Ottawa Amateur Radio Club

Groundwave

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

February 2019

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Remember the upcoming Canadian Ski Marathon, February 8 –10. Visit hambone.ca/csm to volunteer and register.

This month's speaker is Ron Schwartz, VE3VN, and the title of his presentation is "Chasing 6 Meter DXCC with FT8".

See you at the meeting.

Ian Jeffrey, VE3IGJ
Editor

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

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

In This Issue....

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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 Colonel By 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 local. 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 local. 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 local on the club repeater VE2CRA (146.940-, 100 Hz) 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 local on VE3MPC (147.150+, 100 Hz CTCSS tone) 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 local on repeater VE3MPC 147.150+, 100 Hz) 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 local 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 local on VE3MPC (147.150+, 100 Hz CTCSS).

The regular **OVMRC net** meets Thursday evenings at 20:00 local on VE3TWO (147.300+, 100 Hz CTCSS tone) analogue FM.

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 Monday night Capital City FM Net from 20:00 to about 21:45 .

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January Minutes

January 9, 2019

19:35 Meeting started by Diane VA3DB

Announcement about announcements (Diane VA3DB) Diane asked to please send text announcements to the club secretary at va3bit@rac.ca or to her at va3db@rac.ca at least a day or two before the meeting so they can be organized into a presentation for showing for the half hour prior to the meeting, and after the meeting.

OARC Club Project (Dave VE3BOW)

Dave has been collaborating with Barrie VE3NA of the OVMRC to develop a follow-up project to OVMRC's PowerPole project last November. The proposed project is a PowerPole splitter: either 2-way & 4-way with fuse protection. Other possible projects would include catching up on previous projects such as Wayne's Battery Monitor from a few years ago. Build location could be either Algonquin College or a room at the Science & Tech Museum. More info at the February meeting.

Announcement (Wayne VE3CZO)

Has fuses for kits distributed at December's meeting.

Womens March (Jeffrey VA3PEW)

Saturday, January 19 Although there are sufficient volunteers, the event could use more. Expect between 2000 and 10,000 participants. Hams will be working with the march organizers and Ottawa Police to help with comms & road closures. Dave VE3BOW and Jeffrey tested VE3OCE and VE2CRA for coverage along the route from the Parliamentary lawn to Lansdowne Park via Bank Street. Primary repeater: VE3OCE (VHF)
Secondary repeater: VE2CRA (VHF)
Time committment: 10:30 - 15:00 (event is scheduled 11:00 - 14:30) If interested, please contact Jeffrey at va3pew@rac.ca asap.

Canadian Ski Marathon (Neil VE3PUE and Harrie VE3HYS)

February 9-10 with some preparations happening on February 8. Currently 16 volunteers are committed with 2-3 unsure. Harrie said they could use a minimum 3-4 more hams. Please see hambone.ca/csm to register/volunteer, and for maps and assignments.

Guests: Reg Mercure (studying for his license)

Carp Hamfest (Ed VE3WGO)

Saturday, September 7, 2019 Arena has been reserved, advertisement paid for and scheduled for TCA. The event is listed on RAC's Event Database.

Wanted

Wayne VE3CZO: An HP Signature Analyzer for finding faults in digital circuits (not a spectrum aanalyzer).

Presentation (Glenn VE3XRA)

"Amateur Radio in Space"

Discussion of the history of amateur radio satellites, including Canadian hams involvement with both satellites and the International Space Station. 50/50 won by Chris VA3CME

Minutes taken by VA3BIT.

Dates to Remember

2019

Feb. 9-10	Canada Ski Marathon
Apr. 10	Homebrew Night
May 17-19	Dayton Hamvention
Jun. 12	OARC AGM and Elections
Jun. 22-23	Field Day
Jul. 1	RAC Canada Day Contest
Sep. 14	OARC Hamfest
Sep. 21	Radio in the Park
Sep. 30	Membership Renewals Due
Nov. 1	Joe Norton Award Subm. Due
Nov 21-23	Tall Pines Rally
Dec. 28	RAC Winter Contest

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mk's Word

Five weeks of January and it feels like fifteen. We have enough snow for now, thanks. Just turn it off please. While you are at it, how about plugging in the heater again.

Meanwhile on the amateur radio front, it seems hibernation isn't going to happen any time soon. Doing the CW course has got me thinking about my own proficiency. The ARRL runs code proficiency tests along with their code practice. I'm trying to get to 35 words a minute. In doing so, I find my top speed making text come out of the keyboard is around 40 words per minute. Not much headroom there for thinking about anything. In much the same way that some ops can't copy a thing in their head without putting it down on paper, I can't seem to get anything down on paper if it doesn't get done at the second I hear it. I never learned to "copy behind", and am paying for it now. That plus a bad habit of anticipating the end of a word and getting it wrong is making my goal a tough slog. I have empathy for people getting on the first rung of the CW ladder.

