

The newsletter of the
Crystal Palace Radio & Electronics Club

Affiliated to the Radio Society of Great Britain

Established January 1956

Meetings are held on the first Friday of each month.

The room opens at 7:30pm for an 8pm start at:

All Saints Parish Church,

Beulah Hill, London, SE19 3LG

(opposite the junction with Grange Road).

Visitors are always welcome.

Web sites:	Club Admin: http://cprec.btck.co.uk/
	Club Technical: http://cprec.btck.co.uk/OurTechnicalSite
Email:	cprec.g2lw@gmail.com
Club Net:	Each Wednesday at 20:00 on FM on 145.525MHz (S21) ± QRM
Twitter	@BobFBurns or www.twitter.com/bobfburns

Next meeting: Friday 5th October 2018

Introduction to Electronics - Power Supplies by Bob G300U

In this issue: *Future Meetings & Events, Recent Event News, Useful Free Software by Nick Stapley, Technical Snippets, Members News, Miscellaneous, Noticeboard, Diary of External Events, News from other Clubs, Local Training Courses and Club Contact Information.*

Dear Reader

Future Club Meetings and Events

05 Oct 2018	M	Introduction to Electronics - Power Supplies by Bob Burns G3OOU
02 Nov 2018	M	Network Radio by Martin Butler M1MRB
07 Dec 2018	M	Christmas Social
04 Jan 2019	M	Video Evening
01 Feb 2019	M	Annual General Meeting

C = Contest, CM = Committee meeting, E = External event, M = club meeting, R = Rally, T = Training course, V = Visit.

05 Oct 2018 - Introduction to Electronics - Power Supplies

We continue with our 'Introduction' series by looking at the simple and more complex aspects of power supplies. All electronic equipment requires a power supply of some sort and a lot of modern amateur radio equipment, being all solid state, requires a low voltage supply at a relatively high current, typically 13.5v DC at up to 25 amps for a typical 100W transceiver. High power linear amplifiers used to be valve based with a high voltage supply but a lot are now solid state requiring a DC supply of typically 50 volt at 20 amps or more.

This talk will look at the risk analysis required prior to using or designing a power supply followed by the basic structures in power supplies, both linear and switching types. It will look briefly at power factor correction and some new developments.

Recent Event News

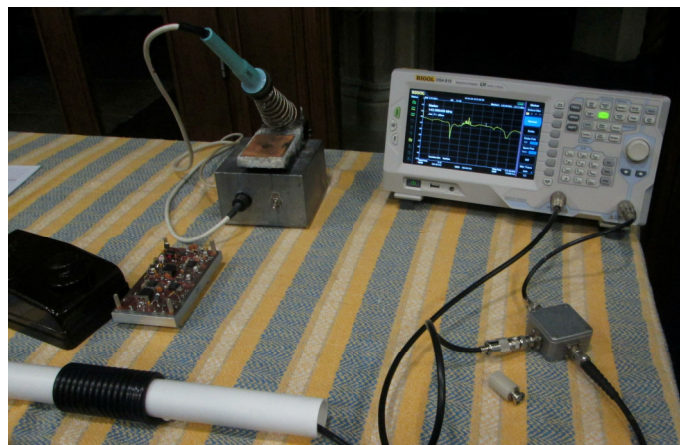
07 Sep 2018 - Practical Session - Building a compact VHF Aerial

Following a previous presentation by our Chairman Damien 2E0EUI on Flower Pot aerials, this evening we set about constructing six of these aerials. Five were for 2m and one for 4m with materials and diagrams provided by Damien along with a working low power 2m/70cms transceiver and SWR bridge for testing completed aerials. Also provided by your scribe was a Spectrum Analyser with Tracking Generator and a Return Loss Bridge to enable wide band testing.

By the end of the evening all six aerials were finished and tested with no issues. The photo below may look like a Star Wars re-enactment with light sabres but was actually Damien testing some of the completed 2m aerials. They were all built into white PVC kitchen waste pipe with a self resonant external balun and a short stub of coaxial cable and a PL259 connector.

