



# SURREY RADIO CONTACT CLUB

**83<sup>rd</sup> Anniversary Year - Founded 1935**

**January 2018 – No 905**

**SRCC supports the RSGB Child Protection Policy**

CLUB NET 1.905 MHz LSB **Sunday 9:30am**  
 CLUB NET 70.30 MHz FM **Thursday 8.00pm**  
 CLUB NET 145.35 MHz +/- 25kHz FM **Friday 8.00pm**

Hon. Sec. John Simkins G8IYS  
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 Sanderstead  
 South Croydon  
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CLUB Internet WEB Site: <http://www.g3src.org.uk>

E-mail: [secretary@g3src.org.uk](mailto:secretary@g3src.org.uk)

MONTHLY MEETINGS NORMALLY ON 1<sup>ST</sup> AND 3<sup>RD</sup> MONDAYS 7.30 FOR 7.45pm

**Meetings at Trinity School, Shirley Park, Croydon CR9 7AT**

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**1<sup>st</sup> MEETING Monday 8 Jan: Annual Construction Contest**

**2<sup>nd</sup> MEETING Monday 22 Jan: Fix-it, Move-it-on and Social Chat  
 with John G8MNY**

## SRCC Committee 2017/18

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## Dear Members & Friends

Hello and welcome to the 905th edition, the January 2018 Issue, of the SRCC Newsletter - edited by your Hon Sec John G8IYS.

I shall start by wishing all readers a very happy new year and a hope that all enjoyed a good Christmas. At the G8IYS QTH, the holiday started with a severe dose of the family lurgi which led very directly to strict limitation on the intake of goodies – indeed the intake of anything of any substance. As

we enter the new year, we are nudging recovery. I have spent a little time in the shack to work a little on Top Band, 80, 40, 20 and 17 metres. I have also carried out the simple (but nerve jangling) modification to my rig to permit operation on 60m. Nothing of great interest to seasoned dx-ers, but for me it was quite rewarding to work the west coast of EI, and northern GM on 40, 7Z Saudi Arabia, 7X Algeria and SV9 Crete on 20m. Also on 20m, but only heard, was a variety of east coast Ws and VEs plus east cost VU India.

80M delivered a bit of fun on New Year's Day with GB0HNY from Denby Dale ARC. They are offering a free certificate for working that station and GB1HNY over the next week or so. My inverted L antenna loads up nicely on 60m and I have heard activity on 3 UK channels so far - but all stations were busy chatting among themselves, so no QSO yet. A more hope than expectation visit to 472 kHz revealed some moderate strength CW signals. I have worked John G8MNY and Jim G4WYJ on a fairly regular basis on 80m. My attendance on the SRCC 160m Sunday morning net is irregular – something to do with horizontal polarisation!.

## **JANUARY MEETINGS**

### **Monday 8 January Annual Construction Contest**

As many entries from as many members as possible are invited for the SRCC Annual Construction Contest. Any item from the simple to the complex is welcome and may be self-designed, a copy from a published design/circuit or built from a kit. All present will have the opportunity to select from all items on display, by casting their vote in a secret ballot to select 1st, 2<sup>nd</sup> and 3<sup>rd</sup> places. Before the vote, Exhibitors will be invited to make a short presentation about their item. The winner, runner up and third place holder will all be rewarded from the Graham Marshall G3RJW Memorial Fund. The Winner will receive the Coronation Cup. The Runner-up will receive the Basil Wardman Tankard.

Last year's results were:

- 1st : QFH antenna – G4XAT
- 2nd : Antenna switchbox – G3WRR
- 3rd : 2m linear – 2E0BPU

We anticipate that the current holders will bring the Trophies along with them.

**2<sup>nd</sup> Meeting: Monday 22 January. Fix-it, Move-it-on and Social Chat led by John G8MNY.**

## **PREVIOUS MEETINGS**

**1<sup>st</sup> MEETING 4 December 2017: The Search for Extra-Terrestrial intelligence (SETI) by George M6TPH**

**Summary of presentation provided by Quin G3WRR plus supplementary information provided by George.**

The meeting was attended by 28 members and visitors.

