THE OVMRC RAMBLER

Volume 39, Number 7 - February, 1995

Earth-Moon-Earth (EME) Beckons !

Written by Jacques Choquette, VE3TSC

Elaine, VE3UXZ, and I were fortunate enough to be invited to visit the Algonquin Park Space Complex to see the VE3ONT EME team in action.

Two weekends in October/November had been planned by the EME people for transmissions in different frequencies but sadly one had been cancelled due to the dish being required for supernova research. On Saturday, November 30, after an hours drive from Pembroke, we arrived at the site. This consisted of several buildings (dormitory, garage, homes, technical centre, etc.) all situated around a lake. Built 30 years ago, the equipment is still in very good condition. We entered the control centre to watch 2 members of the Toronto VHF Society communicating with Australia (VK). Most contacts were in CW and SSB used only with strong stations or to clear traffic. A computer had been set up to show global day/night areas which helped show what parts of the world were good for contacts. During that week-end 299 contacts were made giving a total of approximately 16 million points. Overall contacts were lower than usual due to solar flares cutting into signal reception.

Denis Mungham, VE3ASO, one of the major coordinators behind the project, took us on a tour of the site. An underground tunnel links the control centre with the satellite dish tower. He indicated various parts of the satellite controls such as the wiring, turning track and other motor parts. One unique apparatus was an extremely stable hydrogen maser used for radio astronomy intereferometry.

He explained how their equipment was set up to send signals to the moon. A Yaesu FT1000 was the main receiver/transmitter connected through a signal splitter to an

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The huge dish at the Algonquin Park Space complex faces up beaming its signal towards the moon. The Control Centre is located in the building in the lower right-hand corner.

Inside the Control Centre, two unidentified members of the VE3ONT EME team are at work with their HF rig.

The Ottawa Valley Mobile Radio Club

RAMBLER

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The OVMRC
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Mark Your Calendar !

Next general meeting:

Thursday, February 16th at 1930 hours in the main auditorium of the Museum of Science and Technology. It's Corel Night, a highlight meeting, with the Corel Presentation Team presenting an interesting program of what's new in computer graphic software

Deadline for next Rambler:

Friday, February 24th, 1995.

OVMRC's Repeater:
VE3TWO , 147.300MHz (+)
444.200MHz (+)

Affiliated Clubs

The OVMRC exchanges newsletters with the following organizations:

Algoma ARC, Sault Ste Marie, ON
Augusta Amateur Radio Assoc.Augusta,ME
Border City Radio Club, Windsor, ON
Chatham-Kent ARC Inc. Chatham, ON
Calgary Amateur Radio Assoc. Calgary AB
Comox Valley ARC, Comox, B.C.
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Thousand Island ARC, Brockville, ON
West Island ARC, Dorval, PQ
Winnipeg ARC, Winnipeg, MAN

Sponsors

The OVMRC provides newsletters to the following organizations for their past support of our activities:

Bytown Marine, Ottawa, ON
Kenwood Electronics Canada Inc. Mississauga, ON
Corel Corporation, Ottawa, ON

We gratefully acknowledge the support of the Corel Corporation in producing the Rambler.

Ramblings

Wise words from our President,

Ernie Jury, VE3EJJ

Larry, VE3WEH, our Program and Publicity Chairperson really out did himself when he got Jim Dean, VE3IQ, to speak to us at our January meeting. Jim's talk on the changes coming for Canadian amateur radio was captivating. Many thanks to both Larry and Jim.

I was negligent at that meeting in not properly introducing the H.F. Group of the Outaoais, and I do apologize for the oversight. More about them is included in the minutes of the meeting elsewhere in this issue.

The executive has been considering the Club's equipment inventory and how to dispose of the items which are surplus to our needs. At this time we would like to sell the surplus items to Club members by some sort of auction process. We would like to do this at our March meeting. A few details remain to be resolved but specifics will be published in the March Rambler.

