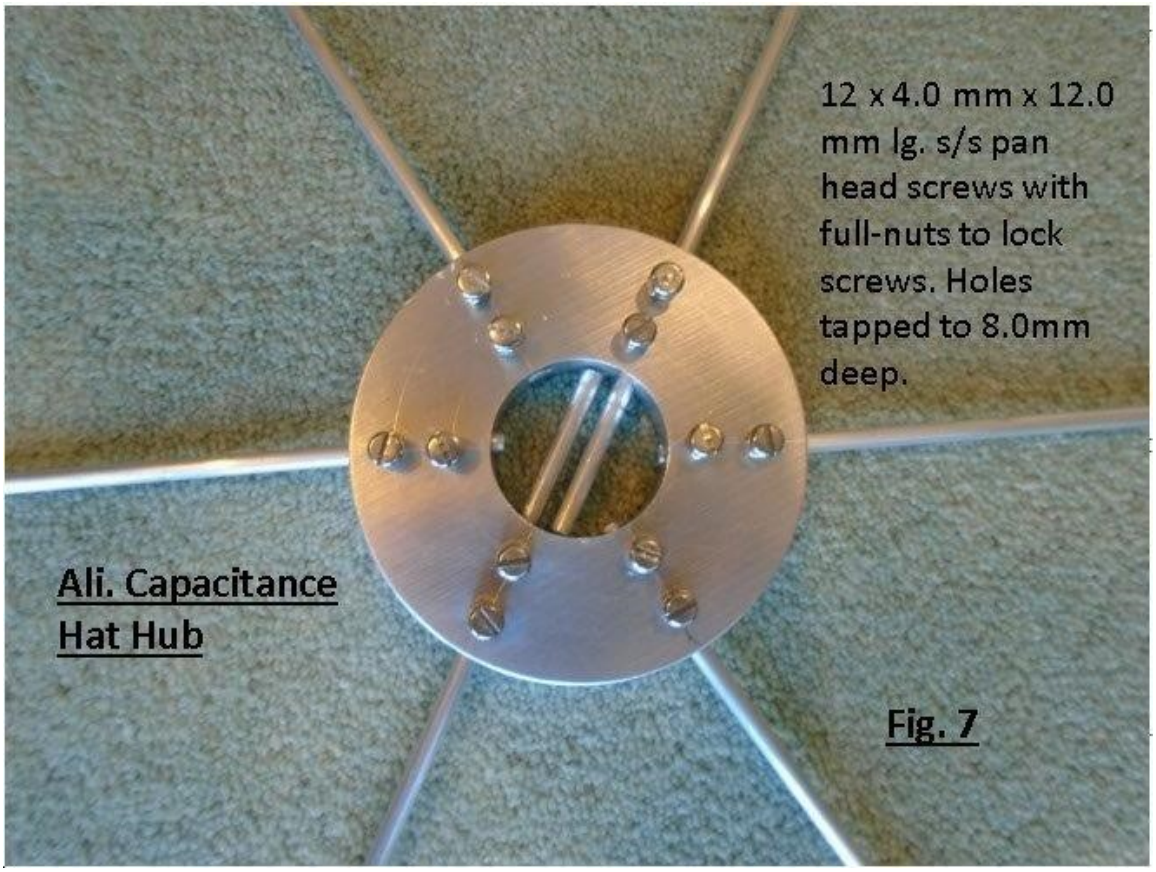
Mid Sussex Amateur Radio Society

NEWSLETTER

Feb 2020

Mid Sussex Matters



Part of Top-Loaded Low-Band Antenna by Alex M0TOT See page 4

In this issue

Meetings are held on Friday evenings starting 7.45pm at the rear of Cyprus Hall, Millfield Suite, Cyprus Road, Burgess Hill, West Sussex

Visitors are always Welcome

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From the President's Corner

DR. ROBIN BELLERBY GM3ZYE SK

I am sorry to announce the passing of Robin, a onetime member of MSARS, and a friend of mine for more than 50 years.

Robin died at his Scottish home on the 3rd January after a long illness, and it is fitting that we reflect on the achievements of this remarkable man.