George opened by showing a picture of a large (100 ft wide and 20ft high) rotatable antenna constructed by Karl Jansky of Bell Laboratories at the end of the 1920s to investigate sources of noise in HF radio systems. In addition to terrestrial noise sources such as thunderstorms, noise signals clearly originating from space were detected. These followed an approximately daily cycle, so these were initially assumed to originate from the sun. Subsequent more detailed measurements identified a periodicity of 23 hours, 56 minutes and a few seconds – a sidereal rather than solar day – suggesting a source outside the solar system. In due course this was traced to the centre of our galaxy, the Milky Way. The possibility that these signals might be generated by intelligence rather than natural phenomena contributed to a growing interest in UFOs and the like, and production of a range of films, some good – such as *ET*, *Contact* and *2001: A Space Odyssey* – and others less so, such as *Plan Nine from Outer Space!*

The first systematic search for extra-terrestrial intelligence (SETI) was Project Ozma, led by Frank Drake at the National Radio Astronomy Observatory in Green Bank, West Virginia. This scanned a 400kHz segment near the 1420MHz (21cm) neutral hydrogen spin reversal line using a 26m dish and ran from April to July 1960 for six hours a day, seven days a week. It produced 150

hours of magnetic tape full of radio noise but apart from a single signal (recognised as false), no credible intelligence produced signal was detected.

In the ensuing 57 years, and around 100 SETI related projects, the most plausible instance of signals from an extra-terrestrial intelligence occurred on 15<sup>th</sup> August 1977 at 0216 UTC. This is referred to as the “Wow! Signal” after the comment pencilled on the computer printout (the normal output medium of the day) by the operator, and was received at the Big Ear antenna at Ohio State University, which consisted of a plane reflector which reflected the incoming signals onto a paraboloidal reflector which focussed them onto two horn antennas connected to the receiving equipment. (Sadly, the antenna was subsequently dismantled to allow the creation of a golf course...). Although the system was adjustable in declination (equivalent to elevation angle or latitude), the Right Ascension (equivalent to longitude) could only be scanned by the rotation of the earth. The combination of earth rotation speed and antenna beamwidth meant that a particular point in space would only be visible for a 72 second window, and this is what was observed for the “Wow! Signal”. The signal (which was not a “message” – merely an unmodulated CW signal much stronger than the ambient noise) was observed in a bandwidth of less than 10kHz at the 1420MHz frequency (as used in Project Ozma) and was received by only one of the two horn antennas. There is some ambiguity over the precise location of the signal source (due to the fact that it was received by one horn only) but it was certainly near the “teapot” in the Constellation of Sagittarius. A number of potential suggestions for non-intelligence based sources (including atomic explosions and twin comets) have been made but none are completely satisfactory, and this remains the most plausible instance to date of signals from intelligent sources.

One of the main difficulties facing SETI is the ability to pick wanted signals out of noise (something as amateurs we are all familiar

with....). A number of types of noise limit what can be achieved:

Solar noise

Thermal noise from the earth

Other planets (mostly Jupiter)

Galactic background noise from the centre of the Milky Way

Cosmic microwave background at 2.7<sup>0</sup>K (the discovery of which in 1965 confirmed the Big Bang Theory, and demolished the alternative Steady State Theory).

Another problem is atmospheric opacity to electromagnetic radiation. We are accustomed to the atmosphere being transparent at the wavelength of visible light (between around 400 & 700 nm), but this is something of an exception. At wavelengths above around 12m, and below around 800nm, the atmosphere is almost completely opaque. Between these two wavelengths (which include the visible spectrum), opacity varies between 0% and approaching 100%, including a window of very low opacity between around 3cm and 12m. Within that window, there is an area where the low atmospheric opacity combines with relatively low noise from the sources listed above to provide an optimum range of frequencies for searching for intelligent signals. Since this range includes the hydrogen (H<sup>+</sup>) and hydroxyl (OH<sup>-</sup>) spectral lines, it is often referred to as the “water hole”. Losses due to atmospheric opacity of course only apply to terrestrial based observations and can be avoided by satellite based observations, but this introduces a host of new problems!