Not to worry though. In contests, I can copy a callsign and report even when some speed demon thinks everybody is using a CW decoder to read their stuff and twists the speed knob all the way to the right. This month I got to play in three contests, each quite different from the others, and each at VA2LGQ, the cottage of VE3AV.

First was the ARRL January VHF/UHF event. It was a contest like no other I have ever experienced. We were ready to go on 6m, 2m, 70 cm and to some extent even 222 MHz. After putting in many hours over two days we had ZERO contacts. Try submitting a cabrillo log like that and see what happens. The antennas worked. We could hear the VE3WCC beacon, confirming we had antennas and rotors, and coax between the rigs and aluminum, but weren't hearing anybody. We had fun anyway, sort of. I hear the Women's March on the same weekend was more fun. Maybe next year.

After that was the CQ 160 CW contest. It was the opposite of a shutout. We (five of us in total) made just over 1000 contacts on that band. Not our best ever, but respectable. With that many operators nobody gets too chair sore, although you do have to get up and operate at some odd hours. I don't think we worked VK or ZL this year, as we do sometimes, but Alaska and Hawaii were in there along with a mitt full of European stations. Definitely more fun than a shutout on VHF. After the event we started talking about receiving loops and such for next time. Always something new to try.

Contest number three was at the same time as the CQ 160. It was the Winter Field Day. The action on 160 is at night, leaving lots of daylight time to do WFD. Much like it's June brother, it involves setting up and operating independent of commercial power. It turns out to be much harder to set up antennas when every step you take outside means making a hole in the snow in front of you with three plants of the boot, then packing it down, then stepping into that hole, then repeating the process. So much easier when you can just walk over to that tree over there. - Not as many mosquitoes though. By June I will have forgotten what minus 25 feels like.

Coming up, I think I will take in the Contest Club of Ontario Eastern meeting on the second, and I think I will give the Canadian Ski Marathon a miss this year. With any luck by the time February is over, spring will be only a month away.

73 keep hammin' and keep warm
mk

For Sale

Kenwood TS-590S

Contact Dave Parks

Tel: 613 723 4787

Email: ve3av@rac.ca

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The Vacuum Tube's Power Law

In the 48 years since the introduction of the first microprocessor, in 1971, the number of electronic components that can be crammed onto a given area on a chip has increased seven orders of magnitude. That corresponds to a doubling about every two years [see "Moore's Curse," IEEE Spectrum, April 2015].

You might think that the performance of previous vacuum-tube electronics could not possibly compare with that record of improvement. Not so. It's just that the key metric of improvement is different.

The diode, the simplest vacuum tube, was invented in 1904 by John A. Fleming; three years later came Lee de Forest's triode, and tetrodes and pentodes followed in the 1920s. These "gridded" tubes use the voltage in a grid to modulate current from an electron source. Work on magnetrons - another type of vacuum tube that generates microwaves by squeezing electrons through a magnetic Field - led to the first patent in 1935 and to the first deployment in radar, in the United Kingdom in 1940. The klystron (used in radar, later in satellite communications and in high-energy physics) was patented in 1937, and gyrotrons (generating power in the millimeter wavelengths, used for heating materials and plasmas) were first introduced in the Soviet Union in the mid-1960s.

These successive generations of tubes improved by leaps and bounds in their power density—that is, in the maximum power that can be transported through a device—which is proportional to the cross-sectional area of the circuit, which in turn is inversely proportional to the operating frequency. In 1960 Leon Nergaard, at that time the director of RCA Microwave Research Laboratory, proposed average power density as a figure of merit for comparing the performance growth of these diverse devices. Four decades later Victor L. Granatstein, Robert K. Parker, and Carter M. Armstrong estimated the numbers as the product of megawatts and gigahertz to the second power—(MW) (GHz) **2—in the Proceedings of the IEEE, May 1999.

