

MAY 85



GROUNDWAVE



Club Call VE3RC

Repeater VE2CRA

VE3XXY

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THE OTTAWA AMATEUR RADIO CLUB, Inc. is an association of Radio Amateurs devoted to the promotion of interest in Amateur Radio communications in the Ottawa regional area and to the advancement of the technical competence and achievement of Club Members.

THE CAPITAL CITY NET meets every Monday at 2000 hours on the Club repeater VE2CRA (146.34/.94) to pass traffic and to make announcements of interest to Amateurs in the Ottawa regional area.

THE SWAP NET, a service of the Ottawa Valley Mobile Radio Club, Inc., is repeated on the Capital City Net and is conducted by Ed Morgan VE3GX. To list items and make enquiries, call Ed at 733-1721.

An ENGRAVING PENCIL is available to Club Members to mark their valuables for positive identification in case of loss or theft. For further information, contact Penny Robinson VE3ERO at 225-1276.

The OARC EXECUTIVE normally meets on the second Wednesday of each month in the Board Room of CFRA, 150 Isabella St., OTTAWA at 1930 hours. Contact the President to confirm the date of the next meeting.

RENEW YOUR CARF AND CRRL MEMBERSHIPS directly with these organizations, as the club no longer provides this service to members.

DEADLINE FOR COPY is the first Wednesday of each month.

REGULAR MEETINGS of the OARC, Inc. are held on the first Wednesday of each month (except July and August) at the National Research Council Auditorium, 100 Sussex Drive, Ottawa at 2000 hours. A bulletin board is available for posting notices of interest to other members at about 1915 hours. For further details about the next, see Page 5.

SEE YOUR NAME IN PRINT! -- In National and International publications. Write an article for the GROUNDWAVE and watch it travel! Many local articles have been reprinted in Club Bulletins across North America.

MATERIAL PUBLISHED herein does not necessarily represent the official OARC viewpoint. Items may be reprinted by Amateur Radio or similar publications, provided that the proper credit is given to the OARC, Inc.

SAFETY BELTS and TWO METRE RIG are available for loan to Club Members. The two metre rig may be borrowed by members who are hospitalized and the safety belts and pole straps by any member (\$100 refundable deposit is required for the latter). For the belts, contact Paul VE3ICV 820-6643 (west end) or Brian VE3JKZ 523-1535 (east end). Contact the President for the two metre rig.

RADIO AMATEUR CALL BOOKS are available for use of area Amateurs at many of the libraries throughout the region, including downtown and other city libraries, Orleans and Nepean. Enquire at the information desk of your local library for details.

MINUTES OF THE OTTAWAAMATEUR RADIO CLUB, Inc

April 6th 1983

The meeting was called to order by Bob VE3MPG at 2003 hour. Bob welcomed the following visitors: Ted VE3OHA, Bill VE3OAI, Bob VE3DUB, Robin VE3EUI, and the guest speaker, Dr. George Collins VE3FXT.

The "Home Brew" activities commenced immediately. The large number of items and the variety and quality was much appreciated by the members present. Many members expressed the opinion that this was the best home-brew night in many years. Fifteen members displayed their equipment.

Brian VE3JKZ showed four items. The first was a simple, low-cost antenna matching network for 160m operation. The chassis was a baking pan, and it was equipped with a built-in SWR meter. It was designed to match an end fed half-wave antenna. Brian's second entry was another "baking-pan" antenna tuner; this one was link-coupled and designed for matching antennas fed with open wire line. His third entry was a phone patch built using the \$9.00 kit which was sold at the auction a couple of years ago. He had added a battery to drive a flashing LED to indicate the patch was on to overcome his habit of leaving it connected after the patch was completed! The final item was a 10 MHz CW transceiver, using a direct conversion receiver and a 6L6 vacuum tube as an output stage to provide ten watts.

Bill VE3GPR then showed his simple antenna tuner.

Dave VE3KMV had five items. The first was a set of repeater logic including a CW identifier. Next was a quick-charger whitches to a low charging rate automatically as the battery voltage builds up. The next three items were a touch tone generator, and two decoders with different degrees of complexity.

Kurt VE3NPU had an IC-22S which was modified with an EPROM look-up-table and dial switches to enable one to dial in frequencies directly. He also had a 13.6 v. 10 amp power supply and a 16 channel scanner.