Around 1950, Enrico Fermi (who in 1942 had constructed the world’s first nuclear reactor in Chicago) asked a question (now referred to as the Fermi Paradox) which can be paraphrased as “why aren’t the aliens already here?” This absence is also referred to as The Big Silence. In an attempt to quantify the problem, in the early 60s Frank Drake (referred to above) produced the now famous Drake Equation:

$$N = N_s \times F_p \times F_l \times F_i \times L_c / L_s$$

where:

N= number of civilisations in the Milky Way today

N<sub>s</sub>= number of stars in the Milky Way

F<sub>p</sub>= fraction of stars with habitable planets

F<sub>l</sub>= fraction of habitable planets with life

F<sub>i</sub>= fraction of life bearing planets where intelligent civilisations arise

L<sub>c</sub>= lifetime of a typical civilisation

L<sub>s</sub>= lifetime of a typical star.

Plugging in known figures where available and making realistic estimates of the others, assuming a minimum figure of 100 billion stars in the Milky Way leads to a prediction of around 10k candidate civilisations in our own galaxy.

One of the areas in which understanding of the parameters in the Drake Equation has developed greatly in recent years relates to exoplanets (ie. planets outside our own solar system), thanks in part to the Kepler Space Telescope. This was launched in 2009 as a one year, 600 million USD budget project. However, despite the failure of two of its four gyroscopes in 2013, it (at the time of writing) continues to operate as part of an extended "K2" mission and has contributed to the discovery of 2335 exoplanets as of June 2017. Progress to date in this area can be summarised as follows:

solar systems with planets can now be regarded as normal rather than an exception

some exoplanets appear to be in the "Goldilocks zone" where (as in the old fairy story) it is not too hot, not too cold but just right – as defined by the ability for liquid water to exist

the system of TRAPPIST-1 (a red dwarf star in the constellation of Aquarius) has been found to contain a total of seven planets in the Goldilocks zone

building on the experience of Kepler, plans for the use of the planned (but as yet lacking full budgetary commitment) Square Kilometre Array in the southern hemisphere include its use to search for exoplanets.

While being in the Goldilocks Zone may be a necessary condition for life to develop, there may be other conditions that also need to be met. For example, the Earth's magnetic field (the result of circulation of its liquid iron/nickel core) causes the energetic particles in the solar wind to be diverted around the planet or trapped in the Van Allen radiation belts (discovered by the Explorer 1 satellite in 1958). Without a magnetic field it is possible that a planet's atmosphere could be driven away completely by the solar wind, thus removing the possibility of life developing. And even with a magnetic field present a temporary surge of solar wind (such as that caused by a Coronal Mass Ejection) can overload it and result in disturbances with major impact on high technology communication and power systems. If such effects were severe, they could act as a barrier to development of high technology societies capable of communication with others. This is no idle fear as there have been many instances of such surges causing problems on the Earth (such as the failure of the North American power grid in 1989, communication satellites and GPS). The most severe instance on record is the "Carrington Event" of September 1859 in which sparks and fires were reported from the relatively unsophisticated telegraph equipment of the day. It has been reported that is believed that an event of the same magnitude today would devastate the modern world.

George went on to display the scope of the major active or planned SETI programmes on a three dimensional graph whose axes were:

frequency used (noting that some projects were extending into the infra-red and optical ranges)

percentage of sky covered by the project

relative depth of penetration into the universe.

This was supported by:

a diagram depicting and comparing around 30 of the current SETI observation platforms in use in terms of physical size (in relation to a tennis court and baseball pitch) and configuration / structure of mirrors

photographs of:

SETI Institute Allen Telescope Array at Hat Creek 300 NE of San Francisco (currently receiving 55 terabytes of data per day)

Arecibo dish in Puerto Rico

Paranal Observatory in Chile

500m Aperture Spherical Telescope (FAST) in China.

George noted that although the focus of work had largely been on receiving messages, there have been two instances of sending them: firstly plaques attached to the 1970s Voyager 1 & 2 probes, showing information related to humanity (including our location in the universe and representations of DNA and humans), and secondly a 27 second message sent from Arecibo in 1974 depicting (in a matrix form reminiscent of early computer games) similar information to that on the plaques. A claimed “return message” in the form of a 120 x 70ft crop circle at Chilbolton in Hampshire is assumed to be a hoax!

