Ottawa Amateur Radio Club

Groundwave

P.O. Box 8873, Ottawa, Ontario, Canada, K1G 3J2

January 2016

Just a reminder that this will be the last issue to be sent to those who have not renewed their memberships for the 2015/2016 year.

The Canadian Ski Marathon is upcoming next month. Note the dates — February 20 and 21 — are later than normal.

The speaker for the January meeting is Bryan Rawlings, VE3QN. His talk is entitled "The Who, Why, Where, and When of Radio Regulation".

See you at the meeting.

Ian Jeffrey, VE3IGJ
Editor

Check out our Web Page: ***www.oarc.net***

Next Meeting 7:30 pm, Wednesday, January 13th in the Colonel By Room at Ottawa City Hall

In This Issue....

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Groundwave
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Articles may be submitted for use in this publication provided that they portray events or activities that promote Amateur Radio. Letters and comments are also welcome. Submissions may be made by mail addressed to the Editor care of the OARC, or by e-mail to "ve3igj@rac.ca". Deadline for submissions occurs three days after the regular monthly meeting of the OARC.

Please support your local radio organisations. They support you!

Club Information

The Ottawa Amateur Radio Club Inc. is an association of Radio Amateurs devoted to the promotion of interest in Amateur Radio communications in the National Capital Area and to the advancement and achievement of club members.

Regular Meetings of the OARC Inc. are held on the second Wednesday of each month (except July and August) in the Honeywell Room which is on the second floor of Ottawa City Hall, formerly Regional Municipality of Ottawa Carleton Headquarters, on Lisgar Street. Meetings commence at approximately 19:30 hours. Further details about each meeting are noted elsewhere in this publication.

Executive Meetings of the OARC Inc. are normally held on the first Wednesday of each month at 19:30 hours. Contact the President to confirm the date, time and place of the next meeting.

The CAPITAL CITY FM Net meets every Monday (except some holidays) at 20:00 hours on the club repeater **VE2CRA 146.940(-)** to pass traffic and to make announcements of interest to Amateurs in the National Capital Region.

The Rubber Boot Net runs week days at 07:30 on VE3MPC, 147.150 + hosted by Mike, VA3TJP. The Rubber Boot net has been running since the early 1980's and is popular for the early risers and the go to work crowd.

The POT-HOLE Net is a SSB/HF net sponsored by the Ottawa Valley Mobile Radio Club and is conducted every Sunday at 10:00 hours on **3.760 MHz**. All amateurs are welcome to check in.

The POT-LID CW Net is an informal slow-speed **CW** net that meets every Sunday, except during July and August, at 11:00 hours on **3.620** MHz, to promote interest in CW and CW procedures.

The QCWA CHAPTER 70 Net meets every Monday evening at 19:30 hours on repeater VE3MPC **147.150(+).** You do not have to be a QCWA member to participate.

The Ottawa Valley VHF/UHF SSB Net is sponsored by the West Carleton ARC. Look for it every Tuesday night (except the first Tuesday of the month) around 21:00 on **144.250,** (roll calls after net on 50.150, 432.150, 222.150, and 1296.100.) Horizontal polarization is preferred.

The Phoenix Net meets Tuesday evenings at 20:00 on VE3MPC (147.150+, no tones).

VE3TEN

Tuning in the beacon so that it makes sense requires you tune to **28.175** on **CW** and read the tone that is there . The spaces between the elements are the higher tone. If that doesn't work, tune to **28.175.28** on **lower sideband** for better results.

The Ottawa Amateur Radio Club bulletin "Groundwave" is published and distributed to club members. Publication dates may vary but it is hoped that the bulletin arrives at its destination before the events listed in it have expired. The bulletin is not published for July and August when meetings do not occur. Every effort is made to provide accurate information in the bulletin, however we are all human and mistakes can be made. The OARC accepts no responsibility for any damages that may result from this. The opinions expressed in this bulletin are those of the author.

Voice (VHF) 146.940/146.340 100Hz CTCSS required
(UHF) 443.300/448.300 100Hz CTCSS required

VE3TVA Amateur Fast Scan Television Repeater
Currently off the air and looking for a new home.

IRLP Node 2040 146.940/146.340 (VE2CRA/VE3RC)
(Code 411 for info) (Code 204 for activity)
(Code 88 for time)
For further information please contact the Repeater Chair.