He joined MSARS, when the English Language College he was running in Hove, was flourishing.

However, the withdrawal by the Government of the time, of many foreign language student's visas, made it necessary for Robin to travel to many parts of the world, to sign up students who could still qualify.

He used his amateur radio skills to the full as part of his search. Robin held the calls G8DTO, G3ZYE, A45WA and JY8ZY amongst others, and operated from more than 40 countries during his travels.

I too was also travelling widely at the time, and we kept in touch either by skeds from around the world, or by postcards from the exotic places he visited.

He lived in Hove when the language college was operating, and then moved to Lindfield before relocating to Newton Stuart in Scotland.

This is one of the UK's Dark Sky areas, and Robin set up an observatory, with a sliding roof containing three large telescopes. He taught students from local schools, who were bussed in from the surrounding area. This went well, until the local council cancelled the buses, making it impossible for the arrangement to continue.

Meantime, Robin's two towers and beams installed for his amateur operations, were struck by lightning, and his failing health prevented him getting on the air.

Although living in Scotland, Robin and his Son Richard, made many trips South, and visited MSARS whenever possible.

They travelled in what was perhaps the world's oldest and most unreliable campervan, taking it in his stride, even if he had to stop midway to replace a clutch or gearbox.

His most memorable visit to Cyprus Hall, was when he arrived beardless, and almost persuaded us that he was his Brother, and that Robin would be along shortly.

I had a Christmas card and letter from him, just a week or so ago, in which he gave no indication of his failing health, but that was Robin he would never complain.

Look at his website and see the amazing list of qualifications he had amassed. Amongst other things, he was an RSGB Council member for many years, and still found time to work all bands and modes.

I shall miss him.

Ken G3WYN

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From The Chair February 2020

February has as usual, started slowly for us, however, I feel things will pick up as the evenings gets lighter.

Members are renewing their subscriptions, so if you have not already renewed yours, please see Mike G8KMP.

Kirk 2E0GKL, held a meeting to outline training, using the new syllabus, which will be a new way of running the courses.

This will involve asking help from more members to become involved, and I am confident you will step up to the plate. Then we will continue to be the training center candidates will wish to use.

As I said in the newsletter, we already have some dates for the coming months. Please check the website and put the dates in your diary.

Remember we will need your support with the outdoor events.

If you have never been on one of our Foxhunts, speak to us, and we will arrange one of the regular teams, to take you and show you the ropes. This also applies to the Treasure Hunts.

Once again, I must mention the AGM, as we will be looking for you the members to seriously think about supporting the society in the coming year.

Time to sign off till next time.

Regards
Russell M. Nelson G7TMR
Hon Chairman
MSARS

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Top - Loaded Antenna
by Alex M0TOT

This project came about because I 'lost' the use of my homemade Windom, as a result of the tall Leylandii being removed from the bottom of the garden.

These trees provided the height and fixing points for the wire that was strung-out across the roof and garden.

The absence of the installation left me without any form of H.F. antenna. However I came across an article in the 2007, A.A.R.L. Handbook on a Top-loaded Short Antenna by Dick Stroud W9SR.

The information and drawing in the article seemed to provide enough material to enable me to attempt a replica antenna in some form.

Procedure

I chose to wind an inductance coil for the '40m' band (see Fig 3 below). This would need weather protection before being fitted to the two-halves of the aluminium tubing (see Fig 4 next column).

Fig 3

Fig 4

I could not find the same size pipes tubing in the U.K. as detailed in the article, so had to fix on sizes which were as close to those shown.

This produced a difference of a few millimetres between the O.D. of the plastic tubing and the I.D. of the aluminium tubing.