With the collection of increasing amounts of data as SETI activity grew, there was an increasing need for computing power to process it. With the increasing availability of personal computers, in 1999 a distributed computing project entitled *SETI@home* was set up at the University of California at Berkeley. In this the data is broken down into packages called Work Units (WUs) and sent, with processing software, to volunteers (of whom there are currently around 150 000). The code - the function of which is to process the data and pull signals out of the noise - runs in background on the volunteers’ computers, and on completion of processing the results are returned to Berkeley. At the in-

station (Berkeley) end, *SETI@home* now runs on a computing platform developed as part of the *Berkeley Open Infrastructure for Network Computing (BOINC)* initiative. This includes 31 projects, all requiring large amounts computing power but capable of being processed on a distributed basis, covering such topics as proteins, climate change, HIV, earthquake prediction and malaria. Volunteer contributors (who may be individuals or groups) are provided with Message Boards to allow them to communicate with each other, and are able to tune their settings (e.g. workload). Typical running costs are 10p per day for a laptop and 70p per day for a tower unit or server.

Despite having been running for 18 years, *SETI@home* has so far recognised no intelligence originated signals. In order to increase the level of activity and effectiveness of SETI, the *Breakthrough Listen Project* was set up in 2015 with a 100m USD donation from the Russian entrepreneur Yuri Milner. Having established that exoplanets are a relatively frequent occurrence, it is now opportune to focus efforts on those for which the necessities of life are present. These include water, oxygen and, particularly, chlorophyll. The main problem, as usual, is noise. Although water is relatively easy to detect, oxygen is much harder and detecting it in exoplanets is beyond the capabilities of current technology – and detecting chlorophyll is harder still. The proposed Advanced Technology Large Aperture Space Telescope (ATLAST) - with infra-red, optical and ultra-violet capabilities far exceeding those of the existing Hubble Space Telescope - would greatly improve prospects in this area. However it is unlikely to be on line before 2025 (hence the humorous acronym ATLAST...). However progress is being made, and during 2017 the Green Bank Radio Telescope (see above) has been linked up with the UK’s Jodrell Bank Radio Telescope in Cheshire and Parkes Radio Telescope in New South Wales. In addition, eleven potential candidates have been pulled out from the petabytes of data – although these are now believed to be false positives.

Another project under the Breakthrough umbrella is *Breakthrough Starshot*. This is a proof of concept study into launching nanoprobes weighing a few grams and powered on the outward journey by ground based laser beams reflected off a 4m x 4m graphene "lightsail" attached to the craft.

Functions would include:

camera

magnetometer

gyroscopes

power supply (solar and/or atomic battery)

microcontroller

radio link (to send data gathered back to Earth)

photon thrusters

environmental protection (e.g. against space dust).

Prototype "Sprites" containing the radio part on a 3.5 cm square chip weighing 4 grams were launched in July 2017.

It is believed that travelling at up to 20% of the speed of light such nanoprobes could reach the nearest star system (Alpha & Proxima Centuri) in around 20 years, and return data to Earth in a further four years.

At an end of presentation Q&A session a number of topics were discussed, including Dyson Spheres.

[Shortly after the presentation, George e-mailed to note that the University of California at Berkeley are now offering research internships on Breakthrough Listen, and wonders if the children or grandchildren of any SRCC members doing appropriate courses of study might be interested. Details are as follows:

***SETI@home: Berkeley SETI Research Center undergraduate research internships, summer 2018***

*Applications are invited for 10-week paid undergraduate research internships at*

*Berkeley SETI Research Center for summer 2018. BSRC is a world-leader in the search for extraterrestrial intelligence – the quest for a scientific answer to one of humanity's oldest questions: Are we alone in the Universe?*

*Housed in the Astronomy Department at the University of California, Berkeley, the team at BSRC leads the science program for the \$100-million Breakthrough Listen project (<https://breakthroughinitiatives.org>). Our scientists and engineers are pioneers in the development of software, instrumentation, and science strategy for the search for intelligent life on other worlds. We have access to substantial amounts of time on the planet's largest telescopes, connections to leading players in industry, and we're based in one of the world's premiere astronomy research institutions. We're also psyched that we get to wake up each day and hunt for aliens. Current sophomore, junior, and senior undergraduates (including non-US citizens) studying at a degree-granting institution in the US are eligible to apply. Around 5 - 7 positions will be available. A stipend of \$20 / hr (up to a maximum of \$8000) will be provided. Details and links to the application form are at*

<https://seti.berkeley.edu/Internship.html>

George also suggests that, following the Q&A discussion on Dyson Spheres, the following URL may be of interest:

[https://en.wikipedia.org/wiki/Dyson\\_sphere](https://en.wikipedia.org/wiki/Dyson_sphere) ]

## **73, Quin G3WRR**

### **AN UPDATE ON RSGB AFFILIATED SOCIETIES CONTESTS - AND AFS SUPER LEAGUE**

For the last couple of months I have reproduced the Table constructed by Quin G3WRR showing the contests remaining in the current rounds of AFS Contests and the AFS Super League. The intention of the original article by Quin in the November 2017 issue was to raise awareness and level of participation level in this series of 7 Contests. Participants known to have taken part to date

are Quin G3WRR, Steve G4FYF and John G8IYS. . Dates and Bands are shown in the table on next page. If you are interested, or want to find out more, I recommend a re-reading of the November piece and following the links. The most imminent event is CW on 80 and 40m on 7 January..

Date	Time UTC	Contest	Band	Mode
Sunday 7/1/18	1400 – 1800	HF AFS (CW)	3.5 & 7 MHz	CW
Saturday 13/1/18	1400 – 1800	HF AFS (SSB)	3.5 & 7 MHz	SSB
Saturday 20/1/18	1400 – 1800	HF AFS (data)	3.5 & 7 MHz	RTTY PSK63
Sunday 04/02/18	0900 – 1300	432 MHz AFS	432 MHz	99% SSB

<http://www.rsgbcc.org/hf/rules/2018/rafs.shtml>  
<http://vhf.rsgbcc.org/cgi-bin/readcal.pl>  
<http://vhf.rsgbcc.org/cgi-bin/readcal.pl?year=2018>

## BLANCA WYNN SK

I have just been informed of the passing of Blanca, widow of the late Bernie Wynn G8TB and mother of Victor. As I write, I have no more information. I will pass on any further news as I get it. Please drop an email to secretary at g3src.org.uk to be put on the list for update.

## CHAIRMAN'S RAMBLINGS

Hello Everyone. A Happy New Year to one and all and I wish you the very best DX for 2018.

Preparations for the Christmas period have rather taken over other events in the Burton household this month, so this piece may be rather shorter than usual.

At the end of last November (but after I had written my Blog), the results of the November 70cms UKAC were published; I came 64th of 102 entries which is a decline from 54th in

October. But more importantly for me was the fact that my logging was 100% accurate (i.e my adjudicated score was the same as my claimed score). Under contest conditions, it is surprising how difficult that is to achieve. My "normalised" score of 382 helped SRCC up to 25th in the Club Championship. Midway through December was the usual 70cms UKAC contest (the last for the year to count for 2017 Club points). It is too early for the results to be announced but my claimed score was 8095 points from 29 QSOs with the best DX being with a GI at 521km. This points score is up on last month but well down from my record of over 10000 in October. Conditions were far from good so we'll wait and see what the results show.

The other big "Radio Event" in terms of my activities was the "public release" of the new MINOS2 VHF Contesting Software. Some of you may remember that a couple of months ago I mentioned that I was actively involved in testing this new version of the contest logging program that the 70cms team has used for a number of years during VHF NFD Well, after many months' development and many hours of testing, we believe it is stable enough to release to our fellow Amateurs. I (and a few others) have been trialling it during the UKAC events during the autumn and I should say it is a big improvement over the previous release we have use The biggest enhancement is the ability of the software to interface with the radio equipment (transceiver and rotator). Also, there is now a facility to export a log file that includes mode and frequency information that can be imported into your usual (non-contest) logging program for those users who still keep a full station log. Another enhancement provides multiple memories that can store Callsign, Frequency and Direction data. The memory can be instantly recalled and, if required, the rig and rotator reset accordingly. This, potentially, saves precious minutes during the contest in chasing down stations still-to-be-worke Further enhancements are planned for the new year including a "Bandmap" (to show diagrammatically where other stations are) and a window to the DX Cluster.

While talking about contests, some of you may be aware that scoring for some VHF RSGB contests is changing for 2018. The old rules gave 500 points for the first contact with each large square covering "middle England", 2000 points for the "remote" squares and 1000 points for the others. The new rules give 500 points for the first contact with every large square. It depends where you live and where you make your QSOs as to whether you think this is more fair or less fair to contestants!!!