All of the 2m aerials showed an SWR of better than 1.5:1. The 4m aerial could not be tested on air but showed a low reflected signal level on the analyser and will complete its testing at home.

The following photo shows the lower end of the 4m aerial, with its resonant balun, being tested on the analyser. The vertical axis is 10dB per division.



The display covered 1 - 206MHz with a sharp dip in SWR at 70MHz towards the left of the display.



Aerials that will be used outside instead of being suspended in a loft will require a top weather-proofing cap, a lower plastic extension to keep the structure away from any metal clamps and a longer coaxial lead. My 4m aerial pipe is 34mm outer diameter which is a fairly good fit inside the next larger size pipe and PVC solvent adhesive is easily available from plumbing emporiums. Some foam rubber should be used to keep small livestock out of the lower end of the aerial. Self amalgamating tape may be used to weather-proof cable joints.

Useful Free Software by Nick Stapley

Theorist is on holiday (hooray!) so the editor asked me if I could fill in. There is a lot of free software for Windows machines out there and some of it is remarkably good. This is a personal selection of a few free Windows software that works, and works well under Windows 10 at least. I use these programmes on a regular basis and they would be amongst the first things I would install on a new machine. All the following are Windows 10 compatible software, but I think most or all of it works on earlier versions of Windows at least since Windows 8. All are utility software. The links should take you directly to the free versions of the software rather than paid-for or trial versions.

Windows file manager has always seemed rather poor to me, partly because you can really only have one pane or

tab open at a time. There is a trick though, which is that by holding down the shift key and clicking on the file manager icon you can open multiple independent instances of the manager – useful if copying or transferring files to another location. This works for some other programmes as well. Alternatively you can use **Explorer++** (<https://explorerplusplus.com/download>). I have tried other free file managers but this is the best. The big thing about this is that if you right-click on a folder you get the option to open the folder in new tab. You can thus have all your favourite folders (or drives/partitions) as separate tabs. In effect the programme is a tabbed file manager, or a browser that only deals with files and folders. You can set it so that all the tabs reopen next time you use the programme. Very handy for easily moving files to a new location.

The search facility in file manager is quite poor in my opinion being very slow for one thing, so I was grateful to the editor for pointing me in the direction of **Everything** (<http://www.voidtools.com/>). Once set up you just start to type the filename and the utility homes in on the possible file you are after. You can easily and quickly find (e.g.) all pdf files on your machine, or all files that have 'radio' in the filename. If like me you tend to be a bit disorganised about storing files in a particular location this utility is essential. I really wouldn't want to be without it. It only searches for file and folder names though, not the text a file contains. It takes a few minutes the first time you use it but thereafter is extremely quick.

Snipping Tool is actually a part of Windows 10 (and probably earlier versions of Windows as well). It is used to capture a shot of part of the screen you are looking at. To find it click on the start button and type 'snipping tool' and the app should come up. You can drag a box around the area of the screen you would like to capture and then simply save it. Once you start to use it more and more uses for it become apparent, such as capturing images from a website perhaps for including in a newsletter article for Palace Pulse, or to record the small print of an offer you see online. I have a shortcut to the app on my toolbar.

Recuva (<https://www.ccleaner.com/recuva>) is something I rarely need, perhaps no more than once every few years, but is useful to have around. It is a utility that will recover deleted files even those that you have 'permanently' deleted from the waste bin. In case you weren't aware of it a file is never truly deleted in Windows; rather the space it occupies on your drive is simply flagged as 'available' to write over. If you have only recently 'permanently' deleted a file the chances are it will not have been overwritten and Recuva will get it back for you. Ideally best to install on a USB stick to avoid the chance that installing on your machine will overwrite something you wanted to recover.

