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*

Newsletter No. 426 Web Address - www.g0mwt.free-online.co.uk July 2001

The July Meeting -Amateur Satellites

Have you ever wondered what goes on, up there, above the clouds. Well at our next meeting **Frank Howe G3FIJ of the Colchester Club** will be telling us all about it, and we mean all, because Frank is an acknowledged expert on Amateur satellites, among many other things.

He will be covering the subject from end to end, starting with the early days, the follow up years, together with today's techniques. He has numerous overheads to show us together some sound bites and some hardware, including an S Band Converter.

If you want to know about OSCAR 40 and all the other satellites, then be at our usual venue, **the MASC in Beehive Lane, on Tuesday 3rd July** at 7.30pm, when **Chairman John G8DET** will be calling us to order.

DATES FOR YOUR DIARY

3 July Amateur Satellites MASC B'hive Lane 7.30pm
11 July CARS Com. Mtg. Danbury Village Hall 7.30pm
15 July McMicheal Rally Reading Football Club.
27-29 July Amsat-UK Colloquium Surrey University.
29 July Colchester Rally Sheepen Rd Colchester.

Report of the June Meeting.
The Constructors Competition.

The number of entries was down a little this year but the standard of work was as high as ever.

Chairman John started the proceedings with an entry sent from Peter D6SKP. John had received the circuit details and constructional description via e-mail from Germany. John gave an excellent presentation with the supplied material which resulted in a good understanding by Members of the techniques involved. The equipment described was a 2 tone 7MHz oscillator for the measurement of 3rd order intermodulation products of different types of RF mixers. It was based on boards made by Peter and contains two Colpitts oscillators and a hybrid. The two tones are 6,999MHz and 7,0255MHz. The harmonics are 40dB below the fundamental and the IM3 products are believed to be 90dB below the tones.The overheads contained some excellent colour pictures but unfortunately the circuit could not be resolved from the e-mails, but has been since. From the pictures, construction was seen to be to a very good standard.

For his entry, **John DET** now speaking on his own behalf described the Club's current Website pages which he has spent very many hours of midnight oil producing. He discussed the many and varied disciplines that are required to produce a top quality and user friendly site. Using overheads John pointed out the different aspects and his reasons for including the numerous topics. He told us of the various links available to other sites, such as SCARF (the Scouts Radio Fellowship) the G5RV memorial pages and many others, as well as the links to and from the RSGB. The HTML was used to produce the pages and we were shown what the actual written software language looked like.and to my untutored eye it did not seem to make any sense at all. He does not know how many people have visited the site, but we do know new members have joined us as result of it. Not only that Peter Neave an ex Club member and President of the Australian Radio Society saw the site down under and made contact. John acknowledged the help he received from Murray and others but he also displayed 3 or 4 very large books which he had obviously spent long hours digesting to produce what I think is an excellent Club Web site.

Geoff G7KLV then took the stand to described to us his latest venture into his favourite branch of electronics; Synthesisers! He started by reminding us that last year he followed a similar theme using a large synthesiser and a small receiver. This year it was large receiver and a small synthesiser. He was very proud of his unique design he used for the synthesiser which was based round a 4046 chip, which has a built in RC VCO driven by a 100Kc/s crystal. 6 other I/Cs plus many other components were used to produce switchable coverage of the medium waveband i.e.550 metres to 1500 metres. At the start of his talk Geoff also thought a second theme from last year was emerging, when at switch on no sound was heard from the receiver, but he quickly realised that before the meeting started he had been demonstrating his prowess to an admiring audience and had left the selector switch at rest. But all worked well for his demonstration .

SWL Anthony stepped up next to show us the 12 volt power supply he had made. Based around a commercial switched mode unit Anthony had constructed a nicely made case which also contained a shunted 1mA meter and indicator lamps, all connected together with neat wiring. The unit was able to supply some 8.5 amps at a the not too variable output voltage. Although a mains filter was fitted he had been unable to test for RF immunity.

Next on parade was **Bob M0CSV** with an entry prompted by an article in September 2000 Radcom the PicATUne. The basic ATU configuration is an L-match with thousand as of possible switched L,C and Z combinations. rated at 200 watts it will match end fed, coax fed and (with a balun) balanced antennas at any frequency in HF amateur bands. Many of the components were purchased , but the 11 various value high voltage capacitors were individually made by Bob from copper shim and pieces of plastic bag. Bob also made all the printed boards using an etch resist pen for th RF board and a photo system for the very small tracked logic board. Bob had obviously spent a long time on the

construction and testing.and had used his ATU on air a number of times with good results. A perspex cover completed the unit. The project was the subject of much inspection and praise at the end of his talk.

