

The newsletter of the
Crystal Palace Radio & Electronics Club

Affiliated to the Radio Society of Great Britain

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: <http://www.g3oou.co.uk/>
Technical: <http://www.gsl.net/g3oou/>
Club Net: Each Wednesday at 20:00 on FM on 145.525MHz (S21) ± QRM
Twitter @BobFBurns or www.twitter.com/bobfburns

Next meeting: Friday 6th October 2017

DSP Without Maths by Alan G0TLK

In this issue: *Future Meetings & Events, Recent Event News, Storage Problem by Theorist, Technical Snippetts, Members News, Miscellaneous, Noticeboard, Diary of External Events, News from other Clubs, Local Training Courses and Club Contact Information.*

Dear Reader

Future Meetings and Events

06 Oct 17	M	Digital Signal Processing Without The Maths by Alan G0TLK
03 Nov 17	M	Millimetric Microwaves – Chris G0FDZ
01 Dec 17	M	Christmas Social
05 Jan 18	M	TBA
02 Feb 18	M	Annual General Meeting
06 Apr 18	M	A talk on The British Vintage Wireless and Television Museum

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

06 Oct 2017 - Digital Signal Processing (DSP) Without Maths by Alan G0TLK

The next meeting will feature a talk entitled 'DSP Without Maths' by Alan G0TLK.

Alan writes: *'This talk will be a simplified introduction to Digital Signal Processing without the complicated maths. We will take a spin through its history, sampling with a demonstration of what happens if you get it wrong, followed by the Fast Fourier Transform and perhaps a demonstration. To round it all off we will take a quick look at digital filters.'*

Recent Event News

01 Sep 2017 - Antenna Modelling by Quin G3WRR

The presentation focused on HF aerials where long wires, dipoles and verticals are the most common types in use although Quin did point out that the basic principles apply equally to VHF and UHF aerials.

The following topics were discussed:

- Why you might wish to try antenna modelling
- Demonstration of some of the available software tools (including some interesting antenna patterns)
- Display of antenna patterns based on info provided by CPREC

Quin's first slide stated:

'Don't Panic

You don't have to do any of this stuff to make contacts.

Just get some wire up in the air

As long as possible

As high as possible

Preferably centre fed

The G5RV is not the only answer

Do that and you will make contacts

Is it really as simple as that?

Yes!

And no.....'

If you have a specific need for an aerial then it should be optimised for that need in terms of its height, direction of maximum radiation and geographical orientation - tools

are available for these processes including a Great Circle map centred on your location.

The elevation angle is important and determined by the distance to the target area and the height of the ionosphere layer to be used. The 'simple' formula for the elevation angle is:

$$\Theta = \tan^{-1} \left[\frac{h + 1(1 - r \cos(90d/\pi r))}{r \sin(90d/\pi r)} \right] - (90d/\pi r)$$

To help you with this task there is a free software package from W6EL at: <http://www.qsl.net/w6elprop/>

To complete this task you will need to provide the location of both stations, the date, Solar flux and K index. The latter two are available from:

<http://dx.qsl.net/propagation/propagation.html>

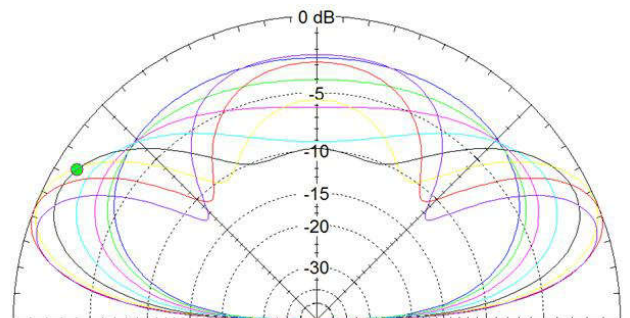
To work out the radiation pattern of your aerial you can use EZNEC which is available from:

<http://www.eznec.com> but is not free - it currently costs \$99. This application allows you to define the physical structure of your aerial, feeders, ground losses and it provides a plot of the radiation pattern plus a lot of supplementary information including impedance and SWR.

