

Chelmsford Amateur Radio Society

Affiliated to the RSGB

President: Harry Heap G5HF

Secretary: David Bradley M0BQC

Club Call Sign: G0MWT

Chairman: John Bowen G8DET

Treasurer: Brian Thwaites G3CVI

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The June Meeting - The Constructors Competition.

Older Members will know that, by long standing tradition, we always hold a Constructors Competition in June. This is the time to bring along all those projects you've been working on during the long winter months and enter them in the competition. Yes, we know this is rather short notice for newer Members, but you've probably got something you have made in the past that is worth entering. Even if it's not a winner it may prove to be of interest to someone else. It costs nothing to enter. The possible rewards, in the shape of monetary prizes, have been increased and are truly staggering! All we ask is that you provide a few sketches and notes giving the salient facts concerning your masterpiece. We would also like you to say a few words about your entry.

In the past our Chairman has headed a small team of judges but last year we asked Members to do the judging for us. This worked out very well and we are going to do the same this year. Slips of paper will be distributed on arrival for you to record your judgement, so please bring along something to write with. The results will be analysed during the tea break and the winners announced afterwards, together with presentation of the prizes. The Certificates, courtesy of the Club 'Certificate and Illuminated Address Maker' Colin G0TRM, will be presented at the July meeting.

What are the rules, you might ask! All we are prepared to say is that they are quite flexible! They have never, actually, been formalised. We tend to make them up as we go along! If your entry has got something, however vaguely, to do with amateur radio that's fine and, if it hasn't, have a go anyway! You never know your luck!

This month's raffle is being organised by **Harry G5HF and David M0BQC**. Please support it. Incidentally we are grateful for the many prizes contributed by Members and particularly their wives, the cakes are always popular! Their generosity all goes to increase the profit.

Our **Chairman John G8DET** will be opening the meeting at **7-30pm. on Tuesday 5th June** at our usual venue, the **MASC at Beehive Lane**. We will be starting promptly in anticipation of the many competition entries!

Dates for Your Diary.

- 5 June Constructors Competition MASC 7-30pm.
- 13 June CARS Com. Mtg. Danbury Village Hall 7-30pm.
- 17 June E Suffolk W'less Revival The Hollies, Bucklesham Ipswich.

Member's News.

It is with pleasure that we welcome a new Member, Alan Maylin M1DKP. Alan hails from Stanford Le Hope, a long way to come and we hope he finds it worthwhile!

Morse Practice.

It is suggested that some Members might be interested in some informal off-air Morse practice during the Club meeting tea break. It may be on a 1-1 basis or take the form of a net or both depending on the equipment available but it will all be conducted with headphones. Would those interested contact Colin G0TRM so that interest levels can be assessed. It is just possible that we might have a trial run at the next meeting. Tom G4INM will be in charge of sending and Chris G0IPU will be supplying the hardware.

International Marconi Day. Brian G3CVI.

As usual John G3VMJ and I did the graveyard shift from 0100 until 0500 and spent most of the time on 40m. We tried 80m but it was virtually dead whereas 40 yielded mostly short skip into Europe. The "layers" were and still are so dense that it appeared that signals were refracted back to Earth in the next county or close country rather than further afield. One operator likened the state of the ionosphere to several thicknesses of copper sheet and just about as impenetrable.

At the first indication of dawn 80m sprang to life as the grey zone approached and we went off watch with the expected shower of calls increasing by the minute. We later learned we were "on the

cluster" and no doubt that prompted stations to tune onto our frequency and join the fun.

Up stairs on Tony's 101, 20m secured dozens of QSO's and so it continued right through the day. In all we made about 900 contacts so we hope the stations asking for QSL's will be patient while Carl G3PEM processes the mass of paperwork yet to arrive. "It has already started," he says. So thanks a lot to everybody who did their bit especially not forgetting the aerial boys who had an unforeseen struggle with a broken halyard.

Chris's gallant lads in the tent rejoiced in the absence of rain and did splendid work on the VHF's and entertained many visitors who were very impressed with their slow scan pictures.

The weather wasn't suitable for Tony YTG's kite station but his Morse reader excited a lot of interest, together with his curvaceous 'Gibson Girl'. The 'new' 30kW transmitter generated a lot of interest and some visitors recalled their associations with it. Ralph G3NAA was doing sterling work assisting the Catering Manager, Marie, and her ladies. Our thanks to everyone we haven't mentioned but who helped to make the day so enjoyable and successful.

Finally thanks to our host Dr. Geoff Bowles, well pleased with his 350 visitors, who made it possible for us to occupy the Museum, stay warm, well lit and able to utilise such an aerial site which makes most of us green with envy!!!.....See you next year?

Last Month's Meeting. Packet Radio by Clive G1EUC and Mike M1EMF.

Our Deputy Chairman opened the evening in the absence of Chairman John G8DET who had picked up a bug at IMD! Carl G3PEM announced that we had logged over 900 QSO's on IMD, and that we had already received some QSL cards from the USA. Another piece of good news was that all eight candidates on the NRAE course run by Chris G0IPU had passed. Congratulations

to all, well done! Harry G5HF and SWL Ethel had a some items for sale in aid of the Hospice.

Clive started his talk by asking how many members knew anything about packet radio, and estimated that about 20% knew very little! Clive told us that packet radio is like a radio internet, and that packet radio has been in use for about 20 years.