The entry from Fred G6FXM can really only be described as sort of..... well different. To understand the entry one had to be, what you might say as,being well connected, because Fred wanted to socket to us. We all know how adaptable Fred is and his entry had a sort of spark to it. Although I do not want to plug it, we have not seen the like before and we may not see the like again,. However what we did see was the light! and then not at the end of a tunnel but at the end of a whole array of now out of favour plugs, sockets, adapters and connectors all logically joined together in a futuristic arrangement finished in a carefully chosen shade of green, destined we feel sure to end up a the next National Gallery display of modern art. But Fred just in case you do not make your fortune with art perhaps you could dismantle all the connectors and go into the scrap brass business!.

So now to the winners. The now newly established and much favoured method of voting by Members, with forms provided by Carl, produced the following results. In first place was **Bob M0CSV** for his ATU. That's two wins in a row for Bob. Well done.

In second place was **Anthony SWL** for his power supply,
and third place went to **Geoff KLV** for his Synthesiser. The first time winners prize went to **Peter DK6SP** for his two-tone generator.*Report by Colin G0TRM*

On being informed of his success Peter said he would like his certificate please but would we donate his prize money to maybe help a youngster with a ham project. Many thanks Peter.

Are you interested in geography? Do you have a little time to spare? If so our Vice-Chairman and QSL Manager would be very pleased to hear from you. He has a large number of QSL cards that have been received for the Club call G0MWT. They require sorting , first into country of origin and then into mode and band.

The aim is to see if the Club has sufficient cards to apply for one of the special awards that Carl told us about during his recent talk. Even a modest effort from a few members would be greatly appreciated by Carl . Call him on 01245 261645.

Morse Code Practice.

Some interest was shown for morse practice during the Club meeting break. Formal sessions will be finalised when precise requirements are known, but we hope some practice will take place at the next meeting. Volunteers to assist with practice sessions would most welcome. In fact more than welcome.

Note.When learning morse it is recommended by some authorities, that beginners should not try **sending** any morse until they are fairly proficient at receiving, say at least 5 or 6 words a minute. and that from the start, characters should sent at 12 words a minute with longer spaces between them.

Amateur of the Year Award.

Members are reminded that nominations are requested for the forthcoming Amateur of the Year Award. The award will be made to the person Members think has done much useful work to aid the Club, its Members or its activities. Nominations should be made in writing to Carl G3PEM or the Chairman John G8DET.

Wideband Amplification Geoff G7KLV.

To complete our review of the Marconi Self Tuning System, we look at the actual self tuning system itself. In the first article we noted the commercial reasons for the system; the reduction in maintenance and operating personnel. In the second we looked at wide band amplification.

Wide band amplification simplifies the tuning process so far as the low power driver stages are concerned. The final output stage is thus the only one that is actually tuned to the operating frequency and it is this process which we will be describing in this final note.

It is necessary to tune the input and output circuits of the final amplifier (grid and anode in our case) and the coupling circuits to the aerial feeder. The self tuning process is initiated by operating the decade switches of the frequency synthesiser, locally or remotely. This immediately causes three functions to occur sequentially. First the DC supply to the anode of the output stage is switched off. Then the frequency changes and thirdly the traffic input is disconnected. The traffic input is then replaced by a tuning signal at the new frequency approximately 8dB below the normal level. In SSB systems there is no RF signal in the absence of traffic. The lower level is used to avoid tripping during tuning.

The low level signal appearing at the input to the final amplifier and the associated frequency discriminator senses the frequency change and provides an error signal which drives a servo motor which coarsely adjusts the input inductor and then the output tuning and loading coils and capacitors. After this power is re-applied to the output stage and the fine tuning process begins. When the anode circuit is finally in tune the loading process begins which necessitates further adjustments to the anode tuning capacitor. The tuning and loading controls operate sequentially in progressively smaller steps until both are set correctly for the incoming frequency. The incoming traffic lines are then restored and the retuning process is complete.

The tuning and loading settings are correct for the feeder impedance at the time but the feeder impedance can change quite erratically due to weather. The tuning and loading controls operate continuously to ensure optimum operation.

Needless to say, there are endless interlocks installed to prevent unacceptable operating conditions arising. Continuous monitoring of the VSWR prevents under or over loading, thus preventing nuisance tripping.

This description of the MST system is, by necessity, much simplified and those interested in more detail should consult the late Vic Stoke's very readable classic tome 'Radio Transmitters'.

Food for thought . The software engineering field is staffed primarily by men;the ratio of male to female software engineers is about 15 to 1. This makes it pretty easy for woman to find potential mates among their peers. However, software types have a well-earned reputation for being.well, a little strange. While discussing the prospect of working in the software industry, one women commented to another, the odds are good, but the goods are odd! Anon Gleaned from the web by Carl G3PEM

Joint Editors
Colin G0TRM 01245-223835 colinpage@ukgateway.net
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 11th July