Gerry VE3GK brought what he could of his new 100 foot rotating tower, which was the base bearing for the lazy-susan arrangement which is mounted on the base made of five cubic yards of poured concrete. The tower is a powered crank-up model which is 28 feet high when lowered and the top is 113 feet when fully raised. The tower lowers automatically when wind speed exceeds 50 km/hr. The tower raises to full height in 30 seconds. It can be programmed to stop at any height within its range.

Keith VE3GFI showed the members his very neatly constructed synthesized two metre rig which he had built up from various modules, such as kits from VHF engineering, a receiver circuit from a 1972 QST article, a diode matrix similar to the GLB club project, a power amplifier copied from a commercial transceiver, an amplifier to increase the sensitivity, etc. The rig is equipped with low and high power settings for one and ten watts output and has 0.3 microvolt sensitivity. He also displayed a regulated power supply from a 1979 or 1980 Handbook and an incomplete touch-tone pad.

Walt VE3CBE entered a switchable right/left handed memory keyer, which was very neatly packaged. The control switches were push buttons "borrowed" from a low cost calculator.

Howard VE3JDZ described his vertical antenna designed to mount on a sloping roof. It is basically a Butternut vertical with "lots of radials". With this antenna and 100 watts, he received a 57 report from Venezuela on 75 metres.

Paul VE3ICV brought along his linear amplifier which uses a 4-1000Z tube. The filament requires 7 v. at 20 amp. The amplifier is a grounded grid design. Paul also displayed a

power meter from the February issue of QST for two metre rigs. He had checked the accuracy and found it to be quite adequate.

Paul VE3KIY showed his "Slim Jim" two metre antenna based on a design by G2VCX which was constructed of copper pipe, 1/2" i.d. and appropriate elbows. With this antenna, Paul can operate through VE2RM at full quieting with 10 watts. The figure below gives the general design. For full details, you may contact Paul at 731-2388.

4"

/4

/2

Hirsch VE3JBU had built the power/quick charge which was featured in a recent QST. With discharged batteries, it supplies about 600ma for the first hour, dropping to 100ma after six hours then to 45ma and finally to about 20 ma. With the rig connected, the supply supplies enough current when transmitting to prevent any battery drain.

John VE2VQ had three items on display. The first was a safety rig for tower work made of a metal chain and plastic tubing (someone said it looked like a "Newfoundland chain saw"!). He also had a two metre yagi using a gamma match with a ceramic trimmer and an automobile power supply for two metre handie talkies.

Brett VE3JLG showed his prowess with digital circuitry with his pocket packet terminal which used a Radio Shack PC-2 micro computer as a keyboard, an ICOM IC-3AT 220 MHz handie talkie modified to obtain the output before the audio amplifier and a 6805 based front end microprocessor with 2k RAM, a bus connector and a modem board for 2400 baud afsk. The PC-2 collects the keyboard entries for output via the 6802. The software is yet to be completed.

Bill VE3ARZ demonstrated his CW regenerator which cost \$7.00 for

the three I.C.s and a box which he picked up at a flea market. The design is based on an article in an old 73 magazine, but Bill stated that there is an improved design in the April 1983 issue.

Mike VE3MJC showed his multi tone oscillator which provides four discrete frequencies, individual level controls for each and about 0.7 v rms output. The design, which uses two operational amplifiers for each oscillator, is based on a design in Bill Orr's Handbook. Mike also displayed his T-tap line to vary the deflection when directly driving the plates of an oscilloscope for SSB monitoring.

John VE3HPW described his 20 metre transceiver which uses a super-hetrodyne receiver based on a design by W1FB which uses four MOSFETs and a 250 kHz bandwidth crystal filter which uses low cost television colour burst crystals. The VFO is based on the QRP rig in a 1981 QST. Image rejection is 100 db and output is five watts.

The entries were judged by Brian VE3JKZ, Mike VE3MJC and Paul VE3ICV. Their unanimous decision was that John Hayes VE3HPW was the winner of the Technical Achievement award for his 20 metre transceiver. The other winners were Brett VE3JLG for his pocket packet radio, Keith VE3GFI for his two metre rig which displayed such excellence in construction and Bill VE3ARZ for the very useful, yet simple CW regenerator which captured the interest and imagination of most members present.