The executive foresees a few problems arising from the current Club bylaws. A formal notice of bylaw change will be published in the Rambler prior to its being considered and voted upon at a regular Club meeting. It will deal with the inability of the Chairpersons of the Standing Committees, such as the Editor of the Rambler, the Flea Market Chairperson, the Technical Chairperson, etc., to hold their position for more than two consecutive terms. It has been decided also that an overall review of the bylaws should be undertaken. Mike Beausoleil, VE3BGP, will be doing this. So that Mike will have as broad a perspective as possible on what changes should be made, all members with views on needed changes are asked to commit their ideas to writing and give them to Mike at the next meeting. We feel there is not sufficient time remaining before the end of June for this Executive to draft and bring a fully revised set of bylaws to a membership vote, but rather, Mike's work will result in recommendations to be passed along to next year's executive.

Our Rambler editor, Dan, VE3XDD, has been making a number of changes in our newsletter and he would like to tell you about them, so QSY to Dan.

Thank you Mr. President.

It has been almost two years since I started the monthly chore of putting the Rambler together. And it has taken a number of months to determine what types of stories/features the Club's membership wants in it. Hopefully we are now satisfying the membership with the current content which balances "how to" , "technical" , and "news" items.

In response to a number of requests from members, this month we are introducing a new feature, "Bits and Bytes", a regular column on computers. Ed Strange who lectures on this subject at Algonquin College is writing it. We are rather fortunate to have Ed share his expertise with us and, hopefully, explain in understandable, every day language the complexities of operating a computer and how it works.

Next month, March, we hope to respond to yet another membership request with the introduction of a regular column on "Packet Radio" which Ken Asmus has agreed to write. The ever growing community of amateurs who use packet should make this feature one which is well worth reading and saving for future reference.

Each column is independent of the other and not only becomes a reliable source of general information but also a source which will respond to your invited written questions on either subject.

We hope you enjoy these two new features and we look forward to your comments.

Minutes

OVMRC Regular Meeting
19 January, 1995

The meeting was called to order by President Ernie, VE3EJJ, at 1934 hours.

The membership welcomed a number of visitors - Fern, VE2ZV, Jack, VE2JJS, Michel, VE2PFQ, J.P. VE2JPD and Sylvain, VE2SNJ - all members of "Le Groupe HF de l'Outaouais" who won first place in the Field Day 4A Category 3 years in a row as well as being 2nd best in the CQ WW for the past 2 years in Canada. (An apology to the Groupe for having not introduced them properly to the membership at the meeting). Other visitors included Bruce, VA3BWN, Peter, VE1JI/VE3YOW, Vincent, VA3CGH, George VE3XS and Tom, WB1C from Connecticut.

Larry, VE3WEH, introduced our guest speaker Jim Dean, VE3IQ, RAC Vice President, Governmental Relations. Jim opened his remarks with the news that EMCAB-2's application has been put on hold by the government. RAC, he said, is continuing its efforts to have the controversial edict withdrawn. He then provided a progress report on RAC's "Amateur Delegation Working Group" and its negotiations with Industry Canada. He said RAC had been given a mandate to do a feasibility study on assuming certain responsibilities in managing and servicing Canadian amateurs. The four main aspects considered, in three phases of implementation, are Certification, Licensing, Documentation and Spectrum Surveillance. There have been no actions taken or commitments made to date. Jim also gave a detailed projection of the various phases of implementation and forecast that phase 1 should be operational by December, 1995. He concluded his presentation with an appeal to all amateurs to join and support RAC.

The President thanked Jim for a most interesting and informative presentation. He continued with three announcements from the RAC bulletin. 1) New Hydro Codes; 2) the new Ontario reflective licence plates for amateurs will increase in cost to $30; and 3) RAQI general meeting is to be held in Ottawa. He also reminded members that the RAC's postal box has been closed. You must now use their new mailing address - 614 Norris Court, Unit #6, Kingston, Ontario, K7P 2R9.

It was pointed out that the CW Course Coordinators Bob, VE3SUY, John, VE3NJ and Jerry, VE3CDS are broadcasting slow speed CW code practise almost each night at 6:30pm and 9:30pm on 7.050 Mhz. A show of hands revealed there were quite a few members taking advantage of these nightly practice sessions.

