squeeze! The capacitor will disintegrate, and all that's then necessary to complete the work is to shake out the bits, and remove any remains. You'll then find that in the f.m. mode the receive audio is louder, brighter and much clearer, although of course on weak signals the hiss level will be increased.

There are, of course, many other rigs on which similar modifications can be carried out on and as an example the circuit of the FT-230 is shown. Early examples of this rig also provided rather muffled modulation, but getting at the circuit to remove a capacitor from the de-emphasis network isn't too easy. Fortunately, the de-emphasis network can be partially bypassed. This is done by wiring a resistor in series with a capacitor between the tags that Yaesu have kindly provided for attaching a tone squelch unit. (Sorry – I don't have any tone units).

Altering the value of this resistor will vary the amount of treble boost, but 10kΩ seems about right. In other rigs when you cannot get at the de-emphasis capacitor, partially bypassing the de-emphasis network in this way is the easy way out.

Assessing Speech Quality

When testing out equipment, such as a speech processor, it can be very difficult trying to access speech quality and readability. I have tried listening to myself on headphones, and recording my own transmissions on a tape recorder, but in the end I have usually gone on the air and asked for comments. However, have you ever wondered about the value of such reports?

Many years ago I was listening on a net to the proud owner of a brand new FT-101EX, which he had just unpacked. He seemed to be under the impression that he had purchased a deluxe version of the FT-101E at a very good price, and was asking for reports as he tried out the internal speech processor. Some stations were saying that it did not seem to make very much difference; others disagreed, they definitely could hear an improvement, and noted an increase of 'punch' and signal strength when it was switched on. I managed to keep quiet and not fall off my chair laughing as the reports came in, but eventually just had to break in and give them the bad news.

The FT-101EX was an economy version of the FT-101E, and hence did not include the fan, 1.8MHz, and quite a few more bits and pieces, which were optional extras with this version. It did however include the processor switch, but normally there was nothing behind it except a neat bunch of wires! I persuaded the operator to loosen two screws and lift up the lid, and to his disappointment that is just what he found.

I'll leave you with a question this month. Does anyone know where to find low-priced replacement mains transformers for the FT-101ZD? Any offers? See you next month! ●

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 has a text to Morse translator program for you.

Roger Cooke G3LDI
PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: roger@g3ldi.co.uk
Packet: g3ldi@gb7ldi.#35.gbr.eu

The first candidate has taken the new RSGB Proficiency Certificate. Congratulations to **Anthony Freeman M0HAZ**, **Fig 1**, who has passed his 12w.p.m. Morse exam on March 4th. The test was conducted by **Peter Kendal M0EJL** and **Jim Stevenson G0EJQ** was the adjudicator for the exam. This is hopefully the first of many that will take the new proficiency certificate as the UK gears up with adjudicators all over the country. Speeds range from 5w.p.m. up to 30w.p.m. and it is possible to start at any level. Adjudicators are still required, as are the GB2CW volunteers themselves, so if you would like to take part, you will be most welcome. More details are to be found at: **www.rsgb.org/morse/**

Basic Practice

I am always running on about practice so here is another site that might be of interest to some of the beginners. It is a basic Morse translator. This translator requires both Java (version 1.4.2 or higher) and JavaScript to be enabled. If the applet does not work on your computer you should try the CGI Morse Code Translator instead or the old Java Morse Code Translator. It was written by Stephen Phillips, he's not a Radio Amateur but a research engineer and it's to be found at: **http://morsecode.scphillips.com/jtranslator.html**

Punch the text to be played as Morse into the program and then you can play it back. It's a super way of getting to know your call. Obviously all sorts of text can be converted to Morse that can have the usual parameters of: volume, pitch, speed and Farnsworth form all varied. Great fun and good practice!

Feedback

I received an E-mail from **Dave Ackrill G0DJA** regarding the use of c.w. on the v.h.f./u.h.f. bands. I don't use those bands very much, preferring to chase DX on the h.f. bands so I must plead 'guilty' myself. However, Dave says that there is a lot of different activity on several bands ranging from 50MHz to 24GHz.

Fig. 1. Anthony M0HAZ.

Dave says "I was inspired to use 10GHz and 24GHz w.b.f.m. by the late **Glen Ross G8MWR** but even there people used tone oscillators sending c.w. identification to allow people to find them and align their dishes before going onto wide-band f.m. to make contacts. When I moved to Wakefield I was able to make contacts using Aurora on 50 and 144MHz using low power to reasonable antennas (5-element yagi on '6m' and a 9 element yagi on '2m') using an IC-202 and an Icom radio that produced a maximum of 10W on 50MHz at that time. I actually kept lowering the power to see how low I could go and still make contacts on 50MHz Aurora or Sporadic-E using Morse at that time."

