

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: [crystalpalaceradio.club@gmail.com](mailto:crystalpalaceradio.club@gmail.com)  
Club Net: Each Wednesday at 20:00 on FM on 145.525MHz (S21) ± QRM  
Twitter @BobFBurns or [www.twitter.com/bobfburns](http://www.twitter.com/bobfburns)

*A Merry Christmas and Happy New Year to  
all of our readers*

Next meeting: Friday 5th January 2018

## *Video Evening*

In this issue: *Future Meetings & Events, Recent Event News, Making Waves 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 Club Meetings and Events

05 Jan 18	M	Video Evening
02 Feb 18	M	Annual General Meeting
02 Mar 18	M	Club Projects
06 Apr 18	M	'The British Vintage Wireless and Television Museum'
04 May 18	M	Whisper (WSPR) Evening
01 Jun 18	M	Introduction to Electronics - Power Supplies
06 Jul 18	M	Practical Evening
03 Aug 18	M	Summer Social

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

### **01 Jan 2018 - Annual Subscriptions**

Our new club year commences on 1st January and subs then become due so please send your payment to our Treasurer Ian or bring it along to the January meeting. Prompt payment is much appreciated as it saves us having to chase members.

### **05 Jan 2018 - Video Evening**

Alan has arranged three videos:

- BITX40 Construction Review
- BITX40 QRP Operation
- Antenna Analysers

The BITX40 is a popular single band 7MHz solid state 6W SSB transceiver designed by Ashar Farhan VU2ESE and constructed on a single PC board. The design which started out in 2003 on 14MHz has been constructed by amateurs across the world using easily available and low cost components and is now well proven. Components may be changed to operate on other bands.

Technical information may be obtained from:

[http://www.hfsigs.com/bitx40v3\\_circuit.html](http://www.hfsigs.com/bitx40v3_circuit.html) which also has a link to the original 14MHz design.

This looks an interesting unit which could become a club project if sufficient members are interested. A multiband version of this transceiver is about to be offered by Ashar Farhan and availability will be advised in a future newsletter.

### **Recent Event News**

**01 Dec 2017 - Christmas Social** was well attended and we enjoyed a Christmas style buffet snack and lots of Doris's trifle as well as the usual refreshments. Thank you to all members who contributed to the buffet.

We have been in discussion with the church committee about the problem accessing our club cupboard because of the disorganised use of the side room by the play/nursery group during the day. We were offered an alternative storage location but this was rejected because of the risks of damp. They have now agreed to ensure

that the side room is kept in a tidier state so that we can access and open the cupboard and reach the light switch.

### **Making Waves by 'Theorist'**

If you threw a few stones into a pond and as the ripples intersected could magically freeze the water, you would see that where two or more peaks coincided you get a bigger peak, and where two or more troughs coincided you got a deeper trough. The amplitude of the combined wave at any point would be the sum of the amplitudes of all of the waves at that point. This phenomenon is given the name the 'Principle of Superposition' (PoS), and it works for all types of waves - most of the time.

It works for waves that travel in a medium, such as sound and water waves, but only up to the point that the medium is not deformed beyond some limit, in other words only when the relationship between the deformation and the restoring force is linear. Very loud noises are not linear in this regard, and two very loud pure tones can produce 'intermodulation distortion' (IMD), which may well be familiar to readers in an RF amplifier context. RF IMD produces harmonics which are multiples of the original frequencies, also signals at the sum and difference frequencies of the original frequencies and their harmonics. These can be problematic for modulated signals in that they can cause interference in bands adjacent to the modulated signal.

