

Wythall Radio Club meets from 8pm every Tuesday and Friday evening at Wythall House, Wythall Park, Silver Street, Wythall, B47 6LZ, near Birmingham. Visitors are very welcome. **Wythall Radio Club** is affiliated to the Radio Society of Great Britain. Contact g0eyo@blueyonder.co.uk

It might seem quiet but it has been a busy summer

Although attendances at the weekly meetings have been lower than in previous years it has still been a busy summer with a number of activities in which members have participated.

VHF NFD

Set over the first weekend of July, National VHF Field Day is a 24 hour radio contest and although we came last in the open section, because we only operated on 2m with 62 QSO's and had an antenna higher than 30ft (the old trailer mounted versatower finally got an airing after several years in hibernation), members still had a great time setting up the station and operating through the night. So although we didn't take the contesting part of it too seriously, we made sure we celebrated the Saturday night in style with a barbecue to which about 50 members and their families came. A great time was had by all. The food prepared by Chairman Mike G4VPD and Anita 2E0DUO with help from Peter M5DUO was really excellent. It is believed that much alcohol was consumed based on the clanking from the black sacks the next morning.

5km/10km Fun Run

About 16 members turned out the following Sunday to help the Hollywood and Wythall 5km/10km Fun Run organisers with their communications. We formed 8 teams of two and were stationed at critical parts of the course to provide two-way radio comms for all the race control point marshals and to tell race control in the Park how the runners were progressing. This is an annual event and the roads around the course have to be closed for a couple of hours to enable the event to take place safely. This is the second year we have done this and, as you might expect, we are getting a little better at it. All involved reported that they had had great fun while helping the early morning event to go off as smoothly as possible. GB3WL, our UHF repeater station, was pressed into service and performed admirably. Roy G0HDF reported finding

himself distracted by ladies strip-ping for action at one checkpoint(!) while John M6KET, who is known for being 100% exclusively a Morse Code man, was actually heard using voice on the air for the first time ever! Sadly, the weather was a little variable and it was a pity about the torrential downpour part way through the event. But well done to everyone involved, both participants and organisers, and especially the brave lady (wearing 887) who, although she came last, got the biggest cheer of the day!

Other activities

May is normally the month when activity towards winning the Lew Williams Shield for CW is monitored but our organiser Lee G0MTN got a little distracted with work and planning issues so this was delayed until July and Alf G1MJO was pronounced the worthy winner (see a write up on page 3.

William 2E0SDV went off to Brecon Beacons for a week as part of the RSGB's Youth Committee DX15 expedition and he tells of his experiences on page 4.

Finally the 16th August saw the club set up and man a club stand at the annual Wythall Carnival with a display of Amateur Radio demonstrations, Morse Code, RSGB information, rolling video programmes, home-brew projects, an HF Station, a VHF/UHF Station and even a D-STAR demonstration station. Much fun was had by all who took part and we have a write up on this on page 5.

AGM

As mentioned in the last newsletter, the



club AGM is being held early this year due to three of the officers and committee being overseas at a wedding. The club year ends on 31st August and the AGM will be held on the 22nd September. The official notices have gone out informing members of the timetable and seeking nominations for the officer and committee positions. Voting for these positions and any constitutional changes are done by secret ballot. Ian M0IDR has sent out an e-mail requesting that members renew their subscriptions before the AGM and there are several ways this can be done. Cash or cheque any Tuesday or posted to our Treasurer or via PayPal or a bank transfer to the club's account. There will be an opportunity for members who fail to pay by the AGM to pay their subs before the meeting officially starts as following last years AGM, subscriptions need to be paid by the AGM you to be able to vote. Subscriptions haven't changed this year. Annual Membership £20.00 Family Membership £30.00 There is a concession subscription for full time students and the Unemployed persons of £10.00 Pensioners 65 and over can also get the half price concession but given if you can afford to pay the full amount we would be happy to receive the donation.

Thank you

Armond Taylor & Co—From Paxolin to Jewels

There was always a peculiar smell emanating from this uninspiring single story factory building in Marsh Road, Pitsea. The smell came from the process of bakelizing sheets of paper paper to form Paxolin which we are still familiar with today.

