CPREC

G2LW

Palace Pulse

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.qsl.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 1st September 2017

Antenna Modelling by Quin G3WRR

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

See page 8 for club contact information

Dear Reader

I am sorry to have to advise you that club member Trevor Cheesman M0DIA, age 89, became a silent key on 27 July 2017. Trevor, who lived in Norbury for most of his life and was a retired radio technician, first joined the club in 2005 and was a keen member attending most meetings and club net events until he was involved in a road traffic accident in 2010. As a result his mobility was severely limited and after leaving hospital he moved into a care home where he still managed to attend the Wednesday evening net until a new building was erected on site which had a major impact on his transmitted signal - he was not allowed to have an outside aerial. Your scribe represented the club at the funeral on Friday 11th August 2017. A summary of Trevor's life appears later in this newsletter.

Future Club Meetings and Events

01 Sep 17	M	Antenna Modelling by Quin G3WRR
06 Oct 17	M	SDR Without 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

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

06 Sep 2017 - Antenna Modelling by Quin G3WRR

The next meeting will feature a talk entitled 'Antenna Modelling' by Quin G3WRR who writes:

'The presentation will focus on HF antennas, although the principles also apply for VHF / UHF ones. It will:

- *Explain why amateurs might wish to model antennas*
- *Identify key antenna characteristics that can be modelled*
- *Introduce and demonstrate some of the available software modelling tools (particularly EZNEC)*
- *If time permits, include design of a simple antenna "by committee" and display of its key characteristics.'*

Recent Event News

a) 04 Aug 2017 - Summer Social

This was a well attended event with much discussion going on but little focus on the club projects so they will have to be addressed at a future meeting.

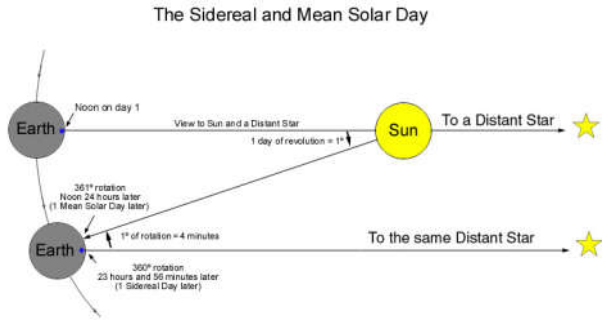
Damien brought along his HF loop aerial and QRP transceiver and your scribe brought along his work in progress 300W HF linear amplifier and two example 13.5v 25A power supplies, one commercial and one homebrew.

Thank you to all those who contributed some food and also to the club member who donated a pack of envelopes and a book of stamps towards the costs of posting newsletter.

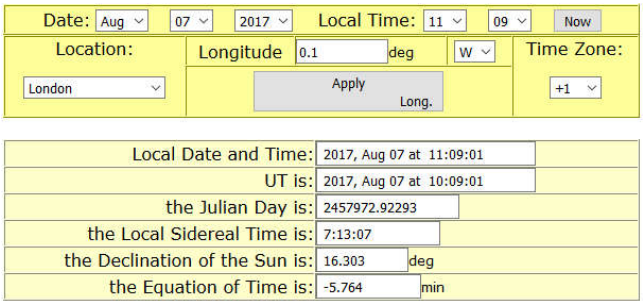
Maintaining Standards by 'Theorist'

How long does it take for the Earth to make one complete revolution on its axis? If you thought 'one day' meaning 24 hours, then you would be wrong. It it actually about 23 hours 56 minutes and 2 seconds, a period which is called a 'sidereal day'. If you fixed a telescope on some distant galaxy and noted the time, then after one sidereal day it would be back in view. A 'normal' 24 hour day is related to the time it takes for the Sun to be directly overhead (which we can call noon) to the next time it is directly overhead. Since this varies throughout the year due to wobbles in the Earth's rotation, the standard 24 hour period is an average time between successive noons.

The discrepancy between normal and sidereal day is because the Earth is orbiting the Sun, so after one sidereal day the Earth has moved round the Sun a bit, and needs to rotate a bit more to bring the Sun back overhead, as shown in the diagram.



