SURREY RADIO CONTACT CLUB

82nd Anniversary Year - Founded 1935

January 2017 – No: 893

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**

CLUB Internet WEB Site: http://www.g3src.org.uk

Hon. Sec. John Kennedy G3MCX
22 Croham Park Avenue
SOUTH CROYDON
Surrey CR2 7HH
020-8688 3322
E-mail: secretary@g3src.org.uk

MONTHLY MEETINGS 1ST AND 3RD MONDAYS 7.30 FOR 7.45pm

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

****

1st MEETING Monday 9th January: 3D printing by Gareth G4XAT

2nd MEETING 23rd January: Informal Chat, Move-it-On, Fix-it. Led by John G8MNY

SRCC Committee 2016/17

Chairman & Club Meetings	G4FDN Pat McGuinness	020 8643 0491
Vice-Chairman	M0LEP Rick Hewett	01689 851472
Secretary & Communications	G3MCX John Kennedy	020 8688 3322
Web Master (ex Committee)	G4FYF Steve Jones	01424 584143
Treasurer & Membership Records	G4FFY Ray Howells	01732 357474
Equipment Officer, Fund Raising & Liaison	G4DDY Maurice Fagg	020 8669 1480
Club Contest Co-ordinator	G3WRR Quin Collier	020 8653 6948
Co-opted Committee Member	G3ZPB Peter Burton	01737 551413
Co-opted Committee Member	G6JXA Kim Brown	07812 735507

Dear Members & Friends,

Hello and welcome to the first 2017 issue of the SRCC Newsletter.

First Meeting: 9th January 2017: 3D printing

"3D printing" is a term we hear pretty often nowadays, and this will be an opportunity to hear SRCC member Gareth G4XAT to tell us all about it – and perhaps even give us a live demonstration!

Second Meeting: 23rd January 2017: Informal Chat, Move-it-On, Fix-it session

This will follow the usual format for the second monthly meeting: mainly a chance to chat to other members/visitors face to face, but with the option of taking advice on those intractable technical problems with the assistance of the collective brainpower present, supported by a set of test equipment provided by John G8MNY. If you have a particular problem in mind, it might be worth contacting John in advance to ensure that he has the right kit to assist!

Sad deaths of two SRCC members

It is particularly sad to have to report the deaths of not one but two club members this month.

Bert Smith G0IZB, who was an Honorary SRCC member, died on 21st November at the age of 96 following a fall. His funeral will be held at 11a.m. on 5th January at Sanderstead Parish Church. A number of members will be attending. Bert was one of that small surviving band of people who had taken part in the D-Day landings in 1944, and it is hoped to include a more detailed obituary in the Newsletter in due course.

Bert Smith (G0IZB) – R.I.P

The death has also been reported of Ivor Morgan-Jones M0IMJ. Ivor had been a SRCC member for some years. Like Bert, he had been involved with the services, in his case with the Royal Navy. He had been a manager at HMS Belfast on the River Thames, and was an Honorary Life President of the London branch of RNARS. Again it is hoped to include a more detailed obituary in the Newsletter in due course.

Ivor Morgan-Jones (M0IMJ) – R.I.P

LAST MONTH'S MEETINGS

The annual SRCC Construction Contest for 2016 was held at Trinity School on 5th December. 13 members and guests were present. The chairman, Pat G4FDN, opened by explaining that the exhibitor of each item would be allowed up to 3 minutes to describe the offering, and when all the entries had been presented, those present would be able to vote for first, second and third positions. A total of 17 items were presented by 6 entrants.

Entries laid prior to judgement!

1. **VHF / UHF transceiver test set (John G8MNY) –** John had bought this item, dating from 1989, at a junk sale. It offers a wide range of functions associated with testing radios: dummy load / power meter / frequency counter / PLL signal generator / PLL CTCSS tone generator / Selcall ID generator and decoder / AF oscillator / AM-FM-PM receiver / modulation meter / modulation meter / SINAD meter / AF voltage and dB meter / IF crystal oscillator. It needed significant work (all without a service manual!) to restore it to full operation, including:
    - Repair of mains switch
    - Rebuild of dummy load to present 50Ω (rather than 147 Ω !). Now flat to 1GHz
    - Replacement of broken 10k preset to restore calibration/correct operation of FM deviation range control
    - Replacement of transistors in 12V PSU
    - Restoration of PM calibration
    - Restoration of accuracy of AF oscillator frequency
    - Improvement of CTCSS pilot tone waveform shape.