Treesizefree (https://www.jam-software.com/treesize_free/) is a tool that analyses a drive or folder and shows you what is occupying the most space. It does this both in a conventional tree structure but also in a graphical manner. My current laptop has a large HDD but a small SDD which I try to keep as uncluttered as possible. The OS is on the SDD which is thus very fast booting up – about 5 seconds typically. Treesize helps let me see if anything has taken up too

much precious SDD space. It is not obvious where to start though; when first open you need to click on the 'select directory' icon and choose a drive or folder.

If you have several email accounts you might want to try the **Thunderbird** email client (<https://www.thunderbird.net/en-US/>). Once set up (and this is not entirely straightforward) you can access all your email accounts in one go. You can set a password for the programme so that your accounts are not unprotected if someone got access to your computer. There is not really an acceptable alternative to Thunderbird that will deal more than a few emails accounts.

Libre Office (<https://www.libreoffice.org>) is still the best free alternative to the Microsoft Office suite. There are several competitors but this is still the best by a big margin. The only complaint is the somewhat antiquated look and feel. I have never had a problem processing MS Office files, although I suspect that if you were importing an Excel file that used the advanced features of Excel you might get a problem. I use Libre Office all the time and have never bought MS Office.

If you have a favourite free piece of software please **write to the editor** and let us know about it. He is always delighted to get copy as this relieves him of some of the onerous task of putting the newsletter together each month.

Members News

Something Completely Different: On a recent Heritage Open Weekend Cathy and I visited two garden properties in Reigate, one of which was Bucklands Windmill which dates back to the 1860s and is listed Grade II by English Heritage along with



the adjacent house which dates back to the early 1700s.

The mill was only ever used as a saw mill and is thought now to be the only remaining one. It contains an example bench saw and wood lathe both driven by belts from a central shaft which in turn is driven from the original sails or more recently by an electric motor.

The second property was Shagbrook, the former home of Sir George Livesey, that once included 11 acres of pleasure grounds. What now remains is an area of 3.5 acres with a narrow access track from the A25, a small house and garage and a relatively wild but interesting garden surrounded by a lot of very attractive looking tall trees. I left dreaming of a top band dipole at 60ft high well shielded from the neighbours!

Mast Maintenance Party

A big thankyou to club members Alan G8NMK, David G0PAR, Ian M6FZC, Jim M0JFL, Geoff Godfrey and Nick Stapley who arrived promptly at 14:00 to help replace my old 36ft aluminium scaffolding mast with a thin walled and much lighter weight version. The old mast can be seen below.



The old internal scaffolding couplers are very strong and reliable but did not force the mast sections to join in a completely straight line so the mast looked a tad crooked. It had been in place for many years and survived the hurricane in 1987 unlike many of the local trees which ended up on the ground blocking our road.

The new mast, which is ex-military, has sections that slot into each other without the need for separate couplers so the mast is much straighter. There are two sets of three 6mm polypropylene rope guys with a breaking strain in excess of 400Kg which are replaced about every five years as they weaken over time due to UV exposure*. The guys are attached to eye bolts set into concrete fence posts which are set into 40-60Kg of concrete below soil level and do NOT move.

At the height of the work, the mast committee convened for a quick chat (shown below) with David helping to support the garden shed! This meeting

finished with a round of tea and cakes to raise flagging spirits after which the work resumed.

The guys were adjusted to get the mast vertical and the aerial was then attached and raised. As expected this caused the centre to bow away from the aerial a little so the mid guys were adjusted to correct the bow. The new much straighter mast is shown to the right. Two halyards have been fitted on separate pulleys so that I can experiment with vertical aerials without disturbing the HF dipole.



The work was completed at 17:15. The old aluminium mast sections and couplers are for sale - most are about 4ft 6inches long with a single extended top section of about 14ft - see the noticeboard later in this newsletter.

The new mast is shown below.



Our club owns two of these masts complete with full sets of guys and halyards which were erected to their full height of 45ft with three sets of guys on field days and other outside events.

