

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
Experimental net each Saturday at 20:00 on FM on 51.55MHz
Twitter @BobFBurns or www.twitter.com/bobfburns

Next meeting: Friday 1st November 2019

The Gliwice Radio Tower Incident by Phil Tate M1GWZ

In this issue: *Future Meetings & Events, Recent Event News, Now You See Me, Now.... By 'Theorist', Technical Snippets, Members News, Miscellaneous, Noticeboard, Diary of External Events, News from other Clubs, Local Training Courses and Club Contact Information.*

See the last page for local training courses and club contact information

Dear Reader

Future 2019 Club Meetings and Events

01 Nov	M	The Gliwice Radio Tower Incident by Phil Tate M1GWZ
24 Nov	E	CATS Bazaar
06 Dec	M	Christmas Social
03 Jan 20	M	Video Evening
07 Feb 20	M	Annual General Meeting

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

01 Nov 2019 - The Gliwice Radio Tower Incident by Phil Tate M1GWZ

Phil writes: "The Gliwice Radio Tower in modern Upper Silesia (Poland) is the tallest wooden structure in the West and quite probably in the entire world. Built with the express purpose of spreading Nazi propaganda across Eastern Europe, it was the scene of a half-baked Nazi plot to justify the invasion of Poland, which would have made a good storyline for a black comedy were it not for the fact that it cost innocent lives and is regarded by many as the first act of overt Nazi aggression of the Second World War. Meet the perpetrators and uncover a convoluted tale of lies, treachery, stupidity and radio broadcasting."

Recent Event News

04 Oct 2019 - Emergency Service Communications by Steve Shorey G3ZPS

Steve, who has a wide range of interests spanning amateur radio, professional electronics and guitar playing, presented a very interesting illustrated talk reviewing the methods of communications used by law enforcement officers from the 1700s to date.



The last 90 years or so related to wireless communications and the times before that used a variety of mechanical and electrical methods of communication.

Before electricity came on the scene communications were basic and slow - typically runners, horse riders, drums, fire beacons, semaphore telegraph (as covered by Jim M0JFL in a recent talk) and carrier pigeons.

The Fielding brothers, who were magistrates in the 1750s, set up a very rudimentary police force which became the Bow Street Runners. The rather irreverent title 'Old Bill' and the 'Peelers' came from the 1829 Robert Peel bill.

The police 'beat' became very controlled as a means of reporting a crime. The first means of communications was a rattle and every use had to be reported. These lasted until 1883 when they were replaced by a whistle - rattle sounds carried for some 700 yards whereas a whistle sound carried for at least 1000 yards.

Using early electricity the Wheatstone & Cook 1837 Telegraph used one to five needles to convey a message over wires and in 1845 John Tawell was the first person arrested following the use of an electrical communications device. 1880 saw the development of the telephone and the famous blue police boxes with telephone and light were used to attract the nearest police officer's attention.



1930 saw the appearance of the Creed teleprinter.

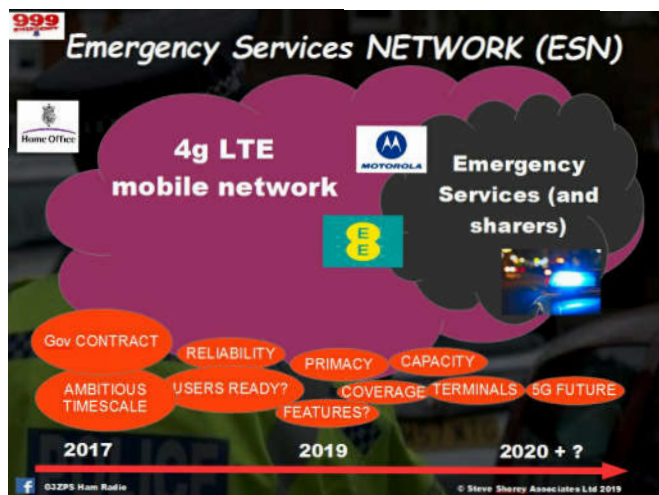
In 1935 a house fire caused blocking of the telephone system so a special number (999) was set up in 1937 - it received 1000 calls in the first week which had increased to 19 million in 1986 and 37 million in 2012. Analysis of 999 calls showed 52% for the police, 41% for the ambulance, 6% for the fire brigade and 1% for the coast guard.