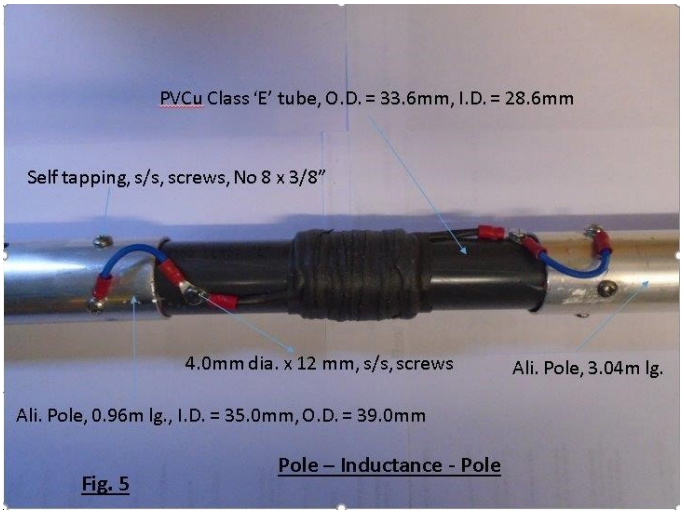

Fig 5

This gap was sealed with five-layers of electrical tape (I could not find any 'O' rings which would seal the space).

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Top - Loaded Antenna by Alex M0TOT

The plastic tubing is the length as shown; which now I believe is a bit too short. In the future, I would make it ten-to-twelve inches long. This would allow a more rigid fixing in view of lack of snug-fit of the two pieces of tubing.

In addition, I would probably use two rows of stainless-steel self tapping screws.

The two-part capacitance top hat used by W9SR is a piece of 'solid' engineering, which I was unable to

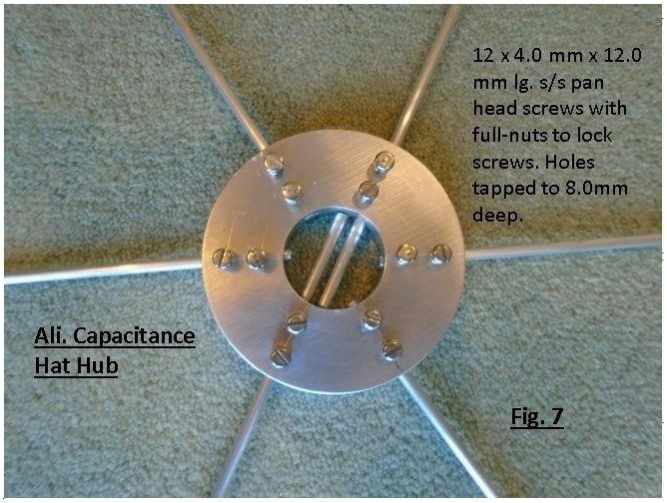

Fig 7

replicate because of the cost of manufacture. In addition, in my case, I wanted to be able to move the top hat up-and-down the top half on the aluminium tubing.

For this to be possible, I drilled a pair of six-holes equally spaced along the top portion of the aluminium tubing, using two of the longer radials to 'peg' the hub to the tubing (Fig 8 next column).

It was now not necessary to make the top hat hub such a tight fit.