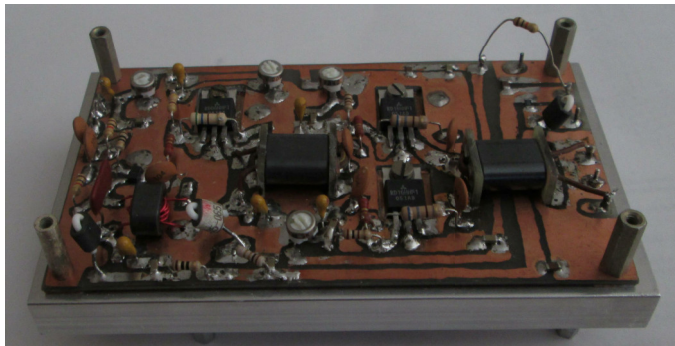
* A similar problem was experienced with polythene insulators in open wire feeders which went hard and brittle after a few years exposure to sunlight. The current insulators are made from 8mm acrylic rod and have not yet shown any degradation after five years exposure to the sun.

Technical Snippets

a) Broad Band Amplifiers: A multi-amplifier assembly has been built using both sides of a slab of extruded aluminium. One side holds the first of three 25-30W Mitsubishi PA blocks for 70, 144 and 432MHz and the other side holds a single discrete 20W amplifier covering 1.8 - 52MHz and using Mitsubishi MOSFET power devices. Jim M0JFL very kindly milled the ends of the slab smooth to remove the hacksaw marks.

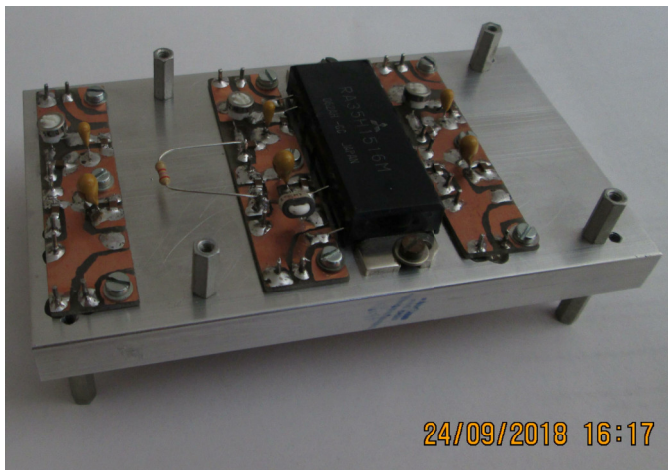
The slab will eventually be side mounted onto a rear panel finned heatsink with a cooling fan. To date the 144MHz amplifier is working well and the HF amplifier generates 20W with adequate gain but the linearity is not yet satisfactory.

HF PA Side:



This is a three stage amplifier with negative feedback around each stage.

VHF PAs Side:



The fitted PA is for 144MHz and the empty spaces will hold the PAs for 432MHz and 70MHz, all by Mitsubishi.

The hexagonal spacers allow either side of the amplifier block to rest on the bench without damaging the components and will be removed on completion.

b) Broad Band Transformers: During the above development project, some home made transformers were constructed and one broadband transformer kit was purchased via eBay from DN-Radio in the Ukraine which arrived some days later. The binocular core on the latter item is about 30% larger by volume than the BN43-0202 core used previously so should be capable of running at higher power. The PCB end cheeks are well made and the thin walled copper tubes cut to size and ready to assemble but has yet to be tested. See www.dn-radio.com for more information on their products.

Assembled commercial broadband transformer:



The gap between the copper areas can be clearly seen. The copper on the other end is continuous.

Motorola produced a series of application notes on broad band power amplifier and transformers which are still available on the Internet. Communications Concepts Inc supply a series of amplifier kits and transformers based on these notes.

c) Temperature Measurements: A project which has had to be significantly moved up the priority list is a hot and cold box. This allows components and printed circuit modules to be cooled and heated up so that performance measurements can be made across a range of temperatures. It also allows components like inductors to be heat treated to remove the construction stresses and dry the encapsulation varnish. If it was large enough it could be used to test completed equipments.