In the 1920s the Met Police (Met) experimented with Amplitude Modulation (AM) on the medium wave band using massive frame aerials mounted on their cars but experienced severe problems with noise so they moved to 2.2MHz. Improvements in valve technology resulted in smaller and cheaper valves. Quartz crystal technology was also evolving resulting in the establishment of common standards. Post WWII the police moved their communications to FM on VHF - the US police used the 42 - 70MHz bands. The Met then used VHF in cities and UHF in counties.

Defining moments in the 1980s meant that all of the emergency services had to be included so a digital system was proposed but with long time scales. The Met looked again at their own systems and surveyed London to see what signal levels were required. They also analysed traffic flows over their radio systems. By 1995 a new trunk radio system was proposed with 85 sites and over 20,000 handsets and 3500 vehicles with 11 sites.

In 1999 the Home Office delivered a digital system called TETRA using TDMA and FDMA which is still working today but a little bit slow and the government thinks that it is expensive.

Post 2000 a data explosion occurred with smart phones and in 2012 it was determined that a new system was needed. The Home Office started to procure a system called Emergency Services Network using 4G LTE. Now, Mission Critical PTT is a major police requirement and hundreds of EE ESN sites are required - you can find a PDF document about this on the Internet. The cost is increasing and the older systems are expensive to maintain.



Zello, described by Damien 2E0EUI in a recent talk, now has PTT over cellular radio with 100 million users world wide. (PTT = push to talk).

Now You See Me, Now by 'Theorist'

The editor recently sent me an email with a link to an article suggesting that it could be possible to get energy from neutrinos, enough to power a mobile phone. He rightly queried whether this was possible as neutrinos hardly interact with anything at all. My guard was down and I replied that I would investigate as something new can always turn up. However after a few minutes thought I realised that it must be a hoax or publicity stunt, or more likely some sort of misunderstanding about what neutrinos are and what they can or cannot do.

There was a bit of a crisis in the 1920s when nuclear physics was beginning to be investigated. The problem lay in beta decay – a radioactive decay whereby a nucleus spits out an electron [1]. The problem was that some energy appeared to go missing, or rather that not all the energy could be accounted for in the process; the accounted energy after the decay was less than that before. It was considered quite seriously at the time that the solution to the problem might be that the principle of conservation of energy was broken in beta decay.

Enter Wolfgang Pauli who in 1930 proposed that there was another particle that was carrying off the missing energy. The particle would have to be (it was thought) massless, and not interact with anything at all, or very rarely, as otherwise it would be detected. A sort of 'ghost' particle. At the time it was a bold thing to suggest, inviting ridicule, and Pauli himself was very nervous about proposing such a thing. Yet the idea took

hold since it was the only viable alternative to breaking a sacred conservation law, and the evidence for their existence grew over the years until in 1955 the first detections occurred, actually of anti-neutrinos as described in the footnotes [2]. (These days physicists feel free to invent or propose as many new particles as they like, such as WIMPs, winos, zinos, dilatons, saxions, selectrons, and squarks - in fact you can generally add an 's' in front of practically any known particle and you'll find it proposed. You can also often add an 'ino' at the end to get other proposed particles such as the photino, Higgsino etc.)

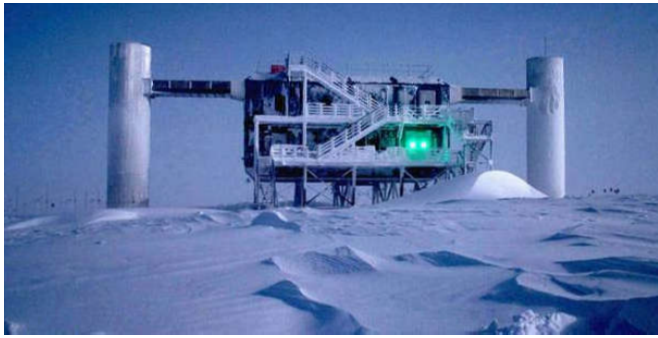
The Sun is the major source of neutrinos in our neighbourhood producing about 2×10^{38} per second, so that about 100,000,000,000 pass through your thumbnail every second. Yes, you read it right, about 100 billion every second. This is equivalent to about 0.5×10^{15} per second through your entire body or 1.5×10^{22} per year. If you are lucky(?) one of them will interact with one of the atoms in your body in your lifetime, converting a proton into a neutron, changing one element into another. A neutrino can happily pass through a thickness of several light years of solid rock without being stopped, and leaving no trace of its passage.