The guest speaker, Dr. George Collins VE3FXT, was raised in Toronto and received a degree in mining and engineering geology from U of T and later his Ph. D. in geochemistry. He talked about coherent CW, which was described in detail in the May and June 1981 issues of QST. He pointed out that one can buy a 1 MHz crystal oscillator with ± 1 Hz accuracy and stability for \$400. With this oscillator, a simple frequency synthesizer and an HW-8 transceiver, he has built

R.S.O. CONVENTION - 1983

Reserve the week-end of September 23, to attend the 15th annual Radio Society of Ontario Incorporated Convention. The site of this year's festivities will be Toronto's internationally known Inn On The Park.

Activities will include an indoor flea market, commercial dealers, technical forums, banquet, ladies program and special rate admission to the nearby Ontario Science Centre. —the whole family will have something to do.

The Inn On The Park is a resort hotel situated adjacent to over 500 acres of parkland, right in Toronto. Enjoy the peak of autumn colours, with swimming, racquet sports, walking trails and complimentary bicycles. Six restaurants will satisfy every appetite.

Watch for details.

PEEL ARC PROJECT

How many of us who like to tinker with electronic projects have wished for a variable voltage bench power supply that would deliver up to 5 amps? It could even power your mobile rig in your shack.

The Peel ARC is doing a club project this year consisting of just such a dandy little power supply. Projected cost will be about \$25 but if we can scrounge or get parts donated, it may be less.

A \$10 down payment is asked to get in on this and we hope to have kits made up by the March meeting. For information call Jim VE3IOM.

de PEEL ARC NEWS

(Now, if OARC would run a similar project, I would be at the head of the line — VE3JMT)

In a subsequent announcement, the project coordinators reported that with donations of parts, they expected to have a final price about \$15. Three to 20 volts with 5 Amps out, sounds great at this price.

BUMPER STICKER

. . .reads "DAHDIDAHDIT DAHDAHDIDDAH"
Send \$1.00 to D. Mollan, WB7FDE,
7805 NE 147th Ave. Vancouver, WA
98662. Who knows? You may be the
only kid on the block to have one.
"Hi-hi".

de South Pickering
SPARC GAP

SOME WORDS OF WISDOM — "CQ" STYLE

Under the general heading of 'Antennas', Karl T. Thurber, Jr., W8FX has prepared a series of articles on Antenna Accessories For The Hamshack.

Part VII in the April issue of CQ concludes the series with an interesting discussion of some of the important accessories in current use and with a look back at some of the devices used in 'yesteryear.' Karl's advice concerning purchases is worthy of special note.

"Regarding cost, good test equipment costs money; in some cases, this cost can be more than that of the gear that it is intended to serve. Yet one of the best investments you can make is in good, dependable test equipment, whether for "r.f. purposes" or for workbench servicing. Good test equipment rarely becomes outdated.

. . .The decision to purchase more or less expensive test equipment should be based on your needs and the frequency with which you anticipate its use. For example, it pays to obtain some good, basic test equipment such as a precision multi-meter or s.w.r. bridge, because you will likely use these instruments every day, and they'll probably never go out of style. On the other hand, to invest in a frequency counter good to an accuracy of less than one part per million would not be cost effective if you are but a casual VHF or UHF operator."

Karl goes on to suggest that more complex and costly test equipment might be acquired as a club project for shared use. He recommends, however, that if a club goes this route, they should be careful to

"... buy only the best, most rugged instruments, as shared equipment tends to get much rougher treatment than individually owned gear."

While emphasis in the article is placed on frequency counters and such ilk, passing recognition is given to such ancestors as the frequency meter and Lecher Wires. We still see the venerable BC-221 at flea markets, although usually much modified. I have seen this great instrument man-handled, abused, neglected, and ill treated and still performing in solid fashion month after month.

I had forgotten that there was such a device as Lecher Wires, for those who haven't met one, a pair of wires or pipe mounted on a board or plank to be used as a wavelength/frequency measuring device. Somewhere back about 1941, a discussion on Lecher Wires in the Instructor's room at the RCAF Wireless School in Calgary led to construction of an oscillator that was eventually coaxed up to the lofty frequency of 120 Megs (MHz). The oscillator was a type 30 tube with the base removed to lower the distributed capacity. Ah, nostalgia!

