Chelmsford Amateur Radio Society

Affiliated to the RSGB *Club Call Sign: G0MWT*
President: Harry Heap G5HF *Chairman: John Bowen G8DET*
Secretary: David Bradley M0BQC *Treasurer: Brian Thwaites G3CVI*
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Newsletter No. 438 **July 2002**

The July Meeting.
From Rig to Radiator. Tuesday 2nd. July, 7-30pm, MASC.

In feeding the RF output from your transceiver it is not just a matter of buying an ASTU (Aerial System Tuning Unit), plugging in, and hey-ho off we go! There are plenty of problems lurking there for the unwary! So be warned! However with a proper understanding of the principles involved it is easy to avoid the pitfalls! This is what **Brian G3CVI** hopes to do at the July meeting.

He is also going to try and clear up the mystery of the decibels or dB's for short! From listening on the air he says that there is a great deal of misunderstanding about these damn dB things! He says it is all so simple and he hopes to prove it! In his former life Brian was a schoolteacher and he say that if his A-level students could manage it so should we!

Can I just put a thought in your minds! The decibel (after Alexander Graham Bell) is a unit commonly used for expressing the relationship between two power levels. Radio engineers are always doing this when they are discussing the gain of an amplifier or the loss of coax cable. Decibels are logarithmic ratios and the beauty of them is that they can be added (or subtracted). Remember looking up logs at school and adding them up to do multiplication! Some of you may be more familiar with slide rules. They just consist of two logarithmic scale which can be added together to do multiplication.

If you have two amplifiers, one after the other, and one has a gain of 13 and the other has a gain of 19 what would the overall gain be? It's hard to do that in your head but if the gains are expressed in decibels all you have to do is to add the decibel gain of each one. Addition is a far easier process than multiplying, or it is if you are like me and not a mathematical genius!

Brian also aims to remind the 'old timers', to nudge those who may have shied away from the minefield of feeder systems and introduce the newer Members to some of the problems met when setting up the rig to radiator connection. Often this is the weak link in an amateur station, yet with a minimum of essential items, success is achievable.

Now, don't let all this technical talk put you off! Brian has that enviable knack of making such things simple with his light-hearted approach. That's what a good teacher can do! After the break he will throw the subject open to discussion.
This month the raffle is being run by Carl G3PEM. Come on, have a flutter and help to pay our rent bill!

Dates For Your Diary.

Tuesday	July 2	CARS Meeting. From Rig to Radiator, 7-30pm. MASC
Wed.	July 10	CARS Committee Meeting. Danbury Village Hall. 7-30pm.
Sunday	July 28	Colchester ARS Rally. Sheepen Rd. Colchester.
Sunday	July 28	Sandford Mill Open Day 10am - 5pm.

Members News.

We have five new Members, Lindsay Shaw (nearly M3LAN). Alex Doric M3VAR, Terry Lee SWL, Matthew Saunders M3OHM and last but not least, as they say, Simon Williamson M0NIS. Welcome and we hope you will enjoy and enter into our Club activities. Button hole a Committee Member if you need any help or information.

Amateur of the Year Award.

Suggestions for this prestigious award to any Committee Member please, for a Member who you think has made a significant contribution to our activities.

Sandford Mill Open Day. Sunday 28th. July.

Volunteers are urgently required, please, to operate our station, act as loggers or act as hosts. We are particularly anxious to encourage our new M licensees to partake in any of the above activities. Brian G3 CVI will be pleased to receive volunteers at the next meeting or contact him on 01245-471919..
It's a pity it clashes with the Colchester rally but do the obvious; spend half the day with us and the other half with them! Can't say fairer than that, can we!

Last Month's Meeting.
The Constructors Competition

This annual event produced a good and varied crop of 11 high standard entries, both from the regular entrants and, happily, this year from some newcomers to the construction art. This event is, as always, a bit of a nail biter for the Committee but this year there was no cause for worry. The entries filled the evening nicely. Our able Chairman John G8DET introduced the evening in his inimitable manner! Just as we did last year, the judging was undertaken by the Membership after all the entrants had completed their presentations.

The first entry was by Anthony M1FDE who described the construction of a temperature frost 'stat manufactured from a kit supplied by Marlin His description was coupled with the reason for the construction and the end solution to the problem. Well done and many thanks for the entry Anthony.

Fred G6FXM described a wonderful battery supply capable of running his video camera. This was designed and mainly constructed by the other Fred G2HNF whose entries on his own behalf have invariably won prizes in the past. Another superbly constructed piece of equipment and thanks for the entry Fred (FXM).

Denis G8AAE moved us to the very latest technology by entering a programmer for the PIC micro-controllers now becoming available. The new PIC's are beginning to turn up in a variety of published amateur circuits in magazines and they are adding yet another dimension to the hobby. Thanks for the entry Denis. A short talk one evening on PIC's would be much appreciated! How about it?