Girl Guides On-The-Air are looking for volunteers to install and operate an HF demo station for this event on February 18th. Anyone interested is asked to contact President Ernie, VE3EJJ.

Jerry, VE3CDS, reported excellent progress by the museum in building the new station. A tentative official opening date is February 27th. Ernie and Jerry will visit local amateur radio clubs to invite their members to operate the new station, VE3JW.

Leo, VE3NVL, reminded the members that this week was the start of the qualifying period for Class A and B certificates on the Wise Owl Net. He invited everyone to check in on Friday nights at 8:00pm.

Richard, VE3UNW, announced that the OARC will hold its free Advance Class Amateur Course beginning with registration next Tuesday night, January 31st, at Carleton University.

Peter, VE3EPB, the proud interim owner of the Bunny in a box trophy announced that the next Bunny Hunt will be held February 4th between 10:00am and 4:00pm. Al, VE3ZTU, will be hiding the bunny.

The door prize, an ARRL Antenna Book, donated by Rick, VE3IHI and Seaway Communications in Cornwall, was won by John, VE3JKG.

The meeting adjourned at 2108 hours and was followed by a social hour with tea, coffee and cookies.

Bits and Bytes

Written by Ed Strange VA3CEJ

The Rambler welcomes to its pages the first is a series of columns on computers written by Ed Strange. We hope you enjoy Ed's writing and we hope it helps demystifies the complexities of the world of computers !

When I sat down to do this column I wasn't sure how I was going to start. After some reflection, I decided to start with the basics. For some of you this will be old information and for some this will be completely new but one has to start somewhere.

I decided that I would start with the most basic element of the computer system and work my way up from there. The most basic element is the Microprocessor itself. This is commonly referred to as the CPU or MPU. CPU being Central Processing Unit and MPU being Micro Processing Unit. This is the heart of any system. The size of a system and its throughput speed are determined by the type of CPU the system has at its heart. A CPU has two important Buses which are of interest to the user. The first is the Address Bus. This bus consists of lines which contain the address of such things as memory locations or interface chips. Every location must have an individual address which we access to obtain information. The second bus of importance is the Data Bus. This bus is a group of lines which carry the information (data) to and from the CPU. A CPU's size is usually measured by the size of the address and data buses with the clock speed of the CPU being another component by which we compare CPU's.

A 16 bit address bus would allow us to address up to 65,536 8 bit or byte-sized locations or 64Kb as it is more commonly referred to by computer geeks. Today the CPU is generally available with a 32 bit address bus which gives the processor over 4 billion byte-sized locations or 4Gb(Gigabytes) of addressable space.

The original CPU came with a 4 bit data bus which meant that you could manipulate 16 unsigned numbers from 0 to 15 or signed numbers between -8 and +7. You could do a whole lot of calculation with that HI HI. The newest CPU's come with 64 bit data buses which allow calculation of numbers in the billions whether signed or unsigned.

At this point it should be noted that there are two characteristics with the data manipulation function which can affect a CPU speed. There are two distinct data buses which are the internal and the external and a number of microprocessor chips have internal data buses which are larger than the external data buses. This difference can be noticed when the same program is run on a processor which has a small external data bus but a large internal data bus configuration. An example of this is the difference between the 80386DX and the 80386SX. The DX has both a 32 bit internal and external bus structure whereas the SX has a 16 bit external bus with a 32 bit internal bus. This means that in order to manipulate a 32 bit number the SX must read from memory twice in order to get the data into the CPU before it can be manipulated. The DX on the other hand only requires one memory read to get the data into the CPU therefore producing a saving of time. Although internally they may both manipulate the data at the same speed it is this extra bus access which makes the SX appear slower.

Next month I will compare the INTEL and MOTOROLA microprocessors by their physical characteristics.

Please feel free to send, in writing, any questions you may have about computers either to myself or the editor of the Rambler, Dan Doctor, and I will try to provide the answers in a column ASAP. 73.