CO-AX CABLE FACTS

Item 1. The outer jacket on co-ax cable is very important in determining what the life span of the cable is. Cable with vinyl jackets comes in two types: Class 1 - contaminating type originally used on cable such as RG-8U, RG-58U and RG-59U. This jacket material when manufactured is kept flexible by incorporating a plasticizer or extender. Unfortunately, as soon as the cable is jacketed, the extender starts to move from the jacket through the shield braid into the polyethylene insulation around the centre conductor. This causes the polyethylene to change its insulation characteristics with increasing electrical losses. These losses can be readily measured after a year or two. Thus the older cable, particularly surplus cable that is old, is no great bargain at any price.

Item 2. Later cables have used what is called a class 2A jacket. This material is long lived, abrasion resistant, not damaged by sunlight. It can be buried for underground runs and best of all it is non-contaminating to the polyethylene centre conductor insulation. All of these advantages add up to a class A jacketed cable has not, I repeat has not increased the cost of the cable to us, the amateur using co-ax cable. Examples are RG-213 replacing RG-8, RG-58C/U replacing RG-58U, RG-59 /U replacing RG-59/U, etc.

Item 3. With RG-58/U no longer being a mil-spec cable, the shielding no longer has to be made so well. The result is a cheapened shielding and less density of the braid. This has been cheapened to such an extent that if you bend the cable the braid spreads to leave holes so you can see the inner insulation. It behooves us, therefore, to refuse to purchase non mil-spec cables. As frequencies get higher, there would be more RF leakage through these poorly made cables. The manufacturers did not cut the price on the non mil-spec cables, but merely cheapened them.

Item 4. Theoretically foamed insulation on cables should increase the efficiency. However, there are none of them made to mil-spec so far as shielding, do not have class 2A jackets, and unless foam is gas filled to keep moisture from oozing through the jacket into the foam, are not desirable. Losses go up very rapidly if moisture gets into the foamed insulation. To conclude, stick with the late types of co-ax using class 2A jackets and leave the foamed types to TV. Jacket types for the co-ax cables can be checked in the cable makers' catalog. Cable jacketed with Class 2A jacket is normally no more expensive than the older non mil.

de U.S. MARS Newsletter
submitted by Dave
WFØLNZ and rcvd via
PEEL ARC NEWS

Minutes--Continued

Carrie VE3ARS, Editor of the TCA, apologized for late deliveries of the magazine recently. He said that they are changing printers which could result in an improvement in the future. He also appealed for articles.

Mike VE3LAR reported on behalf of the OVMRC that he was organizing communications support for the "Metres for Millions" walk. He can be contacted at 523-1571. He also said that the recent interference to repeater VE3TWO had been cleared up. VE3JW at the Science Museum is being moved, but will soon be active again, and operators are needed for the weekends.

Al VE3LNH reported that he will be out of the country for about six months and that he would be willing to lend his two metre synthesized rig to a "new or 'impoverished' amateur".

Bob VE3MPG reported that the new Club Vice President is Jerry Wells, VE3CDS. His principal interests are two metre repeaters and HF operations. The Club is still looking for a Treasurer.

The meeting adjourned at about 2245 hours.

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A CALLING CHANNEL FOR TWO METRES???

by Paul Cooper, VE3JLP

Last summer for the first time in my life, I found myself operating on a band where the use of a calling channel is mandatory. I was sailing on Georgian Bay in a chartered yacht and the service I was using was Marine VHF. I had taken the trouble to equip myself with a "Radiotelephone Operator's Restricted Certificate" beforehand as I knew the boat we were chartering was equipped with VHF. Of course, once we were settled in, I had to try out the system and make comparisons with two metre Amateur operations. I had read the DOC handbook for the service, and so I knew I had to make my initial call on channel 16, the calling and safety channel for this band.