Note: The IRLP link is not connected to ECHOLINK. Please do not try to connect using the alpha keys on your keypad. It just confuses the operator.

Note: The IRLP link is disabled during the Capital City Net each Monday. It is disabled from 2000 to 2145 Mondays except for May to August when the link is disabled from 2000 to 2020.

Ottawa Amateur Radio Club
Groundwave

January 2016

December Minutes

December 9, 2015

1945 Meeting started by Glenn VE3XRA

Guests
Gerhard Roth VA3YGR
Ken Lehman VE3IKL
YL of Luc VA3LDC
Robert Martin (no call)

Glenn reminded everyone that new hams are eligible for a free annual membership with OARC as well as RAC.

Rally of the Tall Pines (Mike VE3FFK)
About 84 hams and around the same number of non-hams volunteered to help. There were about a dozen cars and no accidents. Three nets were operated simultaneously. The weather was fine despite the forecast for rain and cold temperatures.

Joe Norton Award (Glenn VE3XRA)
No nominations this year. Glenn reminded members that new amateurs within three years of certification are eligible.

Club Project (Wayne VE3CZO)
Two project candidates.
1. Battery Keeper: Maintains lead acid batteries at a better than 90% state of charge. Very low current consumption. Reverse polarity protection. Uses the battery itself to monitor its state of charge, rather than the mains supply. When the battery discharges sufficiently, the charger turns itself back on and charges the battery.
Four sessions; About $45 depending on the Canadian-US dollar exchange rate.
2. Battery Keeper Jr: Simple trickle charger for one or more batteries using one 24V wall wart and a Battery Keeper Jr for each battery. For batteries from 2AH to 100AH.
One session; Depending on the Canadian-US dollar exchange rate, about $12 for the wall wart, $6 for each Battery Keeper Jr.
Timeline: Early February to early March.
Wayne passed around a sign-up sheet.

Dates to Remember

2016

Feb. 20, 21	Canada Ski Marathon
Apr. 13	Homebrew Night
Jun. 8	OARC AGM and Elections
Jun. 25, 26	Field Day
Jul. 1	RAC Canada Day Contest
Sep. 10	Hamfest
Sep. 30	Membership Renewals Due
Nov. 1	Joe Norton Award Subm. Due
Dec. ??	RAC Winter Contest

RAC Winter Contest (Dave VE3TLY)
Taking place December 19 (0000UTC to 2400UTC). OARC has participated for eight years at the Diefenbunker Museum. We operate from 0800-1900 local time. In addition to operating the contest, we answer questions from museum visitors.
Local FM contacts from area amateurs on 6m and 2m are welcome.

Groundwave newsletter needs a new editor (Glenn VE3XRA)
Our current editor, Ian VE3IGJ, is retiring and we need a new editor. The new editor may continue using the current format, but is welcome to try a new format and/or different software.
Tyler: Requirements are not onerous. They include adding and formatting minutes submitted by the secretary, and inserting columns such as Mike VE3FFK's "mk's Word". Additional content is up to the editor's discretion.

Glenn's Announcement
Glenn will be taking on RAC President as of January 1, 2016. (Lots of applause)
Congratulations Glenn!

Upcoming Contests
10m contest this coming weekend (December 12-13).
ARRL VHF contest from January 30 to February 1, 2016.

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mk's Word

I gotta tell ya about my latest little tweak. Once upon a time (last year, I think) I tried to add some more capacitance to my tuner. It didn't go too well. I used the "lamp" switch to switch the capacitors in and out. The problem was the light emitting PC board the switch was soldered to. It also emitted smoke at some tuner settings. The caps got pulled and the idea went back to the drawing board, where most almost great ideas go to die.

Then something happened to the calendar and the RAC Winter Contest got moved off the weekend of the Stew Perry Topband Distance Challenge. The STU is a 160m contest, and regular readers know I typically hang out with a bunch who goes off to the country to do the two big 160m CW contests every year. I had never done the STU before. In fact, checking the log I found exactly eleven contacts on that 160m from home. Could I get my 80m dipole to exhale RF on top band? Time to take another look at that tuner and the capacitance idea. In the interim, at the December meeting/party/swap meet, I acquired another short cable with UHF connectors on it. Having a second short cable meant I could put a T-connector in the middle of the line between rig and tuner. That meant I could clip capacitors on the line outboard of the tuner, meaning I wouldn't be cooking anything inside the tuner this time. My shiny new Rig Expert analyzer said the SWR got better each time I added capacitance between the rig and tuner. By the time the SWR came down to reasonable (the point where the rig won't complain and throttle back the power) there was 2200 pf across the coax. At that point, I could tweak the tuner as I moved around the band and keep the rig happy. So I removed the alligator clips and soldered a connector to the ball of capacitors. Now I can connect them to the T when working 160m, and remove them for any bands above this. Maybe I'll bring the caps in to show and tell in January.