Part One

Ham Radio Station Lightning Protection

This is the first in a series of articles which appeared, starting in the February, 1994, issue of the "Striking News" from PolyPhaser on lightning protection information for ham radio station. This is a well written, easy to understand series which we highly recommend you retain for future reference.

Proper lightning protection for a ham radio station can involve more variables than any other type of radio site. the table below shows many of the combinations available. The bottom line is the antenna location will establish the grounding requirements, while the station location will drive the protection requirement.

SHACK LOCATION	ANTENNA SUPPORT	POWER / TEL ENTRANCE	
Basement	**Ground Mounted(Vertical)**	**Opposite Side**	**Underground**
First Floor	**Tower or Pole(Conductive)**	**Near Side**	**Aerial**
Second Floor	**Wood Pole / Tree**		
High Rise	**Roof Mounted**		

The primary rule for surviving a lightning strike is still the same no matter which of the many possible variations you have: all equipment elements must be connected to a single, low impedance ground system. This includes the antenna, the antenna support (pole, tower, etc.) , and all of your station's inputs and outputs (I/O's, antenna, power, telephone, rotor,etc.)

Let's examine the significant elements of a good grounding and protection scheme to help you construct a "bullet proof" installation that will survive a direct lightning strike.

We will begin with the antenna. The type and placement of the antenna will dictate the location and size of your ground system. All antenna systems must be grounded. This is accomplished by grounding the base of the tower. For wood pole mounted antennas, connect the antenna mast to the ground system using copper strap. The antenna ground system must be able to dissipate as much of the energy as soon as possible to prevent it from travelling to your equipment. As we will see later on, the ground system is formed by a set of ground rods interconnected below grade with bare radials.

Also fundamental to a good protection scheme is the creation of a single point ground within the ham shack. This single point ground is used to mount all of the protectors and to provide a ground for all of the equipment chasis. This interior single point ground is connected to an external ground system (also composed of radials with ground rods) with a low impedance copper strap. The tower ground system and the single point ground system must be interconnected. This interconnection should be below grade and with a bare low inductance conductor. Your coax shield must not be the only interconnection between these ground systems.

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Lightning Protection

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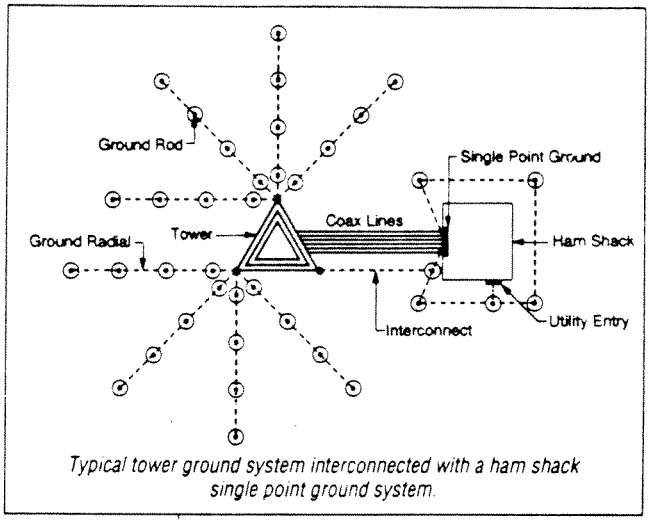

Typical tower ground system interconnected with a ham shack single point ground system.

THREE TECHNIQUES

Every free standing conductor has measurable inductance. Similarly, ground conductors exhibit normal inductance before they go belowgrade. Once in the ground, the inductance of a bare conductor is shunted by the earth's conductivity.

If the soil at the grounding location is not very conductive, three things can be done to help the situation. First, increase the surface area of the conductor which will decrease its normal inductance. Second, dope the soil to increase its conductivity and thus shunt the inductance of the in-ground bare conductors. Third, install additional bare radial lines with ground rods which will effectively parallel the inductance and reduce the overall system inductance. In some locations it may be necessary to utilize all three of these techniques for the best results. Let's examine each one.