One of our regular constructors then took the stage. Bob M0CSV presented his electronic clock using NIXIE tubes as the display. I remember the NIXIE tube from the very early frequency counters and it was nice to see the technology put to modern use, even at the price quoted by Bob for a single tube. Bob is becoming a skilled producer of PCB's and the high quality of the double-sided board is to be commended. Thanks for the entry.

Tony G4YTG produced a 2 meter clip on vehicle antenna, which was donated to the Club raffle. It took approximately 10 minutes to construct and double the time to tune. Tony's novel approach gave food for thought, thanks again for a superb effort.

Bob MIDTA's entry was a desk microphone with an amplifier produced for a cost of 99 pence, the latter paid out for a piece of sponge on the microphone head. An excellent piece of construction. I particularly liked the swan neck adjustable height, an idea well worth copying. Well done Bob and thanks for the entry.

Bob M0CSV Being Congratulated by Harry G5HF.

I then presented my entry for this year which was a HF Noise Bridge, which I constructed in 1995 from a kit of parts, purchased for about £6. It enables measurements of antenna impedance to be carried out. Unlike the automatic readings on such devices as the MFJ analyser it does need pen and paper to calculate the result.

Colin G0TRM then gave two presentations. Firstly he presented on behalf of Geoff G7KLV a Wheatstone bridge for measuring Inductance and Capacitance. The bridge employed a 15 kHz oscillator as the source and balance was measured by a TLO82 op amp. Another superb design and thanks for the entry.

Colin G0TRM then described his own entry. What would you expect from Colin with his obsession for Morse? This one was certainly original. A stationery Morse key, no less! This was constructed from office stationery, hence its name. The parts list sported a miniature hole punch, a paper clip and a wooden ruler. Well done Colin for an ingenious approach to an old problem!

At the AGM last year Harry G5HF laid down a challenge to produce alternative power sources. Although there was only one entry it was certainly ingenious! But what you expect from Colin TRM? He came up with a solar powered battery charger. Again a most ingenious solution, allowing the solar panel to track the sun.

After the presentations the well-supported raffle was drawn whilst the audience voted.
The results of the 2002 Constructor Competition were as follows;

1st Prize	Geoff G7KLV
2nd Prize	Bob M0CSV
3rd Prize	Carl G3PEM
1st time Winner	Bob M1DTA
Alternative Power	Colin G0TRM

The evening ended with a presentation by Harry on alternative power sources, a report of which is given below

Our thanks to all the entrants for making the evening such a success and I trust that it will spur others to enter next year.

Report by Carl G3PEM.

Note: My thanks to Colin for presenting my entry. He obviously did it much better than I would have done!
Geoff G7KLV

Alternative Power Supplies.
A Demonstration by Harry G5HF.

After the break and having presented the Awards, Club President Harry G5HF treated us to an excellent presentation. He talked about and showed us the many sources of alternative power he had made or obtained, which many Members thought should have been entered into the competition. Selfishly however, I am glad he did not enter them, as otherwise I might not have won a prize!

Firstly, Harry described a primitive chemical cell devised by Volta in about 1800. He and others, such as Faraday and Grove devised many methods of making these non-rechargeable primary cells, some of which can be a bit nasty. A very basic cell consists of a container filled with tap water, a little salt and two electrodes, one carbon and the other a piece of aluminium. Harry showed one such cell he made some 10 years ago. It was still working and topped up occasionally with water. It drives a small digital clock. It produced very little current, but that could be increased by the use of a little acid. Generally speaking, basic chemical cells are not suitable for high currents.

Harry then showed a wind generator, popular with environmentalists. It consisted of pair of curved vanes attached to a 6-volt bicycle dynamo. The vanes were made from the offset halves of a cylinder or large tin and went under the name of Savonius.

John, our Chairman attempted to drive the assembly using a large fan he had brought along for the purpose, but it was not powerful enough. Wind generation in built up areas is generally far from satisfactory as much turbulence is produced and a good steady pressure is required. Conditions at sea or very open areas are the most suitable and wind speeds at sea are some 5-10 times more than on land.

We were next shown a commercially made torch-cum-radio. This had a built-in hand generator, and re-chargeable cells. With about 30 seconds winding, the generator was capable of charging the cells for about one hours operation of the radio. This was followed by a very small motor driven by a hand wheel, but it would only be capable of charging small batteries and would be a fairly long job, although with suitable mechanics, a large weight could be attached to keep the mechanism turning for a long period.

A Selection of Alternative Power Sources.

Generation by heat was then discussed, a set of so called Peltier elements (giving 2-3volts) fixed together and heated by some means produced a voltage, but due to the high internal resistance, any attempt at drawing current reduced the voltage to zero. Usually, by applying a voltage to these elements a hot side and a cold side is produced, so they are generally used for cooling purposes. A further heat-producing device is known as a thermo-couple, which consists of a junction of two different metals, sometimes iron and Constantan. The draw back here is that very, very many junctions are required to produce any great voltage as each junction provides only a few millivolts. Some 50 microvolts per degree C was a typical figure.