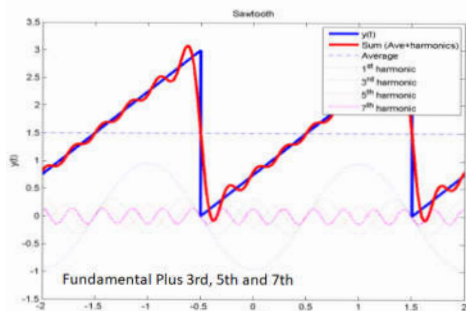
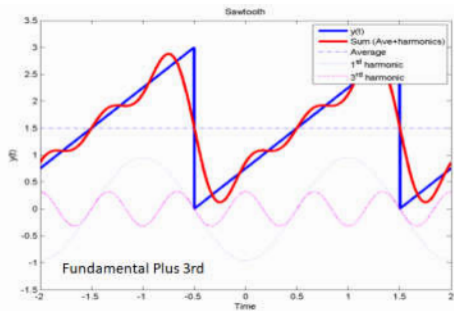
[It only takes one signal out of a number appearing at the same time in an electronic circuit to cause that circuit to become non-linear and create IMD, two make it a lot worse - Ed]

The principle works, when it works, because waves can occupy the same space *independently* of each other, and pass through one another without changing themselves or each other. With a bit of imagination this suggests that perhaps any waveform can be constructed by adding together a set of sine and/or cosine waves. [1] Looked at another way, suppose you were given the frozen waveform referred to earlier; could you work out what combination of waves produced it? If you could then it would mean that you could decompose a signal into its component parts, and represent it as the sum of simple sine/cosine waves with different amplitudes and frequencies. You would know the frequencies and amplitudes of the ripples produced by the stones.

In several talks given to the club in the last few years, especially those that have dealt with Software Defined Radio, the speaker has referred to Fourier Transforms or Fast Fourier Transforms (FFTs). The idea behind these (surprise surprise) is to represent a waveform as the sum of a series of sine or cosine waves with appropriate amplitudes and frequencies. In so doing the component frequencies become apparent.

A minor confusion factor is that you may see the term Fourier Series being used as well as the term Fourier Transform. There is a difference between the two, although both do the same thing. To represent a regularly repeating waveform, such as a square wave, triangle wave or any other regularly repeating wave, a Fourier series will suffice. To represent an irregular waveform, or some sort of pulse, a Fourier transform is required.

It is easiest to give an example. In the first diagram a sawtooth wave is first shown represented by a simple 'fundamental' sine wave. This is a poor representation of the sawtooth as is readily apparent. However if we add in the 3<sup>rd</sup> harmonic, with the right amplitude, we can get the second figure. This is a much better representation. The third figure shows the sawtooth as the sum of the fundamental, plus the 3<sup>rd</sup> 5<sup>th</sup> and 7<sup>th</sup> harmonics of the fundamental, again with the right amplitudes. All we are doing is adding the amplitudes of the waves, and the more harmonics we add in the better the representation. In this case, which is a regular waveform and thus represented by a Fourier series, all we need to do is add all the odd harmonics.



How do we work out the correct amplitudes and frequencies? That is done using mathematics.

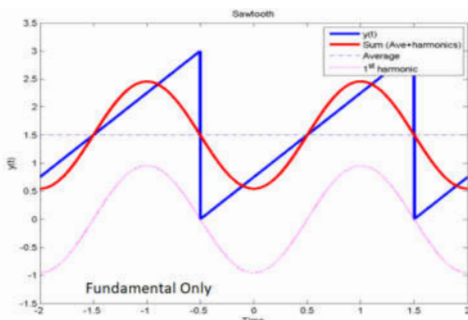
Next month's article will look at this a bit more, and also look at Fourier transforms.

[1] A sine wave can easily be converted to a cosine wave (and vice versa) by adding a suitable phase shift to the argument.

## Technical Snippets

**a) Qualcomm** has announced the Centriq 2400 series of Arm based processors designed for cloud workloads in datacentres. Each one contains 48 high performance 64bit single thread cores running at up to 2.6GHz and built with a total of 18 billion finfet transistors using 10nm technology. Typical power consumption is 65W.

**b) Crystal filters** - There are a number of frequencies for which reasonable cost crystal filters are available, the most popular being 9MHz where a new SSB filter may be purchased for as little as £12.



Another frequency to consider is 1.4MHz which was in common use in professional / commercial receivers and transceivers and second hand units typically cost £20-£25 each from eBay or £10-£15 at rallies.

