Chelmsford Amateur Radio Society

Club Station Call Sign GØMWT

Issue Number 362 March 1996

THE MARCH MEETING

This month we welcome Jonathan Higgins from The News and Current Affairs Department of The BBC to make a presentation entitled "This is the news brought to you by....."

When we are watching the news on Television or listening to Radio, apart from admiring the reporters who risk life and limb to be "on the scene" how often do we think about how this news is relayed into our homes?

Electronic News Gathering (ENG) is the technical term now used to embrace all the latest communication systems available to news correspondents, virtually at any point in the world.

Jonathan's talk will be supported by video film which with the aid of the College projector (as seen for the first time in January) will provide comfortable viewing.

The meeting will open promptly at 7.30pm in Room 3, Marconi College, Arbour Lane, Chelmsford and for this occasion, to enable the committee to make a seating plan, we ask members to let us know in advance if they are bringing a guest.

DATES FOR YOUR DIARY

5 March CLUB MEETING - BBC News Lecture.
9/10 March LONDON AR & COMPUTER RALLY.
10 March HERTFORDSHIRE COMPUTER & RADIO FAIR.
16 March RSGB HQ SATURDAY OPENING.
2 April CLUB MEETING - The Oscar Satellites.

NFD 1996 - Gwyn, G4FKH

The NFD stalwarts gathered the other night at G4KQE's QTH to discuss the questions posed in last month's newsletter. It can be clearly shown that the group has not been as competitive over the last couple of years as we would like. To this end we are seeking good contest operators to assist this year. Do you know anyone who fits the bill? It is not necessary for them to be club members, just good. G4FKH and GOGJS will perform the CW expertise checks. In order to maintain our logging edge, gained last year, we will again use computer logging and are seeking loggers. Training will be given and selection will take place if we are lucky. The event this year takes place on the weekend of 1st and 2nd June, site to be announced, but it will be in Chelmsford. Helpers are required as usual and we would like to have extra people on site throughout the 24 hours. Should you wish to participate in whatever area, please contact one of the above mentioned gentlemen.

CLUB RIG UPDATE

The Equipment Fund has been gradually increasing in value to the level where the Committee could recommend and approve the purchase of an Aerial System Tuning Unit, thus making a complete kit for immediate use in club events.

Brian, G3CVI was nominated to do the shopping and, through browsing the units available at Waters and Stanton, chose an MFJ DELUXE VERSA TUNER II, model MFJ-948.

The new unit was tested at Brian's QTH and passed to Roy, G3PMX for final inspection and labelling.

The accompanying manual provides comprehensive instructions on how to obtain the best results from aerial systems using either balanced or unbalanced feeders and includes a circuit diagram!

COMMITTEE MEETING

The next Committee meeting will be held at 7.30pm on Wednesday 13th March, in Telford Lodge, you are welcome to join us.

LAST MONTHS MEETING - Harry, G5HF

No advertised speaker, no published agenda, nothing much to draw the crowds on a cold night, but what a cracker! Thanks to Chairman John and many members who chipped in with comments and anecdotes, we had a great meeting.

It started with Peter's (G0KSJ) story. He woke one morning at 7.15am to find no house lights on and found the mains breaker had tripped, so he re-set it and walked into the lounge only to find his video smoking, but not with Peter's pipe. When he turned the light on it shone like a photo-flood. A dedicated mains voltmeter read full scale, so Peter used his multi-meter on the 600 volts ac range and it registered 415 volts. The freezer was going mad, the central heating had failed, as did other appliances and the damage was several hundred pounds, however, Peter had fitted a Maplin transient suppressor costing 65p across the burglar alarm and this was slightly burned, but had blown a 3 amp fuse and so protected the alarm. This story prompted John to recommend the use of MOVs (Metal Oxide Varistor), which I had not come across before, so here is the Gospel according to John.

MOVs are available from RS and Maplin with ratings from 5.5 to 575 volts and they cost from 32p for low energy devices to about £10 for 180 joule rating. They are zinc oxide varistors which have a very fast response, typically in picoseconds, and when a spike or steady voltage over the "clamping" voltage occurs, they short circuit the mains supply to protect the equipment. MOVs can be used on ac or dc circuits, so they can be wired into equipment.

Obviously, it is necessary to fit a suitably rated fuse or circuit breaker and the device must be in a case so it does not set fire to the house if it blows up. Some professional equipments are fitted with diodes to perform the same function, but these are not so fast acting.