Detecting neutrinos is difficult but the technology has improved dramatically over the years. In the Canadian Sudbury Neutrino Observatory (now defunct), a 1000 ton tank of heavy water encountered 10^{12} neutrinos each second of which about 30 neutrinos per day were detected. The instrument was located 2.1 km underground to eliminate effects caused by cosmic rays and such like. The results helped to solve a decades old problem which was that previous neutrino detectors had consistently only detected one-third of the predicted number of solar neutrinos. The solution turned out to be that there are in fact three types ('flavours') of neutrino called electron, muon and tau neutrinos. The muon is exactly like the electron but much more massive, while the tau is also like an electron but super-massive. This was already known, but what was not known was that neutrinos can oscillate or transform into one another in the sun.

The picture then is that the electron neutrinos produced in the sun change on their journey to us, and it was only when detectors such as the Sudbury were built that could pick up the muon and tau neutrinos that the results agreed with the predicted numbers.

The discovery of the oscillations also meant that neutrinos must have mass. Why they do is not known as the standard models predict that they should not. Furthermore the mass of the neutrinos is not known precisely but is such that *at least* 1,500,000 of them would have the mass of an electron. This is a lower limit so that the real mass could be even less.

I cannot finish without mentioning the IceCube neutrino detector in Antarctica. This is a huge instrument (pictured below) enclosing a cubic kilometre of ice near the south pole, worthy of a separate article. In 2018 it detected the first extragalactic source of neutrinos; an outstanding achievement. Their website is well worth a visit and can be found at <https://icecube.wisc.edu>



[1] As an example an atom of radioactive carbon C^{14} can emit an electron and an anti electron neutrino from a neutron, turning itself into an atom of nitrogen N^{14} in the process:

$n^0 \rightarrow p^+ + e^- + \bar{\nu}_e$ i.e. neutron \rightarrow proton + electron + anti-electron neutrino

Anti particles are usually indicated by a bar above them by convention.

[2] The anti electron neutrino in the reaction in note [1] can very very occasionally interact with a proton giving a neutron and an anti-electron (aka a positron e^+) as below. The positron soon annihilates itself with the first electron it encounters giving two gamma rays, and the neutron can interact with another nucleus also emitting a gamma ray. The coincidental detection of the gamma rays was taken as evidence for the existence of neutrinos in the original detection experiment:

$\bar{\nu}_e + p^+ \rightarrow n^0 + e^+$

Member News

a) Club member Andy Hofstedt has passed the Advanced examination and his new callsign is G2RW.

b) National Hamfest: I attended this two day event on Saturday 27 September having previously attended one year on the Friday and finding taxis almost impossible to book due to them doing the school run. This is a well attended annual event at the Nottingham and Newark Showground with typically 3000 attendees.

Entrance was £5 on the day with a small discount if ordered early. Hot meals and snacks were available from the on-site cafe.

Exhibitors included large distributors, the RSGB, local clubs, small businesses, private individuals and a few charities. There were some outside stands available but tents or other cover was mandatory to protect against the weather - it rained heavily on Saturday afternoon.

A number of the latest transceivers were on display including the following examples.

Icom IC-7851



HF and 6m, 200W output, DSP, roofing filters, multimode, mains powered, typically £9999.95.

Yaesu FTdx101D



HF, 6m 4m, 100W (MP version is 200W), pre-selector, SDR, typically £3195.95.

Icom IC-705



HF, 6m, 4m, 2m, 70cms, 10W output on 13.5v, 5W on battery, portable, multimode, price to be advised.

Yaesu FTdx5000MP



HF and 6m, 200W output, two separate receivers, 4 / 5 roofing filters, SSB, CW, RTTY, AM, FM, Packet, multimode, typically £3199.95.



Spectrum analyser covering 9KHz to 2.1GHz, internal tracking generator, displayed noise level average typically -161dBm, phase noise -98dBc at 10KHz offset, 1Hz minimum resolution bandwidth, typically £1449.