With the capacitors between the tuner's SWR bridge, and the rig, the bridge no longer tells me anything useful, but as the rig can measure SWR on its own, I can do without the one in the tuner for one band. The SWR at the antenna, and on the coax run up to it is still rather ugly, but I was able to shove 75 watts into it without any light shows. Who knows how many watts made it out to the ionosphere? It doesn't really matter, as I was able to make another 32 contacts on 160m, which did great things for my total. It won't beat even a QRP station with a real 160m antenna, but it's a start.

One last thing about that calendar I mentioned earlier. No doubt UNK will tell you about the Ski Marathon coming up. Take note that it is later in the month this time. It means if you always had a conflict that weekend, you might be able to come out and play this time. On the other hand, if you are a regular at the CSM, you may find yourself already booked, so pay close attention to the dates.

73, keep radiating, keep warm
mk VE3FFK

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Scores from June 2015 VHF Contest (Clayton VE3IRR): The West Carleton ARC achieved 10th place as a multi-op station overall and 2nd place in Canada.

Haves & Wants
George VE3BNO trying to give away a 10m, 3 element beam. On the ground and disassembled at his QTH, and ready for anyone to take it away.

Interesting Contacts
Bryan VE3QN: VK7XX from Tasmania earlier today on 20m (long path) at about 1500.
Mike VE3FFK et al: ARRL CW Contest: Worked Hawaii, Uruguay, Paraguay. Had 1001 contacts and 101 multipliers.

Glenn presented a video created by the Radio Society of Great Britain (RSGB). The URL is http://rsgb.org/main/get-started-in-amateur-radio/amateur-radio-a-hobby-for-the-21st-century/

Pete VE3XEM

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Had an interesting altercation when he applied 34 volts to a large and aged electrolytic capacitor rated at 35 volts: it exploded! Luckily it only made a dent in his ceiling and Pete didn't suffer any injuries.

Greg VE3YTZ
Greg brought a bunch of stuff for sale to the meeting mini-fleamarket, the proceeds of which will go to the OARC.
Also, Greg wants to thank Janice VA3PAX and Margaret VA3VXN for all the effort they went into preparing for this evening, especially the baked goods and drinks. (Lots of applause).

Glenn closed the formal part of the meeting at about 2035.

Janice described how the rest of the evening would go. Food, the mini-fleamarket, door-prizes and lots of socializing! Five draws for three $50 gift certificates from Radio World and two pre-paid Visa cards.
First prize ($50 gift certificate from Radio World) won by Ed VE3WGO
Second prize ($25 MasterCard) by Paul VE3ICV
Third prize ($50 gift certificate from Radio World) by Wayne VE3CZO
Fourth prize ($25 MasterCard) by Al VE3ZTU
Fifth prize ($50 gift certificate from Radio World) by Brooke (YL of VE3IGJ)

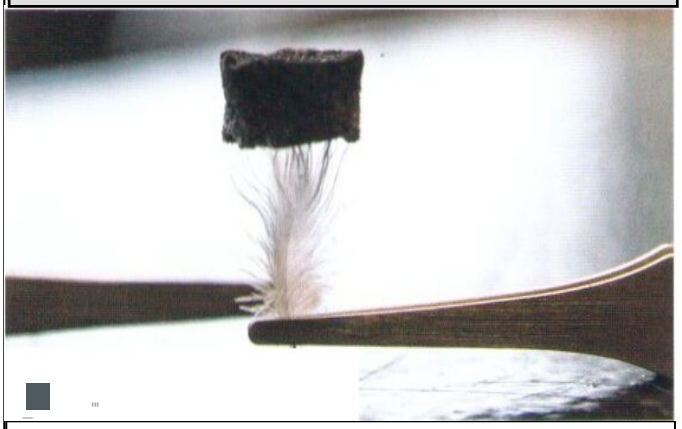
Merry Christmas everyone!