Paxolin is basically varnish impregnated layers of paper heated and squeezed under a lot of pressure. The material is very strong and a near perfect material from which to make tag strips, tag boards, transformer bobbins and the like. It does not deform under heat and is easily drilled, but under extreme local heat it does char and burn away. An example of that was illustrated in my article about the Linear Conchord amplifier where there had been a significant burn up on the tag board.

With the radio industry looking towards producing transistor radios, this once very profitable Company was now down to around a handful of employees and it was decided in 1957 to design and build a their own radio, the Jewel.
Looking at the picture the red jewel in the headgear served as an on/off indicator



favour of their own which is basically a cylinder with two separated thin copper sheets glued on and insulated (fixed vanes) over which is wound two similar strips of copper (moving vanes). The amount of overlap gave the capacitance which surprisingly was around 30 to 500pf, the same as a standard tuning cap of its time.



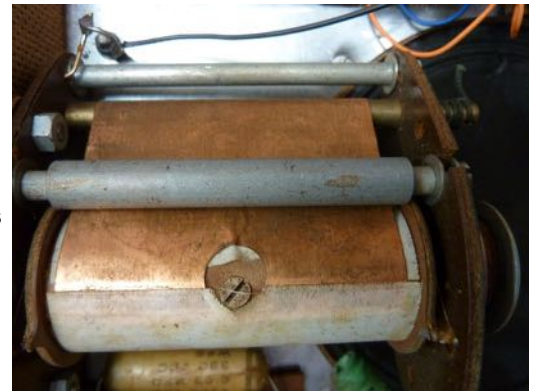
The voltage for the battery valve heaters was tapped off the UL41 cathode bias network and the battery valves were fed with around 100v HT which exceeds their normal operating parameters. The intention was to do a production run of 5000 but they did not sell well, had a failure rate of around 20% and production ceased with under 1000 made.

The factory was mothballed and left to decay. In 1991 the daughter of the owner contacted Gerald Wells, the curator of a fabulous radio museum in Dulwich, to ask if he was interested in clearing out the factory which by then had holes in the roof and was getting swamped by the march of nature's brambles and other vigorous vegetation.

lamp lit by a m.e.s. bulb of uncertain voltage but seemingly 40mA rated in the HT line to the set.



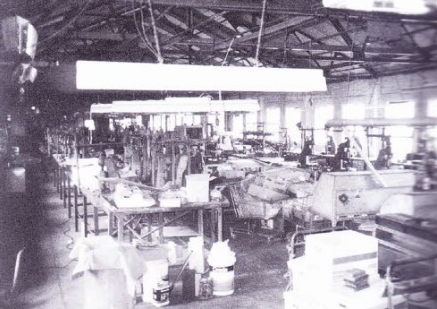
The case was oval in shape, having been formed of a Paxolin sheet, punched for ventilation at the back and for the speaker aperture around the front. The sheet was then heated and pressure formed into an oval. This tube was then dressed with the tartan style material (there were lots of different colour combinations apparently) and a twisted cord similar to the cords used for curtain tie-backs.



The top and bottom were oval plywood or mdf type board and felt covered. If that wasn't enough the insides were strange as well. Three valves usually found in battery sets were used and a UL41 audio output. We had a strange mix here, a UL41 needing 40v at 0.1A for its heater and needing 250v HT and three valves wanting 1.4v each for the heaters and a maximum of 90v HT. On top of all that, they decided to dispense with the usual type of tuning capacitor in

Within the factory was around 200 incomplete sets abandoned together with stocks of unused cases and components. The whole lot was transported to Gerald Wells' museum where the task began to see what was salvageable. In all Gerry and his museum staff made around 50 sets from the complete but not working, and the part complete and so much time was taken up fault finding completed sets, that they threw the towel in. 50 was a nice round number and it time for a cuppa.

Armond Taylor & Co Cont'd



As an example of what they had to contend with... a complete but non-working set plucked from the line of radios had the following problems:

The UL41 wired backwards i.e. pin 1 was wired as pin 8 and so on.
The HT smoothing capacitors were wired negative to HT line
The audio output transformer primary and secondary were reversed
Lousy soldering, indeed some joints had very little solder on, Roberts Radios would be proud of their frugality with solder.