The box contains a simple heater, thermostatic controller, power supply, air circulation fan, ice pack slot and thermometer.

The (freezer) ice pack should enable the internal temperature to be reduced to around zero degrees for an hour or two. Anything longer can use the fridge or freezer directly.

Temperature testing circuits is important as most development is done at 20-25C and it is entirely possible that circuit bias levels or oscillator frequencies etc may change significantly at higher or lower temperatures.

Humidity is another major problem with electronic circuits but is more difficult to test as a climatic chamber is required with steam source, air heaters and wet and dry bulb thermometers. 95% humidity can be obtained at an air temperature of 40°C when the wet bulb thermometer is 1°C different to the dry bulb thermometer.

When I worked on the design of merchant marine lifeboat emergency equipment they had to be subjected to a wide range of tests including temperatures from -25°C to +70°C, 24 hour driving rain, 28 day mould growth and bump and vibration.

They also had to survive a 60 foot drop into the ocean from the top deck of a tanker or container vessel of those days. The first one we dropped came back sounding like a set of maracas - almost everything had broken in some way, not helped by the internal hand cranked generator coming loose and bouncing off the internal assemblies. Needless to say we fixed all the problems and achieved type approval - it was very interesting and challenging work.

Miscellaneous

a) The Beulah Spa at the top of Spa Hill, about three hundred yards along Beulah Hill from our meeting place, is to get a new commemorative stone to mark its 187 year history.

b) Railways on the Air takes place this weekend 29/30 September and many clubs will be taking part. It celebrates the anniversary of the first steam-powered passenger railway that took place on 27 September 1825 — the first passenger train ran on a line in the north-east of England from Darlington to Stockton. Bishop Auckland ARC coordinates this event. You can find a list of the participating call signs at rota.barac.org.uk [source RSGB].

c) The National Hamfest takes place on 28/29 September at the Newark & Nottinghamshire Showground, Lincoln Road, Winthorpe, Newark, Nottinghamshire NG24 2NY. Free parking. Nearest railway station is Newark Northgate on the East Coast Mainline accessible from London Kings Cross. More information from www.nationalhamfest.org.uk.

d) HF Conditions are poor as we approach the current cycle minimum. However there are some DX opportunities available with patient listening - 9M2 (Malaysia) was heard on 20m at about 559 during September.

e) Martin M1MRB who is delivering a talk to us on Network Radio in November manages the ICQ Podcast which presents a new podcast every two weeks. You can listen to them at <https://www.icqpodcast.com/>

f) A Passage To India: If you are a fan of older films this one is being shown at the David Lean cinema in Croydon on 09 October. A Q&A session is planned after the showing between actor James Fox and assistant director Patrick Cadell. More information from <http://www.davidleancinema.org.uk/>

g) Robot Surveyors: A pair of robot rovers have landed on an asteroid and begun a survey, Japan's space agency said Saturday, as it conducts a mission aiming to shed light on the origins of the solar system. The rover mission marks the world's first moving, robotic observation of an asteroid surface, according to the Japan Aerospace Exploration Agency (JAXA). [Source: New Straits Times]

Notice Board – Wanted and For Sale

The Notice Board is for all club members to use so if you have one or more items that you wish to buy or sell then please send in the details. Some of the current list of items may be viewed at:

<http://cprec.btck.co.uk/SaleofClubEquipment>

All excl P&P.

For Sale

a) Remaining items donated for club use or club funds by two Norbury residents:

- Four text books: '*HF Communications - A Systems Approach*' by Nicholas Maslin, '*Communications Systems*' by Simon Haykin, '*Telecommunications Engineering*' by Dunlop & Smith, '*Introductory Topics in Electronics and Telecommunications - Modulation*' by F R Connor. £1 each.
- Gould Digital dual beam 20MHz solid state storage scope type 4035 with manual on CD, working, £30 ono.