Minutes taken by VA3BIT

Brain Teaser

You are locked in a room that contains no metal of any sort (not even on your person) except for two identical metal bars. One bar is a magnet, the other is not magnetized. You can tell which is the magnet by suspending each by a thread tied around its center and observing which bar tends to point north. Is there a simpler way?

Canadian Engineers Construct Supercapacitor from Wood



Light enough to perch on a feather, a new aerogel developed by engineering researchers at McMaster Un1vers1ty, combines cellulose nano-crystals and conductive nano-particles to create a highly flexible and power dense supercapacitor (Photo credit: Xuan Yang and Kevin Yager)

Leave it to Canadian engineers to figure out a way to turn trees into just about anything, including an electricity storage material. More specifically, it's the cellulose in plants, bacteria and algae that McMaster University researchers have shown holds prom ise as a superior supercapacitor, capable of powering everything from wearable electronics to electric vehicles.

"Ultimately the goal of this research is to find ways to power current and future technology with efficiency and in a sustainable way," said McMaster assistant chemical engineering professor Emily Cranston, whose joint research with materials science and engineering professor Igor Zhitomirsky was recently published in Advanced Materials. "This means anticipating future technology needs and relying on materials that are more environ mentally friendly and not based on depleting resources."

Zhitomirsky and Cranston's research centers

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Your Next Contribution

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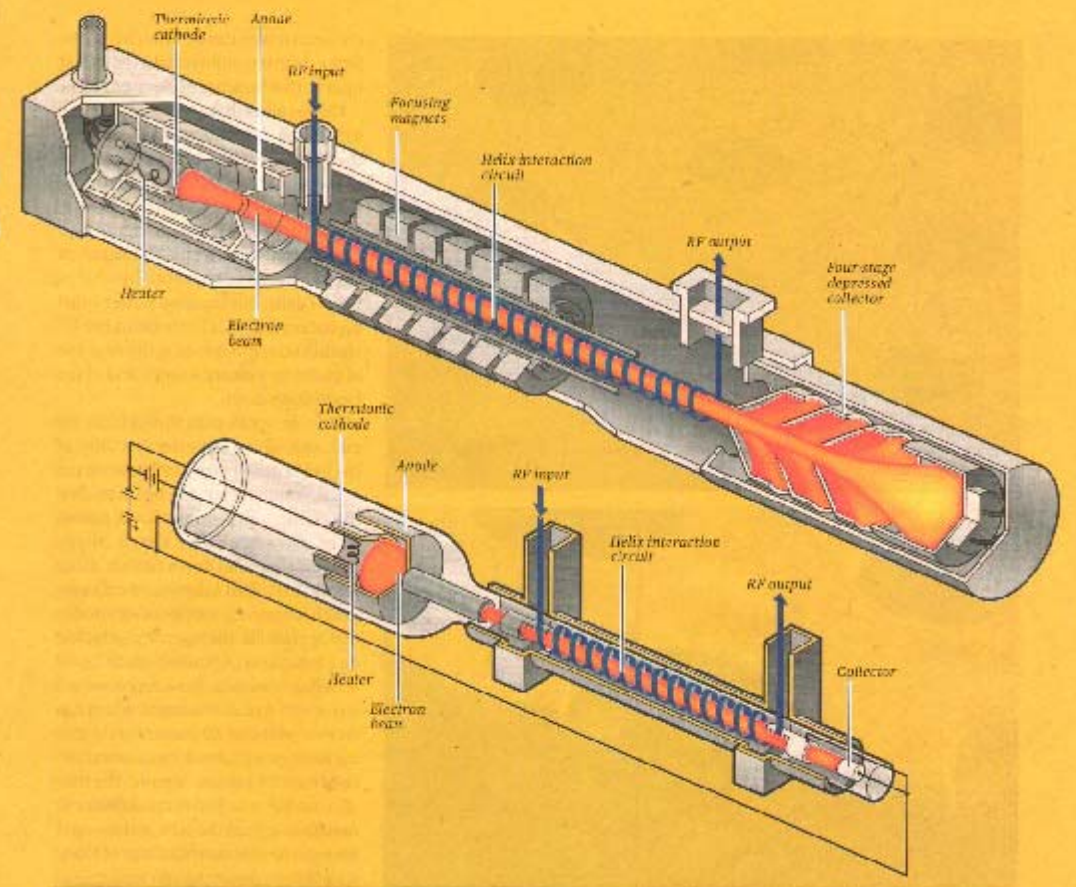
on using cellulose nano-crystals - which look like microscopic grains of rice - fused together t0 form a three-dimensional mesh or aerogel. This foam is then used as a substrate to contain conductive polypyrrole nanofibers, polypyrrole coated carbon nanotubes and manganese dioxide nanoparticles. The result, the researchers say, is an exceptionally light and flexible supercapacitor that exhibits "high capacitance retention, low internal resistance and fast charge/discharge rates."