    Other enhancements were:
    - Creation of set of test leads
    - Improvement of ability to adjust crystal oven
    - Increase of deviation measurement range
    - Addition of meter illumination
    - Addition of mode indication LED
    - Replacement of Selcall adjustment control with speaker/amplifier/volume control
    - Increase of AF oscillator frequency range.

2. **2m Moxon rectangle beam (Gareth G4XAT)** – useful for DF hunts / portable use. Uses tape measure elements so cheap and forgiving in use!

3. **3 elenent 2m Yagi (Gareth G4XAT) –** again using “tape measure technology”. This is optimised for very high front/back ratio and as such well suited to DF hunts. Excellent SWR achieved with “hairpin match” the inductance of which tunes out the inherent capacitive reactance. Polarisation changeable by moving the handle!

4. **QFH antenna (Gareth G4XAT) –** at last year’s construction contest, Gareth presented a quadrifilar helix (QFH) antenna for receiving pictures from weather satellites. This year he presented a beta test version of a new design by the designer of last year’s model. This features

an improved radiation pattern at lower elevation angles (indeed slightly below the horizon) compared with the original. The trade-off for this is a somewhat reduced pattern at higher elevation angles – where gain is less important as signals are stronger. This antenna allows noise free weather pictures (also demonstrated) down around 1^0 above the horizon. Although the design is still "work in progress" the current version is flat from 134 – 148MHz and has the advantage of being less susceptible to pager interference than the previous design.

5. **Car mounting for pump-up mast (Gareth G4XAT) –** this item was presented pictorially due to the difficulty of getting the host car into the lecture room! It consisted of a mounting to permit an existing Clarke 10m pneumatic mast to be mounted on a Ford Scorpio. The base of the mast sits on an adaptor attached to the towing bracket, and in use upper support / stability is provided by struts attached to the roof-rack, supplemented by a set of guys. The whole setup (including antennas and step ladder) can be carried on the roof rack.

6. **"Megasquirt" Engine Fuel Injection Controller (Gareth G4XAT) –** the item displayed is Gareth's fourth and most advanced unit. (The design – a Linux based open source fuel injection controller – goes back to 2003/4). It is destined for use on his Austin Hereford (A70) hot rod project. In addition to controlling the injection, it can also "talk to" other electronic controllers such as an electronically controlled automatic gearbox. It was demonstrated "running" a JimStim engine simulator which can be programmed to emulate a very wide range of engine types. It can be tweaked using the "Tuner Studio" software package.

7. **Kit based shack clock (Gareth G4XAT) –** In reality this item is no ordinary shack clock! It uses a sub-equipped WSPR (Weak Signal Propagation Reporter) board from the excellent Hans Summers QRP-Lab. (It was made clear that this should **not** read Ann Summers…). As currently equipped, in addition to date and time it includes GPS capability and two temperature sensors – so it is possible to measure temperatures between -40^0C and $+125^0$C at a displayed 6 digit Maidenhead locator. In additional to the internal temperature sensors, the ability to read from remote sensors is also provided. The board was mounted in an existing box, in conjunction with a custom bezel and angled stand generated on a 3D printer.

8. **Small power unit (Gareth G4XAT) –** this item is based on a cheap (£2.50) 150W DC boost converter (=SMPS) board from eBay which for an input of 10v

can provide an output of up to 35V. This is enough to drive a Weller soldering iron – and much more efficiently than an inverter and mains power unit.

9. **20W LED floodlight (Gareth G4XAT) –** this item is a resurrected mains 20W LED floodlight, which had been dumped because of a failed power unit. This was replaced by an adjustable SMPS board. Selection of a suitable potentiometer allows adjustment of power levels from about 1.2W up to 20W.

10. **1 kW 13.8V PSU (Gareth G4XAT) –** this consisted of an "extensively got at" ex-server switched mode power supply. The (large) screw terminals are protected against shorting out by a 3D printer generated insulating divider. It delivers up to 70A, with a voltage output that drops from 13.8V to 13.7V at a current of 50A.