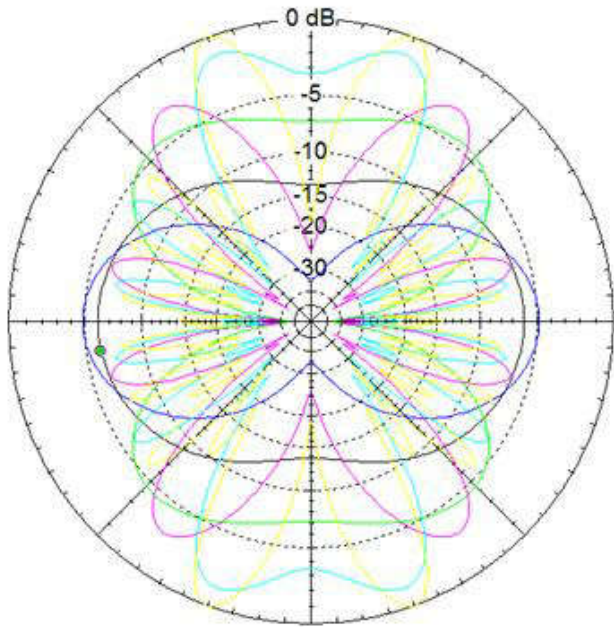
	FREE SPACE - "STARTER FOR TEN"	FREE SPACE - TWEAKED LENGTH	PERFECT GD. - TWEAKED LENGTH	"NFD SITE" - TWEAKED LENGTH	"CROYDON" - TWEAKED LENGTH
LENGTH (ft)	66	68	68	68	68
HEIGHT (ft)	-	-	66	66	66
RESONANCE (kHz)	7247	7035	7116	7118	7118
SWR	1.47	1.47	1.52	1.52	1.52
MAX GAIN (dBi)	2.02 (symmetrical)	2.05 (symmetrical)	7.94 @ 32°	7.03 @ 29°	6.27 @ 28°
GAIN AT 0° (dBi)	2.02 (symmetrical)	2.05 (symmetrical)	-99.99	-99.99	-99.99
GAIN AT 90° (dBi)	2.02 (symmetrical)	2.05 (symmetrical)	-6.93	-2.78	-2.78

The picture above shows some examples of the effect of ground conditions for a given aerial.

Once the data has been entered EZNEC will provide overlaid plots of the various radiation patterns for various aerial heights. The following plots are for a dipole between 30 and 100 feet in height:



EZNEC can also provide plots of the horizontal radiation patterns of a given aerial on different bands (80m, 40m, 20m and 15m) as shown in the following picture. The increase in the number of lobes as the frequency is increased is clear:



EZNEC can also analyse multi-element aerials like Yagis and Cubical Quads so a very useful software package at a reasonable price. Additional useful information is also available from SOLARHAM at <http://www.solarham.net/>

Table Sale

Our Secretary Alan organised a table sale of components and equipment at this meeting and a significant amount was sold benefitting club funds.

Storage Problem by 'Theorist'

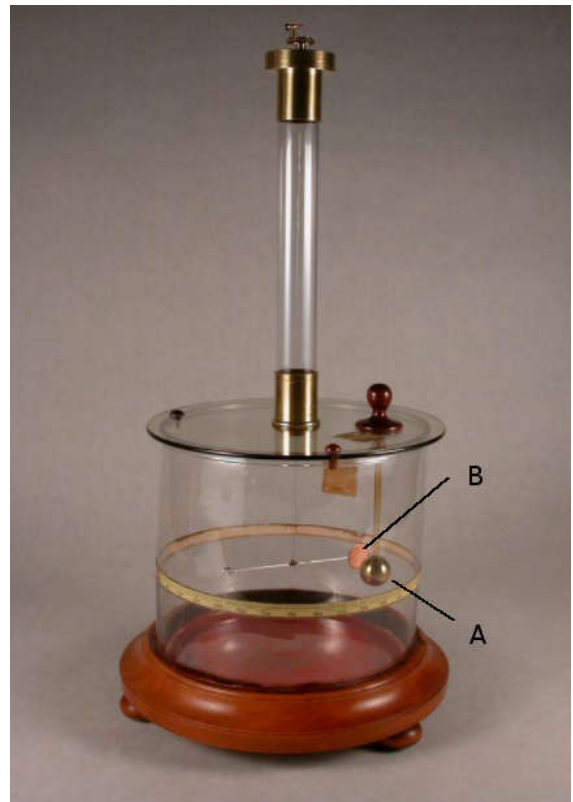
Last month's Technical Snippets column provided a refresher on capacitors, dielectrics and the 'dielectric constant', and coincidentally provided the idea for this column. Dielectric constant is a term which has rightly but unfortunately fallen out of favour, as different authors used the term to mean slightly different things. The correct modern term is 'relative permittivity', as used in the Snippet. Finding out what happened when something was placed between the plates of a capacitor was first investigated by no less than Michael Faraday in 1837, and his discoveries posed a problem for the early investigators of electromagnetic phenomena.