Dave is getting onto the 10GHz (3cm) band with a 432MHz to 10GHz transverter system, and has blown some PICs (micro-controller ICs) so that he can key a couple of beacons, one from his home and the other when out portable. Once contact has been made, c.w. will be a useful mode of communication. So, if you feel like trying the broken carrier mode on those frequencies, give it a try! I am sure Dave will appreciate a QSO or two.

South Africa

From **Gerald Smith ZS6IG**, **Fig. 2**, (the shirt says it all) who says: "May I say how much I enjoy your articles. I received a series of copies of the articles from **Dave Gemmell - ZS6AAW** and read them right through in one sitting. How refreshing! I am a member of two clubs, ZS4SRK, Sasolburg Free State and ZS6VTB, Vanderbijlpark, Gauteng, formerly Transvaal. Both clubs are in the Vaal Triangle area. At the moment I am acting as QSL manager for the Special Event Station, ZS08TV to mark the Treaty Of Vereeniging.

"The Treaty of Vereeniging marked the end of the Anglo-Boer War in South Africa in 1902 (see **QRZ.com** for detail). Keep an ear open for operators, **Vidi La Grange ZS1EL** (c.w.) and **Dior ZS6DJD** operating s.s.b. on 7 and 14MHz. 'Pile-ups' can be very brisk, especially to the States, South America and the far East in both modes. This is a year-long operation so will end by October."

Fig. 2. Gerald ZS6IG.

That's It

Well, that's it for this time. If you have any comments or news, then please feel free to contact me!

73 and May the Morse be with you!

Roger G3LDI

TRADERS TABLE

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

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YAESU VR5000.....£395
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MFJ 1020C ACTIVE ANT.....£69
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YAESU VX3E DUAL BAND TRANS.....£89

HANDHELD SCANNERS

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ALINCO DJX3 ALL MODE SCANNER.....£85
BEARCAT 120XLT 100MEM AM/FM.....£79
BEARCAT 860XLT SCANNER.....£99
ICOM R3 HANDHELD SCANNER.....£299

BASE SCANNERS

BEARCAT 785XLT BASE SCANNER.....£149

RECEIVERS

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ERA MICROREADER DISPLAY.....£50
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MAYCOM AR108 AIRBAND/MARINE H/H.....£54
MIDLAND 98PLUS CB RADIO.....£59
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ROBERTS RD41 DAB RADIO.....£99
TEAM ROADCOM CB RADIO.....£89

WATERS & STANTON

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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
Eton Mini-300 AM, FM-stereo and 6 shortwave bands (49, 41, 31, 25, 19 and 16 meters) £35
Roberts R-862 HF/VHF receiver AM/WFM 0.15-0.281 / 0.522-1.62 / 4.6-21.95 / 87.5-108MHz 3 VDC (2*R6 / AA).....£49
AOR AR-3000A 100kHz-2036MHz All Mode Communications Receiver 400Ch. 12V + psu.....£499
Yaesu VX-5R 6m,2m,70cm FM Micro Hand Held Transceiver 5W + Full CTCSS & Wide RX ..£119
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Watson W-20SM 12V 20A (max) Switch Mode PSU £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
Icom MFJ-903 6m ATU 200W SSB (100W FM) £49
MFJ ARB-704 Universal Transceiver to Linear Amplifier Interface Unit £45
Watson W-620 1.6-200, 118-530MHz SWR/PWR meter 200W.....£69
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Kenwood MB-11 Mounting Brackets for the TM-731E AS NEW.....£15
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Icom MB-58 Mounting bracket for the IC-207 .....£10
Yaesu FT-980 HF 10-160m + WARC All Mode Base Transceiver with Gen.Cov. 100W mains.....£349
Ten-Tec Orion II HF All Mode Base Transceiver + Spectrum Scope, Dual 32-bit IF-DSP, Twin RX, 12V DC.....£2,199

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01702 206835

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Lowe HF-150 30kHz-30MHz All Mode Base/ Portable Receiver 12V + psu with Optional Keypad £199
Icom IC-R2500 10kHz-3300MHz All Mode PC Controlled Dualwatch Receiver with Control Head USB 12V + psu £349
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Realistic DX-394 150kHz-30MHz AM,CW,SSB Receiver 160Ch. Mains/12V.....£99
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
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Albercht AE-485-S 10M Fm/Am/Usb/Lsb mobile + repeater shift + 1750Hz Tone £139
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Yaesu VX-7R Silver 6m,2m,70cm FM "Silver" Transceiver + 5W, Full CTCSS, Wide RX & WIRES.....£169
Yaesu FT-950 HF, 6m All Mode Transceiver + Gen Cov, Auto ATU & DSP Audio filters 100W 12V DC.....£699
Yaesu TS-480HX HF + 6m All Mode Base/ Mobile Transceiver with Gen.Cov. RX & DSP Filter 200W 12V.....£529
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Roberts RD-59 Digital radio FM, Portable Radio £45