So somewhere there are at least 50 of these weird radios (mostly in lofts I suspect) and perhaps this radio will provide a curiosity for collectors for years to come...or maybe not.

Ian M0IDR

Alf G1MJO wins Lew Williams Shield



Well, the results are in... and it's celebration time for one of Wythall Radio Club's oldest members.

The winner of the Lew Williams Shield for progress in Morse Code has been announced as Alf G1MJO.

Alf is one of Wythall Radio Club's oldest members – at nearly 89 he still turns up faithfully every week for Morse class and to support members in all their regular activities. He even comes by taxi in the rare event he cannot get a lift to club nights!

When the Morse classes recommenced a few years ago, Alf was one of the original starters and has kept improving his skills week by week. This year he has been rewarded for his efforts by winning our prestigious club shield, presented in honour of former Club President and Morse tutor, Lewis Williams.

While the judging was very close, most members here will agree that no-one deserves it more than Alf.



Also awarded Certificates of Merit by judge Lee G0MTN were John G4OJL and Alf's little brother Les G0HOR. Well done chaps

Chris G7DDN

Jamie's YOTA DX15 expedition to Brecon Beacons

As many of you may know on Thursday 23rd July I made my way to The Brecon Beacons in South Wales where I took part in the first ever RSGB youth DXpedition DX15. The QTH was not far from Brecon near Lake Langorse and a 30 minute drive from Abergavenny. The DXpedition was organised by the societies newly formed Youth committee and this event was part of a project to encourage youngsters to venture deeper into the hobby and show off all aspects of amateur radio to them. The DXpedition was sponsored by a number of different organisations with the main one being Kenwood Communications whom provided all transceivers for the event.



The call sign we used was MC0RYC; this was operated from the Brecon Bunkhouse in the "Kenwood shack". Using mainly 80m, 40m and 20m we made a grand total of 4617 contacts. Although we did use some of the WARC bands when conditions allowed us to do so. We were joined by Camb-Hams who provided a wealth of knowledge and assistance to us.



They also brought their demonstration vehicle "Flossie" and a Scam 12 mast.

Flossie was the holder of a rotating dipole for 10m, 15m and 20m where as the scam held a 20m and 15m spider beam and rotator. At the same time hung from a halyard we had a 40m dipole strung up it and an 80m dipole running across the valley. With help from the Camb-Hams and some leaders I managed to play my part in the set up of the station in the first evening before it got dark.

Our DXpedition team consisted of Project leader Mark M0NCG, Rob M0VFC, Dom M0BLF (*from Camb-hams*) and Mike 2E0MLJ, along with myself. We were accompanied by; Milo 2E0ILO, Jonathan GW2HFR, Matt M0MBU, Will 2W0WOD, Connor M6LNE, Ross M16WKE, Taylor M16RXC and Josh 2I0TXB.

Friday included our first Breakfast as a "Family" (I use that term loosely). Followed by a level 1 first aid course and some talks about Rob and Dom's latest DXpedition to Svalbard. Two routes were also planned for SOTA summits to be completed later in the week.

We took part in the IOTA contest on that weekend too. I was ready to operate for 17 hours straight and actually operated for about 10 hours until no one woke up to do their shift in the morning. I ended up doing the majority of the contest with Josh 2I0TXB. I did the first 5 hours and then Midnight until 5am (That is when I gave up). None the less we had good fun and scored over 1 million points.



On that same day two SOTA summits were activated, Pen-y-fan and Mynydd Troed. Although I personally didn't do either of these summits I here it was good fun.

However I did go up Mynydd Llangorse on Sunday, (mostly to get out after all that contesting). I had a good

time and made all of my contacts to qualify from a handheld and telescopic whip.

Whilst we were in The Brecon Beacons we made contact with people through a satellite. We used the only operational FM sat, SO50. I made contact into Belgium!!

