

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: 5th May 2017

**One Route Through Product Design - Part 1 by Bob Burns
G300U**

In this issue: *Future & Most Recent Meetings, Club Membership, Technical Snippets, Noticeboard, Diary of External Events, News from other Clubs, Local Training Courses and Club Contact Information.*

Dear Reader

I am sorry to have to advise you that club member Frank Springate G0BWV became a silent key on 10th April. Frank joined this club in April 2001 and was a regular attender until health problems set in about three years ago which affected his mobility.

He spent the last 18 months in a care home and was admitted to hospital on 27 March with pneumonia. Frank, who leaves two daughters Sheila and Angie, was very keen on HF bands CW operation and home construction.

Club members helped to clear his radio shack and aerials in 2016 and a lot of his equipment was sold at the Kempton and CATS Bazaar rallies.

The funeral will be held on Friday 28th April 2017 at 3pm at Beckenham Cemetery and Crematorium, Elmers End Road, Beckenham, BR3 4TD.

Future Club Meetings and Events

30 Apr	R	Kempton Park Rally
05 May	M	One Route Through Product Design - Part 1 by Bob Burns G30OU
02 Jun	M	Sub-sea Telegraph Cables at Enderby Wharf by Richard Buchanan
07 Jul	M	GPS by Nick Stapley plus another short talk to be advised
04 Aug	M	Summer Social
01 Sep	M	Antenna Modelling by Quin Collier
06 Oct	M	SDR Without Maths by Alan G0TLK
03 Nov	M	Millimetric Microwaves – Chris G0FDZ
01 Dec	M	Christmas Social

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

30 April 2017 - Kempton Park Rally

Our Secretary Alan has booked two tables for this rally. We have received a considerable number of equipment donations and these items are to be sold to benefit club funds and help keep subscriptions down (see the end of this newsletter for some of the items).

We will need assistance at this event so please contact Alan with offers of help. There are a limited number of free entry tickets for helpers at this event.

05 May 2017 - One Route Through Product Design - Part 1 by Bob Burns G30OU

We all want our design and construction projects to be successful and take the minimum time and costs to complete. Unfortunately, many projects either fail, never get completed or become too expensive or complex to be commercially viable because they were incorrectly specified in the first place. 'Scope creep' is another classic reason for project failure.

In addition, product design, particularly in the RF field, is frequently regarded as difficult and the preserve of a highly qualified but limited group of specialists.

This illustrated talk seeks to address those experiences and views by offering a relatively flexible design methodology. It is based on a 'Top Down' concept with a route map of the various stages and commences by reinforcing the need to separate the 'What is it?' (the User Specification) from the 'How will it work?' (the Technical Specification). These techniques are applicable to almost any form of mechanical, electronic or software project.

The talk concentrates on the first design level "What is it" and also briefly considers the link from the 'What' stage to the start of the 'How' stage for an example receiver design and concludes with a brain storming session. Here the audience works either all together or in small groups to define a User Specification for a receiver (or a different product if required).

No circuit or electronics design knowledge is required by participants at this stage but some knowledge of the use and functions of a receiver is required. The results from the brainstorm will be recorded and retained by a volunteer member of the audience.

Following on from the first session an optional second talk looks at the processes and techniques that may be used to generate a Technical Specification and a prototype design based on the above User Specification of this receiver (or a different product). This could then become a future club project.

Recent Event News

07 April 2017 - Club project - Frequency Counter Design Considerations and the use of KiCad by Alan O'Donovan G8NKM

This illustrated talk consisted of three parts

- a description of the frequency counter project design and implementation
- Alan's experiences in the design and production of the circuit diagram and printed circuit board
- A simple worked example of how to produce a PCB in Kikad

a) **The Frequency Counter** is based around the following functional assemblies:

- an Arduino Uno assembly which gathers the frequency information from the adjacent circuit
- an accurate real time clock (RTC) oscillator which generates a stable 1Hz pulse and also provides a calendar
- an LCD display
- a number of CMOS integrated circuits that process and divide the input signal
- a prescaler which increases the maximum input frequency from 80MHz to over 1GHz.