CONDUCTOR SURFACE AREA

The most effective material for a ground system conductor is copper strap. Copper as a metal is a good electrical conductor, only moderately attacked by ground and air borne acids, and should have a life-span measured in years. Since lightning has a large portion of its energy in the VHF range, it will behave like an RF signal. That means the energy will only be conducted on the skin of a conductor (skin effect). Thus the surge current will only ride on the outermost surface of the conductor. Such currents following a round-member conductor will not make extensive use of its large cross sectional area. With a 1-1/2 inch or larger flat strap of at least 26 guage (0.0159 inches), both surfaces will conduct the surge.

SOIL DOPING

Water in it purest form is an insulator. Ionic salts when mixed with water make ions. The earth is a conductor because of the number of ionic salts present in the soil. Therefore, conductivity can be improved by adding more ions to the soil.

Soil doping can be done by either adding water or a saline solution to the soil around the grounding system. If the soil already has a sufficient amount of naturally occurring salts, adding water will free the ions and improve conductivity. The more ions (salts) available, the less water that will be needed to reach a given level of conductivity.

If few natural ions are available, salts such as Epsom Salts, can be added to the soil to increase its conductivity. Depending on the amount of rainfall, doping the ground system radials with 4 pounds of salt per linear foot and 20 pounds per rod may last approximately two years.

GROUND RADIALS

Radials are the most cost effective grounding technique considering system impedance, material cost, and installation labour. If one #6AWG bare radial gives "X" resistance, then two will deliver an equivalent "parallel rule" plus 10%. This rule only holds true when the soil has the same conductivity over the entire radial area. After the first two radials, you will need to double the number of radials each time to continue with the parallel-plus rule.

Radials do have a limit on their effective length. If the surge energy has not been launched into the soil within the first 75 feet, the inductance of the radial will prevent any further effective prorogation. Therefore, as a general rule of thumb, all radials should be at least 50 feet long and no longer than 75 feet.

Ground rods should be placed along the

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A Low Cost High Quality Microphone

Developed and written by Wayne Parker, VE3WCP

Did you know that you can construct, for under $5, a microphone that compares in performance to commercial units selling for much more ? You may wish to try my design which uses an inexpensive "electret" unit available from Radio Shack.

The electret microphone has become very popular in communications and high fidelity audio applications due to its small size, low cost and excellent audio fidelity. It is used frequently in tape recorders, telephone handsets, lapel microphones, desk microphones and handheld transceivers.

ABOUT THE CIRCUIT

Electret microphone elements require a DC bias to function. I designed the circuit shown in Figure 1 to provide the optimum bias of 4 to 6 volts DC. This circuit also establishes the audio output level, the output impedance and the low frequency cutoff point.

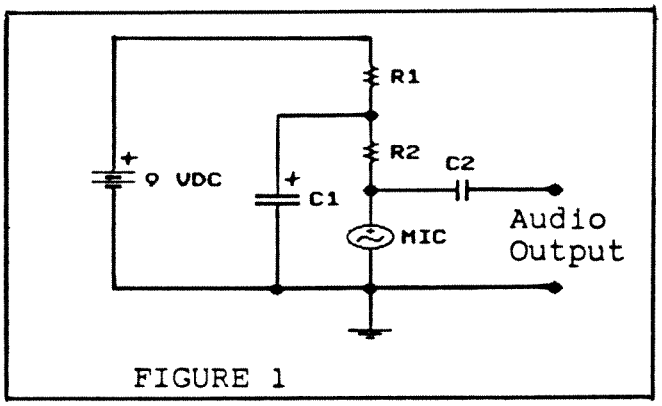

FIGURE 1

The DC bias is provided by R1 in series with R2. The values shown were selected to provide the correct bias from a 8 volt DC power source. The circuit will work equally well when powered from a 9 volt battery. Battery life will be long as the unit only draws about 0.3 milliamperes of current. If you want to power the unit from a 13.8 volt DC supply use 33 K ohms for R1 instead of 12 K ohms. Make sure the supply is well regulated (filtered) or hum may occur on the audio signal.

The output level and the output impedance are determined by C1 and R2. The values shown will provide an output level similar to that of most dynamic microphones and an output impedance of 1000 ohms.