The Final day found us taking part in an ARDF or Fox hunting contest, of which I found 2 out of 3 foxes. We made our own Tape measure Yagi's to use alongside our handhelds. They worked really well as a directional antenna. The last evening consisted of a meal and presentation evening. This is where I was awarded a book for being "the best at controlling the pile ups". I was proud of this achievement as it was given to me by The Camb-Hams. I obviously made a good impression on them.



Jamie, far left with handheld in QSO with a station on the summit

Overall and to conclude I had a really enjoyable week. After a nervous and shaky start not knowing anyone we formed our own radio family and made good friends nationwide. I found the DXpedition opened new opportunities to all who participated and everyone left with a new bit of knowledge. It was really worth going and I will definitely apply for the next one!! Thank you for your support throughout my DXpedition and it was good to work those of you that I did.

Jamie 2E0SDV



Wythall Carnival a big success

Every year the Wythall Community Association put on a Carnival in the Park during August to raise funds to maintain the building and park. Last year the weather on the day caused the event to be cancelled. This year the Association were favoured with fine weather and the carnival was a great success.

Bearing in mind that 2015 is the 800th anniversary of the signing of the Magna Carta there was to be a medieval theme with a jousting contest amongst the affiliated societies but I gather this was replaced by a clown on a unicycle with a jousting pole. There were demonstrations of birds of prey and a court jester in the Arena. Some 25 stalls and a classic car show plus a gymnastic display gave the visitors plenty of things to do and look at. Most of the local societies and organisations were to be seen, and WRC was no different.

We put together a stall featuring Amateur Radio demos, Morse Code, RSGB informa-

tion, rolling video programmes, home-brew projects, an HF Station, a VHF/UHF Station and even a D-STAR demonstration station. The event was organised by John G3VRF, Dave G3YXM and Phil 2E0WTH and supported by many other club members, some of whom were also on duty in the car park, helping the public to find a space (not an easy job, that!).

Everyone had a great time, and there were more than few expressions of interest in the next Foundation



Course! The weather gods were kind to us too and we were grateful to be placed close by the Hog Roast! All in all, though tired by the end of the day, we went home with the feeling of a job well done!

Chris G7DDN



The Variable Transformer (Variac): Why do you need one?

The Variac is an autotransformer with a continuously variable output from near zero to about 110% of input voltage depending on design. Manufactured by such names as Claude Lyons and sold through RadioSpares amongst others, they are a specially designed autotransformer having a single layer winding arranged in a circle. A rotatable bush made of carbon or alternatively a bronze roller can then tap off any voltage required and this is then used to supply the piece of equipment being worked on.



Being an autotransformer, there is no isolation from the mains and so the usual precautions still apply. Feeding the variac from a 1:1 isolating transformer provides a safer working environment but fully isolating 1:1 transformers are very expensive and generally rated at no more than 200 or 300 watts.



You can see that the winding is fed from one end with the Neutral and the Live goes to a tapping towards the top end of the winding. This extra bit above the live feed is an overwinding and is intended to compensate for low mains voltage.

Regular readers will know I do not like things going fizz/pop/bang and so my relatively cautious nature requires the regular use of such a piece of equipment. As a restorer of elderly valve equipment, it is very useful to gently bring them back to life and to be able to spot potential problems before things turn nasty. I have also found that the older Yaesu equipment (FT101, FRG-7 etc) is designed for 234v AC and it is surprising how much easier it is to locate circuit faults by being able to measure voltages and compare directly with the service manuals. Sometimes of course it's not that simple, when Yaesu label a supply rail of 6v they may mean 5v but it's all part of the fun.

The biggest headache with old equipment is the condition of electrolytic capacitors and they do deteriorate if the equipment is unused for a long period of time. Electrolytic capacitors will generally last a very long time as long as the equipment is regularly used and the rail voltage is around 85 to 90% of the capacitors rated voltage. Keeping them cool is important and a very common cause of failure in modern equipment is where they are located too close to heatsinks. It is primarily the prolonged lack of polarising voltage which causes the capacitor to become unstable electrically but a unwelcome heat source close by does not help especially with today's closely packed pcb's in TV's and Monitors.