The main aims of the project were to:

- Minimise the amount of hardware by implementing as many functions as possible in software on the Arduino.
- Keep the cost to £10 per unit by purchasing components in 100 lots. In fact the final cost was £11.80.
- Avoid difficult soldering processes like remote connection of the LCD display, SMT components, stripboard etc.

- Achieve a frequency range from 100Hz to 100MHz. This ended up as 1KHz to 80MHz.
- The final specification that was achieved was:
- Frequency range 1KHz - 80MHz in the basic unit and 1GHz minimum using the prescaler
- Worst case input sensitivity of 500mV - it is typically 250mV from 10 - 80MHz
- Frequency stability vs temperature of $\pm 1\text{ppm}$ ($\pm 1\text{Hz}$ per MHz)
- Frequency accuracy of $\pm 0.2\text{ppm}$ ($\pm 2\text{Hz}$ at 10MHz) at room temperature

During the development cycle several CAD packages were investigated including Eagle, Protel, Design Spark and Kikad with the latter being selected.

b) PCB Design and Production

A typical modern double sided printed circuit board (PCB) consists of:

- a layer of insulation which is usually fibreglass
- defined areas of copper tracks on each side of the insulation
- metal plating to cover any exposed copper
- Drilled through holes for the component leads and mechanical mountings - these may be plain or plated through to connect top and bottom copper areas
- VIA's which are used to connect top and bottom copper areas but not containing a component lead
- a solder resist on top of the copper on each side
- a printed legend on one or both sides showing the outline of each component and the design identity and manufacturer of the PCB.

In the case of PCBs containing more than two layers of copper there will be additional layers of insulation and copper tracks. Mother boards in personal computers may typically have six to eight copper layers and hundreds of plated through holes or VIA's.

Almost all CAD PCB design systems require the user to draw the circuit diagram first and to link all of the components to their respective templates in the system libraries. Then the components must be uniquely annotated in the form R1, R2, C1, D1. The template for each component holds the physical details like dimensions, outline shape, lead or pad spacing etc.

Once this has been completed, a net list can be generated containing test based descriptions of every component and connection on the PCB. A utility may be used to validate the net list so that all components have been correctly annotated (no two components have the same reference for example) and there are no missing connections. Any issues must be resolved before the next step is commenced.

The next stage is to import the net list into the PCB layout editor which will then load the template for each component and track and produce a rough layout - sometimes with some or all of the components on top of each other - this is usually called a rats nest and can look extremely chaotic. More up market packages have an auto-router which will attempt to move the components and tracks into some semblance of order but this may not always meet the designer's requirements. Alan decided to manually complete the layout process.

A second utility can check that all of the chosen design rules like component separation, track spacing etc have been met.

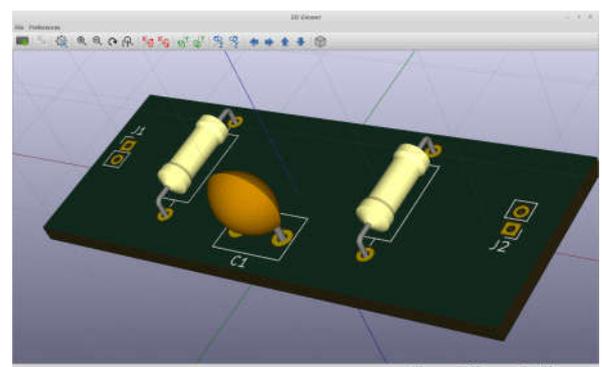
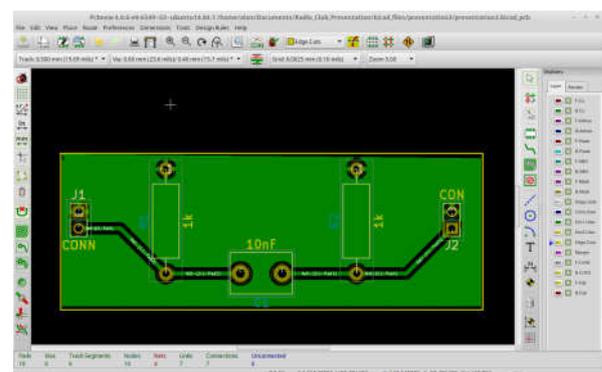
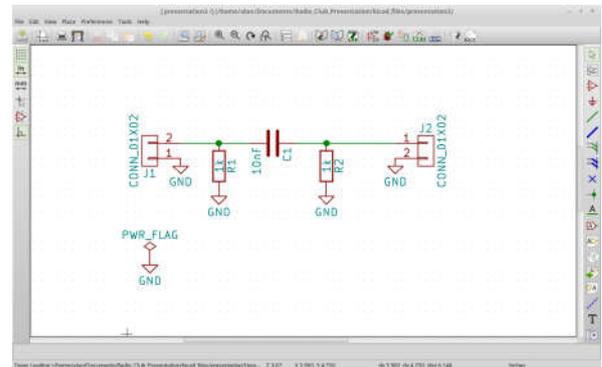
When the layout process is complete, the designer can use more routines in the CAD package to generate Gerber files to send to the manufacturer for a quotation or instructions to make the PCB.