Astronomers use sidereal time extensively - every observatory will have a few sidereal clocks somewhere, and 'real' astronomers (those who actually use telescopes) will probably have a sidereal time app on their phone. The screenshot shows local normal and sidereal time on a windows app at the time I was writing this article. I advanced the time to show British Summer Time, hence the +1 time advance shown. The Julian Day is obviously the number of days since noon at Greenwich on 1st Jan 4713 BC.



I was not in the audience for the July talk on the Global Positioning System, but I know that various time standards were mentioned since timing information is critical in determining positions in GPS. The question is what time standard does GPS use? Greenwich Mean Time (GMT) used to be the world's time standard, but this has not been true since 1972, when it was replaced by something called Coordinated Universal Time or UTC. The world's timing centres agreed to keep their clocks synchronised (i.e. coordinated) in 1960, and this was achieved a year later with GMT still predominant, UTC eventually taking over. Today GMT remains the legal definition of time in the UK, for contractual purposes and the opening and closing of polling booths if nothing else.

All modern time standards are ultimately based on International Atomic Time (TAI). This is derived from a growing number of 400+ atomic clocks around the world, which are all nominally at zero height based on mean ocean level around the Earth. The height needs to be

specified since time goes slower in a stronger gravitational field than it does in a weaker field, a relativistic effect which was the subject of a Theorist article in the January 2016 newsletter, and part of the GPS talk. Since not all the clocks can be at mean sea level, corrections must be calculated and applied to each clock before some sort of global weighted average is taken. TAI was synchronised with UTC on 1st January 1958.

The main difference between UTC and TAI is that UTC is based around our relation to the Sun. It allows for the slowing down of the Earth's rotation, requiring leap seconds to be added every now and then at unpredictable intervals, since all the factors affecting the Earth's rotation are not known. This means that in UTC it is not possible to say exactly how many seconds there will be between noon today, and noon on the same day in 20 years time for example. For scientific purposes (sending a probe to Pluto for example) this is not acceptable, so no leap seconds are ever added to TAI, which provides the exact speed at which our clocks should tick. UTC is based on TAI in that it keeps step with it, but with the occasional addition of leap seconds. Another way of looking at it is that UTC compares the rate of TAI with the actual length of a day. The current difference between TAI and UTC is 37 seconds (TAI ahead) due to the number of leap seconds added to UTC since synchronisation.

Most countries use UTC as their basis for local 'wristwatch time', adjusting for the location of the country. In this regard GMT is now a *time zone* used by the UK in winter, some African countries and Iceland. It derives the time from UTC which is a *time standard*. Therefore technically no country or territory officially uses UTC as a local time, since UTC is a *standard*.

So what does GPS use? Well internally it uses a week number and something called the Z-count, which is the number of 1.5 second intervals since the start of the week. However it really uses TAI. It was synchronised with UTC at 0hr on 6th January 1980, and is now 18 seconds ahead of it due to the insertion of leap seconds. This means that the difference between TAI and GPS is a constant 19 seconds due to the different synchronisation dates. The second screenshot shows the time I finished this article in different time standards, including Loran-C.

local	2017-08-07 16:51:48	Monday	day 219	timezone UTC+1
UTC	2017-08-07 15:51:48	Monday	day 219	MJD 57972.66097
GPS	2017-08-07 15:52:06	week 1961	143526 s	cycle 1 week 0937 day 1
Loran	2017-08-07 15:52:15	GRI 9940	172 s until	next TOC 15:54:40 UTC
TAI	2017-08-07 15:52:25	Monday	day 219	37 leap seconds

Don't ask.

Technical Snippets

Printed Circuit (PC) board as a capacitor - I have had to construct a prototype base connector for the Gs9B valve in my new grounded grid linear and decided to try using fibreglass PC board for some of the layers. The thinking here was that the impedances are fairly low and as a fair amount of cold air flows over the base keeping the lower valve seals cool the PCB is unlikely to overheat. If this proves to be too optimistic then a metal - PTFE insulator - metal sandwich will be used instead.