In one experiment, Faraday filled the space between the plates of one capacitor with different dielectric substances such as oil, shell-lac (Faraday's spelling) or mica. Another identical capacitor was left air-filled for comparison. Both then had the same voltage applied simultaneously by using a battery to charge the capacitors in parallel, so that the voltage would be guaranteed to be the same across both - an important detail in an age where it was difficult to get a reliable standard source of just about anything. Faraday found that the plates with the dielectric held more charge than those filled with air.

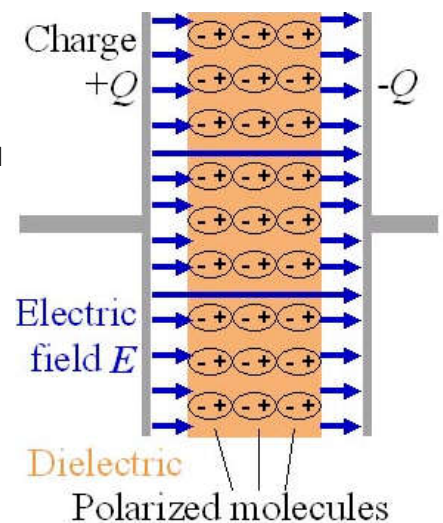
He proved this by measuring the relative charges on the plates. He did this by touching a metal ball with an insulated handle to a plate, thus sampling the charge. The ball was then placed in something called a Coulomb torsion balance. In this the test ball A (see the first illustration) was repelled by a second standard charged ball B mounted on a balance arm, and the force between

the balls measured by the twist on the torsion wire. I'm sure our editor would have made one of these contraptions for his well equipped shack, had he been around at the time. However, now I come to think of it, I believe I saw one in our ex-Chairman's shed when I was last there, amongst some other....useful stuff.

Anyway, by measuring the force, Faraday was able to show that more charge was stored on the plates with a dielectric [1]. The problem was that nobody really had any idea of what atoms were like, or even if atoms actually existed at all. With this lack of knowledge it was felt at the time that putting something between the plates should block whatever was happening between them. The capacitance should surely go *down*, not up, when something was between the plates!



The solution to this problem came with an understanding of the nature of atoms and molecules, and an understanding that molecules could be polarised, with one part of the molecule becoming slightly positive, and another slightly negative. A dielectric material is simply an insulator that can be polarised by application of an electric field. When a voltage is applied, charges in the dielectric do not flow, but shift a bit forming dipoles, with positive and negative charges moving a small amount in opposite directions. This



creates an internal electric field that is a bit *weaker* than it would be otherwise, requiring *more* charge on the plates to 'restore' the voltage across the capacitor to the value it should be. This therefore increases the charge stored. Note that contrary to popular belief *no extra charge is stored inside the dielectric*, which remains electrically neutral. The extra charge is stored on the plates.

It is worth noting that if the molecules of the dielectric are weakly held together, they can orient themselves along the field - but not perfectly due to thermal agitation. Also, that the displacement of the positive and negative charges is extremely small, a lot less than an atomic diameter.

There was another problem with capacitors as well. It was known that a wire carrying a current produced a magnetic field around the wire. As the capacitor charged up, the magnetic field along the leads could be measured, decaying as the plates charged up. Yet there was also a magnetic field around the gap between the plates, where no current could be flowing, exhibiting the same behaviour. James Clerk Maxwell sorted this one out, realising that it was not only moving charges that created a magnetic field, but also a *changing* electric field. And as a capacitor charges or discharges, you certainly get that between the plates.