Wolfwave



Audio DSP unit with a selection of filter functions and bandwidths for noise reduction, band pass filtering, notching and hearing loss correction. Settings may be stored in internal memories. £237.50 from SOTA Beams. For more information see:

<https://www.sotabeams.co.uk/wolfwave-advanced-audio-processor/>

The Radio Society of Great Britain had a large stand selling books, a membership stand and individual stands for the various committees.

Component Purchases:

Screw terminals with Wander Plug sockets. Price typically £1 - £2.50.



100pF variable capacitor - ex RF27 unit and various items of post WWII test gear with ball bearing supports front and back. It makes an ideal tuning capacitor for a VFO due to its excellent mechanical stability. If corroded it

can be degreased and then restored using a silver dip. Then dry it and regrease the bearings. Typical price £3 - £4.50.

Rapid Online have on offer a 600V 50A bridge rectifier, part number 47-1012, in a metal based enclosure for £1.19 + VAT.



Club News

a) CATS Bazaar on 24th November:

We have booked two tables with mains power for this event and need some on-site assistance from 10:00 - 14:00. Please contact a committee member or speak to them at a meeting and let them know how you can help.

b) Club Cupboard: this has now been moved into its new resting place in the cupboard under the stairs along with the blackboard, projector screen and various aerial parts. The new location is drier, illuminated and shortly to be locked for increased security. A number of the blue chairs will be stored in this location and we have been asked to return the chairs after each meeting.

Technical Snippets

a) Seen at Standen, a National Trust Arts and Craft property located near East Grinstead and designed by Philip Webb for

James and Margaret Beale, was an old crystal set and its original high impedance headphones. The cats whisker was present but sadly the working status of the unit was not known. The front panel had an extra set of sockets with a shorting bar clearly visible in the photo on the right (near to the lid hinge) for connecting a loading coil for the reception of long wave signals.



b) Startup company Cerebras has announced a massive integrated circuit intended for Artificial Intelligence applications which was made on a single piece of silicon measuring approximately nine inches on each side. The IC contains about 1.2 trillion transistors and uses water cooling to prevent overheating. More information from:

<https://www.wired.com/story/power-ai-startup-built-really-big-chip/>

c) Ergonomics: one of the most difficult design topics to deal with as it is so subjective. Take a transceiver front panel for example - how do you arrange the receiver and transmitter controls, where do you place the common controls and connectors, are you left or right handed? The list goes on and on and the more controls you have the more difficult is the problem.

When designing a new piece of communications or test equipment, I will often make a list of all of the required controls and connectors on the front and rear panels, cut out and label pieces of shaped card representing them and then spend time trying numerous layouts until one looks better than the rest. The problem then is can the chosen arrangement be made to line up with the mechanical layout behind the panel?

For an exercise, make a list of the controls on your transceiver and then go into another room and try arranging them differently.

One of the reasons that I like the Icom IC-7400 HF/VHF transceiver is the easy to use front panel layout with very few nested controls.

d) Safety: This is another broad topic that requires a lot of thought during the design phase and covers personal safety and protection of the equipment and supply in the event of a fault condition. You must ensure that a fault does not result in a fire or the failure of the DC or mains supply so fuses, current limiting and the associated electrical components must be adequately rated for the purpose. We have all seen nails or aluminium foil used instead of fuses but that is just plain stupid.

A detailed fault analysis must be performed and the possible fault conditions identified and prioritised. Fault conditions should be detected and clearly displayed on the equipment front panel(s). If the fault is rated as catastrophic then the unit should shut down automatically and/or a fuse should blow.

Consideration must also be given to what happens when the equipment is open for access / maintenance. Do you fit access barriers or interlocks on high voltage power supplies or power amplifiers. For just alignment purposes all high voltage points should be inaccessible when the equipment is open as it is too easy to slip with or drop a screwdriver or metal alignment tool. All of this will certainly increase the costs but what price your life or house?