11. **Barbecue starter chimney (Gareth G4XAT) –** the basic item was bought on line but improved by provision of a heat shield to protect the hands, addition of extra holes to improve burning rate, and splaying of the legs to improve stability.

12. **Wood gas stove (Gareth G4XAT) –** consists of two concentric cans and sits on top of a fire. The inner can contains the fuel (it will burn nearly anything combustible) which is gasified by the heat from the fire: the outer one constitutes an external chimney feeding additional air to the gas, thus helping to provide a smoke free burn and increase heat output.

13. **T500 linear amplifier (Gareth G4XAT) –** the basic amplifier had been bought from a local amateur. Although it worked OK, a number of modifications designed by John G8MNY have been incorporated, viz. improved input match, changed standby current consumption and driver ALC. Cooling is provided by a pair of thermistor controlled "smart fans", whose speed track the heatsink temperature closely.

14. **1kW linear amplifier (Gareth G4XAT) –** this item was exhibited in 2015 as "work in progress". That term still applies, but a lot has been done. The main power transistor board (bought in from the USA and capable of producing 1kW between 1.8 and 52 MHz) has now been mounted on a large heatsink, believed to be from a mobile phone base station and purchased at a SRCC junk sale many years ago. Cooling is provided by four fans mounted on an acrylic sheet. The fans are unusual in having PWM (pulse width modulation) control, allowing precise control of their speed and hence heatsink temperature. This is managed by a PIC microcontroller which also allows operation of warning

LEDs. It is hoped the item will be exhibited, in fully operational form, next year.

15. **4m Slim Jim antenna (Pat G4FDN) –** This item was built to the design used for the 2016 SRCC construction project, and is built in an ABS pipe. Although it bends in the wind, its performance, which is much better than a half wave dipole, is not affected. It offers an SWR of 1.1:1.

16. **Antenna switchbox (Quin G3WRR)** – This item was built specifically for the Restricted section of HF National Field Day, where only a single antenna is permitted for six bands between 1.8 and 28MHz. It allows up to 6 ATUs (one per band) to be connected between the rig and antenna, and appropriate selection made without the need for manual ATU changing or retuning. A control box and connecting cable allow the switchbox to be located remote from the operating position, in order to avoid mutual interference between the logging computer and the rig. It is designed to do the job rather than display technical sophistication (eg. it uses mains relays up to 28MHz…) or constructional aesthetics!

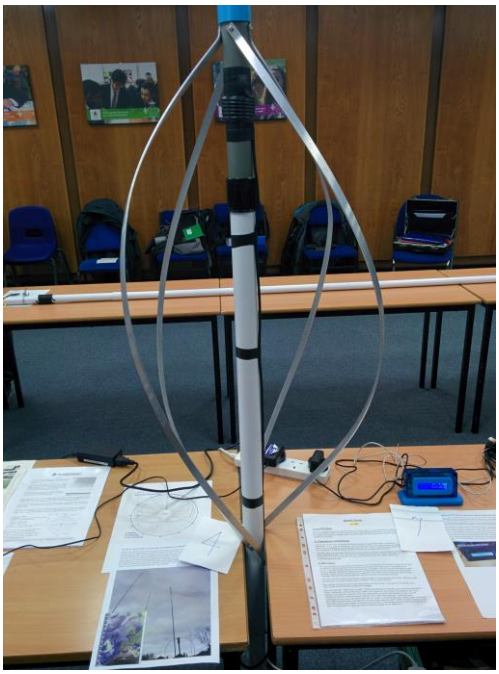
17. **Rigs in boxes (Rick M0LEP)** – Two transceiver kits (crystal controlled, one from Pixie producing 100mW output on 40m, the other from Fox-3 producing 1W on 30m) mounted, with suitable board trimming, in small sweet tins that Rick had to hand.

18. **2m linear amplifier (Nick 2E0BPU)** –After problems with a 50W amplifier (the board of which delaminated at 50W output), Nick - who is interested in meteor scatter – decided to build a 500W amplifier using a pair of PA board kits bought from a supplier in Greece. These have now been assembled and mounted, with input and output combiners, on a large heat sink. However support from the supplier has been disappointing – although they were able to provide a component layout diagram, they would not provide a circuit diagram.

