Chelmsford Amateur Radio Society

Affiliated to the RSGB — *Club Call Sign: G0MWT*

President: Dick Brocks G3WHR — *Chairman: John Bowen G8DET*

Secretary: David Bradley M0BQC — *Treasurer: Brian Thwaites G3CVI*

Newsletter No. 411 Web Address www.g0mwt.free-online.co.uk **April 2000**

The April Meeting.

The Society is justly proud of the many achievements of it's Members. In the past we have provided three Presidents for the RSGB and another of our Members will always be remembered for a certain very well known aerial! We also have another Member who has achieved fame in the field of propagation and is one of this country's experts in this subject . He is a very busy man and, alas, we rarely see him at Club meetings. He is, however, always willing to come along and talk to us when ever his busy schedules permit. Who is he? He is **Professor Les Barclay G3HTF.** His last talk was concerned with modern propagation research and prior to that he entertained us with his experiences, as a much younger man, working in Antarctica. He has the happy knack of making complicated subjects not only readily understandable but entertaining and amusing as well! His talk is entitled " High Altitude Platforms and Other Topics" and he will be telling us about radio stations in the stratosphere and the next world radio conference. This is certainly a meeting not to be missed!

Our Chairman will open the meeting at **7-30pm on Tuesday 4th. April at our usual venue, the MASC in Beehive Lane.**

Dates for Your Diary.

Apl. 4 CARS Meeting MASC 7-30pm Les G3HTF
Apl. 12 CARS Committee Mtg. Ela's QTH 7-30pm..
Apl. 13 IMD Mtg. Sandford Mill 10am.
Apl. 16 Cambs.Rpt.Grp.Rally Bottisham Nr. Cambridge.
Apl. 25 IMD Aerial erection. Sandford Mill 9-30am.
Apl. 29 IMD and Open Day Sandford Mill.

Members Miscellany.

Apologies to new member David James, he is M1DCJ and not a SWL.

Also to Big Jim. He is 2E1GUA and not M1GUA. Sorry!

The Net Controller for April is Harry G5HF..

Members are always welcome to attend Committee Meetings.

Some More Sad News.

It is with sadness that we record yet another Silent Key. Ron Parry G5XV passed away in January. Ron was a Club Member until a year or so ago. He did not attend meetings regularly but was very well liked.

We extend our sympathy to another ex Club Member Lawrie Dunn, an SWL. His wife Myrtle passed away recently and very unexpectedly.

For Sale 1 - 70 cms. Antenna.

Big Jim has a 19 element Tonna cross beam for sale. It requires assembly and is complete with mast clamps. It is 'as new'. Yours for £25 ono. Details from him on 01245-359394.

IMD and Sandford Mill Open Day.

Just one more reminder about this event on Saturday 29th.April. See the local press for details of the Open Day with its theme of Communications. Please support us. Make this a family day out!

News Letter by Email.

So far over 30 Members have agreed to receive the News Letter by Email, at considerable savings to Club funds. If you would like to give it a try please contact the Editors (see bottom of page 2) or Chairman John G8DET.

Last Month's Meeting.
The Chairman's Visual Forum.

For want of a better name the evening's meeting was titled “The Chairman’s Visual Forum” and, as with all good chairmen, our John G8DET immediately delegated, invited and coerced a team to do all the hard work and run the meeting for him! There was trouble with the sound of the in-house video equipment which delayed the start but eventually we got going in fine style!

For our evening's enjoyment Fred G6FXM had produced a composite video of most of the CARS 1999 events. This clearly demonstrated the diversity of the subjects covered by our speakers during the year and gave some highlights of our activities including the constructors competition and the Christmas party, up to the point of disaster when he dropped the battery!

Fred included a number of “commercial breaks” during his presentation and John introduced various speakers to talk about their pet subjects.

Tony G3YTG explained that one of his interests is maintaining audio equipment for the deaf and this is subject to new regulations regarding testing portable appliances. As he explained their ramifications it all seemed quite sensible. The tests include Meggering, checking the resistance of the earth lead, checking fuse ratings and the actual load current. All electrical appliances offered for sale should comply with this regulation, so we have been warned.

Brian G3CVI and Charles G0GJS gave details of the preparations for International Marconi Day, on Saturday April 29th. which this year has been combined with one of the four Sandford Mill Museum open days. This particular open day has as its theme communications. Remember there is only one operating day at the Museum this year so please support your Society and help to make this day a big success.

Carl G3PEM spoke about his Club Directory, pointing out that the last issue made a small profit. He thanked Members for their response and asked new Members for details of their interests for an updated edition.

After the intermission a well supported raffle was drawn with a lot of prizes being won, one of which was a freshly baked cake presented by Jill, of Christmas party fame! Please continue your generous support to the raffle it helps to pay for

the hire of the room. Our Treasurer does a good job in controlling our funds but the Society still requires your support for the raffle in order to maintain our low subs.

Colin G0TRM gave a very explicit account of a circa 1950/60 clandestine operators TX/RX, which is intended as a donation to CARS. It occurred to the writer's warped mindset, that all the secret police had to do was to look for the standard size green wooden box! Remember the WW2 suitcases? This gave Colin a chance to demonstrate his new digital video camera and it was agreed that it gave impressive results, treating Members to good close-up views of the equipment.

Our thanks to Fred FXM for his hard work in editing all his footage, to the various contributors and to John DET for organising the evening's programme.

Report by Carl G3PEM.