RADIOWORLD

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Yaesu FRG-7700 HF Receiver £225
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Kenwood TS-870S HF Transceiver.....£799
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Yaesu FT-920AF HF / 6M Base.....£899
Icom IC-756Pro HF / 6m Transceiver.....£899
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Yaesu FT-847 HF-6-2-70 Base.....£899
Icom IC-R8500 Receiver.....£999
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Kenwood TS-950SDX HF Transceiver.....£1,399
Yaesu FT-1000 "CLASSIC" HF Transceiver £1,399
IC-756PRO-MKIII Icom HF + 6m Trx £1,499
IC-7800 Icom HF + 6m Trx.....£4,995
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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.

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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

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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.:.....

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

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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

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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

ALA-1530 LOOP ANTENNA less antenna interface and power unit, plus AR300XL rotator and remote control. Garden mounted on 6ft post. Free if you will dismantle. Tel: Norman 01202 747223 (Poole).

EDDYSTONE 958 short wave receiver. 10kHz-30MHz. Rack mounting with manual, £150. Buyer to inspect and collect please. Tel: A Jennings 0121 475 8647 (Birmingham).

KENWOOD TS-570DGE like, new, £450. TenTec Argonaught II, model 535 like new, £350. Yaesu FRG-770 receiver, £100. Tel: John G4XYY 01937 844197 (Bramham).

MONITORING MONTHLY magazines, first twelve issues. Mint, three coupons removed. Best offer secures. Masses of info. Tel: John G8BXO 01769 573382 (North Devon).

ALTRON SM-20 mast, £100. Buyer to collect. SGC-2020 with ADSP, exchange for KX-1 kit or built. Wanted, scrap Corsair 2 from TenTec, also ext VFO unit. Tel: 01634 250427 (North Kent).

YAESU HF AMP FL-2100B 600W, 10m, 500W. Looks new, photos available. New 572B valves plus spares. SK David G3WMG, £200. Welcome to view, test or use. parcel freight. Write: Mr P Pitts, Westmoor, Trezelah, Gulval, Penzance, Cornwall TR20 8XD.

WANTED

BUY NRD-525 without options. Very good state of run and aspect.Tel: Claude Jacques Patou +33 680 608 555. E-mail: 0680608555@orange.fr

CODAR AT-5 transmitter. T-28 receive power supply would be nice. Any condition. Also, top band mobile whip and HF multi-band vertical. Can collect Midlands area (or small top band rig). Tel: Roy G0BZT 0121 523 8400 or 01902 678792.
Mobile: 07836 348945 (W.Mids).

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).

YAESU FT-S22 CTCSS tone squelch unit. Fits FT-5200, etc. Tel: David G3VSJ 07050 037248 before 8pm, please. E-mail: 83VSJ@yahoo.co.uk

EXCHANGE

German language course - Linguaphone. In superb black brief-case with combination locks. Absolutely mint and complete, with thirteen cassettes, handbook, vocabulary book, course and study books - Originally cost over £200. Will "swap" for something useful Amateur-radio-wise. Hand-held VHF or UHF, quality scanning-radio(Icom?), or what-have you?
Tel: Dennis G3HCM, 01427 752 284 (North Lincs) or Deng3hcm@yahoo.com

Bargain Basement order form

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

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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. July '09

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Passport to World Band Radio is a #1 seller. Each edition is welcomed by established and emerging readers alike, as Passport delivers in nearly 600 pages what world band listeners seek: Three-way guide to what's on from stations in dozens of countries: news, entertainment and opinion in English and other languages. All three formats: country-by-country, channel-by-channel, hour-by-hour.

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592 pages

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SORRY - DELAYED DELIVERY FROM THE PUBLISHERS. NOW DUE ON 25 MAY!

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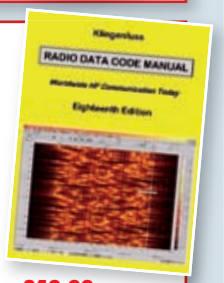

Worldwide HF Communication Today

The totally revised new edition has, again, more than 600 pages with 131 new graphics and screenshots.

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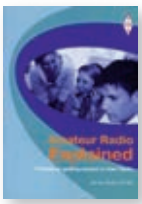
AMATEUR RADIO EXPLAINED



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.

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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.

£11.50

CALLSIGN 2009

The new 15th edition of our very popular Civil and Military Aviation Callsign Directory. Fully updated for 2009 with a large number of additions, amendments, confirmations and deletions. There has been a full overhaul of the two databases in the past year to ensure that all the information is as current as possible.