[1] As an exemplary experimenter Faraday also did the 'reverse' experiment of applying the same charge to the different sets of plates and measuring the voltage across them, showing a drop in voltage when a dielectric was present.

Technical Snippets

a) Single layer Inductors

Designers and constructors can spend a lot of time converting a technical requirement for an inductor into a finished item so anything that can reduce that time is always welcome. The history of inductance calculation is complex, commencing with the first result by Lorenz in the 1800s, Wheeler in the 1920s and more recently by Nagaoka and many others.

Some of the basic inductor calculators on the Internet only work for close wound inductors and some are at best an estimate - there are many variables to take into account to get high accuracy. Two web sites that offer more accurate calculators may be found at:

<http://hamwaves.com/antennas/inductance.html>

and

<http://www.mogami.com/e/cad/coil-01.html>

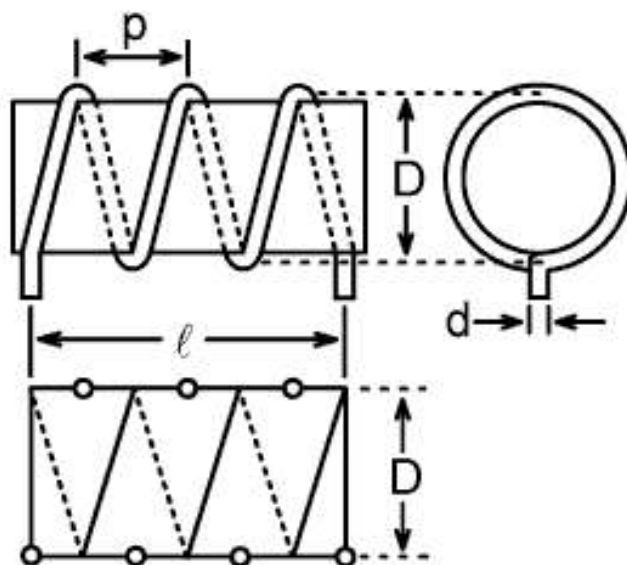
The latter site shows the detailed formula which you can edit into a spreadsheet to make your own calculator. Both sites provide for close wound or spaced turns by enabling the designer to specify the overall length of the wound inductor and the wire diameter so that the winding pitch can be calculated.

Inductors wound with the turns spaced apart are useful for:

- High frequency applications
- High power RF amplifier applications

- Making the the self resonant frequency of the inductor as high as possible

The following diagram taken from the first site shows the basic construction of a typical single layer inductor and some of the items that you can enter into the calculation.



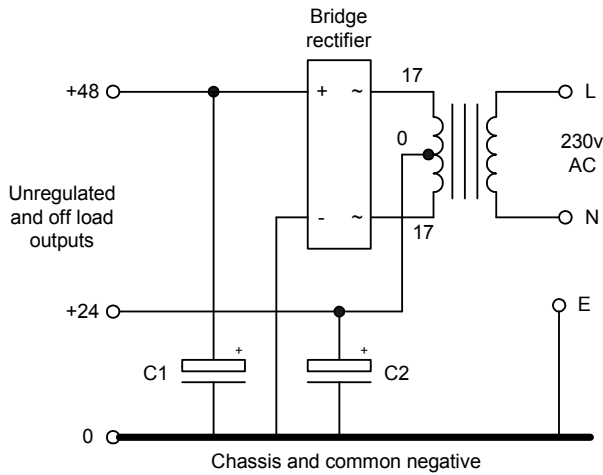
As an example of component stress in a high power valve amplifier, the peak AC anode voltage of a 400W HF amplifier running from a 2000V supply can approach 4000V. The RF choke in the anode circuit will be physically long and have many turns to cater for operation down to 1.8MHz so the volts per turn will be relatively low. The output matching inductor, although not subject to the anode DC voltage, will still see a peak to peak voltage approaching $\pm 2000V$. On 28MHz this inductor will typically be around six to seven turns so the volts per turn will be very high. To avoid flashover between adjacent turns, they must be spaced apart.