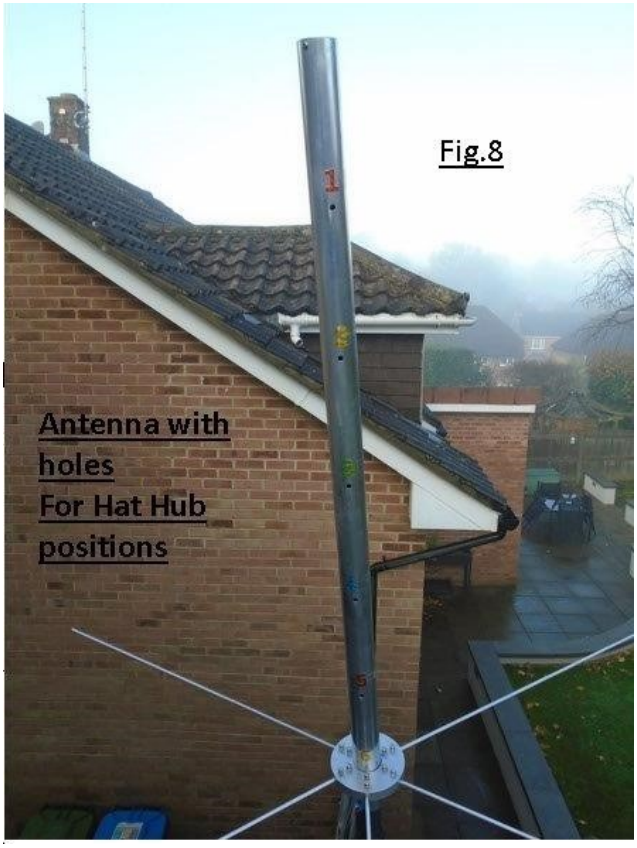

Fig 8

Before the completed antenna was installed at the side of the house, the whole assembly was field - tested at ground level in the garden with a 'miniVNA'.

The Multi-UnUn was earthed with a piece of wire and a screwdriver stuck in the top soil.

As there were six fixing points on the top tubing for the top hat, and three tapping-off points on the Multi-UnUn, there could be eighteen different results.

In fact only half that number of alternatives were required before the 1:4 ratio or taping and the bottom pair holes, i.e. No 6 gave the best result.

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Top - Loaded Antenna by Alex M0TOT

Quote ' … *and in the top-loaded version the entre vertical element carries high-current. Since the high current part of the antenna is responsible for most of the radiation.' and ' … The hat should be as large as practical to increase the radiation resistance of the antenna and improve bandwidth*.'

Further information in the article by W9SR is available concerning other coils and their windings etc.

The six-radials, in the W9SR article, are shown to be 1300mm long. In my situation, it was not feasible to make them that long. The overhanging roof at the gable ends would have made it difficult to 'swing' the top part of the antenna and its radials away from the roof and then back above it.

I restricted the lengths to 600mm. Even then it was not easy to put the top hat above the sloping gable -end without damaging the radials.
The aluminium tubing was itself attached to a length of fiberglass pole (The bottom half of a windsurfing mast), using two universal pole-to pole clamps. This in turn was supported by 'T' and 'K'

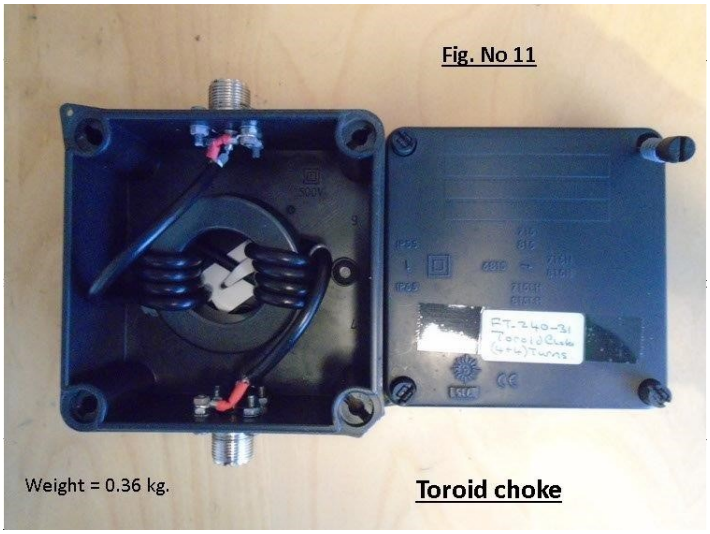
brackets bolted to the wall with 8mm Rawlbolts.

I will have to see how this supporting arrangements behaves over a period , particularly if it is windy. Attached to the tubing is the Multi-UnUn with 4:1, 9:1 and 16:1 ratios or tapings and a separate earth point.

Fig 10

Attached to the UnUn, with a double PL259 straight coupling, is a toroid choke to counter common-mode currents.

Fig 11



From here a long length of RG58 cable feeds the antenna.

Final Part on Page 7

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Top - Loaded Antenna
by Alex M0TOT
Concluding Part.