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● **NEW MILITARY AIRCRAFT MARKINGS 2009** Howard Curtis. (abc)	224	£9.99
● **NEW AIRWAVES 2009** (Photavia)	144	£11.50
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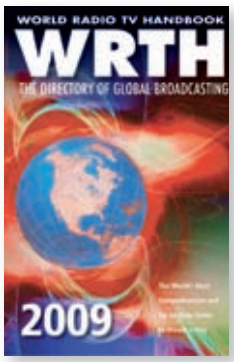

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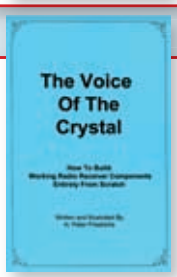

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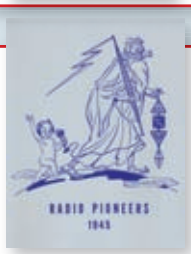

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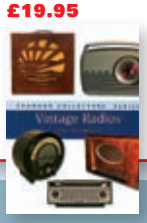

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Rob Mannion's

topical talk

Rob chats about security paranoia and possible marine ducting tests.

Occasionally in *PW* I've mentioned the 'Cold War' paranoia that that sometimes surfaced in the past when Radio Amateurs – who have attracted unnecessary and unwanted attention when they were legitimately enjoying the hobby. In the 'old days' (late 1960s) this sometimes led to Amateurs – using hilltop v.h.f. sites – being asked to explain their presence to police officers.

If we were fortunate (it happened to me several times!), the police officer would either have some knowledge of Amateur Radio and we wouldn't be asked to produce our licence. When such understanding was missing, we had to explain that the Amateur Radio Licence wasn't designed to (and didn't need to) be carried about – and unlike driving documents – wasn't that easy to understand for the uninitiated.

I had thought that the paranoia of the 'Cold War' days had left us, but unfortunately it occasionally re-surfaces! The last incident I was involved in, occurred several years ago while I was on the road to visit the **Otley Amateur Radio Society**, in West Yorkshire.

I'd also visited the **Rev. George Dobbs G3RJV in** Rochdale on the way to Otley and stopped – quite by chance – in a lay-by with views of the distant RAF Menwith Hill radio station to have a quiet sandwich lunch. However, literally, within minutes a police vehicle arrived – no doubt attracted by my 70 and 144MHz antennas!

Fortunately for me on that occasion, the police officer who'd been asked to investigate what they regarded to be a suspicious vehicle – turned out to be a Radio Amateur and a *PW* reader. We both laughed at the incident and after a chat we both got on with the business of the day – but I was left in no doubt of the sensitivity of the area! Later in the evening – meeting at their then Cricket Pavilion headquarters – the Otley ARS members enjoyed the story too – and also made me a Honorary Member. So the day really had (indeed) been an extra special one!

Despite the fact that my own fairly recent meeting with a security conscious organisation was brief and perhaps rather amusing, I don't think the same thing can be said for what **Steve Norman 2E0MVB** (Letters this issue) experienced. Steve was, in his own words, a long way from any known and apparently 'sensitive' site.

Personally, I think the level of security paranoia – some of it originating from governments outwith the UK and our political system and culture – will continue to increase. It will continue to do so, until those responsible for national security finally realise that radio enthusiasts who **openly** carry out their harmless activities don't pose a threat to anyone. Although I fully agree that there's a growing threat to humanity existing both within and without the UK's borders – those responsible for our security must surely look in the **directions from where those proven threats have already arisen** – not towards the practicioners of a peaceful pastime.

Marine Ducting

The letter featuring marine ducting at v.h.f. from **Stanley Mitchell VK3BOT** (Letters this month) highlights the interest being shown by *PW* readers readers around the World. Indeed, since the topic first featured in the Letters section and I made my own comments, there's been a continual stream of E-mails and letters from interested readers.

I'm now beginning to think seriously about the possibilities of arranging – with other interested Amateurs – to undertake some marine ducting tests from local beaches. There's obviously some potential – let's say from the western side of the UK towards Ireland and from the south coast towards the Channel Islands and France. Obviously, the UK's eastern coast has tremendous possibilities, and this has already been mentioned in *PW*.

Perhaps we could arrange some scheduled tests from otherwise (from the v.h.f. point of view) unpromising static mobile/portable operating sites? Additionally, having enjoyed working on 144MHz from some wonderful beaches in south west Cork as EI5IW to places as far away as France and Spain, I just wonder what the possibilities are towards Canada and the USA from the far south west of the UK and Ireland? The **Brendan Trophies** on offer from the **Irish Radio Transmitters Society** (IRTS) could be a reward waiting for a lucky operator!

Rob Mannion G3XFD/EI5IW

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