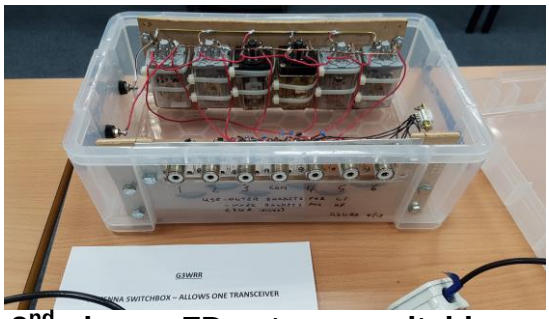
Following presentations of all the entries, those present voted for their choices for first, second and third place. The results were as follows:

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

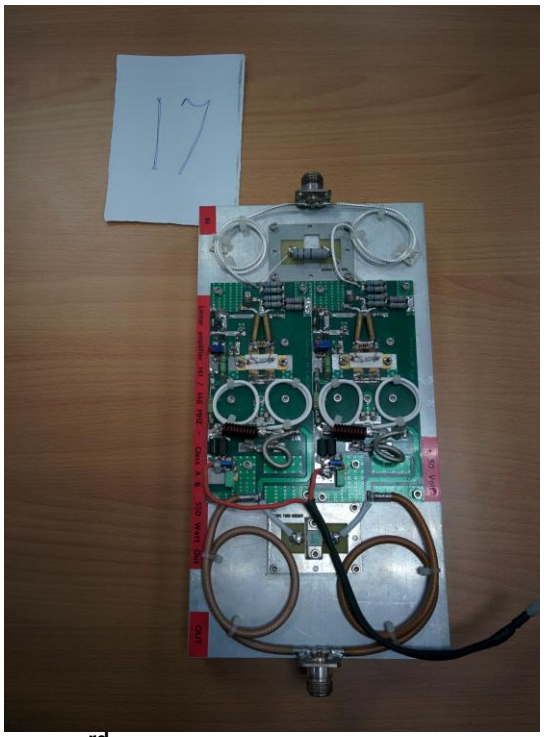
Congratulations to all the winners!



Winner – QFH antenna



2nd place – FD antenna switchbox



3rd place – 500W amplifier

Gareth G4XAT receiving the winner's prize

The second meeting, on 19th December, was slightly different from the usual second meeting. In addition to the usual selection of test gear, brief presentations on the club component pool and equipment loan scheme were given, together with a attempt to encourage (well, bully actually…) members into operating in the three remaining contests in the RSGB AFS series. Business completed, a selection of comestibles, supported by drinks (alcoholic and otherwise) was made available and a convivial session followed.

SRCC members (all still standing at this stage) at the pre-Christmas meeting

73, Quin Collier, G3WRR

Chairman's Blog by Pat G4FDN

I wish a **Happy New Year** to all members and their families.

New Year Resolutions: I imagine many of us will have new and old things in our personal lives we want to change and improve on, but here I'm going to suggest consideration of some amateur radio related ones:

- to get on the air more
- to participate in one or more of the club's nets
- to attend club meetings more often
- to 'put something back' into the hobby

These can lead to a 'virtuous circle: operating more, including on club nets can lead to the desire to improve one's station set up in order to be better heard and to hear others more easily. Attending club meetings more often can often lead to ideas and help on improvements and solving operating problems. Contributing to the club newsletter or offering a presentation on something you have done, learned or observed are just a couple of ways of 'putting something back'.

Welcome to new member: I'm pleased to advise that Jim Lugsden 2EØJFL of Beckenham has joined the club. Jim is very 'clubbable' -being a member of CPREC and SMEE as well, and is pictured below with two fellow SMEE (and SRCC members) at our pre-Christmas meeting.