The low frequency cutoff point is determined by C2, R2 and the load impedance (input impedance) presented by the device the microphone is connected to (e.g. HF radio, audio amplifier, etc.). For communications applications a low frequency cutoff in the 200 to 300 Hz. range is desirable to reduce low frequency room noise (rumble) and remove the "boomy" sound from a male talkers voice. The components values shown will provide a low frequency cutoff in the 200 to 300 Hz. range for loads with an impedance in the 4.3 to 7 K ohm range. If you want a high fidelity response use 1.0 Ufd. for C2. This will give a low frequency cutoff in the 20 to 30 Hz. range. If you want to calculate the low frequency cutoff use the following formula :

Fc=1000000/(6.28*(R2+RL)*C2)where

Fc = Low Frequency Cutoff Frequency
R2 = Value of R2 in ohms
RL = Load Impedance in ohms
C2 = Value of C2 in Ufd.

ASSEMBLY

Layout and assembly are not critical. I built the interface circuit on a small piece of perforated board by folding the leads of each component , sticking them through the board, twisting the appropriate leads together on the underside of the board and soldering. Use shielded cable to connect the electret element to the interface circuit and interface circuit to the output connector. Don't forget to add a switch if you use a battery to power the unit (and to turn it off when not in use). If you are connecting the unit to a HF radio check to see if the radio has a RCA type "audio input" jack on the back (for phone patch and RTTY applications). This jack is typically connected to the same point in the internal circuitry as the front panel microphone connector. Use the "audio input" if one is available because the mating plug is

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Attention Kenwood Owners

Did you know that your Kenwood TH22A, TH42A, TH79A, TM251A, TM451A and TM733A can "clone" or "copy" each other ? Additionally, some can be easily altered to perform cross-band repeat functions. Several late model Kenwood transceivers provide a dedicated Packet/Data connector.
Kenwood has provided the Rambler with copies of the technical specifications to accomplish all of the foregoing which, by the way, is not covered in any of the transceivers manuals. If you would like a copy of any or all of the technical specifications conact Dan Doctor, Rambler editor.

For Sale !

A complete YAESU amateur radio operating station is for sale at a reasonable price. Please note, however, that no single items will be sold - it's sall or nothing. Delivery in the immediate Ottawa area can be arranged. The complete station consists of the following:

FT-101E	Transceiver
FL-210B	1000 W Amplifier
SP-101PB	Speaker / Phone patch
FV-101B	External VFO
YC-601	Digital Frequency Display
YO-100	Monitor Scope

Included: All manuals, spare tubes, microphone, all cables and connectors, plus a maintenance service manual for the FT-101 series.

Also included :
MFJ 941D 300 W antenna tuner /SWR meter / Watt meter /Antenna switch (this unit is brand new - still in its original shipping box) .

Interested parties, please contact HANS, VE3REL, at 692-0917 (Manotick).

HT Power Supply Building Party

The pressures of work and the need to earn a living has forced the postponement of the scheduled HT Power Supply Building Party until sometime in May. The organizers of the event apologize for any inconvenience caused by the postponement but , as previously stated, the pressures of work make it physically impossible to hold the "party" any sooner.
Listen to the Welcome Mat and Wise Owl Nets on Wednesday and Friday evening, respectively, for further information about this party.

Low Cost Microphone

Continued from page 8

much cheaper to buy and easier to wire than the front panel microphone connector. Also check to see if the rig has a 8 or 9 volt DC accessory power output jack. This output can be used instead of a battery to power the microphone unit.
I leave the packaging of the electret element and interface unit and the provision of a push to talk switch to you .
The microphone sounds best when you speak directly towards the electret element from a distance of 3 to 6 inches from your mouth. I have been using the unit I built as a base station microphone for my HF radio for several years now. I have frequently received complements on voice clarity and naturalness and have been questioned as to what kind of radio I was using. It is the microphone that makes the difference.