Direct conversion from the HF bands to 1.4MHz is possible although the image response would be worse on the higher bands without additional RF selectivity. A good rule of thumb is to limit the ratio of 'RF in' to 'IF out' in a mixer to 10:1. A better solution would be to use dual conversion with a tunable IF system or an up-conversion to a higher frequency IF such as 45MHz where roofing crystal filters are available at low prices.

Another issue to be aware of is that the fifth harmonic of 1.4MHz is 7MHz so good screening of the IF and BFO would be required to avoid a spurious response in any band that is a multiple of 1.4MHz.

**c) Intermodulation Distortion (IMD)** - is mentioned in the article by Theorist this month and is a major issue in both receivers and transmitters, particularly in today's high rate of band occupancy in and around Europe or when conditions are good or an international contest is running and many signals are present on the same band at the same time.

IMD is now so important that it features in the specifications of both receivers and transmitters.

Even order IMD products are less of an issue as they are reduced by the actions of the RF tuned circuits and filters but odd order IMD products are too close together to be affected by RF selectivity and can be a major problem.

In receivers they appear as spurious signals but only while the source of the strong signal(s) causing the non-linearity is present. This form of interference is generated in the front end of a receiver and was particularly common on 1.8MHz due to overloading by strong signals from broadcast stations.

In SSB transmitters they appear as additional signals on either side of a transmission and are usually due to over-driving or inherent non-linearity in the final power amplifier. This form of interference is often referred to as splatter, a term that originated in the 'old days' of amplitude modulation when the transmitter was over-modulated.

Receiver front ends and power amplifiers may be specified by:

- measuring their intermodulation performance using a minimum of two input signal sources and looking at the resulting output products.
- Measuring the 1dB compression point by plotting the output signal level against the input level and noting where the output does not keep in track with the input. At the point where the output level is 1dB below where it should be the 1dB compression point has been reached.
- Plotting the fundamental and third order outputs from two input signals on a graph and extending the plotted lines to the point where they cross. This is called the third order intercept point. The third

harmonic output component increases faster than the fundamental component so they must cross at some point - the higher the better.

More next month....

## **New Club Website**

This is now up and running at

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

and also has a new contact email address of:

**Crystalpalaceradio.club(at)gmail.com**

Committee member Nick Stapley is the webmaster for this new site.

The original club website now just contains a link to the new site. The technical website address is unchanged at present but a rebuild is being contemplated.

## **Members News**

Congratulations to club member Jim Lugsden who has passed his advanced examination and now has the call M0JFL.

Our Treasurer Ian M6FZC advises that his working hours have changed again and he is now able to attend Friday meetings. Thanks go to Alan G8NKM who has been acting as Treasurer pro tem in Ian's absence.

## **A Little Club History**

This item was prompted by my re-reading 'World at Their Fingertips' published by the RSGB in 1967 and probably now out of print. Our club was very active in annual field days in its early years both with National Field Day (NFD) in June and VHF Field Day (VHFFD) in July. NFD is CW (Morse) only but VHFFD is multimode so Morse and telephony modes are allowed.

The first photo is from the above book and shows one of our NFD stations in the 1950s with operators (left to right) John Worrall G3IWA and Geoff Stone G3FZL. The transmitter was home built based on a Geloso VFO or similar and the receiver appears to be a Hallicrafters type.



A typical National Field Day installation operated by the Norwood and District Group. The operators are G. M. C. Stone, G3FZL and A. J. Worrall, G3IWA.

The second photo is one of a number provided by past member Bill Wright G0FAH and shows our aerial installation on an NFD event at Crystal Palace, probably in the early to mid 1980s.

The right hand mast is 45ft high with three sets of guys and supporting one end of a Top Band dipole. To the left can be seen the TA33jr three element tri-band beam just adjacent to the TV mast. No rotator was used with the beam so someone had to go outside to turn it by hand. We still own two of these ght weight but strong ex-WD aluminium masts and guy sets.



Before we had the beam, an end fed 264ft long Zepp was used, pointed at North

America. This worked well, particularly during the early morning openings on 14MHz.

Our leading CW operators of the time were Eric Neal G8GP, Fred Crisp G3GZJ, Geoff Stone G3FZL and Eric Yeomanson G3IIR, all now silent keys. G3FZL and G3IIR were elected RSGB presidents in 1964 and 1965 respectively.