Gerber files have an internationally agreed format that contains descriptions of all of the components, their orientation and positioning, track layouts and widths, hole positions and dimensions, solder resist details, PCB size and thickness - in short everything that is required to manufacture the PCB in the required quantities. All that remains is to pay the bill and wait for their arrival.

c) PCB Demonstration Using Kikad - Alan showed the basic processes that are required to complete the design of a very simple PCB containing three passive components and two connectors.

First, the circuit was drawn and annotated:

Then the netlist was generated, imported into the layout editor and the components moved around into a reasonable layout.



Kikad has a very useful feature in that it can produce a 3D view of the populated PCB which can be rotated in any direction as shown in the previous diagram.

Kikad is a completely free package that may be downloaded from the Internet and run under Windows, Apple OSX or Linux. Alan stated that he had a steep initial learning curve.

Club Membership

Membership this year is slightly up on last year's numbers but we still make a loss on meetings so contributions to club funds from sales and donations are an important ongoing requirement to save having to increase members' fees.

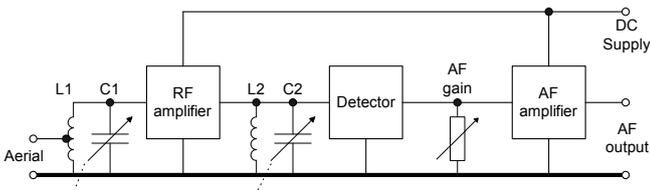
Technical Snippets

a) Receivers - continued

In previous newsletters we have looked at very simple signal detectors starting with the crystal set which requires a good Aerial and very high impedance and sensitive headphones in order to hear many signals. Also mentioned was the addition of an RF amplifier and an AF amplifier to increase the sensitivity. However, none of these improves the selectivity (bandwidth) so reception of multiple signals often occurs, particularly in the evenings when the medium wave band is open to Europe.

The simple solution is to add one or more tuned circuits in the RF path to reduce the overall bandwidth and therefore reject more unwanted signals.

The Tuned Radio Frequency (TRF) receiver addresses some of these issues and an example is shown in the following block diagram:



Tuned circuits L1/C1 and L2/C2 are both tuned to the desired signal frequency and should both have a high Q. The tuned circuits should be separated and screened from each other to reduce the risk of oscillation in the RF amplifier.

At least 20dB of gain is provided by each of the RF and AF amplifier stages so where the original crystal set might just be able to hear signals in the 1-10mV range the above TRF receiver should be able to hear signals in the 10-100uV range with similar aerial and headphones. As with the crystal set, an earth connection will be required for best performance. Some form of manual or automatic RF gain control may be required to cater for wide ranges of incoming signal levels.

This circuit will provide improved selectivity compared to a crystal set but it will still be inadequate when conditions are good as medium wave stations can be just 9KHz apart.