Top-loaded Antenna

Fig. 12

Fig. 17

Final protection – E.P.D.M. sleeve

Fig. 14: Top-loaded Antenna A.T.U. Results

Band (m)	Frequency Limits	miniVNA	FlexRadio A.T.U.
160	1.81<1.91>2.00	5.43:1	1.30:1
80	3.65<3.725>3.80	4.64:1	1.60:1
60	5.258<5.332>5.406	26.87:1	High S.W.R.
40	7.00<7.10>7.20	15.64:1	1.60:1
30	10.10<10.12-10.15	8.22:1	1.80:1
20	14.00<14.18>14.35	2.51:1	1.60:1
17	18.06<18.12>18.16	5.18:1	1.20:1
15	21.00<21.23>21.45	7.84:1	1.50:1
12	24.89<24.94>24.99	12.93:1	1.30:1
10	28.00<28.85>29.70	14.88:1	High S.W.R.
6	50.00<51.00>52.00	4.50:1	High S.W.R.

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How I Became interested in Amateur Radio by Steve GJ6WRI Part 3

At the current QTH-R, I have a very good take off in all directions, but especially to the north east, so back up towards Sussex is a VHF path for me. Then I've got everything right the way round pointing to Ireland and the Atlantic.

I wasn't doing much with SSTV or other digital modes. Dial-up broadband was slow and unreliable if you remember, and you were charged the minute or the Megabyte at a very very slow speed, quarter of a meg uploading or something ridiculous.

When Class B licences got HF, I had a G5RV antenna at very low level. It was then that I learnt about RF in the shack, and RF burns on your lips when you touched the microphone. But it gave me an interest in HF rather than just go and buy something and put it up and plug it in.

I've kept on going with HF. We were fortunate to design and build our own house 2006-2007, and that gave me the opportunity to design a purpose-built shack, and have the ducting and conduits in for the coaxial and data cables and whatever.

And now I am at a situation where I have amassed loads and loads of radios, too many radios, too many accessories and I'm rapidly running out of bench space really.

Going from left to right in the picture I've got Yaesu Azimuth and Elevation controllers for satellite. Also an Icom 9700 again primarily for satellite. So that's 2m 70cm and 23cm.

I then have an Icom 7300 which I'd had for quite a while actually, before I took it out of the box. It looked nice in the shiny Martin Lynch advert on the back of RadCom. I thought nice, I'll get one of those!

And then going around, I've got an old 1980's IC2KL solid state HF amplifier from Icom, got two of those. They come with matching ATU which can take the full power. I don't use those because they won't work on 5MHz, (60m) it won't tune reliably.

I have an LDG 600 Pro2 antenna tuner. Well actually I've got two of those, and they will tune 600 watts into a dummy load, 400 watts into the antenna. It's good as they have two antenna ports on the back of each one so I've got a selection.

I've got any number of power supplies, probably about 10, some linear, some switch mode.
The lowest amperage one is about 2amps and the highest amperage is about 60amps.

Continued on next page...

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How I Became interested in Amateur Radio by Steve GJ6WRI Part 4

Then moving round the shack I've got some Icom 735's HF 100 watt. Again 1980's radio around the same time as Yaesu had their FT757gx. I got given those by an elderly gentleman who wasn't continuing in the hobby, but he admired me for my approach to amateur radio, and building and doing things as opposed to, (not condemning it or knocking it), but just to go and buy something, plug it in and off you go.

So, I've got more power supplies, I've got some general coverage receivers, Icom ICR7000 which I think covers about DC to 2GHz. I also have the ICR25 I think it is, which I can't remember what that actually goes to, I think it might be 0 to 25Megs or something. Along the end there is one of the matching ATU's for the amplifier.

On the next shelf is an Icom IC-7000 so that's HF to 70cm 100 watts self-contained. I've got an LDG100 ATU for that. And then an Icom IC-7100 which is a favourite. That to has an LDG100 ATU, and I use it mainly for repeater and D-Star use. Then I've got a selection of hand-helds from the big manufacturers and a "handful" from China.

Remote Software: I've got a number of different remote-control solutions, and that's for me to control my station when I'm away, be it in France or America where we go for our holiday homes.

I've got the Icom RSBA1 V2 which supports the Icom 9700. This software is very stable, and the audio is very good, and the latency, low. It has a good waterfall function too.