Peter's radio equipment was not damaged because it was not switched on, but John warned that 400 volts has been known to jump the opened contacts of a mains switch, so he suggests that for very low cost a suppressor should be fitted to protect all radio equipment, Hi-Fi's, TV's, burglar alarms, computers and central heating.

Peter's mains failure happened before Christmas and at the date of the meeting (6th Feb) the street lights were still out and there were holes in the road for a month after the event. The happy note was that Peter was paid full compensation in a few days.

You can buy a mains plug fitted with three suppressors, wired between each of the three leads, but if it operates on an over voltage you have to buy a new plug.

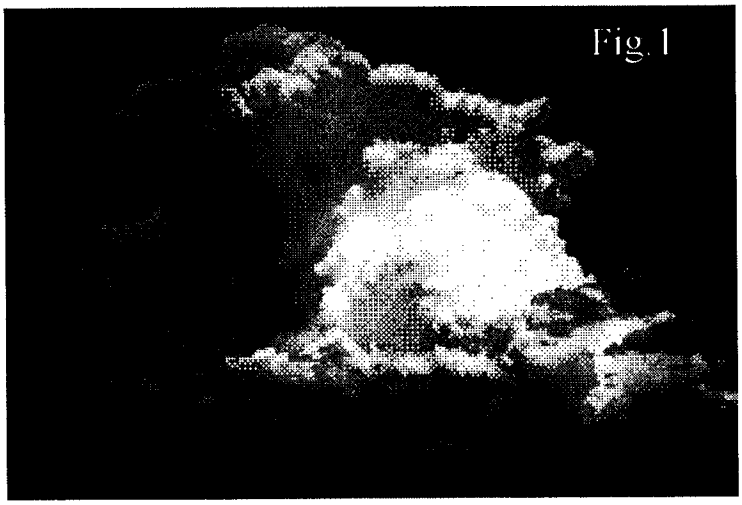
This lead to discussion on circuit breakers and a point that many people forget, that MCBs (miniature Circuit Breakers) only operate on overload and to protect people from fatal shocks it is better to install RCDs (Residual Current Devices), formerly known as ELCBS. These detect leakage to earth, typically 30 mA and break the circuit before a fatal dose is received. A show of hands indicated that 20 members had received a bad shock at some time in their lives, but no-one admitted to a fatal one!!! **(continued on page 2)**

QRN - Brian, G3CVI

Following on Harry's (G5HF) article on hailstones, this item is to show briefly how they are formed and the effects of the associated conditions on radio propagation.

Energy is required in enormous quantities hence the weather which produces hail is almost always in summer during long hot days or in equatorial and tropical regions both north and south, almost at any time.

When the atmosphere is unstable and rising air currents (especially if the air is wet or nearing saturation) reach great heights, 30,000 to 40,000 ft, one sees the familiar giant towering Cumulus clouds. Their bases commence at a few thousand feet where the temperature has fallen to the dew point. Then out comes the water vapour as minute droplets which form the cloud, (See Fig.1) The vertical velocity of the rising air can reach 200 knots in extreme cases but 50 to 100 are commonly met by careless or luckless aviators who stray into the central column of turbulence.



Harking back to ones school days, lets us remind ourselves of the Van de Graaff generator (See Fig.2). A rubberised belt about a metre in total length and endless runs round two rollers. The lower one is driven by an electric motor the upper one being an idler. Both rollers are mounted on a rigid insulating column about half a metre high which is fixed to a heavy base and which has at its top a 15cm dia. metal dome with a well rounded lower rim. At the lower end a metal comb deposits charges onto the belt due to electron induction from earth and at the top another comb picks off the charges and deposits them onto the dome which soon in a dry laboratory, becomes very highly charged. Several hundred kilovolts can be achieved and the charge can produce sparks up to 20cm long to an electrode held near to the dome.

The process occurring in our Cumulus cloud is similar to that shown in the lab experiment. Water droplets barely visible individually are carried aloft by the rising air currents and become very cold as they ascend. They soon freeze into small hailstones and at some level near the top of the cloud they fall back when the air currents are not strong enough to support them.

On their way down they are increased in size by collision and deflected outwards because they carry charges of the same polarity as the rising stones and are hence repelled by them. Again and again the miniature stones go up and down gaining size and mass upon each occasion and leaving electric charges at the top. Their size increases rather like an onion which has concentric skins each larger than the previous one. As many as 50 skins have been recorded and the stones have weighed as much as 2 pounds.