Offers to our Chairman Damien on 07900 242541 or email [Gorby928\(at\)gmail.com](mailto:Gorby928(at)gmail.com).

b) Mast sections: One 14 foot section and up to six approximately 4 foot 6 inch sections of two inch nominal diameter aluminium scaffold poles with 5 internal steel couplers. £40 the lot - buyer collects. Contact bob on 01737 552170 or [g3oou\(at\)aol.com](mailto:g3oou(at)aol.com).

CPREC has a large bank of fundamental and overtone quartz crystals, from 1.0 – 99.91MHz. The list, which is on the club website as a downloadable PDF file, has recently been updated with new frequencies and case classifications and sorted in frequency order. Prices are £1 each to club members and £2 each to non members, excluding P&P.

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G3OOU

Diary of External Events

12-14 Oct - RSGB Convention

Kent's Hill Park Training and Conference Centre, Swallow House, Timbold Drive, Kent's Hill Park, Milton Keynes, Buckinghamshire MK7 6BZ. The Convention programme of lectures for all interests will be available on the website. Principal sponsor Martin Lynch & Sons. www.rsgbevents.org.

27 Oct - Essex CW Club Boot Camp

3rd Witham Scout & Guide HQ (rear of Spring Lodge Community Centre), Powers Hall End, Witham, Essex, CM8 2HE. Opens 8.30am for registration, session runs

9am-4.30pm. Free parking, entry £10, free snacks.
Contact Andy, G0IBN, 0745 342 6087 or
info@essexcw.org.uk
Web: [\[www.essexcw.org.uk\]](http://www.essexcw.org.uk)

24th March 2019 - Hamzilla Radio Fest hosted by Dover Amateur Radio Club

Discovery Science Park, Gateway House, Ramsgate Road, Sandwich, Kent CT13 9FF. RSGB exams, lectures and demonstrations, bring & buy, entry tickets available via the website. Sellers tables available.
Web: <http://www.hamzilla.uk>

18 Nov - 41st CATS Bazaar

Oasis Academy Coulsdon, Homefield Rd, CR5 1ES Coulsdon. £1.50 entry and plenty of free parking! Applications from traders, clubs and private sellers most welcome. Contact bazaar@catsradio.org or ring Andy G0KZT on 07729 866600.

News from other Clubs

Club Secretaries – please ensure that your future meeting details are present in your newsletters, on your websites or sent to our newsletter editor Bob G3OOU. Palace Pulse is published about ten days before our club meeting which is on the first Friday of each month and closes for editorial contributions a few days before publication. Due to differing publication dates and short lead times it is getting increasingly difficult to include other clubs' events although we will endeavor to do so if advised in time.

Readers - If you plan to visit one of these club meetings please check with the club concerned in case of any last minute changes.

Bredhurst Receiving and Transmitting society

Meet on Thursday night from 8:30pm at the Parkwood Community Centre, Long Catlis Road, Rainham, Kent, ME8 9PN. Contact secretary@brats-qth.org or <http://www.brats-qth.org/brats/>

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| 11 Oct | Practical Radio Astronomy for Amateurs Talk by Paul Hyde |
| 25 Oct | Component Recognition Competition |
| 08 Nov | Junk Sale |
| 15 Nov | Ordnance Survey Ancient and Modern Talk by Mr Colin Brown |
| 13 Dec | BRATS Christmas Party 2018 |

Bromley & District Amateur Radio Society

Meets at 19:30 on the third Tuesday of each month at the Victory Social Club, Kechill Gardens, Hayes, Bromley, BR2 7NH. Contact Andy G4WGZ on 01689 878089 or enquiries@bdars.co.uk. Web: www.bdars.co.uk

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| 16 Oct | SDR / Construction |
| 20 Nov | TRF / Construction by M0YRG |
| 18 Dec | Quiz and Mince Pies by G0HIQ |
| 15 Jan | AGM and Programme |

Chelmsford Amateur Radio Society (CARS)