It is always worth trying to "reform" an older style "can" type, this process will attempt to reactivate the chemical processes within the capacitor. This is where the variac is so useful by providing a vari-

able voltage to the equipment which allows the chemicals to reactivate but not enough to cause the capacitor to go short circuit.

As long as the capacitor does not get warm,

you may well be onto a winner and over several hours, gradually increase the applied voltage as the capacitor reforms. Always worth a try, over 80% will reform and will be good for several more years' service.

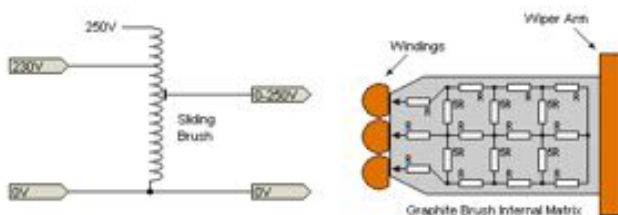
As a restorer of battery valve equipment, I need an easy way of getting 90v or 67.5 v or whatever the set needs for it's HT supply. These variable 3 legged voltage regulators are superb for low voltages, but not so good for voltages above around 40v, adding too much noise onto the supply rail.

I use a transformer with a bridge rectifier and plenty of smoothing, fed by a variac to give me a continuously variable dc supply, an idea adapted from a 50p Reading Rally purchase. A neatly boxed variable 20v supply with just a transformer fed by a variac! Uncomplicated and it works very well indeed.



These two pictures are of my unit, professionally designed, well-built and somewhat heavy. But cost the sum of £5 at the last Donnington Park Rally which is going back a few years now.

As part of my hobby is dabbling with American radios, I need a 117v supply which is provided by a Maplin step down autotransformer. Much care is needed



Variac cont'd

here as most US radios are of "live chassis" design and care must be taken not to come into contact with anything earthed.

Just like our old valve radios, the American ones need gentle awakening after a long slumber and to make this task easy I built a small unit with a 117v variac inside together with a digital voltmeter that cleverly runs off the supply line. This avoids the need for a separate 5v or 9v supply for the digital voltmeter but the drawback is that it requires 80v AC and above to display the voltage. That's actually OK as generally I start at around 90v for an 117v set which equates to around 190v for a standard mains set or just over 75% of the equipment's rated voltage. Anything less and you won't get enough power to sufficiently energise the valve heaters.

In all, a worthwhile addition to a busy workbench not only for those who enjoy building and designing valve circuits, but also for those who search for that elusive transformer for a project they are completing.



Transformers, transformers, boxes of them - right voltage, wrong size- right size, and wrong voltage. With a variac you can whilst testing and improving your design, get a 20v transformer to supply say 16v or 12v, a 12v to supply 9v and so on, giving you time to find or indeed purchase the exact transformer.

A useful item and easily obtained at Radio Rallies. A visual inspection will determine any damage to the winding or brush and just check that they are for 240v (or 117v) as appropriate. Most enclosed ones have a % scale of input dial and so you don't even need a voltmeter, although I would suggest adding a conventional analogue meter or digital display for completeness.

Ian M0IDR

Tim's IOTA expedition to MC0HSL on Ramsey Island

Tim M0URX wrote this report about how he and his friends got on as MC0SHL on Ramsey Island. In June. Their base to organize this event was the club house of MC0SHL which is a farm in Wales belonging to Rob MW0RLJ and his family.

Ten of us met up at the farm Rob MW0RLJ, Ant MW0JZE, Tim M0URX, Charles M0OXO, Tony G4LDL, Chris G1VDP, Vinny M0TAV, Jane - Rob's wife and the chief chef and the one who keeps us in check Laura MW6INK - Ant's wife and Janes right hand & Glenys G8KWD.

Thursday 18th June was a day to prepare and get everything together ready for the early morning departure. I was really poorly all day Thursday, dehydration seemed to be the problem so I spent the day in bed, it was looking unlikely that I would be on the boat on Friday. We had a lot of gear to carry, 4 full stations, three brand new ultra lightweight DXpedition Hexbeams, this was an expedition to test the new design of hexbeam and see how they not only perform on air but also structurally on an island where we always experience a lot of wind from the prevailing south west weather. This would give Anthony some idea of how and if the antenna needs any structural modification in the future.