Further articles will look at alternative detector solutions and the use of the superhet to improve selectivity.

b) AF Oscillator

My test rack now has three out of the five planned items of test equipment completed and working. The work in progress project can be seen in the following photo and consists of, from left to right, an AF Oscillator, Basic Test Meter (both complete), Modulation Meter, Audio Distortion Meter and Common Meter Unit (complete).



c) Electronic Workbench

A copy of a basic electronic calculator program has been added to the Software section of the technical website and may be downloaded to a Windows PC. This has been written and compiled in the Harbour Minigui Extended (32bit) development platform and is about 1.5MB in size. It provides forms for working out:

- series and parallel connected resistors, capacitors and inductors
- Inductive and capacitive reactances
- Resonant circuits
- Bipolar bias values

Additional functionality will be added as time allows. It has also been tested using Wine running under Ubuntu Linux.

'Electricity' at the Wellcome Collection

Old transatlantic cables must be in vogue at the moment, since a piece of one was in the 'Electricity: The Spark of Life' exhibition at the Wellcome Collection museum near Euston Station, which I visited recently. For all I know it was the same piece that Theorist saw at the Guildhall Museum a few months back.

The exhibition starts with the earliest experiments by the first 'electricians', as investigators in this area were called. There are illustrations from old books and magazines showing electricians demonstrating of various phenomena, and a piece of elektron – Greek for amber – which was useful for generating static. Bits of old apparatus are shown, but there is only a passing mention of Michael Faraday, surely the greatest experimenter in the field. Nikolai Tesla and Thomas Edison fare rather better, as they were the proponents of AC and DC respectively, as the way of distributing electricity. Ferranti also does well, as he designed the first 'modern' power station situated at Deptford.

Other exhibits include one of the first electric kettles, an electric eel, photos of pylons from different

countries, and three art installations on the theme of electricity commissioned for the exhibition. If all this seems a bit random, you are right. The problem is that the exhibition doesn't have any focus or purpose. It is a collection of things whose only connection is some association with electricity. There is no discussion about what electricity really is, and I can only speculate that the curator was not someone with a great knowledge of science.

There were a couple of things that caught my eye, the best being a piece of film made by Edison of the Trottoir Roulant at the Paris Exposition Universelle of 1900. This was an elevated moving walkway, a 'flat escalator' some 2.5 miles in length. It must have been sensational at the time, and would still be a sight today.

I can't recommend this exhibition, but if you want to see it visit the Wellcome Collection 183 Euston Road <https://wellcomecollection.org/what-we-do/wellcome-trust> before mid June.

Nick Stapley

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. 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

- Precision permeability tuned solid state VFO with built-in reduction drive, 7.6 - 8.8MHz £75. 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 G300U on 01737 552170 or email [g3oou\(at\)aol.com](mailto:g3oou(at)aol.com)

- Acer 19" - VGA and DVI inputs tested at 1280 x 1024 - £15
- IBM 17" - VGA and DVI inputs tested at 1280 x 1024 - nice stand - £15
- AOC 17" - VGA inputs tested at 12080 x 1024 - £15
- DIX 19" - VGA input, Wide screen, tested at 1440 X 900 - menu button problem but works ok £10.

All excl P&P. Contact Alan G8NMK on 020 8778 9660 or email [alan.odonovan\(at\)btinternet.com](mailto:alan.odonovan(at)btinternet.com) or see them at the Kempton Park rally on 30th April

Club items for sale:

- Redifon PT2100A 100W solid state paging transmitter on approximately 153MHz. Untested but inside looks clean and undamaged. Two crystal ovens and two power amplifiers with combiners and large rear panel heatsinks. Requires an external 28V power supply. Circuit diagram only.
- Racal RA-17 HF bands continuous coverage receiver, no case. Manual on CD.
- Watkins Johnson WJ-8730A Monitor Receiver with two identical switchable front ends and Panadaptor covering 98 - 305MHz. 21.4MHz IF output, AM, FM

and CW operation, IF bandwidths of 50, 300 & 3000KHz. Resolves 1uV on all modes.

- Additional Watkins Johnson tunable LT1020B RF front end module covering 950 - 2040MHz with 160MHz IF output.
- Additional Watkins Johnson tunable RF front end module covering 4 - 8GHz with 160MHz IF output. It appears that all three WJ modules will connect together but no documentation available.

Offers to Bob G300U on 01737 552170 or [G300U\(at\)AOL.COM](mailto:G300U(at)AOL.COM) or see them at the Kempton Park rally on 30th April.