Maurice G4DDY, Jim 2EØJFL and Andrew G4ADM enjoying the Christmas spirit

The performance of tri-band and quad-band collinear antennas: I came to the conclusion a couple of years ago that my Moonraker SQBM1000 Tri-band 6m/2m/70cm collinear antenna was really rather poor on 70cm -performing worse than a 70cm Slim Jim -which was less than a quarter of the size. I sold the antenna and replaced it with a shorter Diamond X-50N dual band 2m/70cm collinear which is least 10db better on 70cm. I suspect that the main radiation lobe of the SQBM1000 is far from the horizon. I have done comparative tests with other stations running similar tri-band antennas from Watson, Diamond, or other manufacturers, and signal reports on line of site paths are very much reduced on 70cm compared to 2m. A test with Kim G6JXA, who has both tri-band and dual band collinears, showed signal strengths being 20dB stronger on 70cm on his dual band 2m/70cm collinear compared to his tri-band 6m/2m/70cm collinear. These tri-band antennas may indeed have a gain on 70cm but it certainly is not most at the horizon. I am therefore very suspect

of quadband collinear antennas covering 6m/4m/2m/70cm that have appeared on the market, and their claimed 'gains' - I suspect that while one may get a good impedance match the actual performance, especially on 70cm, will be disappointing.

Home improvements: thankfully met their Christmas deadline and I'm taking a couple of week's break with hopefully some more time for radio. December saw completion of the living room under floor insulation and installation of new Russian Whitewood flooring (screwed down with around 1000 screws!), together with new mantle, architraving and skirting boards.

Underfloor insulation using Celotex

Russian Whitewood flooring

The flooring has since been stained an antique pine colour to match existing doors. Next up is the dining room with underfloor insulation and new flooring - so more hard skin on the knees to come!

Help requested again!: So far only Peter G3ZPB, has responded to my appeal in last month's newsletter. The club has been donated a large number of resistors. We can possibly keep some for the club's component bank, and also make sets available to members, but we need to produce a list of what we have and approximate quantities. Any more volunteers to help with this? We have six 'vegetable crate' size boxes, and I include pictures of two of the boxes below to give an idea of the 'magnitude'.

Box 1

Box 2

Can you take away a box and catalogue the contents?

Sign-off: I hope to see you all at next Monday's presentation on 3D printing.

For Sale: Price Reduced Again!

ICOM IC-726 MF/HF/6m Transceiver £240

Frequency Range:	TX: 160-10 inc WARC + 6m RX: 0.03-33 & 46.2-61.1 MHz
Modes:	AM/FM/SSB/CW
RF Power output:	HF: 10-100 W (AM 10-40 W) 6 m: 1-10 W (AM 1-4 W)
Voltage:	13.8 VDC
Aerial Input:	50 ohms, SO-239

Further info is available via our Equipment Officer, Maurice G4DDY, who holds the equipment. Payment should be made to Treasurer G4FFY. All income goes to club funds.

Future SRCC Meetings

9th Jan	3D Printing by Gareth G4XAT
23rd Jan	Fix-it, Move-it-On, Informal Chat
5th Feb	"How not to win NFD" by Quin G3WRR
19th Feb	Fix-it, Move-it-On, Informal Chat
6th Mar	Surplus Equipment Sale
20th Mar	Fix-it, Move-it-On, Informal Chat

Contributions for next Newsletter

Should be sent preferably by email to secretary@g3src.org.uk
The deadline for submission is normally 8 days prior to the first meeting.

Signing Off: That's all for this month.

73 "The Committee"

Other Local Club Meetings

19th Jan	**Sutton & Cheam RS** Big Radio Quiz Meeting at Vice Presidents Lounge, Sutton United Football Club, Gander Green Lane, Sutton. Normally 3rd Thursday 7.30 for 8pm. Sec: John G0BWV 020-8644 9945
17th Jan	**Bromley & District ARS** Programme Planning & AGM Normal Meetings third Tuesdays 7.30 for 8.00 pm @ Victory Social Club, Kechill Gardens, Hayes, Bromley, Kent. Contact: Andy Brooker G4WGZ 01689 878089
6th Jan	**Crystal Palace R & EC** Digital Mode Radio by Damien 2E0EUI All Saints Church, Beulah Hill from 7:30pm. Bob G3OOU 01737 552170 (Meet normally monthly on 1st Friday) http://www.g3oou.co.uk/
11th Jan	**Coulsdon ATS** New Year Dinner Meetings held at 8pm on 2nd Monday each month @ St. Swithun's Church Hall, Grovelands Rd, Purley. Steve Beal G3WZK. Secretary@ catsradio.org. Tel: 01883 620730.