Plus a 100 litres of fuel, a spare generator, we had the use of a 6 kva generator on the island so this generator was just in case we had a breakdown. We had to take enough food for 4 days plus some spare in case we were stuck on the island. 4 masts, 400m of coax and lots more. All our gear was packed into a horse box ready for the morning.

Thankfully, I woke on Friday morning well enough to join the rest of the team, we needed to be at St Justinians lifeboat station slip way at 8am. Getting the gear there is quite an exercise in itself, we were lucky to have the use of a hydraulic trolley system to get part of the way, then haul the equipment up a



flight of stairs and down to the slipway.

"Thousand Island Expeditions" had been hired to get us and all our gear to Ramsey, The Gower Ranger, skippered by Morgan and his crew, although it is only 10 minutes off shore, about half a mile, it takes quite a skilful skipper to get through what are known as the "bitches" and some of the fastest flowing tidal waters around the UK. Thousand Island Expeditions are also the only company allowed to moor at Ramsey Island. Morgan and his crew always pitch in with the loading and unloading of the gear.

Ramsey Island is owned by the Royal Society for the Protection of Birds (RSPB) The wardens Greg & Lisa Morgan have become friends over the years since we started this little IOTA expedition back in 2009. They join in the banter and we become part of the island life for a mad few days, Greg's welcoming comment was "The aliens have landed"

To get from the harbour, up to the cottage and then up to the barns that will become our base on the island is about 150 foot up the cliff and needs the use of Greg's quad bike and trailer. Greg was also sheep shearing on the island so we had a break of a few hours before we could have full use of the compound and surrounding fields, this gave us the chance to set up the stations inside the barn. We had two Kenwood TS590s transceivers, one Acom 1000 amp set at 400W and a brand new Expert 1.3 kW amp also set at 400W. This amplifier which was featured in the latest Rad-Com, this has incredible gain for a HF amp, in fact with just 1.6 W from the radio we were getting 400 W out. The third station was a Yaesu FT 897 which was set up for RTTY, we have never

Tim's IOTA expedition to MC0HSL on Ramsay Island cont'd

done RTTY from here before and we had a lot of interest in asking us to use this mode, this would be 100 W station.

We then set about getting the 3 lightweight DXpedition Hexbeams erected, with two teams of 3 it was an easy job, Anthony had sourced from Spain some heavy duty but light 10m masts which are telescopic and again easy to lift up with the lightweight hexbeams. Soon all stations were up and running, well three of them were. Our fourth station was visited by Murphy and he was very persistent at throwing spanners in the works. We had become a little slack in preparation over the years, the Carolina Windom that we had used since doomsday failed, and the 5 element 6m yagi that we had with us had problems which were later found to be co-axial failure. So our fourth station never got on air sadly.

Band conditions on both Friday and Saturday were pretty dire with only two bands being open for most of the time 17m & 20m so one of the three stations was put into use on either 20m or 17m RTTY. Despite the poor conditions we still were surprised by some occasional real DX that called in, such as ZL2AYZ New Zealand on 17m, twelve VK stations called in between 20m and 15m. AH6YY Hawaii on 17m, XE1H Tony from Mexico on 20m and my old friend Jim E50J in South Cook Islands on 20m, as well as AL7JX Glenn in Anchor Point Alaska



17m, yes we really were working the world, lots of West Coast North America too, but the higher bands of 10 and 12m remained pretty silent apart from a few bursts of Sporadic E conditions in the afternoon.

The ladies in the team also took part in manning the stations and were crucial in keeping us all fed and watered throughout the weekend. On the Saturday evening we welcomed Greg, Lisa, and their volunteers Pete and Lizzie, they were all genuinely interested in our radio operations and took it in turns in listening in on a spare headset and I saw eyebrows raised when we were working many Japanese hams and North Americans that evening. You know how it goes, It was time for a BBQ and the wine flowed into the night.