The electric field inside the anode compartment will be high so all components in that area must have low dielectric losses and the variable tuning capacitors must have adequate plate spacing.

b) Power Supplies

You can add flexibility to a linear power supply design that uses a bridge rectifier. If the winding that feeds that rectifier has a centre tap then you can get half the rectified DC output voltage from that tap. The example circuit immediately over the page demonstrates this property.

The 17-0-17v secondary winding feeds the bridge rectifier. The approximate off-load DC output voltages of 24v and 48v are 1.414 times the AC supply RMS voltages of 17v and 34v respectively excluding any diode losses. On full load these will drop to 15.3v and 30.6v so regulators will be required for 13.5v and 28v outputs. There is insufficient voltage on full load for the voltage headroom (3v) required by conventional 78nn or 78Hnn series regulators although low drop out types are available. You will need to measure your particular transformer and rectifiers to see what is required.



Notes:

Switches, fuses and discharge resistors omitted for simplicity

Capacitors C1 and C2 should have a value of at least 3000uF per amp of output current, more if possible to reduce the ripple voltage. The use of large value smoothing capacitors leads to high inrush currents as they charge up at switch-on so some form of inrush protection should be implemented. See the technical web site for details.

c) VDSL Interference

Martin G8JNJ writes: *Over the past few weeks I've been building and testing a 'Drive-By' interference monitoring system, so that I can quickly assess the level of unwanted VDSL emissions in any particular area and then (hopefully) be able to locate the exact source.*

I've put my initial experiments on a new web page, including some short videos of the system in use.

See <http://g8jnj.net/vdsl>

A number of radio amateurs have reported problems to the RSGB EMC Committee about the new high speed broadband routers being susceptible to local HF transmissions for which a solution has yet to be found.

The RSGB EMC committee has requested that reports of all cases of interference to VDSL installations should be sent to them. See www.rsgb.org for more information.

d) HF Conditions

Conditions are currently extremely poor on the HF bands and during the week of 4-8 September there was at least one Dellinger fade out when the bands were completely silent for a period of time.

This is usually caused by radiation from a solar flare being trapped in the ionospheric D layer resulting in complete HF energy absorption in that layer lasting from minutes to hours. This is also known as a sudden ionospheric disturbance (SID).

There is an amateur SID monitoring station in France that has a web site at <https://sidstation.loudet.org/>.

Members News

Our Treasurer Ian sends his apologies - his employment hours have changed and he will have

difficulties in attending club meetings for the immediate future.

Miscellaneous

a) SES Open Day at Bough Beech - Cathy and I went to a Family Fun Day at the Bough Beech water treatment works just outside Edenbridge on 23 August. This event was organised by our water provider Sutton & East Surrey Water Company and was aimed at children as well as adults.

We were shown all aspects of water treatment from the feed from the reservoir to the fully treated water sampling laboratory and output pipe to the distribution network.

We realised the scale of the operation and the volume of water that was treated when looking at the outlet pipe to the network which was just under one metre in diameter.

There were hands-on demonstrations of the several filtering and treatment processes that showed immediately how they worked and a number of games for the children.



The first picture on the right shows, from right to left, unfiltered water, water filtered once and water filtered twice using activated carbon.

The second picture shows the feed pipes in the access tunnel under the reservoir.



The left hand pipe is an emergency overflow and the right hand pipe is the main feed to the treatment works. Both pipes are just under one metre in diameter and the tunnel is about 80m long.

b) Kenley Aerodrome

We also visited the 'Sky Heroes' event at Kenley aerodrome on Sunday 10 September. The original hangars and control tower were demolished following a fire in 1978 but the two runways are still there and the site now hosts the Surrey Hills Gliding Club and the 615 Volunteer Gliding Squadron. Powered aircraft are no longer allowed on the site.

Visitors were able to view a replica (non-flying) Hawker Hurricane MkII that had been constructed and used in a

film, the original underground Blast Pen and the Kenley Memorial.



The Hurricane MkII first flew in 1940 with a Rolls Royce Merlin XX engine and was used extensively during WWII as a fighter and bomber. It could fly at up to 342mph at 21,000 feet.