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

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G300U

Diary of External Events

30 Apr 2017 & 5 Nov 2017 - West London Radio & Electronics Show (Kempton Rally)

Kempton Park Racecourse, Staines Road East, Sunbury on Thames, TW16 5AQ. Talk in and on site car parking. Opens 10am. Traders, Bring & Buy and special interest groups. Details from Paul, M0CJX on 0845 165 0351, info@radiofairs.co.uk. www.radiofairs.co.uk

6 MAY 2017 - SERF 2017 – Southern Electronics & Radio Fair (Eastbourne Rally)

Cancelled for 2017 - see www.serf.org.uk
Event confirmed for Sunday 6th May 2018.

19-21 May 2017 - Dayton Hamvention®

(new venue) at Greene County Fair & Exposition Center, Xenia, Dayton, Ohio, USA. Doors open at 8am. There will be trade stands and a huge flea market as well as special interest groups and an RSGB bookstall. A lecture programme will take place each day. There are multiple catering outlets and family attractions on site. US exams are available and there is a raffle. Details by email to international@hamvention.org. [www.hamvention.org].

21 May 2017 - 34th Dunstable Downs Radio Club Annual National Amateur Radio Car Boot Sale

Stockwood Park, London Road, Luton, Bedfordshire LU1 4LX in Luton on Sunday 21st May 2017. Entry/car park fee is £3. All the usual facilities will be there. [www.ddrcbootsale.org]

11 June 2017 - East Suffolk Wireless Revival (Ipswich Radio Rally)

New venue: Kirton Recreation Ground, Back Road, Kirton. IP10 0PW just off the A14. Opens 9:30, free car parking, entry £2. Trade stands, car boot sale, Bring & Buy, Special interests groups, GB4SWR HF station and RSGB bookstall. Catering is available on site. Contact Kevin, G8MXV, 0771 0046 846 [www.eswr.org.uk]

18 June 2017 - 30th Newbury Radio Rally

Newbury Showground, next to Jcn 13 of M4, Berkshire.

Free parking on site, entry £2.50 or £12.30 for those in the car boot area. There will be an amateur radio station on display, exhibits, special interest groups, clubs and societies. On site catering and disabled facilities. Open to sellers at 8am and to the public from 9am. Advance bookings (with discount) can be made via www.nadars.org.uk/rally.asp

14-16 JULY 2017 - Ham Radio Show, Friedrichshafen
Messe, Friedrichshafen, Germany. Trade stands, special interest groups and IARU Member Societies all have stands in the main hall. Large flea market. Lectures take place each day, some in English. There will be a large RSGB book stall. [www.hamradio-friedrichshafen.de].

16 JULY 2017 - MCMICHAEL RALLY

Reading Rugby Football Club, Holme Park Farm Lane, Sonning Lane, Sonning on Thames, Reading RG4 6ST
Talk in on S22. Opens 9.30am, entry £3. Tabela and car boot spaces are £10. Details, by email, from m5alg@radarc.org
[www.mcmichaelrally.org.uk/]

29-30th SEPTEMBER 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/].

News from other Clubs

Club Secretaries – please send your meeting programs to our newsletter editor Bob G30OU. 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
27 Apr Steam and its uses by Charles G4VSZ
04 May WW2 Radar and Early ECM by Geoff Boakes.
11 May BRATS AGM

Bromley & District Amateur Radio Society

Meets at 19:30 on the third Tuesday of each month at the Victory Social Club, Kechill Gardens, Hayes, Bromley, BR2 7NH. Contact Andy G4WGZ on 01689 878089 or [enquiries\(at\)bdars.co.uk](mailto:enquiries(at)bdars.co.uk). Web: www.bdars.co.uk
16 May Fix-it Evening
20 Jun Direction Finding Evening by Steve 2E0DIZ
18 Jul Morse Code by Graham G4NPD

Chelmsford Amateur Radio Society (CARS)

19:30 on the first Tuesday of each month at Oaklands Museum, Moulsham Street, Chelmsford, Essex, CM2 9AQ.