Sunday gave us the best conditions, especially on 6m as we put about 500 QSOs in to the log on six. The weather had been quite kind to us this year with a lot of sunshine but a very chilly south west wind that was prevalent the whole time. While the stations were on air we had enough operators to also have plenty of walks around the island, see some beautiful bird wildlife as well as the resident deer. Apart from us and their wardens and volunteers there were only the visiting tourists by day and the island closed down at 4pm as the final boat took the day trippers back to St David's.

The hexbeams & masts worked flawlessly and were robust enough to give us some fantastic results, you do not need any tools to put this antenna together. Despite the slow start due to the poor band conditions we closed down the 3 stations around 10am on the Monday morning with 4,068 QSOs in the log, quite remarkable really we never once went split deciding just to control the pile ups operating simplex on the same frequency which worked very well.

As the RSPB wardens had given us so much help and co-operation and let us use their facilities without charge we in



return gave a rather generous donation to "Friends of Ramsey Island" <https://www.rspb.org.uk/joinandhelp/donations/campaigns/ramseyisland/>

Tear down was quite easy, just taking our time as the sun was getting quite hot so we needed plenty of water breaks, we always ensure that we leave the area cleaner than when we arrived. Cleaning the barns as we leave and even taking away with us a cooker that needed to be taken to the tip. Arriving back at St Justinians was very hard work, at one point at the life boat station a couple of members of the team were suffering a degree of heat stroke. You should never underestimate the power of the sun, the same sun that gave us some brilliant DX over the 4 days was by the end really wearing us all down.

Getting back to the farm and taking turns in getting a well-deserved shower and freshen up, and a hot meal was about all we could manage as the sun set on another fantastic adventure to Ramsey Island.

RSPB Ramsey Twitter <https://twitter.com/RSPBRamsey>
Lightweight DXpedition Hexbeam <http://www.g3txq-hex-beam.com/index.php/shop/106/10/g3txq-broadband-hexbeam/ultra-lightweight-d-hexpedition-portable-hexbeam-detail>
Photo Gallery Ramsey Island 2015: <http://www.mc0shl.com/photo-gallery/category/34-ramsey-island-eu-124-2015.html>
Photograph credit Chris Colclough G1VDP

Tim MOURX

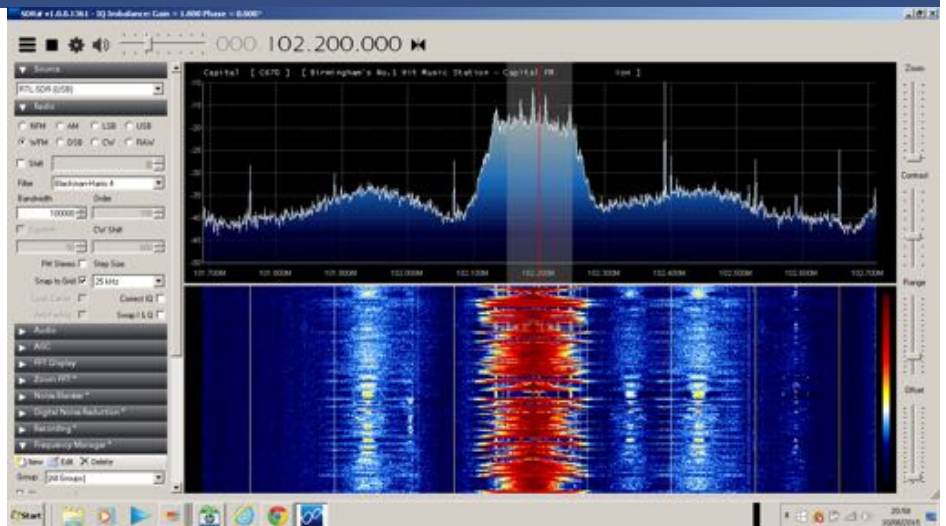
USB Stick Software Defined Radio

Admittedly I'm late to the party with this, but I'd like to report that I recently purchased a USB stick Software Defined Radio. There are many different options available today – from ready made USB devices found on Ebay or Amazon for £10 - £20, through to higher performance receivers again in a USB dongle form factor, to kits, and on to high end receivers and transceivers – either using PC software to provide the user interface, or having a traditional set of buttons and dials instead.