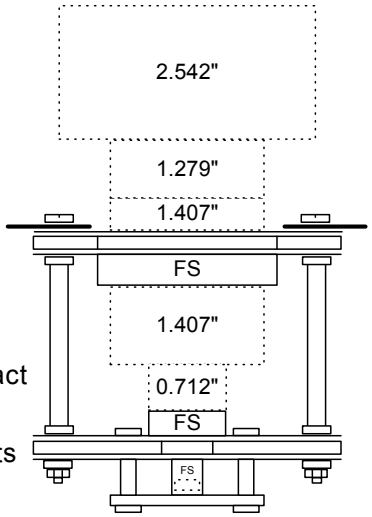
Valve outline is dotted

Heavy line is the metal chassis

Three pieces of double sided PCB are required.

An octal valve cap is used for the lowest contact

FS = finger stock contacts



In the above diagram the lowest (small) piece of PC board holds the connector (a small valve cap) for the filament ring and also connects to one side of the next higher piece of double sided PCB. The second side connects to the cathode and boths sides must have sufficient copper area to conduct two amps of heater current plus the 300mA of anode current. The highest piece of double sided PCB has the upper side connected to the chassis and the lower side connected to the control grid which enables the grid to be decoupled and negatively biassed. Adequate protection must be provided to cope with an internal anode to grid flashover. Alternatively, the control grid can be permanently grounded and the anode current controlled by the cathode circuit on both receive and transmit.

The diameter of the valve grid ring is a convenient fit for finger stock retained in a piece of copper tube cut from an Imperial 1½ inch pipe joiner. The double sided PC board for the grid connector is three inches square with a 1½ inch diamater hole at the centre and shows a capacitance of 110pF between each copper side.

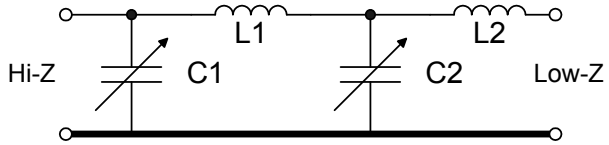
Capacitor Theory: In its simplest form, a capacitor consists of two metal plates separated by an insulator which may be air, a vacuum or a non-conducting material. The resulting capacitance has a basic unit called the Farad and the value is a function of the area of the metal plates, their spacing and the relative permativity (or dielectric constant) of the material separating the plates. Relative permativity, symbol ε_r, is the ratio of the absolute permativity of the insulating material to the absolute permativity of free space, symbol $\varepsilon_{0,}$. For G10 fibreglass $\varepsilon_r = 5.4$ and for PTFE $\varepsilon_r = 2.1$. The permittivity of free space (a vacuum) is approximately 8.85×10^{-12} Farads / metre.

Unfortunately, not all insulators have low losses at radio frequencies so tests are required to ensure that a chosen insulator is appropriate at a specified frequency.

Very early PC boards used SRBP (silicon resin bonded paper) as the insulator but this was not a very strong material physically and the copper to SRBP adhesion was poor so it would not stand repeated soldering. Later PCBs used G10 or its modern equivalent FR4 which are fine on the HF bands and have extremely good copper adhesion. However, losses increase with frequency and PTFE is the preferred material at typically 400MHz and above, depending on the application.

For example, an air spaced inductor on a ceramic former showed a Q of 200 at 2.5MHz with a tuning capacitor of 400pF. Connecting a 2.6 inch square piece of double sided G10 fibreglass used as a capacitor (shown in the photo) to this tuned circuit reduced the Q to 100 at the same frequency after retuning the Q Meter. The piece of PCB has a self capacitance of 135pF which equates to approximately 20pF per square inch. This is an extreme example but does show that PCB losses must be taken into account, particularly in high impedance RF circuits, even at relatively low frequencies. You must therefore check the performance of your proposed circuit every time.

b) The linear amplifier that will use the above valve base will have a Pi-L output network to match the anode to a 50ohm load. This tuned network has the same number of controls as a conventional Pi network but provides extra harmonic attenuation, typically 45dB at the second harmonic. It requires an extra inductor (L2 below) on each band and an extra switch wafer on the band switch to select taps on L2.