Note that the orange 'social and cooking' tent was placed a fair distance from the operating tent to minimise distraction to the operators if the socialising became too noisy. The last photo below shows some of the club team who erected and operated the NFD station.



The club started out in life as the Crystal Palace & District Radio Club in January 1956 which was formed from the Norwood & South London RSGB Group whose origin I have not been able to trace. However I do have the club committee minute books from January 1956. It first met in the house of Don

Gilmour G2VB and then moved to Windemere House, now demolished, which was located about 100 yards behind and lower down from what is now the Sainsbury supermarket off Westow Street in Upper Norwood. The club also attracted members from other local amateur radio organisations.

I had recently tracked down two former members of our club who were keen CW operators by following their callsigns in the RSGB Call Book (now the RSGB Year Book). I had known them both from when I joined the club 60 years ago in 1957 until they left the area but unfortunately they were both missing from the 2017 Year Book so now are most likely to be inactive or silent keys.

## Miscellaneous

**a) Aviation History** - For those readers with an interest in this topic, Croydon Airport House, Control Tower and Museum on Purley Way are open to the public on the first Sunday of each month. Manned by volunteers, there are models, memorabilia, photos and some hardware on display on several floors. The control tower display includes two items of ancient electronic equipment with what appears to be 2volt filament valves and a rotary transformer (dynamotor) to provide the HT supply.

Some of the original grass runways are clearly seen through the windows but all of the hangars were replaced by more modern industrial buildings many years ago. The early aircraft were not pressurised so flew relatively low in often turbulent conditions and the first seats were wicker chairs not fixed to the floor. Later chairs were fitted with cushions but it took some time before they were fixed to the floor of the aircraft.

## **b) Samsung's Transparent Trucks**

Seen recently on Twitter was a Samsung truck with a large rear display screen showing the road ahead for following drivers wishing to overtake safely. See:

<https://twitter.com/search?q=samsung%20transparent&src=typd>

## 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) 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
- A few variable capacitors left

Offers to Bob G300U on 01737 552170 or email [g300u\(at\)jail.com](mailto:g300u(at)jail.com)

### **b) From the shack of Bob G300U:**

- 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/g300u/pto.html>
- 1.4MHz crystal filters for USB & LSB, all tested, £15 each
- Pye 455KHz LC filter, 15KHz wide, £3

Offers to Bob G300U on 01737 552170 or email [g300u\(at\)jail.com](mailto:g300u(at)jail.com)

## Wanted

850-0-850v output 600VA toroid or conventional construction mains transformer.

Offers to Bob G300U on 01737 552170 or email [g300u\(at\)jail.com](mailto:g300u(at)jail.com)

**CPREC** has a large bank of fundamental and overtone quartz crystals, from 1.0 – 99.91MHz. The list has now been completely updated with enclosure classifications, 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



G300U

## Diary of External Events

### 11 Feb 2018 - Harwell Radio and Electronics Rally

Didcot Leisure Centre, Mereland Road, Didcot, Oxon OX11 8AY (3 miles from Milton Interchange on A34). Open 10am to 3pm – entrance £3 (under 12s free). Free car parking with disabled parking and facilities. Traders, SIGroups, RSGB book stand, Refreshments, Talk in on 145.550MHz (G3PIA). Details Ann (G8NVI) [ann.stevens@btinternet.com](mailto:ann.stevens@btinternet.com) or [www.g3pia.net/radio-electronics-rally](http://www.g3pia.net/radio-electronics-rally)

### 25 Feb 2018 - BRATS Medway Radio Rally

The Victory Academy, Magpie Hall Road, Chatham, Kent ME4 5JB. Open 10am-2pm, disabled visitors 9.30am. Entrance £2.50. Free parking, talk in on 145.550 using GB4RRR. Trade stands, RSGB bookstall, Catering on site. Details from Hugh H, G0BRC on 0782 583 8877 or by email to [Secretary@bratsqth.org](mailto:Secretary@bratsqth.org)

### 11 Mar 2017 - Dover Radio Club Rally

Whitfield Village Hall, Sandwich Road, Manley Close, Whitfield, Nr Dover CT163LY. Talk in, catering, trade stands. Open 10am, entry £2. Auction starts at 12.30pm. Aaron Coote, 2E0FQR, 0771 465 4267 or [aaroncoote@hotmail.co.uk](mailto:aaroncoote@hotmail.co.uk). [[www.darc.org.uk](http://www.darc.org.uk)].