I already have a IF based SDR for HF use that taps into the IF output of my Yaesu HF transceivers. My new purchase was a small USB device originally intended to receive digital TV / radio, but can be pressed into service as a wideband VHF / UHF receiver after it was found that the signal I/Q data could be accessed directly.

I chose a device made by NooElec using the R820T2 tuner IC, for around £15. Some Internet articles suggested it would be slightly more sensitive than the earlier R820T variant, which are still sold for even smaller prices. It comes packaged with a little telescopic antenna on a small flying lead. You are suggested to connect a better antenna, and probably purchase an adapter for the tiny MCX connector (Callum!?) but the small stock antenna picks up enough to begin with. There are other manufacturers' devices available using different tuners, and they have slightly different frequency ranges. My SDR is claimed to work between 24 and ~1700 MHz. Additional hardware can be purchased so that HF bands can be received, or other options like the FunCubePro+ could be considered.

For general receiving, there are several software packages available. I've started with SDR# (SDRSharp) which apparently gives good performance on relatively low spec PCs. Literally 5 minutes was spent finding and downloading the software and the appropriate driver, and I'm listening to broadcast FM and the local repeaters and watching them on a wideband waterfall. This was on a 3 year old low spec Windows 7 laptop.



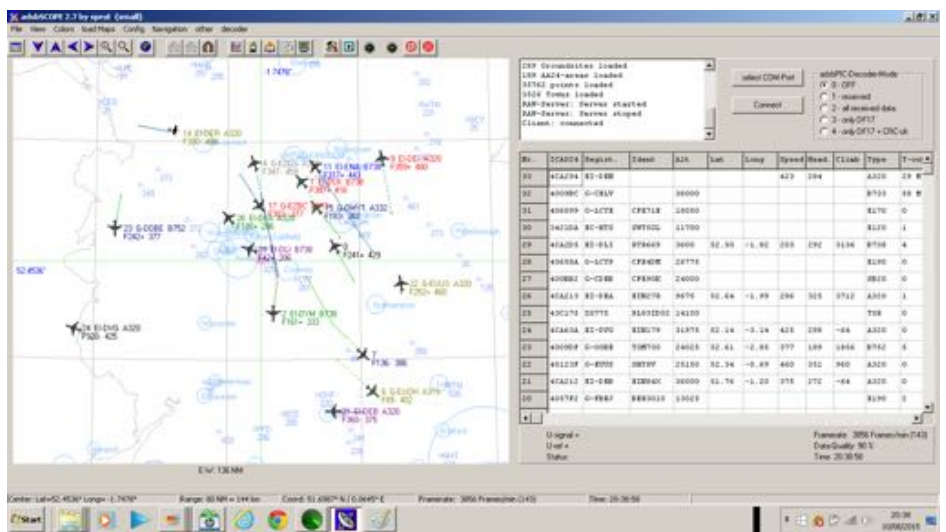
Each individual device does require some calibration to bring it to alignment, which is a small price to pay considering the cost, but this was easily done. There's even a small program you can download that listens to local GSM cell transmissions (which have accurate timing and frequency control) which will then tell you how to calibrate your device. To start with I found GB3WL and clicked the mouse until it reported being spot on 430.950!

Straight after that I downloaded another program, and immediately starting receiving ADS-B transmissions from aircraft up to 100 miles away and seeing the on-screen map of the skies around Birmingham soon full of aircraft traces. The only caveat I found online is to resist

the temptation to transmit on a handheld close by to check it's working, as the SDR can be damaged as a result. There are so many more applications – many realisable just by downloading more free software and having a play. It can be used as a scanner, for APRS, packet radio, radio astronomy, weather satellites – they are all very easily accessible from a little box you plug into your laptop (or Raspberry Pi) and the variety of software available adds to the versatility.

If you've not tried one yet, it's good fun and is a low cost way of experiencing receiving RF in a different way. This is one of many websites giving more background and info: <http://www.rtl-sdr.com/>

Lee G0MTN



The next issue of the Wythall Radio Club Newsletter will be published at the beginning of Nov 2015

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