Next in line came the big stuff, a petrol engined lawn mower motor (cost £5) driving an old car dynamo (cost £2) which was capable of producing some 12 volts at 25 amps was next discussed. This was not demonstrated, as I am sure the rest of the building would not have been too pleased! It was fully able to drive a Ham rig at full power. As the ripple and regulation are not good, it would be necessary to use a car battery in parallel with the output to make it a practical proposition, stabilising the voltage and eliminating ripple. Failing a car battery one could make a Plante cell using two lead plates immersed in acid. This does work but it takes a great deal of forming to make a really effective cell. Some 20,000 cycles of charge and discharge are required make a good battery.

Lastly 'light' was the power source, a tiny solar powered torch was demonstrated first and then a much lager solar panel was shown which Harry has used for some years to continuously recharge a lead acid battery from which he drives a 2 metre portable rig.

Lastly Harry posed the question; why would a very bright Tilly lamp not drive his solar panel? Colin quoting from an article by John Beech in Sprat magazine suggested that the reason be due to the fact that most solar cells depend on infra-red light and maybe a Tilly lamp light has no such component.

Harry gave us a very interesting talk combining mechanics, chemistry, electricity and lots of practical know-how. Thanks very much Harry.

Report by Colin G0TRM with a little help from Harry!

From a 1930's Radio Officers Union Journal by 'Tankop'

If you can keep your head in situations
When 'Mutts' all cry 'Distress' and 'QRT'
If you can sternly brush aside temptations
And keep your itching finger off the key
If you can do your best on bum receiver
And never breathe a word against the set
But struggle on without a thought of 'Leave her'
And wrap it round with canvas 'gainst the wet
If you can still retain your first illusions
When weighing up the life against the pay
If you can copy GBR's effusions
Without quiet curse for CKA
If you can sit through hours of atmospherics
And still keep watch tho' deafened by their roar
Or contemplate the damage done by derricks
To brand-new down leads while you were ashore
If you can take good bearings in pyjamas
When, in the normal way, you'd be in bed
Or put off dates with fair Australian charmers
To nurse sick cells whose gravity is fled
If you can memorise the variations
Which disarrange the Q-code now and then
Nor ever use such wrong abbreviations
As 'CUL', 'OM', 'BV', 'GN'
If you can watch the changing regulations
And never criticise the P.M.G
Or keep the log-book clear of alterations
Without a thought against the B.O.T.
If you can keep the gear in good condition
And still have time to spare when all is done
If you can do all this 'sans intermission'
You're not an 'Op'
You're just a Saint, my son.

P.M.G. *The Postmaster General, who issued licences and general radio regulations and procedures.*

B.O.T. *The Board of Trade, who governed shipping generally.*

CARS Clothing.

Martyn still has a few items left. See him at the next meeting or contact him on 01245-469008.

The Club Nets.

For the benefit of new Members the frequencies and times of the regular Club nets are given below. Feel free to join in.

Tuesday Nets. Starting 8-30pm, 2nd Tuesday, Two on 145.375 MHz.; 3rd. Tuesday Top on 1945kHz.; 4th.Tuesday Ten on 28.325MHz.; 5th. Tuesday (if there is one) Two on 145.375 MHz.

The "21 "Net. Mondays to Saturdays starting at 8-15am(ish!) on 145.525 MHz.

Slow Scan TV Night. Every Thursday at 8pm on 28.68 MHz. Temporarily suspended during Foundation Courses

Backnang Net. Every Sunday at 9-30pm on 3.750 MHz.

Frequencies are +/- QRM and all times are local.

Digimode Operating Frequencies.

Band (meters)	MHz	PSK 31	RTTY/ ASCI	MFSK
(160)	1	.81215	.812	.812
(80)	3	.58015	.580	.580
(40)	7	.07015	.080	.073
(30)	10	.13715	.130	.130
(20)	14	.07015	.080	.073
(17)	18	.10015	.100	.104
(15)	21	.07015	.080	.073
(12)	24	.92500	.920	.925
(10)	28	.12015	.080	.073

Frequencies are +/- QRM.
This data has been supplied via Carl G3PEM by courtesy of Haaken Hveem LC8UBT.

Bargain Corner.

Dick Baker G4DJC has a Kenwood TM241 2M FM Mobile 5/10/50 watts for sale at £100. It is complete and boxed. Also on offer is a BSX TNC for £40.
Contact him on 01245-256416.

Going Free to a Good Home! Triangular lattice tower mast consisting of three 12ft. sections complete with rotator. "Purchaser" would have to take it down! For more details contact Geoff G7KLV on 01245-473822.

Newsletter Editors.

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Deadline for the August N/L is Wed. 10th. July.