The Pi-L network is, as the name suggests, a combination of a Pi and an L network with the value of C2 being the sum of the capacitors from the Pi and L networks. The output impedance of the Pi network and the input impedance of the L network must be the same value which is usually chosen to be the geometric mean of the anode load impedance (3500ohms) and the output impedance (50 ohms) so in this case about 420 ohms.

c) Solid State Power Amplifiers - for those readers who are not interested in valve technology and prefer to construct their amplifiers using modern semiconductors there are a fair number of MOSFET devices capable of 100W - 1200W power output on the HF and VHF bands using a 13.5v - 50v power supply (which is considerably safer voltage wise than the valve equivalent).

The higher power devices often consist of a single package containing two transistors arranged side by side so that push-pull operation is easily implemented. Cooling high power transistor amplifiers is extremely important as with an efficiency of around 50% in the 1200W example there is a need to remove some 1200 watts of energy in the form of heat from about two square inches or less of contact metal.

The following table contains some example devices, not in any significant order:

Device	Watts Output	Gain dB	Freq MHz	Supply V
MRFE6VP61K25HR6	1200	24	230	50
MRF141G	150	20	30	28
MRF151G	150	22	30	50
MRF154	600	17	30	50
MRFE6VP5600H	600	24	30	50
MRF186	120	11	960	28
BLF188XR	1200	26.5	108	50
RD100HHF1	100	11	30	13.5

Communications Concepts Inc are just one company offering a range of RF amplifier kits and individual components - see:

http://www.communication-concepts.com/

Two power amplifiers may be run together with input and output combiners to double the overall output power.

d) Possible Club Projects

The three project teams who worked on some possible club projects during the recent brain storming sessions might like to consider the following:

- Our speaker at the September meeting is offering to try and model an aerial during his talk if the aerial team can produce some more basic information on the proposed aerial like dimensions, basic structure etc.
- The receiver team came up with a requirement for simple AM/FM receiver covering the medium wave and broadcast FM band. This task is made much easier because a search of the Internet produced at least ten different integrated circuits that would each provide the core functions of a receiver. As these are all used in volume production the purchase costs would be relatively low.
- The club already has access to some proven designs for bench power supplies which could be extended to meet the requirements defined by the power supply team.

Over to the three teams and watch this space.....

Members News

a) Equipment Sale

Victor G1PKS has asked if the club would assist in the sale of some of his amateur radio equipment. A list is included in the Noticeboard section of this newsletter.

b) Trevor Cheesman M0DIA

Trevor's brother Dennis has provided a brief summary of Trevor's life:

Born in 1928, Trevor attended Stanley Technical School and on leaving at 16 he started his first job at Mullards working as a draughtsman (following in his Father's footsteps) drawing circuit and valve diagrams for publications.

He was conscripted for National Service and entered the RAF where he trained as a radio engineer and worked on a squadron followed by a spell operating a Direction Finding transmitting station. While on the airfield he was sent home for a few weeks during the great freeze of 1947 as the station ran out of coal and had no heating!

After leaving the RAF he worked at A.J.Whitemores at Croydon Airport, partly in the workshop and partly on the aircraft of the time including Ansons, Consuls, Rapides and Doves.

At the time of Croydon closing as an airport the firm moved to Biggin Hill. During this time he continued with bench work and aircraft – I understood that he became their expert on older equipment as by this time the days of having numerous individual crystals for each frequency were numbered! At this period he also gained his Licence as an approved Overhaul Engineer which was more specialist and not as common as the Licence for aircraft installations.

Sometime about the early 60's he bought his first yacht, a Seal, which he kept at Bursledon on the River Hamble. Spending his time living in Norbury and at weekends on the boat - later he managed to negotiate going onto part time work giving him longer weekends.

After having the Seal for about 3 years he exchanged her for a larger 3 berth Dindy yacht, shown to the right. Both these boats had to be of traditional wooden planked construction as Trevor had no time for *new fangled* fibreglass.