That's all for this month. Let's hope there are lots of entries in the Construction Contest and see you in January.

73, Peter G3ZPB.

## CONGRATS CATS

I was delighted to receive an email from Andy Briers G4KZT obo Coulsdon Amateur Transmitting Society which announced the results of their recent AGM. They now have a permanent Hon Sec in the shape of Terry Giles G4CDY and a new Newsletter Editor in David Milne G6VMI. Their website and contact addresses remain (to the outside world) unchanged as:

[secretary@catsradio.org](mailto:secretary@catsradio.org) and  
[newsletter@catsradio.org](mailto:newsletter@catsradio.org)

## Future SRCC Meetings

08/01/18	SRCC Construction Contest
22/01/18	Fix-it, Move-it-on and Informal Social
05/02/18	Have Computers Killed-off Amateur radio? by Peter G3ZPB
19/02/18	Fix-it, Move-it-on and Informal Social
23/02/18	SRCC Dinner

05/03/18	Spring Surplus Equipment Sale
19/03/18	Fix-it, Move-it-on and Informal Social
02/04/18	Annual General Meeting
16/04/18	Fix-it, Move-it-on and Informal Social
14/05/18	The Role of an RSGB Regional Manager by Mick Senior G4EFO
21/05/18	Fix-it, Move-it-on and Informal Social

## Other Local Club Meetings.

16 Jan	<p><b>Bromley &amp; District ARS</b></p> <p>AGM.</p> <p>Normal Meetings are held on third Tuesdays 7.30 for 8.00pm @ Victory Social Club, Kechill Gardens, Hayes, Bromley, Kent.</p> <p>Contact Andy G4WGZ on 01689 878089 or enquiries(at)bdars.-co.uk. Web: www.bdars.co.uk</p>
09 Jan	<p><b>Coulsdon ATS</b></p> <p>Annual Dinner</p> <p>Meetings are held at 8pm on 2<sup>nd</sup> Monday each month at St. Swithun's Church Hall, Grovelands Rd, Purley.</p> <p>Contact Terry Giles G4CDY via <a href="mailto:secretary@catsradio.org">secretary@catsradio.org</a></p>

18 Jan	<p><b>Sutton &amp; Cheam RS</b></p> <p>An Introduction to Morse Code by Dan Romanchik KB6NU</p> <p>Meets 8pm on 3rd Thursday every month. Contact John Puttock G0BWV on 020 8644 9945 or email <a href="mailto:info@scrs.org.uk">info(at)scrs.org.uk</a> Web: <a href="http://scrs.org.uk/">http://scrs.org.uk/</a>. They also run a practical group most Monday evenings at the Banstead Scout Hut.</p>
04 Jan	<p><b>Horsham Amateur Radio Club</b></p> <p>Bring, Show, Tell</p> <p>Normally 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 <a href="mailto:g3zbu@hotmail.com">g3zbu(at)hotmail.com</a> or <a href="http://www.harc.org.uk/">http://www.harc.org.uk/</a></p>
23 Jan	<p><b>Dorking &amp; District Radio Society</b></p> <p>Ham Radio Yesterday - Discovered Today</p> <p>Meetings at 7.45pm. Contact: David Browning (M6DJB) at <a href="mailto:djb.abraxas@btinternet.com">djb.abraxas(at)btinternet.com</a>. Web site: <a href="http://www.ddrs.org.uk">http://www.ddrs.org.uk</a></p>
5 Jan	<p><b>Crystal Palace R&amp;EC</b></p> <p>Video Evening</p> <p>All Saints Church, Beulah Hill (Normally meets monthly on first Friday). Contact: Bob G30OU 01737 552170 (<a href="http://www.g3oou.co.uk">http://www.g3oou.co.uk</a>)</p>

No info	<p><b>Wimbledon &amp; District Amateur Radio Society</b></p> <p>Meets at Martin 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 <a href="mailto:andrew.maish@ntlworld.com">andrew.maish(at)ntlworld.com</a></p>
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### Signing Off:

Well. That kicks off the first month of the year. Sorry that there are no nice pics or technical articles this month. Please dig out your construction projects and bring them to the Competition on 8 Jan. Once again: Happy New Year. Copy date is 8 days before the First Meeting each month.

Vy 73 from John G8IYS. Editor & Hon Sec.