The surface area of a spherical object varies as the diameter squared but its volume varies as the cube so there comes a time when the drag of the rising air is not sufficient to carry the stones upwards so they spill outwards and downwards to fall to the ground. Long before the process is completed the potential difference between the lower and upper zones of the cloud becomes high enough to break down the insulation of the air and a lightning stroke occurs. It may be only within the cloud but often from earth to cloud producing the familiar forked lightning which does so much damage.

As for the effect on radio propagation one could do worse than to ask any professional radio operator who flies in airliners on well defined routes how often his communications with ground stations are ruined. Here in the latitudes of the fifties we rarely get severe storms but when they are present the so called "static" usually renders radio links in the HF bands difficult if not impossible. A giant Cumulus cloud is nearly always opaque to HF radio or causes such unpredictable refraction and reflection that reliable communication is not possible in the affected region. We all are familiar with the crashes and bangs due to thunder storms and usually shut down if only for the sake of safety.

There are some zones of the world where two thirds of the days in a year produce radio chaos due to such storm activity and the central American countries appear to be the chief sufferers along with the places with coastlines on the Indian Ocean.

In general, areas where cold waters flow and cause sea fogs and frequent misty weather exists, are normally free of severe storms because the incoming heat energy is less than in the hotter zones hence the big Cumulus clouds are less able to build up.

Though the forgoing is by no means an exhaustive study of the phenomena described I hope it will interest you and, as is said in all the best books, will "stimulate further reading"...May all your QSO's have silent backgrounds!!!

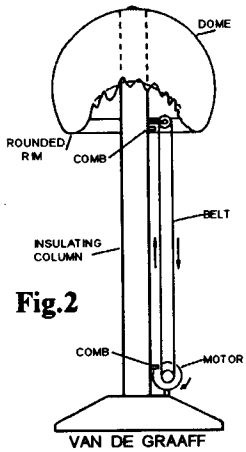


Fig.2

LAST MONTHS MEETING - continued

Brian G3CVI said his eye specialist had detected UV damage to his retina and suggested this was due to looking at a VDU. Brian suggests everyone should fit a UV filter on their screen or, as Fred (G2HNF) said, wear sunglasses.

Another problem Brian mentioned was serious interference coming from overhead power lines and Harry (G2HPF) also suffered from this. The trouble stops when it is raining but gets very bad when windy. Perhaps we should organise a DF hunt when the weather is a bit warmer. It was also mentioned that Tom (G4INM) has suffered interference from his video recorder, probably from a switch mode power supply.

John demonstrated two transistor testers made for BT. Librarian Geoff said he thought we might have the circuits in the Club Library.

Health risks from HF and VHF radiation were mentioned (This was covered very fully by Ron Kitchen some months ago) and John said that there was very little risks from amateur equipment. Tony (G4YTG) warned us not to be fooled by the term aerial gain, because if you put 1 kW into an aerial you cannot get more than 1 kW out, even on a beam. There was some doubt about the field from "magnetic" loop aerials as there have been reports of eye injuries when close to loops, but there is some doubt about it; not so with high power hand-helds where the whip aerial is close to the face! Play safe and keep away if you are using high power!

Many thanks to John for keeping us going till 10.30, that was proof that members were enjoying themselves and roll on the next meeting.

VHF CONVENTION - Ela, G6HKM.

We get a reminder that the VHF Convention is due as a few days before the event the outstanding Contest Certificates arrive on the door mat (or is it just coincidence!). The wx was a bit of a cliff hanger and our final decision was left until the 6.55am radio weather forecast on the day, it looked as though the snow would not arrive until nightfall, so our luck was in.

The event was as popular as ever, I attended the UK Six Meter Group AGM, overseas members attending included 4X4IF, I2ADN a couple of PA's and an OZ. Roy and I met for a quick lunch then Roy returned to the trade stands hunting out the bargains and I attended the opening Ceremony and Presentation of Trophies. We both attended the "Sporadic E" lecture by Jim Bacon, G3YLA which was absorbing, by the way Jim is booked for our Club Meeting in July 1997 (yes the year is right) thats how popular he is.

I met lots of people I have worked on the radio, its nice being able to put a face to the voice, we also met Ken, G3LVP our Club member from Gloucestershire.

DF NEWS - Dick, G3WHR

The Chelmsford DF Trophy will be presented to the winner of the 1995 season during the March Club Meeting.

Plans for the 1996 season will be published in the April Newsletter.

73 from Roy & Ela Martyr,
G3PMX & G6HKM

☎ (01245)360545

1, High Houses,
Mashbury Road,
Great Waltham,
CHELMSFORD,
Essex, CM3 1EL.