19:30 on the first Tuesday of each month at Oaklands Museum, Moulsham Street, Chelmsford, Essex, CM2 9AQ. Contact: [secretary\(at\)g0mwt.org.uk](mailto:secretary(at)g0mwt.org.uk) Web: www.g0mwt.org.uk

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| 02 Oct | CARS AGM |
| 06 Nov | Propagation by Gwyn Williams G4FKH |
| 04 Dec | Xmas Social |

Coulsdon Amateur Transmitting Society (CATS)

8:15pm on 2nd Monday each month. Contact: Andy Briers G0KZT on 07729 866600 or [secretary\(at\)catsradio.org](mailto:secretary(at)catsradio.org). Web site: <http://www.catsradio.org/>

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| 08 Oct | Inter-Club quiz -- To be confirmed with SRCC |
| 12 Nov | Apollo 13 - Terry G4CDY |
| 18 Nov | CATS Bazaar |
| 10 Dec | CATS AGM |

Crawley Amateur Radio Club (CARC)

Every Wednesday 20:00 – 22:00, every Sunday 11:00 – 13:00. Formal events are on the fourth Wednesday of the month, 7-30pm for 8pm. Phil M0TZZ on 07557 735265 or [secretary\(at\)carc.org.uk](mailto:secretary(at)carc.org.uk) or Web: <http://www.carc.org.uk/>

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| 24 Oct | FPGA's by Alister G3ZBU (TBC) |
| 28 Nov | HARC/CARC Challenge |
| 07 Dec | Annual Fish and Chip Supper |
| 23 Jan 19 | Club AGM |

Cray Valley Radio Society (CVRS)

Meets at 8pm on the 1st and 3rd Thursday of each month at 1st Royal Eltham Scouts HQ, Rear of 61 - 71 Southend Crescent, Eltham, London, SE9 2SD. Contact: Richard on [secretary\[at\]cvrs.org](mailto:secretary[at]cvrs.org). Web www.cvrs.org

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| 04 Oct | Annual surplus 'junk' sale |
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Dorking & District Radio Society

Meetings at 7.45pm. Contact: David Browning (M6DJB) at [djb.abraxas\(at\)btinternet.com](mailto:djb.abraxas(at)btinternet.com). Web site: <http://www.ddrs.org.uk>

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| 23 Oct | Invitation to members and visitors to offer a few of their own hints or to ask questions about antennas |
| 27 Nov | AGM & RSGB Video |
| 07 Dec | Christmas Dinner |

Echelford Amateur Radio Society

Meetings on 2nd and 4th Thursdays of each month at the Weybridge Vandals Rugby Football Club. Enquiries to John at [jho_g4gsc\(at\)btinternet.com](mailto:jho_g4gsc(at)btinternet.com) or 01784 451898. Web site: <http://www.qsl.net/g3ues/index.htm>

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| 26 Oct | 'Hernia Cup' Quiz night - St Mary's Church, Sunbury - <u>Note that this is in place of the normal Thursday night meeting.</u> |
| 08 Nov | Weather Satellites & Earth Images - David Simmons, G1MAL & Francis Bell, G7CND |
| 13 Dec | Christmas Party - in the bar at the Vandals |

Hastings Electronics & Radio Club

Meetings held at the Taplin Centre, Upper Maze Hill, St Leonards on sea, TN38 0LQ, 7pm for 7:30 on the fourth Wednesday of each month. Information from Gordon Sweet M3YXH on 01424 431909, email: [sionet3344\(at\)hotmail.co.uk](mailto:sionet3344(at)hotmail.co.uk)

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| Web: | http://herc-hastings.org.uk/ |
| 24 Oct | On air operating and chat |
| 28 Nov | DVD Show by Tony Lunn G0EYE |
| Dec | No meeting |

Hereford Amateur Radio Society

Meets on the first Friday of each month at Hill House, Newton, Nr Leominster, HR6 0PF. Contact: enquiries@herefordradioclub.uk or <http://herefordradioclub.uk/>