### 15 Apr 2018 - West London Radio & Electronics Show (Kempton Rally)

Kempton Park Racecourse, Staines Road East, Sunbury on Thames, TW16 5AQ. Talk in station, on site free parking. Open 10am, disabled visitors 10 minutes earlier. Trade stations, Bring & Buy and SIGs, lectures, raffle and catering on site. Details from Paul, M0CJX on 0845 165 0351, [info@radiofairs.co.uk](mailto:info@radiofairs.co.uk). [[www.radiofairs.co.uk](http://www.radiofairs.co.uk)].

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**22 Apr 2018 - Cambridge Repeater Group Rally**

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Foxton Village Hall, Hardman Road, Foxton, Cambridge, Cambs CB22 6RN. Free parking, opens 9.30am, traders access from 7.30am. Entry £2. Talk in station. Traders, Bring & Buy, RSGB book stall, Catering on site. Contact Lawrence M0LCM on 07941 972 724, or email rally2018@cambridgerepeaters.net [www.cambridgerepeaters.net]

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**6 MAY 2018 - Southern Electronics & Radio Fair-Eastbourne Rally (SERF)**

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Eastbourne Sports Park, Cross Levels Way, Eastbourne, East Sussex BN21 2UF. Transport via buses from Sussex Downs College on Cross Levels Way and Kings Drive and by rail to Hampden Park station, a 10 minute walk from the Centre. Traders, clubs, outside car boot & table-top sale, catering, camping and caravanning. Details from <http://www.serf.org.uk>

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**24 Jun 2018 (new date) - 31st Newbury Radio Rally**

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Newbury Showground, next to Jcn 13 of M4, Berkshire. Amateur radio station, exhibits, SIGs, clubs and societies. Opens to sellers at 8am, visitors 9am. Free parking, entry £2.50 visitor, £12.50 CBS sellers pitch. Advance bookings (with discount) via [www.nadars.org.uk/rally.asp](http://www.nadars.org.uk/rally.asp) On-site catering, disabled facilities. Contact: email: NewburyRally@nadars.org.uk [www.nadars.org.uk]

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**News from other Clubs**

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

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**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](mailto:secretary@brats-qth.org) or <http://www.brats-qth.org/brats/>

18 Jan 18 Bring & Talk  
08 Feb Quiz Night  
15 Feb Aviation in Medway

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**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](http://www.bdars.co.uk)

20 Dec Quiz and Mince Pies  
16 Jan 18 AGM and Programme Planning

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**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 Web: [www.g0mwt.org.uk](http://www.g0mwt.org.uk)

02 Jan 18 Antennas by Justin Johnson G0KSC of InnovAntennas  
06 Feb 18 A unique perspective by Keith Haynes

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G3WRO, RSGB Regional Manager

06 Mar 18 Andy Tyler G1GKN will talk about using ex-military radios for amateur radio

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**Couldson 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/>

09 Jan 18 CATS Annual Dinner  
13 Feb 18 The GB3XP Repeater Project by Martin Rothwell M0SGL  
13 Mar 18 Roll Your Own PCB's by Matthew Nassau M0NJX  
10 Apr 18 432MHz DF receiver club project by Terry Giles G4CDY

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**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/>  
24 Jan 18 Club AGM

28 Feb 18 The History of the Magnetron from WWII Radar to the Kitchen by Mike, G3LHZ  
28 Mar 18 Space weather effects on HF propagation

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**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](http://www.cvrs.org)  
21 Dec Annual Christmas Social  
18 Jan 18 CVRS Planning Meeting for 2018  
01 Feb 18 History of the Transistor  
15 Feb 18 Surface Mount Technology Explained  
01 Mar 18 CVRS Annual Construction Contest 2018

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**Dorking & District Radio Society**