On retiring he spent most of his time aboard working on the boat rather than sailing it. Needless to say he got involved in electrical and radio jobs for fellow boat owners.

Following an accident his Mother had at home she was in hospital for a period and once back home needed considerable help. Trevor was no longer able to spend much time at Bursledon plus his Father, who was partially blind, needed assistance as well so he decided to sell the boat. He looked after both of his parents for the remainder of their lives.

During this period he started learning about computers, mainly by rescuing them from local skips and ones he found dumped on the local pavements – such was the degeneration of Norbury!

He joined the Crystal Palace Radio Club in 2005, went on the net on Wednesday evenings and also attended the monthly meetings to which he usually walked!

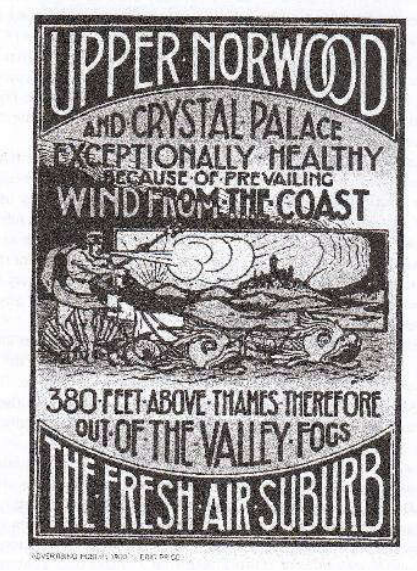
Following a serious road accident late in 2010, and a long period in hospital, it became obvious that living on his own in Darcy Road was no longer an option. He then went to Norbury Hall Care Home and after getting established Bob (G3OOU) helped him to gather together sufficient equipment to get on the air once more although I understand his aerial location gave him limited signal strength and his plea for an outside one was rejected by the care home management!

Latterly he had been unable to use the radio, TV or laptop.

[Dennis has very kindly donated Trevor's remaining radio equipment to the club and a list appears in the Noticeboard section further on - Ed.]

Miscellaneous

a) My XYL Cathy has been reading a book entitled 'Radical Reformers and Respectable Rebels' by Jocelyn Robson about a lady called Grace Oakeshott who moved with her family to the village of Thornton Heath in the 1880s.



In the book is the photo to the right extolling the virtues of Crystal Palace as a healthy place to live at that time. The book ISBN is 978-1-137-31183-2.

b) If you are interested in recent history then:

- the film 'Dunkirk' is being shown at the David Lean cinema in the Croydon Clocktower Arts Complex, Katherine Street, Croydon on 20th September & 4th October - see http://www.davidleancinema.org.uk/
- the Croydon Airport Visitor Centre is open on the first Sunday of each month throughout the year - see http://www.croydonairport.org.uk/

c) Royal Naval College Greenwich - the painted hall entitled "The Triumph of Peace and Liberty over Tyranny" was painted between 1707 and 1726 by Sir James Thornhill. Consisting of 40,000 square feet of wall painting, it is now being conserved at a cost of £8 million. You can take a tour climbing 60 feet to get close to the ceiling - hard hats and mirrors provided as well for this guided one hour tour. Very interesting to watch the work in progress and it will be worth going back when more of the painstaking conservation work has been completed.

Bookings via https://www.ornc.org/

We also saw a portrait of Sir John Flamsteed, the first Astronomer Royal who accurately predicted a solar eclipse on 22 April 1715.

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.

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
- Box of Transistors and ICs most new £10
- Boxes of components i.e. variable capacitors, low voltage transformer, valves, etc. £10
- Yaesu hand held FT 252E £40 (sold)

Offers to Bob G3OOU on g3oou(at)aol.com or Alan G8NKM on Alan.odonovan(at)btinternet.com.

b) From the shack of Trevor M0DIA

- Realistic DX394 mains powered HF multimode communications receiver
- Tronix 13.5v 5A fan cooled power supply
- AKD 2001 2m FX channelised transceiver 13.5v DC
- Stanley ratchet screwdriver with 62 piece toolset
- Uni-com white LED battery powered light
- JCB adjustable spanner
- Set of six rat tail files with fitted handles
- Set of Allen keys
- Large assortment of new quality hand tools

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

All excl P&P. Contact Bob G3OOU on 01737 552170 or email 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 adaptor 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

All excl P&P. Offers to Alan G8NMK on 020 8778 9660 or email 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.