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| 05 Oct | Poss. demo. of 3D printing. Nigel (G4XTF). |
| 02 Nov | The 'L' Band Matrix – Mike G3LZM. |

Horsham Amateur Radio Club

meets on the first Thursday of each month at the Guide Hall, 20 Denne Road, Horsham, West Sussex, RH12 1JF. NRQ TQ172304 at 20.00hrs local time. Contact Alister Watt G3ZBU at [g3zbu\(at\)hotmail.com](mailto:g3zbu(at)hotmail.com) or <http://www.harc.org.uk/>

- 04 Oct Club - Junk Sale
 25 Oct HARC/CARC Challenge - Crawley Club (Provisional – TBC)
 01 Nov Space Project - Dr Chris Bridges TBC

Mid-Sussex Amateur Radio Society (MSARS)

Meet most Fridays in the Millfield Suite, Cyprus Hall, Burgess Hill, RH15 8DX from 7.30pm till 10.00. Contact Stella on 01273 844511, [M6ZRJ\(at\)msars.org.uk](mailto:M6ZRJ(at)msars.org.uk) or www.msars.org.uk

- 12 Oct AGM
 02 Nov Surplus Equipment Sale - UPSTAIRS
 23 Nov Construction Contest
 07 Dec Christmas Dinner in house
 14 Dec Christmas Quiz

South East Essex Amateur Radio Society (SEARS)

Contact Mark Callow 2E0RMT on 07842 336444 or [secretary\(at\)southessex-ars.co.uk](mailto:secretary(at)southessex-ars.co.uk) or <http://www.southessex-ars.co.uk/>

Meetings: 7pm 2nd Tuesday each month at The White House, Kiln Road, Benfleet, Essex, SS7 1BU.

- 09 Oct Andy Tyler G1GKN - Ex military radios in Amateur Radio
 13 Nov Club AGM

Surrey Radio Contact Club (SRCC)

7.30 for 7.45pm on 1st. and 3rd. Mondays every Month. Contact John Kennedy G3MCX on 020 8688 3322 or [secretary\(at\)g3src.org.uk](mailto:secretary(at)g3src.org.uk). Web: <http://g3src.org.uk/>

- 01 Oct Autumn Surplus Equipment Sale and Special Catalogue Sale
 05 Nov Inter-club Quiz
 03 Dec Construction evening

Sutton & Cheam Radio Society

8pm on 3rd Thursday every month. Contact John Puttock G0BWV on 020 8644 9945 or email [info\(at\)scrs.org.uk](mailto:info(at)scrs.org.uk) Web: <http://scrs.org.uk/>. SCRS run a practical group most Monday evenings at the Bandstead Scout Hut.

- 18 Oct Solar power for Radio Amateurs Milton G1RUV
 15 Nov Receivers Over the Ages by Bob G3OOU
 13 Dec Social evening and friendly quiz

Please replace the (at) with @ when using any email addresses shown in this newsletter.

Crystal Palace Radio & Electronics Club is a member of the South East Tutors training group.

Local Training Courses

Licence Level	Dates	Location	Club Provider	Format	Further details
Foundation	07 - 21 Oct	Bromley BR2 7NH	Bromley & District ARS	2 days (Sun)	www.bdars.org
Intermediate	03 - 25 Nov	Eltham, SE9 2SD	Cray Valley RS	3 days (Sat)	www.cvr.org
Foundation	02 - 09 Feb 2019	Eltham, SE9 2SD	Cray Valley RS	2 days (Sat)	www.cvr.org
Intermediate	17 Feb - 17 Mar 2019	Bromley BR2 7NH	Bromley & District ARS	3 days (Sun)	www.bdars.org
	= course commenced				

CPREC Committee Information

Officers:		
Chairman:	Secretary:	Treasurer:
Damien Nolan 2E0EUI	Alan O'Donovan G8NKM	Ian Skeggs M6FZC
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