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

23 Jan 18 Ham radio yesterday discovered today  
27 Feb 18 Practical evening - Making antenna traps by Tom Ellinor G4FDA  
27 Mar 18 One route through product design by Bob Burns G3OOU  
24 Apr 18 The future of amateur radio by Nick Henwood G3RWF  
22 May 18 Meteor scatter by Nick Read M5DND

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**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>  
28 Dec No meeting

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**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 Dec No meeting

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**Hereford Amateur Radio Society**

Meets on the first Friday of each month at Hill House, Newton, Nr Leominster, HR6 0PF. Contact:

[enquiries@herefordradioclub.uk](mailto:enquiries@herefordradioclub.uk) or  
<http://herefordradioclub.uk/>

05 Jan 18 HARS Famous Curry (or Fish and Chips) Night

02 Feb 18 TBA

**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@hotmail.com](mailto:g3zbu@hotmail.com) or

<http://www.harc.org.uk/>

04 Jan 18 Bring Show Tell

18 Jan 18 Social - The White Horse Inn - Maplehurst

01 Feb 18 FPGA Programmable Logic - G3ZBU

01 Mar 18 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](mailto:M6ZRJ@msars.org.uk) or

[www.msars.org.uk](http://www.msars.org.uk)

22/29 Dec No meeting

02 Feb 18 Health and Safety etc by David Davis

09 Mar 18 Computer Logging by Phil G4UDU

**South East Essex Amateur Radio Society (SEARS)**

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

09 Jan 18 Rally preparations

**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@g3src.org.uk). Web: <http://g3src.org.uk/>

08 Jan 18 SRCC Construction Contest

**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@scrs.org.uk)

Web: <http://scrs.org.uk/>. SCRS run a practical group most Monday evenings at the Bandstead Scout Hut.

18 Jan 18 An introduction to morse code – Dan Romanchik KB6NU.

15 Feb 18 Digital Voice by Martin Rothwell - M0SGL and Chris Howard – M0TCH

15 Mar 18 TBA

19 Apr 18 BITX40 by Martin Butler – M1MRB

17 May 18 AGM & Construction Contest

**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@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
<b>Advanced Examination only</b>	27 Jan 2018	Eltham, SE9	Cray Valley RS	Saturday morning	<a href="http://www.cvrs.org">www.cvrs.org</a>
<b>Foundation</b>	3 & 10 Feb 2018	Eltham, SE9	Cray Valley RS	2 days (Sat)	<a href="http://www.cvrs.org">www.cvrs.org</a>
<b>Intermediate</b>	28 Feb, 11, 18 Mar 2018	Bromley	Bromley & District ARS	3 days (Sunday)	<a href="http://www.bdars.org">www.bdars.org</a>
<b>Foundation</b>	Sep 2018 dates TBC	Bromley	Bromley & District ARS	2 days (Sun)	<a href="http://www.bdars.org">www.bdars.org</a>
<b>Intermediate</b>	Nov 2018 dates TBC	Eltham, SE9	Cray Valley RS	3 days (Sat)	<a href="http://www.cvrs.org">www.cvrs.org</a>
	= course commenced				

**CPREC Committee Contact Information****Officers:****Chairman:**

Damien Nolan 2E0EUI

7 Fonthill Court

Honor Oak Road

London SE23 3SJ

07900 242541

[Gorby928\(at\)gmail.com](mailto:Gorby928@gmail.com)

**Secretary:**

Alan O'Donovan G8NKM

2 Mackenzie Road

Beckenham

Kent BR3 4RU

020 8778 9660

[Alan.odonovan\(at\)btinternet.com](mailto:Alan.odonovan@btinternet.com)

**Treasurer:**

Ian Skeggs M6FZC

Ground Floor Flat, 24 Kendall Road

Beckenham

Kent BR3 4PZ

020 8650 9049

[ian.skeggs\(at\)btinternet.com](mailto:ian.skeggs@btinternet.com)

**Committee Members:**

Bob Burns G3OOU

Nick Stapley

Newsletter Editor

01737 552170 or [G3OOU\(at\)AOL.COM](mailto:G3OOU@AOL.COM)