Contact: [secretary\(at\)g0mwt.org.uk](mailto:secretary(at)g0mwt.org.uk) Web: www.g0mwt.org.uk

02 May "Tricks with Coax" - John Regnault G4SWX
06 Jun "Table Top Sale"
04 Jul "Three Short Talks"
01 Aug "Constructors Competition" - CARS Members

Couldson 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/>
09 May Construction Evening - Pixie Take Two
13 Jun 2 Metre DF Hunt organised by Denis M0NDJ
11 Jul 2m Activity Evening
08 Aug CATS Annual BBQ

Crawley Amateur Radio Club (CARC)

Every Wednesday 20:00 – 22:00, every Sunday 11:00 – 13:00. Formal events are on the last 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/>
24 May VHF propagation, by Mike, G0KAD
28 Jun Talk by Nick, G3RWF, RSGB President

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
04 May Basics of Contesting
18 May A25UK DXpedition to Botswana

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>
29 Apr Anniversary lunch - Denbies wine estate
23 May Digital modes demonstration by Keith Bell 2E0GBK & Walter Blanchard G3JKV
27 Jun Wireless, my early days by Ken Tythacott M3CFC
25 Jul South Downs evening

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>
27 Apr Annual general Meeting
3/4 Jun National Field Day
08 Jun CW Practice followed by Marconi's Transatlantic Experiments - Brian Hawes, G2KQ

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://harc-hastings.org.uk/>
24 May View and discuss online AR YouTube videos
28 Jun Talk by Rodney
23 Aug Construction Contest
27 Sep View and discuss online AR YouTube videos

Hereford Amateur Radio Society

Meets on the first Friday of each month at Hill House, Newton, Nr Leominster, HR6 0PF. Contact: enquiries@hars.wagnet.co.uk
05 May Home Brew Evening

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

- 04 May Vive La Difference : Life and Amateur Radio in France - Mike G8CKT/F8VON
 18 May Thursday Evening Fox Hunt - Adrian G4LRP
 01 Jun DMR (Digital Mobile Radio) Dennis Stanton G0OLX
 29 Jun Thursday Evening Fox Hunt
 06 Jul Pirate Radio - Mick Senior G4EFO

Mid-Sussex Amateur Radio Society (MSARS)

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

- 05 May Guide Dogs for the Blind
 26 May NFD How to do logging Evening
 02 Jun Construction Contest
 16 Jun Radio Night and Table Top Sale
 07 Jul Chairman's Barbeque

South East Essex Amateur Radio Society (SEARS)

Contact Dave G4UVJ on: 01268 697978 or secretary@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.

- 09 May Talk with Pete Sipple M0PSX from Essex Ham "My journey into Amateur Radio."
 13 Jun Talk with Tim Wander, author and curator of Sandford Mill.
 11 Jul Station on the Air GX4RSE from the White House

08 Aug SEARS 35th Anniversary evening its 35 years since SEARS was formed on 18th August 1982

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

08 May EGM followed by Award of Trophies and Short Talks.

Sutton & Cheam RS

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

- 18 May Annual General Meeting and Constructional Contest
 15 Jun The Sun & Sky – How Space Weather Affects Radio Signals – Dr Colin Forsyth. UCL / Mullard Space Science Laboratory.
 20 Jul The Icom IC7300 SDR Transceiver – Mike Davies – G0KAD

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@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
Foundation	10 & 17 Jun 2017	Sidcup	Darenth Valley	2 days (Sat)	http://darenthvalleyrs.org/
Foundation	17 Sep & 8 Oct 2017	Bromley Kent	Bromley & District ARS	2 days (Sun)	www.bdars.org
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
= 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	Secretary: Alan O'Donovan G8NKM 2 Mackenzie Road Beckenham Kent BR3 4RU 020 8778 9660 Alan.odonovan(at)btinternet.com	Treasurer: Ian Skeggs M6FZC Ground Floor Flat, 24 Kendall Road Beckenham Kent BR3 4PZ 020 8650 9049 ian.skeggs(at)btinternet.com
Committee Members: Bob Burns G30OU Nick Stapley	Newsletter Editor	01737 552170 or G30OU(at)AOL.COM