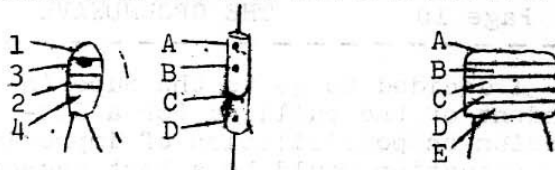
"CYC, CYC, CYC, this is the yacht Adam Beck" over. --"Adam Beck, this is CYC, channel 68, over". I was momentarily caught off guard, but then remembered what the book had said about the calling channel, so I pushed the mike button and said, "Roger, CYC from the Adam Beck. Adam Beck QSY to channel 68." Ouch! I just remembered that these mariners, on VHF anyway, know nothing about the Q codes. However, if I had confused the girl at CYC, she didn't show it when I found her on channel 68 and we completed our contact. My first QSO on Marine VHF; should I ask her for a QSL card? I wondered--but I am digressing from the point of this article.

For the rest of the week, I monitored the service and heard many contacts between pleasure craft. On the whole, I was favourably impressed by the procedures used by most operators, including some young children. Contact was always established on Channel 16 followed immediately to a shift to another channel. Thus, even at busy times of the day, channel 16 was quiet and available for calls, particularly for emergency ones. If one is awaiting a call, or looking for someone, there is never a question of which channel to use to find him. Just call on channel 16, and if he is in range, he will hear you.

Reflecting on this procedure after the trip, I realised that there is a lesson here for those of us who live in an area blessed with several two metre repeaters. Why shouldn't we take a leaf from the Marine VHF book and designate one of our repeaters, preferably one with decent coverage, as a "calling" and if you like, a "safety" machine to be used mostly for these two purposes? You will notice that I have used the word "mostly". This is to answer those local hams who, because of their distance from the repeater, low power, or single channel limitations, or what have you, usually use the machine we may choose for their QSOs. Clearly flexibility is needed. So what does the membership think of this idea? I am sure the Editor would be delighted if I have stirred up some replies for the GROUNDWAVE.

Component Marking

from information from
Joe Courtémanche
VE2DZT



There are a wide variety of markings on components available today, especially on capacitors. Every Ham is familiar with the colour coding which gives the values of resistors. Usually there is an extra band which gives the tolerance. These are:

| | |
|--------|-----|
| Silver | 10% |
| Gold | 5% |
| Red | 2% |
| Brown | 1% |

Some resistors have their value printed on them. This may simply be the value in ohms. However, sometimes a letter is used in place of a decimal point; R for ohms, K for thousands of ohms and M for megohms. For example:

| | | |
|--------------|----|-----------------|
| 0.47 ohms | -- | R47 |
| 1 ohm | -- | 1, 1R or 1R0 |
| 4.7 ohms | -- | 4R7 |
| 100 ohms | -- | 100R |
| 1000 ohms | -- | 1000, 1K or 1K0 |
| 4700 ohms | -- | 4K7 |
| 1000000 ohms | -- | 1M or 1M0 |
| 4700000 ohms | -- | 4M7 |

A letter following the value shows the tolerance F=1%, G=2%, j=5%, K=10% and M=20%.

Capacitors may use the same type of numeric markings, with p representing picofarads, n for nanofarads (1 nF=1000 pf) and u representing microfarads. For example:

| | | |
|---------|----|-----|
| 0.68 pf | -- | p68 |
| 6.8 pf | -- | 6p8 |
| 6800 pf | -- | 6n8 |
| 6.8 uf | -- | 6u8 |

Tolerances in this scheme are marked in the same way as for resistors. Some capacitors are marked with a code denoting the value in pf (the first two figures) followed by a multiplier as a power of 10. Letters denote the tolerance as with resistors, but C=±2.5%. E.g. 123j=12pf x 10³ = 12 000 pf or 12 nF. Some capacitors are marked with a colour coding as indicated in the following figure.

For Tantalum capacitors, bands 1 and 2 indicate the value as with resistors (0-black, 1-brown, 2-red, 3-orange, 4-yellow, 5-green, 6-blue, 7-violet, 8-grey, 9-white). Dot 3 indicates the multiplier (1-black, 10-brown, 100-red, 0.01-grey, 0.1-white). The voltage is indicated by the fourth band (10-black, 6.30-yellow, 16-green, 20-blue, 25-grey, 3-white, 35-pink).