Unlike batteries, which store energy electro-chemically, and therefore have a limited number of slow charge/discharge cycles, supercapacitors store energy electro-statically. This affords them millions of very fast charge/discharge cycles without degradation of its full storage capacity. However, although they enjoy high power density (rate of energy transfer per volume), supercapacitors have traditionally suffered from low energy density (i.e. amount of energy stored per unit weight). The potential of t he McMaster's researchers' supercapacitor material is that it will combine the strength, flexibility and sustainability of cellulose with t he ultralight weight of an aerogel. In addition, the McMaster researchers' nanocellulose one-step fabrication process allows for a high density of conductive material to be incorporated into the substrate while maintaining its shape recovery and other mechanical properties.

Since supercapacitors store relatively large amounts of energy for a very short time, they aren't seen as a replacement for batteries but as a complementary technology. In hybrid or electric vehicles, for example, supercapacitors could be used to store regenerative braking energy and release it during acceleration, thereby reducing the burden on, and therefore extending the range of the EV's battery.

www.eng.mcmaster.ca

Design News, November/December, 2015



THE TRAVELING-WAVE TUBE: THEN AND NOW

For amplifying radio-frequency signals, nothing beats a traveling-wave tube. Here, we see a modern TWT [top] and one from the 1950s [bottom]. In both cases, the cathode is heated to emit an electron beam, which is injected into a helix-shaped circuit.

The RF signal to be amplified is injected onto the helix, with the resulting electromagnetic wave extending away from the helix and exerting a force on the incoming beam. Unmodulated as it entered the helix, the beam current now has an RF component. The modulation induces electromagnetic fields on the helix, which then act on the electrons, and the RF signal grows exponentially.

In a modern traveling-wave tube, the beam power that is not converted to RF is recovered by the depressed collector, which acts like the regenerative brakes on a hybrid car and boosts the overall efficiency to 65 percent or more. That feature plus other advances in design, testing, materials, and fabrication have allowed TWTs to continue to outperform solid-state RF sources. And recent research on a cold-cathode TWT promises to revolutionize vacuum electronics. *C.M.A.*

From IEEE Spectrum December, 2015

2015-2016 Membership Application/Renewal

Ottawa Amateur Radio Club Inc., Box 8873, Ottawa, Ontario K1G 3J2

☐Single $25 ($20 after Feb 1, 2016)
☐Family $30
☐Junior $15 (under 18 years of age)
☐New Ham - Free (if licensed in current Membership year)
☐Emailed *Groundwave* ☐Mailed *Groundwave* (add $10.00)

Please Note: Membership year is September 1, 2015 to August 31, 2016.

Family Name: _____ First Name/Initials: _____

Address: _____

City: _____ Prov: _____ Post Code: _____

Home Phone: _____ Work Phone: _____

E-mail address: _____ (For *Groundwave* mailing)

Callsign(s): _____
Qualifications: ☐ Basic ☐ Advanced ☐ Morse Code
Year Licensed: _____ RAC Member? Yes ☐

Other Family Members

Name: _____ Callsign(s): _____
Qualifications: ☐ Basic ☐ Advanced ☐ Morse Code
Year Licensed: _____ RAC Member? Yes ☐

Interests: _____

Comments/Suggestions: _____

All members who are in good standing on or before the December General Meeting will be eligible for a free one-time name badge. Members who wish a second or replacement badge may purchase one at the club price (approx $10.00 plus tax). Ordered badges will be available in January.

Do you want an OARC **NAME TAG**? Yes ☐ Second or Replacement Yes ☐

ORDER DETAILS - As to appear on badge:

First Name _____ Call Sign _____