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://www.g3oou.co.uk/> in the "Notice Board – Wanted and For Sale" section. All excl P&P.

For Sale

a) From the shack of Victor G1PKS:

- RF dummy load and watt meter
- SEM Z match £60
- Yaesu FT 101ZD HF transceiver £150
- SWR meter
- Trio R2000 receiver with HF & VHF £250
- Alinco 6m DR-M06 20W FM transceiver £75
- Heathkit Oscilloscope
- PSU with variable output
- Advanced Morse Trainer MM2 by Microwave Modules Ltd plus power supply £60
- 2 Morse keys with sounders for training Cubs and Brownies £25
- Boxes of components i.e. variable capacitors, low voltage transformer, valves, etc. £10
- Yaesu hand held FT 252E £40 (sold)

Offers to Alan G8NKM on 020 8778 9660 or email [alan.odonovan\(at\)btinternet.com](mailto:alan.odonovan(at)btinternet.com).

b) From the shack of Trevor M0DIA

- Realistic DX394 mains powered HF multimode communications receiver £60
- Tronix 13.5v 5A fan cooled power supply £20

- AKD 2001 2m 3 / 25W channelised transceiver, (requires a 13.5v DC supply) £50
- Stanley ratchet screwdriver with 62 piece toolset
- JCB adjustable spanner
- Set of six rat tail files with fitted handles
- Set of Allen keys
- Large assortment of new quality hand tools

Offers to Bob G3OOU on 01737 552170 or email [g3oou\(at\)aol.com](mailto:g3oou(at)aol.com)

c) From the shack of Bob G3OOU:

- Commercially designed and made precision permeability tuned solid state VFO with built-in reduction drive, 7.6 - 8.8MHz, £75 ono. A photo may be seen at <http://www.qsl.net/g3oou/pto.html>
- 1.4MHz crystal filters for USB & LSB, all tested, £15 each
- Pye 455KHz LC filter, 15KHz wide, £3

Offers to Bob G3OOU on 01737 552170 or email [g3oou\(at\)aol.com](mailto:g3oou(at)aol.com)

d) Donated to the club:

- 19" Acer VGA + DVI inputs Okay but a few pixels have faded - £15
- IBM 17" VGA + DVI inputs. Excellent display - nice stand - £15
- 19" Manufacturer unknown VGA input, Note aspect ratio is 16:9 Okay but problem with on screen menu display - £10.
- Racal 9918 frequency counter covering 10Hz to 560MHz in two ranges with a temperature controlled crystal oven frequency standard and VLF phase locked multiplier that speeds up very low frequency measurements - £55.

Mains Transformers - all made by Gardeners – untested:

- T1: 250v – 0 – 250v @ 50mA, 6.3V @ 4A, 600V @ 5mA, 1KV probably in the low milliamp range
- T2: 1 – 3 – 9 – 20 current unknown but greater than 1A, 90V current unknown
- T3: 0 – 450V @ 140mA, 0 – 1150 @ 180mA, 6.3V at 0.3A

Offers to Alan G8NMK on 020 8778 9660 or email [alan.odonovan\(at\)btinternet.com](mailto:alan.odonovan(at)btinternet.com).

We are currently planning to have a stand at the 40th CATS Bazaar in November to dispose of any unsold items.

CPREC has a large bank of fundamental and overtone quartz crystals, from 1.0 – 99.91MHz. The list has now been updated, sorted in frequency order and placed on the club web site notice board. Prices are £1 each to club members and £2 each to non members, both plus P&P.

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G3OOU

Diary of External Events

29-30 Sep 2017 - National Hamfest

Newark & Nottinghamshire Showground, Lincoln Road, Winthorpe, Newark, Nottinghamshire NG24 2NY.

Brought to you by the RSGB in association with the Lincoln Short Wave Club. Free car parking and disabled facilities. Trade stands, a Bring & Buy, car boot area, flea market, special interest groups and RSGB bookstall. There will also be representatives from the RSGB Services and Committees. Morse proficiency test will be available. The venue has catering outlets and a seating area. [www.nationalhamfest.org.uk].

13-15 Oct 2017 - 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.