For tubular and candy-stripe capacitors, A and B indicate the value and C the multiplier (1-black, 10-brown, 100-red, 1000-orange, 10000, yellow, grey-10n, white-100n). D indicates the tolerance (for capacitors less than 10 pf, black-2pf, brown-0.1 pf, green-0.5 pf, grey-0.25 pf, white-1 pf; over 10 pf, black-20%, brown-1%, red-2%, orange-2.5%, green-5%, white-10%). A red band on polyester capacitors indicates 250 v.w.

Other markings may be present on some capacitors. For example, Philips ceramic capacitors are marked numerically (e.g. 1n8=1800 pf) and also have a colour band at the top to indicate tolerance. Green-- -20 +80%, -40 - +85 deg C; yellow-- ±10% -55 - +85 deg C; red violet-- +100 ppm/deg C change -55 - +85 deg C; black-NPO -55 - +85 deg C; red-- -75ppm/deg C -55 - +85 deg C).

Hopefully, this information may help you to determine just what those parts are when you pick up an assortment or you are looking through the junk box.

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ANTENNAS ON APARTMENT BUILDINGS

BY Bill Deacon VE3BDO
--continued from April

Last month, Bill started his commentary by describing his frustrations with a two metre antenna on his balcony. Now his saga continues-----

I decided to go to the Superintendent of the building for a discussion on possibilities of improving the situation would be a lost cause. I put him in about the same class as the old biddies. Consequently, I phoned the Company that owned the building and arranged a meeting with the Manager of their Property Department. I got some pictures out of QST and 73 to give the man a better idea of the kind of antenna I wished to install. This was to be a co-linear vertical somewhat similar to the Ringo Ranger, mounted on a Radio Shack tripod which, in turn, would be bolted to three 2x6 planks, each three feet long.

I assured the manager that there would be no guy wires attached to the building, so there need be no fear about water leakage through holes in either the roof or parapet surrounding it. I also assured him that there would be no horizontal antennae. Apartment people seem to have a great aversion to wires drooping over their rooves. I also assured him that there would not be large bundles of big wires going up the side of the building. Finally, I asked if I might run a trial operation with the firm understanding that everything would be removed without argument if there were to be tenant complaints about either RFI or unsightliness.

When I received verbal permission I took a chance and asked that it be put in writing to protect me against the whimsies of any new Superintendents who might appear on the scene later. This, to my great relief, was supplied! I was then able to operate from my 7th floor apartment into a system mounted on the roof of a nine storey building (approximately 100 feet up).

When I had had a few months of successful operation with no complaints from the tenants, I decided to take a chance of moving along on my own. I installed a Cushcraft 147-20 (20 elements with 10 horizontal and 10 vertical elements op-

erated independently of each other). A two metre beam is not at all unsightly and so it aroused no signs of unrest or displeasure around our domain. However, I wanted a control line for the rotor and I also wanted separate feed lines to the two yagis. I also felt that it was time to improve the transmission line from RG58 to something a little less lossy. After all, there was some 70 feet of run from the rig to the antennae.

Control cable for a rotor is no big deal. It is flat and not too visible. The RG58 was replaced with a run of RG213, which is the MIL spec version of RG8. This meant better shielding, less transmission line loss and no leaching of the PVC in the outer cable cover into the dielectric. RG213 has a non-contaminating cover. It also meant a substantial expenditure for a Heathkit remote controlled coaxial switch with five antenna capacity. This meant that I still had only to run one feed line up the side of the building, distributing to antennae from a control box mounted on the beam's mast. Of course, it also meant running an 8-conductor cable up the building to operate the remote controlled switch. In any case, the three lines running up the building are barely noticeable and they evoked no mutterings of protest from anyone, including the management.

Later on, when I was well established on the roof, I smooth-talked the management into letting me install an HF vertical on the roof as well. It was firmly understood that there would be no guy wires attached to parts of the building.

Initially, I installed a Hy-Gain vertical for 80-10 m. Since this was in above-ground mode, it required radials (resonant), so I installed one for each band plus a grounding cable to the building structure, primarily for lightning protection. I had fallen heir to a very big block of concrete with a heavy PVC pipe in its centre. This was cut to about three feet in height and the vertical was U-bolted to it.

THE OTTAWA AMATEUR RADIO CLUB, Inc.
P.O. Box 8873
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