Miscellaneous

a) Club Transceiver: A number of operational problems were encountered with the club's FT-950 during the mill operation earlier this year. Damien 2E0EUI has now solved these by carrying out a manufacturer's reset which has returned the transceiver to its default condition.

b) GB19YOTA: The RSGB has the call sign GB19YOTA and is looking for full licenced RSGB members, radio clubs, schools, Scout, Guide and Cadet groups to activate the call sign or host a station during December 2019. Operations can be on HF, VHF and or UHF using all modes. Each day will be split into three operating slots, midnight to 1159UTC, 1200 to 1759 UTC, and 1800 to 2359UTC. For more information see:

<https://rsgb.org/main/blog/news/gb2rs/headlines/2019/10/18/apply-for-gb19yota-now/>

c) WUSAT-3 Cubesat Project: A new video has been released on YouTube of a talk given to the AMSAT-UK Colloquium, which was part of the RSGB 2019 Convention. For more information see:

<https://rsgb.org/main/blog/news/gb2rs/headlines/2019/10/18/wusat-3-talk-now-online/>

d) Computing: If you are interested in the history of computer development then the following site is a great source of information:

<http://computerconservationsociety.org/>

It includes a section on reconstruction of the first prototype computer from the early 1940s nicknamed

"Baby" with 560+ valves (lots of EF50s) and cathode ray tube memory storage. The power required for the valve heaters is over 1.1KW plus the anode currents and interface devices so a lot of ventilation is required. It also weighs over a ton.

The National Computer Centre at Bletchley Park has a large collection of early computers, some of which are maintained in a working state and regularly demonstrated.

e) Yahoo! Have served notice to all users of its Groups facility that as of 28 October 2019 uploads will no longer be allowed and as of 14 December 2019 the existing uploaded content will be deleted, leaving just the original messages. If you have information on Yahoo! That you would like to keep then you need to download it onto your PC or another web based storage facility.

A lot of Group owners have already migrated their forums to Groups.io and Google Groups which both offer a similar facility.

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) Two AVO 8 Mk VI test meters: One has a broken terminal the other is fine. Both working but no leather carrying cases. £55 each ono. Contact Noel Brown on 0208 761 5883.



b) Fujitsu-Siemens Amilo Pro Laptop running Windows XP Pro, Intel dual core 1.7GHz CPU, 1GB RAM, 80GB hard drive, 15inch LCD, USB, CD/DVD, VGA, WiFi, battery charger, carrying bag, AVG, Office97, Libre Office and assorted utilities, no diskette drive, £35.

Dell Latitude D810 Laptop with charger & spare battery, CD/DVD, USB ports, WiFi, serial & VGA ports. Ubuntu Linux and Libre Office installed, no diskette drive, £25.

Desktop PC with 2.8GHz quad core AMD processor, 4GB of RAM, 1TB and 0.5TB hard drives, CD/DVD RW drive, BluRay BD-RE (25GB) drive, Windows 7 pro 64bit OS, digital FM/TV card, dual monitor graphics card, Ethernet port, 6 USB, parallel/serial ports, 3.5inch diskette drive & all driver software. No mouse, keyboard or monitor, £50.

D-Link DSL-3680 N150 ADSL+ Wireless router with two Ethernet ports and mains PSU, £10.

Offers to Bob on 01737 552170 or g3oou(at)aol.com.

c) CPREC has a large bank of fundamental and overtone quartz crystals, from 1.0 – 99.91MHz and the list is on the club website as a downloadable PDF file. Prices are £1 each to club members and £2 each to non members, excluding P&P. Contact Bob on 01737 552170 or g3oou(at)aol.com.

All offerings on a first come first served basis.



G30OU

Diary of External Events

24 Nov 2019 - CATS Bazaar

The 2019 bazaar (the 42nd) will take place on Sunday 24th November 2019 at the Oasis Academy, Homefield Road, Old Coulsdon, Surrey CR5 1ES. Features include: secondhand equipment, flea market, traders' stalls, new equipment, refreshments, disabled access / toilet, free parking. Admission £1.50 includes a free cup of tea or coffee and entry to the prize draw. Three bus routes: 466, 404 and 60. Doors open 10:00 hrs and expected to finish at around 13:00. More information from bazaar@catsradio.org

20 Feb 2020 - Rainham Radio Rally

The Victory Academy, Magpie Hall Road, Chatham, Kent, ME4 5JB. Open 10am to 3pm, local and national Traders, BRATS Kitchen, Interactive Zone for Kids and Junk, Talk in on 145.550MHz using GB4RRR. Contact 07825 838 877 or rally-coordinator@brats-qth.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 endeavor to do so if advised in time. **If we are regularly unable to obtain the information then that club entry will be removed from this newsletter.**