I have "Remote Hams" software. It runs a small server program on your shack PC which gives very tight control over who can access the radios over the internet, and can restrict use and function on a per-user basis. No whistles or bells. Just an easy to use GUI at the remote end. (GUI: Graphical User Interface).

Then there's the Ham Radio Deluxe Suite which is the main software that I use. It's got some quite good remote-control features.

It does rely on you having software installed on your remote computer or laptop, if you are on holiday, but it doesn't yet handle the audio side of things. So to get around that, I used Ham Radio Deluxe, and a software called 'Remaud' (remote audio) and it's just a little APP that sits on your desktop in the shack and the remote computer. It also handles the PTT if required.

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How I Became interested in Amateur Radio by Steve GJ6WRI
Part 5 concluding part

The most impressive remote software I have, is an excellent suite called Win4 Icom.

It has a very good GUI, and it does some great things that the Remote Hams doesn't do, that Ham radio Deluxe doesn't do, and that Icoms own RS-BA1 doesn't do.

In so much as it can read and program the radio memories remotely, whereas if you use the Icom application, you would have to programme any memories in that you want to use before leaving the shack.

Win4 for Icom software has several exceptional strong points, in that it has the Pan adaptor software that works amazingly well. That's something that even Icoms RS-BA1 doesn't fully do. The 'Remote Hams' doesn't have that either, and Ham Radio Deluxe have tried to introduce a Pan adaptor for the Icom, but at this time it is most definitely a 'Work in Progress'.

The Win4 Icom Pan Adaptor is absolutely superb, it's perfect. The waterfall is scalable, and it integrates with a DX cluster, so the signals displayed on the graph are accompanied by that stations callsign! A simple mouse click will tune the radio instantly, leaving you only to TX and work that DX!

Probably the least parts of my shack exposed to daylight is my test kit. From my calibrated Bird 43 to my Motorola Sig Gen/Test alignment tools.

73 Steve GJ6WRI

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December 19th: My Waterlogged Garden - Did not affect the Vertical at all !!!

The Antenna is a Hy Gain DX-88 Multi band. Its 29 feet high and covers all bands from 160 -10 metres.

The upturned mug is at the top of the **28 foot earth rod!** All the 100 radials are buried. The pond is covered with chicken wire to stop the Herons eating the gold fish.

This is all earth bonded to the base of the aerial and also under the shed. **Peter G4AKG.**

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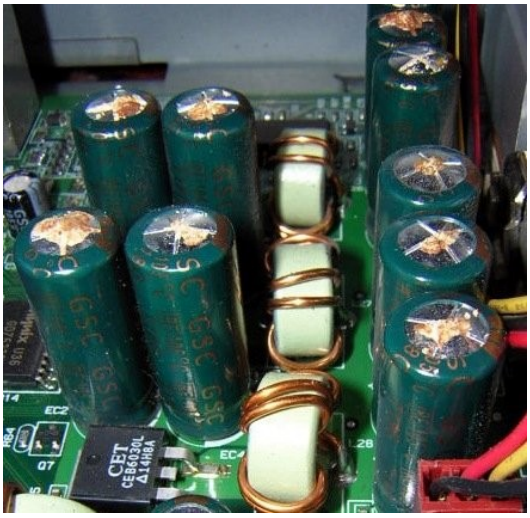
In the Next Issue of Mid Sussex Matters….

How I Became interested in amateur radio
by Chris G4ZCS

A 'Woppo' Box Transceiver Tony Bailey G3WPO

The Capacitor Plague

The **capacitor plague** was a problem related to a higher-than-expected failure rate of non-solid aluminum electrolytic capacitors, between 1999 and 2007, especially those from some Taiwanese manufacturers.



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Home of the Mid Sussex Amateur Radio Society

All contributions of copy for the newsletter please send to:

Tony Finch

(Tel: 01444 254511)

Details of club events etc go to:-

MSARS Web Site

General enquires about The Mid Sussex Amateur Radio Society Tel Sue 01273 845103