Videos of past convention lectures are available on the RSGB web site: <http://rsgb.org/>

05 Nov - WEST LONDON RADIO & ELECTRONICS SHOW (Kempton Rally)

Kempton Park Racecourse, Staines Road East, Sunbury on Thames, TW16 5AQ. Talk in station and on site car parking is free. Open at 10am with disabled visitors gaining access 10 minutes earlier. Trade stations, a Bring & Buy and special interest groups, lectures, a raffle and catering on site. Details from Paul, M0CJX on 0845 165 0351, info@radiofairs.co.uk.

19 Nov - 40th CATS Bazaar

Oasis Academy Coulsdon, Homefield Road Coulsdon. Open 10am to 1pm, entry £1.50. Car parking and disabled facilities are available. Bring & Buy and flea market. Catering on site. Details from Andy Briers, G0KZT on 0772 986 6600 or email bazaar@catsradio.org.

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 G30OU. 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 endeavour to do so if advised in time. We do not have time to go chasing each club for the information.

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/>

28 Sep 999 Emergency - Talk by Steve Shorey G3ZPS

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\(at\)bdars.co.uk](mailto:enquiries(at)bdars.co.uk). Web: www.bdars.co.uk

17 Oct Skills Night

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

03 Oct AGM and Awards

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/>

11 Sep Bring Along Test Night & SINAD Talk by Terry G4CDY

09 Oct Swimming Pool Maintenance by David G6VMI

13 Nov CATS Quiz v Sutton & Cheam

11 Dec Annual General Meeting

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/>

27 Sep The Major International Rallies, Stewart G3YSX & Richard G4ANN

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

05 Oct Practical Radio Astronomy by Paul G4CSD

19 Oct Old Fashioned Junk Sale by Nigel G1BUO

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>

26 Sep ISS project with schools by Mike Senior G4EFO

24 Oct The demise of hobbies - the rise of amateur radio David Smith M0SXD

28 Nov AGM & RSGB film

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>

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)

Web: <http://herc-hastings.org.uk/>

27 Sep View and discuss online AR YouTube videos

25 Oct On air operation

22 Nov Forum Discussion on Amateur Radio

27 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/>

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/>

05 Oct Junk Sale
19 Oct Social - The Chequers - Rowhook

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

29 Sep Skittles Evening at Barcombe
06 Oct About Aviation by Richard

South East Essex Amateur Radio Society (SEARS)

Contact Dave G4UVJ on: 01268 697978 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 Swans Green Hall in Hart Road, SS7 3PE.

10 Oct Latest news from the RSGB by Vic RSGB
DRM
14 Nov 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/>

02 Oct Autumn Surplus Equipment Sale
06 Nov The Metropolitan Police Communications System

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.

Wimbledon & District Amateur Radio Society

Meets on the 2nd and last Friday in the month at Matin Way Methodist Church Hall, Martin Way Merton Park, London, SW19 9JZ at 19:30hrs for 20:00hrs. Contact: Andrew G4ADM on 020 8335 3434 or [andrew.maish\(at\)ntlworld.com](mailto:andrew.maish(at)ntlworld.com)

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

Local Training Courses					
Licence Level	Dates	Location	Club Provider	Format	Further details
Intermediate	30 Sep - 28 Oct	Bidborough, Kent	West Kent Amateur ARS	3 days (Sat)	www.wkars.org.uk/
Full	2, 9, 14 Oct & 4, 11, 18 Nov 2017	Eltham, SE9	Cray Valley RS	2 evenings (Mon) + 4 days (Sat)	www.cvrs.org
Foundation	3 & 10 Feb 2018	Eltham, SE9	Cray Valley RS	2 days (Sat)	www.cvrs.org
Intermediate	28 Feb, 11, 18 Mar 2018	Bromley	Bromley & District ARS	3 days (Sunday)	www.bdars.org
Foundation	Sep 2018 dates TBC	Bromley	Bromley & District ARS	2 days (Sun)	www.bdars.org
Intermediate	Nov 2018 dates TBC	Eltham, SE9	Cray Valley RS	3 days (Sat)	www.cvrs.org
	= course commenced				

CPREC Committee Contact Information**Officers:**

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