PARTS LIST

Mic = Electret Microphone element (Radio Shack Part No. 27-090)
R1 = 12 K ohm, 1/4 Watt Resistor
R2 = 1 K ohm, 1/4 Watt Resistor
C1 = 100 Ufd., 15 Volt (or greater) Capacitor
C2 = 0. 1 Ufd., 15 Volt (or greater) Capacitor

February 16th Meeting

COREL NIGHT

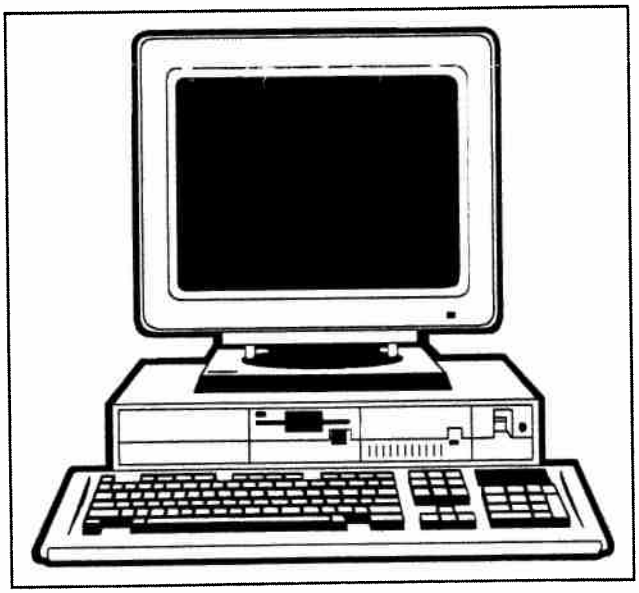
SEE AND HEAR WHAT'S NEW IN COMPUTER GRAPHICS

The OVMRC is pleased and proud to host at the February 16th meeting the Corel Presentation Team, representing a company which is an intregal part of the community as it suupports a variety of arts, athletic, charitable and non-profit organizations. The Corel Corporation supports the OVMRC, having donated CorelDRAW 4 and Corel Ventura for use by the Rambler. Founded in Ottawa in 1985 by Dr. Michael Cowpland, Corel Corporation is the recognized world leader in the development and design of graphic and SCSI computer software.

The Corel Presentation Team will be presenting an extremely interesting program of "what's new in Corel computer graphics". Corel's growing line of software products include CorelDRAW 3, 4 and 5, Corel Professional Photos on CD-ROM, Corel Ventura, Corel SCSI, Corel SCSI Network Manager, Corel CD PowerPak, Corel Gallery and CorelFLOW.

Keep abreast of the latest technology - understand the many advertising claims being made by software manufacturers - attend this highlight meeting and see and hear the latest information. And by the way, there will be prizes and door prizes of Corel products (donated by Corel Corporation).

February 16th - COREL NIGHT



New Computer Net On VE3TWO

Have you tiuned in yet ? Wednesday evenings, 8:30 pm to 9:30 pm on VE3TWO the new Computer Net is full of interesting information about computer software, discussion on computer problems and other topics of interest pertaining to computers. Give it a listen !

What Am I Bid For This Item ?

Get your cheque book ready for the big Silent Auction of surplus club equipment to be held at the OVMRC's March meeting ! Plans are being made to display these items prior to the March meeting, from 6:30 to 7:30 pm , and invite Club members to submit written bids for the items of their choice. Some of the major items will have a reserve price. A committee will review bids during the meeting and will declare successful bidders.

C l u b ' s Constitution To Be Reviewed

The Club's executive has decided to review the constitution to determine if any of the sections require updating. It has been several years since the last review of the constitution took place and it is considered prudent by the Executive to keep pace with changing needs with a review at this time. Any proposed amendments will, of course, be published in the Rambler prior to their being presented at a regular Club meeting for the memberships' consideration.

Something New Has Been Added

The OVMRC has acquired a new indoor/outdoor banner which will be used as a backdrop at meetings and at outdoor events. The new banner is navy blue in colour with white lettering spelling out "Ottawa Valley Mobile Radio Club Inc" . Its first use will be at our February 16th meeting. It no longer will be a secret what organization is sponsoring events in which we are involved !