Packet radio is so called, because of the way the information is sent. The information to be sent is broken up into small parcels and sent one at a time. When the receiving station or node receives each packet of information it tells the transmitting station that it has received it satisfactorily and to send the next parcel or packet. This continues until all information has been transferred with re-transmission of dodgy packets if necessary.

To operate packet radio you need an aerial, a transceiver, a TNC and a computer with the software needed to run packet. The computer doesn't need to be very high spec. and can conveniently be the household stand-by. TNC stands for 'terminal node controller' and is effectively a modem. Instead of using a TNC it is possible to get by with a sound card but different software is required. As the path to the nearest node is relatively short nothing fancy is needed in the way of an aerial and QRP is usually quite adequate. Frequencies in use are various and 2m, 4m, 6m, and 70cms are used. The demonstration used 144.65MHz.

With packet radio you can send and receive messages to and from other packet stations, locally, nationally and world-wide. You can make direct contact world-wide and have a keyboard chat. You can send and read bulletins direct or via the BBS, and access the DX cluster. This is invaluable for DX'ers as it gives some idea of which part of the world is likely to have open path's for DX.

During the evening there were plenty of questions asked and answered. After the tea break Clive introduced Mike M1EMF who is the software expert and he told us something about it. The software can be downloaded from the Internet as shareware, obtained from a friend (such as Mike!) or bought on disk.

While Clive had been talking Mike had been busy setting up a demonstration packet station at the far end of the room which we were invited to watch. All agreed that it was most impressive demonstration.

As is our custom now, the raffle was drawn just before nine to give any early leavers a chance to win!

Finally a big vote of thanks to Clive for an interesting talk delivered with obvious enthusiasm and to Mike for his contribution and successful demonstration.

Report by Bob M0CSV.

The Tavistock Rally. Colin G0TRM.

Our holiday just happened to coincide with the Dartmoor Radio Club Rally at Tavistock. As it happened to be Bank Holiday Monday the shops were open in Plymouth and my wife and daughter drove there reluctantly (*tell the other one!*) to sample the wares of M&S and BHS. In the meantime, however, I had to amuse myself by going to the rally for a few hours. Some twenty five stands manned by local clubs, individuals and a few dealers were set up in the indoor Pannier Market. It was a friendly affair and many goodies, at bargain prices, were on display, some of which were far too good to miss, so I didn't! There was plenty of time for looking and talking and, of course, a little eating. I came away with the inevitable Morse key, a small antenna tuner and an aerial amplifier plus many other bits and pieces. There were some good value bags of mixed components and odds and ends, most of which, of course, I shall never use.

I enjoyed the visit very much and after leaving the rally I caught the bus to Plymouth to meet up with the family, but before that I just happened to pass a Maplin store so I couldn't let the

opportunity pass without buying something there!

Was that the end of my buying spree? Not quite! On the following Sunday, having returned home, a quick visit to Waters and Stanton was rewarded with a few more items I couldn't possibly live without. It was just as well I didn't go instead to the Dunstable Downs rally with Geoff KLV and friends. From what I hear, there were many more mouth watering bargains there which I would have been unable to resist

Yes, Dunstable Downs was superb, with good weather and much of interest. I heard afterwards that some of Silent Key Louis G5RV's logbooks and QSL cards were on sale together with the development model of his Elizabethan. Incidentally, these all eventually went to good homes. Geoff KLV.

Wideband Amplification. Geoff G7KLV.

Wide band amplification as used in the self tuning transmitter was not a new technique. Wide band amplification has applications in TV where a higher limit of 10MHz is common. The self tuning transmitter required wideband amplification from 2 to 30 MHz with powers up to 1kW. An exceptionally high degree of linearity was required. For the lower frequencies all harmonics generated up to the fifteenth will be amplified. To meet the then existing regulations harmonic levels of -40dB, or 1%, then mandatory, was a very tall order!

Wideband amplification requires valves with a considerable anode current swing and at the same time low anode capacitance. Transmitting valves are far from ideal in this respect. The power delivered by a simple amplifier is directly affected by the load into which it operates. With the further limitation that the amplifier is required to operate with load mismatching to a 2:1 SWR, it will be seen that operating conditions are far from optimum.

Distributed amplification provides the answer in that it brings about a much higher ratio of available anode current to effective anode capacitance, and which is virtually independent of the load presented to the amplifier. Artificial transmission lines are used, one for the input and one for the output. The shunt capacitances of the input line are formed by the grids of the valves. The inductance elements of the line effectively isolate the valve inter-electrode capacitances. Each anode is connected to an identical transmission line, half of the anode current flowing down the line to the load while the other half flows to a line terminating resistor. Each valve is thus driven in succession and the lines must be terminated at both ends by the characteristic line impedance.

In practice, to obtain the required linearity class AB push pull amplification has to be employed. The wideband characteristic comes at a price and the overall efficiency only approaches 20%.

There are two WBA's in the self tuning transmitter. The low power 3 watt amplifier contains 12 receiving type valves and the 1kW amplifier contains 18 transmitting type valves.

The 3 watt amplifier is used to drive the 1kW amplifier which in turn drives the final output stage, The 1kW amplifier itself, however, is widely used in low power transmitter applications.

The substance of this article and the one that appeared in the April Newsletter was culled from the Marconi publications 'Point to Point' June 1959 and October 1963 and from a book called Radio Transmitters by the late Vic Stokes. The principles behind the self tuning concept will be explained in a future Newsletter.

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