Small HF Loop Aerials, Earth Rods, Connections and Ground Mats - David Willicombe G0DEC

This useful article first appeared in the Braintree Club Newsletter and David has kindly agreed to to our printing it as well.

If you read up on "small loop aerials" for HF (eg for 160m, 80m or 40m), you will find great emphasis placed on the need for low-resistance joints in the loop itself (often 15mm or 22mm copper water pipe), and for low surface resistance along the loop. Solder has a much higher RF resistance than copper, so each joint made with a pipe connector is a lossy point in the circuit, and the amount of solder should be minimised. The pipe surfaces must be cleaned back to the copper right up to the connector, after soldering, to reduce RF losses at the pipe surface. Using a pipe swage to tighten the fitting mechanically (by expanding the end of the pipe) before soldering is also recommended, as this also reduces the thickness of solder in the joint. At 160m , the RF currents are flowing only in the first 1 - 2 thousandths of an inch (approximately) of the conductor's surface, and this thickness reduces further with increase of frequency. (This is why good-quality copper-plated steel wire is so effective for aerials, while giving immense strength - the plating is thicker than the skin depth.) If this surface is corroded or heavily oxidised, the RF currents will see an enormously higher resistance than for clean copper, no matter how thick the copper conductor actually is, and aerial losses will be such that most power is lost in heating effects.

The VSWR may look pretty good, though, with a nice wide bandwidth, making tuning very easy. This is because the added resistance lowers the overall aerial system "Q" and its performance, making it look more like a dummy load - which is all it may be in some cases. Therefore, for "small loops", it is vital to clean the aerial surfaces, and then protect them from corrosion by some reliable means —eg by using a good outdoor quality paint or marine varnish, covering all surfaces except where moving contacts are used. These must be protected from moisture, by covers and/or suitable grease or lubrication (if they cannot be eliminated from the design altogether). This leads to my next point, which applies to any amateur station using ground rods, counterpoises, etc. as part of the HF radiating system, usually with some form of "end-fed" aerial. If you use dipoles or other balanced or "ground-independent" aerials, these comments may not be so important to you. We mostly tend to get a decent piece of copper tubing, or even a proper earth-rod, maybe 6 or 8 feet long, and drive it into the ground at some convenient point in the garden. (Incidentally, this process is very useful for locating any long-lost drain, gas or water pipes). If enthusiastic, we may use two or three such rods, connected together by some wire above, or just below, the ground surface. Ideally, this connection is then brought back into the shack via some thick good-quality copper cable. Sadly, this connection is often just a bit of hook-up wire from the junk box. This may work fine for a while, but have you ever had that niggling feeling that "things ain't quite what they used to be"?

Have you ever seen the surface condition of a copper pipe after a few months in average soil conditions? I have had to haul a few up (using a car jack to provide the lifting power), and, frankly, have been horrified! In most cases, the surfaces have been heavily corroded, with various chemical compounds, often of extremely hard and impervious nature, and with no surface conductivity what-so-ever. DC tests with an ohm-meter from point to point along the length of the pipe show open-circuits, until the surface is scratched! What hope, then, that RF will find an easy path along the same piece of pipe?

Frankly, it won't! Such an "earth" is usually a dead loss for RF purposes. Often the same problem also applies to the connecting wires or rods between the earth rods themselves, and into the shack. Whether above or below ground-level, such connections can corrode and oxidise (even if run in protective pipes), providing an ever-increasing resistance to RF, while continuing to measure low DC resistance along their length. The same problem occurs very often with the outer screen of coax cables, which can become high-class attenuators while seeming OK to DC tests.

This corrosion problem is so serious in many soils that the copper pipe can be eaten away entirely. Some of our local (Braintree) plumbing supply merchants now stock special pipe (15mm in 3m lengths) for underground supply connection, sleeved with a thick plastic coating that will defy most corrosive elements. The pipe has to be jointed mechanically (olives, not solder), and the joints specially protected afterwards, of course. The snag, as ever, is that the price is several pounds per length, making it quite prohibitive, and in any case these pipes don't make any direct earth connection. Of course, if this pipe is used for your main water connection, it will be virtually as ineffective an earth as a plastic water pipe - but you may not see or realise what it actually is.

Now, I'm not decrying the value of earth rods for safety purposes, against possible mains-supply leakages and, of course, for near-by lightning strikes. The higher voltages involved in most such cases will usually break down the high-resistance surface coating, and make connection to ground. Earth-leakage trips may not always function reliably, however, so don't rely only on your own earth connection system - use the provided mains earth. If you have protective multiple earthing (PME) you need to take special care with use of your own earthing to avoid serious trouble. See RSGB articles for advice.

I'm afraid that is all we have got space for this time. We will print the conclusion of this interesting article next month with more thoughts on station earthing, ground mats and counterpoises.

For Sale 2 - Uniden Bearcat Scanner 220-XLT

Geoff G3EDM has been asked by the widow of a silent SWL to dispose of his VHF/UHF hand-held scanner, recently purchased fromW&S with a 5yr. warranty. Phone him on 01245-223494 or gmills@g3edm.freeserve.co.uk for full details.

Joint Editors

Colin G0TRM 01245-223835 colin @the pages.globalnet.co.uk
Geoff G7KLV 01245-473822 geoff@g7klv.free-online.co.uk
64 Vicarage Lane, Gt.Baddow, CHELMSFORD CM2 8HY
Deadline for the next N/L is Wednesday 13th. April.