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/>

24 Oct Junk Sale
22 Nov EGM
12 Dec Christmas Party

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

19 Nov The 'Nicky' TRF by M0YRG
17 Dec Quiz and Mince Pies
21 Jan 20 AGM and Programme

Chelmsford Amateur Radio Society (CARS)

Meets at 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

05 Nov LF + WSPR by Andy G1GKN (TBC)

03 Dec MicePies, Quiz and a short talk

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/>

04 Nov Inter club quiz
24 Nov CATS Bazaar
09 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/>

07 Nov HARC/CARC Challenge at HARC

13 Nov Coax and Connectors the forgotten ingredients of a high performance VHF/UHF Station. by Alwyn Seeds G8DOH

06 Dec Annual Dinner at Heathy Farm

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

07 Nov TBA

21 Nov Annual 'non-radio' talk: Home beer brewing Paul G4DCV

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 Nov AGM & film
13 Dec Christmas Dinner

Echelford Amateur Radio Society

Meetings on 2nd and 4th Wednesdays of each month at new venue: St. Hilda's Church Hall, Stanwell Road, Ashford, TW15 3QL. Enquiries to Phil at [m1gwz\(at\)icloud\(dot\)com](mailto:m1gwz(at)icloud(dot)com). Web site:

<http://www.qsl.net/g3ues/index.htm>

13 Nov TX Factor - Episode 23

11 Dec Christmas Party

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 Nov Video Presentation

December No meeting

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/>

07 Nov The World at my fingertips - David 2E0NKC

05 Dec AGM

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

01 Nov Surplus Equipment Sale
15 Nov Q Code Practice
29 Nov Christmas Dinner
20 Dec Christmas Quiz - Sue G6YPY

North Kent Radio Society

Meets at the Hurst Community Centre, Room 15, Hurst Place, Bexley, Kent, DA5 3LH. Doors open at 8PM. More information from Stephen G8JZT on secretary@nkrs.info or 07985 753370 evenings or weekends.

Web: <http://www.nkrs.org.uk/>

05 Nov Florida Part 2 by Dave
19 Nov AOR AR-DV1 by Ian
17 Dec Christmas EGM

South East Essex Amateur Radio Society (SEARS)

Contact Mark Callow 2E0RMT on 07842 336444 or secretary@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.

12 Nov AGM

10 Dec Christmas Social

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/>

04 Nov Inter-Club Quiz: SRCC / CATS / S&CRS
02 Dec Construction Contest
16 Dec Pre-Christmas Social

Sutton & Cheam Radio Society

8pm on 3rd Thursday every month. Contact Chris Howard at [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.

21 Nov Receiving Es'hail2 by Paul Kenny 2E0PCK
12 Dec Christmas social and friendly quiz

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

Palace Pulse is published ten days before each meeting and closes for contributions five days before the publication date. Please send contributions to the newsletter editor shown below.

Local Training Courses

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

Licence Level	Dates	Location	Club Provider	Format	Further details
Please note that a new syllabus will apply for all exams from September 2019.					
Full	07 Oct - 30 Nov	Eltham, SE9 2SD	Cray Valley RS	2 eve (Mon), 4 days (Sat) + exam (Sat)	www.cvr.org
Foundation	1 & 8 Feb 2020	Eltham, SE9 2SD	Cray Valley	Two Saturdays	www.cvr.org
Intermediate	Feb or Mar 2020 - TBC	Bromley BR2 7NH	Bromley & District ARS	Three Sundays	www.bdars.org
Foundation	Sep or Oct 2020 - TBC	Bromley BR2 7NH	Bromley & District ARS	Two Sundays	www.bdars.org
Intermediate	14, 21, 28 November 2020	Eltham, SE9 2SD	Cray Valley	Three Saturdays	www.cvr.org
	= course commenced				

CPREC Committee Information

Officers:		
Chairman:	Secretary:	Treasurer:
Damien Nolan 2E0EUI	Alan O'Donovan G8NKM	Ian Skeggs M6FZC
E: cprec.g2lw(at)gmail.com	E: cprec.g2lw(at)gmail.com	E: cprec.g2lw(at)gmail.com
Committee Members:		
Bob Burns G3OOU	Newsletter Editor	T: 01737 552170 E: g3oou(at)aol.com
Nick Stapley	Web Manager	