73

G3OOU

Diary of External Events

27 Aug 2017 - MILTON KEYNES ARS RALLY.
The Irish Centre, Fenny Stratford, Bletchley MK2 2HX (opposite Dobbies). Opens at 10am. Contact Tim Cowell, G6GEI on 07976 262 497 or email renegade62@hotmail.co.uk

2-3 Sep 2017 - SSB Field Day
Portable anf fixed station HF bands contest with open and restricted sections. Runs from 1300UTC on the Saturday to 1300UTC on the Sunday. Full rules on the RSGB web site.

2-3 Sep 2017 - 144MHz
The RSGB 144MHz Trophy contest and the IARU 144MHz Contest take place from 1400UTC on the Saturday to 1400UTC on the Sunday. The fifth and final 144MHz Backpacker Contest takes place from 1100 to 1500UTC on the Sunday. Full rules on the RSGB web site.

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 disable d 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 send your meeting programs to our newsletter editor Bob G3OOU. This newsletter is published about ten days before our club meeting and closes for editorial contributions a few days before publication. Due to differing publication dates and short lead times it is sometimes difficult to include other clubs' specific events although we will endeavour to do so if advised in time.

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. Web: www.bdars.co.uk
19 Sep Short Talks Evening
17 Oct Skills Night

Chelmsford Amateur Rado 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 Web: www.g0mwt.org.uk
05 Sep Radio Caroline " - by Martello Tower Group
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. Web site: http://www.catsradio.org/
11 Sep TBA
09 Oct Swimming Pool Maintenance by David G6VMI

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 or Web: http://www.carc.org.uk/
27 Sep Friedrichshafen Report by Stewart, G3YSX

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 .Web www.cvrs.org
07 Sep Antenna Modelling by Quin G3WRR
21 Sep The Magnetron: From Radar to the kitchen – Mike Underhill G3LHZ

Dorking & District Radio Society
Meetings at 7.45pm. Contact: David Browning (M6DJB) at 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 or 01784 451898. Web site: http://www.qsl.net/g3ues/index.htm
2/3 Sep SSB Field Day
14 Sep On-Air / CW Practice / Bring & Buy / Natter Night

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
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/
01 Sep TBA
2/3 Sep SSB Field Day

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 or http://www.harc.org.uk/
07 Sep DXing from Africa, Nick Henwood G3RWF
05 Oct Junk Sale

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 or www.msars.org.uk
08 Sep Smart Phones by Chris G4ZCS
15 Sep Radio Night
22 Sep Prep evening for Town day at Haywards Heath
23 Sep Haywards Heath Town Day
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 or http://www.southessex-ars.co.uk/
Meetings: 7pm 2nd Tuesday each month at Swans Green Hall in Hart Road, SS7 3PE.
12 Sep "The Moving Coil Meter" by Dave Ellis, G4AJY,
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. Web: http://g3src.org.uk/
04 Sep Sub-sea Telegraph Cables at Enderby Wharf with Richard Buchanan
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 Web: http://scrs.org.uk/. SCRS run a practical group most Monday evenings at the Bandstead Scout Hut.
2/3 Sep SSB Field Day
21 Sep Technical video and discussion – Martin Butler M1MRB

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

Local Training Courses

Licence Level	Dates	Location	Club Provider	Format	Further details
Foundation	17 Sep & 1 Oct 2017	Bromley Kent	Bromley & District ARS	2 days (Sun)	www.bdars.org
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	25 Feb, 11, 18 Mar 2018	Bromley	Bromley & District ARS	3 days (Sunday)	www.bdars.org
	= course commenced				

CPREC Committee Contact Information

Officers:

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