L i g h t n i n g Protection

Continued from page 7
entire length of each radial. The most cost effective spacing between rods for normal (grassy) soil is two times the length of a rod into the ground. If 8 foot rods are used, they should be placed on 16 foot centres.
If the soil is not normal (e.g., very dry or sandy) the separation may be reduced in order to minimize the interconnect inductance. It doesn't hurt to have the rods too close, it only costs more in material and labour.

GROUND MEASUREMENT

Since most soils are stratified, the best way to determine the effectiveness of a ground system is to measure it. The simplest way to determine the sub-layer conductivity is to measure the first ground rod, one foot at a time, as it is hammered into place. This technique can provide a profile of the lower layers relative to the first foot.
Most earth resistance meters measure only DC or low frequency AC resistance of the ground system. Since the lightning strike energy is predominately RF energy, the inductance of the ground system is important. Without using very expensive specialized test methods, the only way to ensure a low impedance ground system is to follow the suggestions given for conductors, doping and radials.
Part Two in this series will appear in next months Rambler.

Potpourri

A sampling of news and comments from newsletters and newspapers from across the country - written by Jacques Choquette, VE3TSC

Winnipeg - A recent RAC report had info which may interest local high speed CW'ers. The World Wireless Beacon mentions that Pacific Coast high speed nets are currently running on 3523/7023 on Mon/Thur at 0330 UTC.

New York - The following interesting trivia was mentioned during a presentation on antique keys and "bug collecting" On July 2, 1939, Theodore Roosevelt McElroy copied Morse code at the incredible speed of 75.2 wpm! (Anyone local that quick? - VE3TSC)

Messenger (Dec 94) - QRM? VE2PML reports that nightly RRTY on 3796.5 is the US military in Haiti! When he contacted the FCC they advised him that they had no authority over military communications. US regulations are that ALL amateur bands be shared with the military on as needed basis. (Lucky ours in Canada is too small to bother us - VE3TSC)

Saskatoon - It was explained and emphasized the dangers of using handhelds/cellular phones in hospitals can cause life threatening problems (ie - heart monitors, incubators, IV pumps which can be affected). One piece of advice was that if any clubs use their handhelds for any events (ie - Xmas nets for sick children) it is best to get permission from the hospital administration.

Detail was given on how the Canadian Forces Affiliate Radio Service (CFARS) uses amateur radio operators to help link people abroad to loved ones at home. One can monitor 14452.5 to see how we help the Armed Forces around the world. For more info about CFARS contact: Len Brewster VA3LEN, RR#2, Chesterville, Ont., K0C 1HO.

Monitoring Times (Jan 95) - An Oklahoma Highway Patrol officer has filed suit against his supervisors saying they illegally monitored his cellular telephone conversations. Once after a call to another trooper, his phone rang. It was his boss who reprimanded him for his actions. Upon complaining, he was informed by his boss that his calls would be continued to be monitored as it was not illegal for the authorities to do so. (Who guards the guardians? VE3TSC)

POT HOLE NET - Held on Sundays, 3760, 1000 hrs is looking for net controllers. Those with no experience or equipment can be guided at the station VE3JW at the Museum of Science and Technology.

EME Beckons !

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Icom 765 used to search for contacts. The signal then went along wires to the feedhorn, a 2M amplifier, a 1 Kw linear, then into the dish (gain 33 dB) to be reflected towards the moon.

The present lease held by the Institute for Space and Terrestrial Sciences (York University, Toronto) expires this fall. If the lease is not renewed, the NRC will shut the facility down and transfer all of its operations to its facility at Okanagan Valley, B.C. As a result of a large population concentration in southern Ontario, there is a saturation of electromagnetic signals causing RFI into the satellite dish. The B.C. site has mountains around it which act as a shield resulting in more clear reception.

We're hoping that luck will be on the EME group's side and the site is kept open as they are hoping to stage another EME expedition in early 95 for 6M and 10Ghz. If it closes, we will loose another fascinating aspect of the amateur radio hobby.