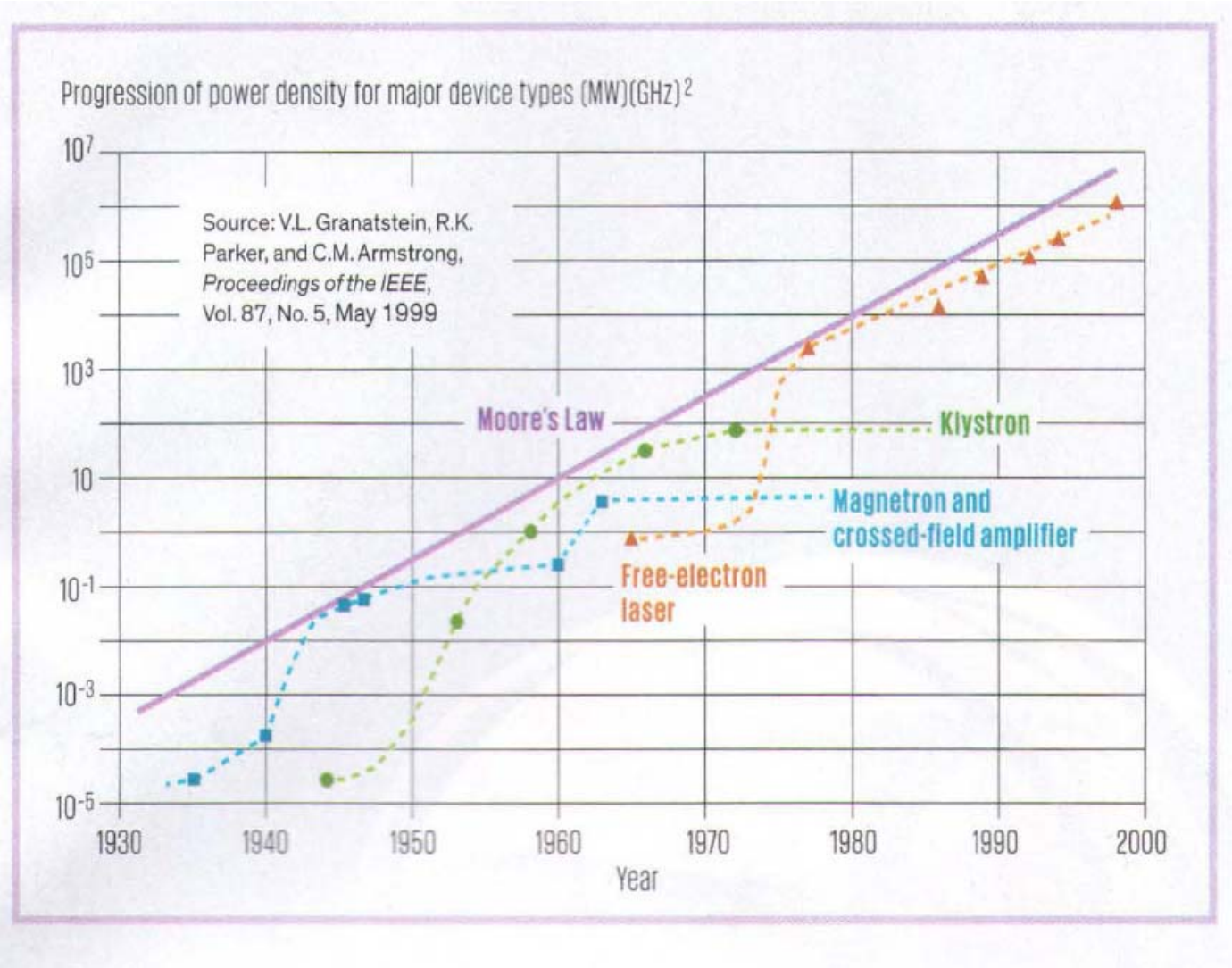
The researchers demonstrated successive waves of innovation. The power densities of the early tubes were first overtaken by the densities of magnetrons, then by those of klystrons, and finally, in the 1970s, by those of gyrotron oscillators and free-electron lasers. Each family of devices followed a logistic curve as it approached its performance limits before yielding to the next family.

Between the mid-1930s and the late 1960s, the maximum power density of gridded tubes (triode and higher) increased by four orders of magnitude. During the same time, the power density of cavity magnetrons and crossed-field amplifiers rose by five orders of magnitude; between 1944 and 1974, the maximum power density of klystrons rose by six orders. The same improvement came for gyrotrons and free-electron lasers between the 1960s and 2000.

If you plot the entire sequence of logistic curves on a semilogarithmic graph [see page 6] the envelope of the curves forms a straight line that gains nearly 1.5 orders of magnitude per decade. As soon as I came across the graph, I realized that the ascent must be very close to the growth rate dictated by Moore's Law, and a simple calculation confirmed the rate. Between 1935 and 2000 the average annual rise of the linear envelope line indicates that the growth of maximum power densities of vacuum electronics was almost exactly 35 percent-virtually identical to the mean annual rate of growth for the post-1965 crowding of transistors on a chip.

To be sure, the trend lines of vacuum tubes and of integrated circuits involve different figures of merit. But it is certainly noteworthy that the first family of electronic devices improved as fast in its domain as the second family did in its different domain. A kind of Moore's Law was in effect in electronics long before Gordon Moore set it down, in 1965.

By Vaclav Smil, *IEEE Spectrum*, Feb. 2019



Member Badges

Greetings to OARC Members. That time of the year has come again and I will have a new batch of badges available for pick-up at the February meeting. The call signs include:

VE3HVB, VA3WTZ, VE3TQY, VA3EGY, VE3PUE, VA3CME, VE3YXY, VA3YXY

If you were expecting a badge and don't see your call sign on this list, please drop me an email and I will fix you right up. You can write me here: ve3ytz at rac.ca. Please don't forget that new hams with free memberships are not eligible for a free one-time badge until their second year.

Also, on a more sombre note, those members who have yet to pay their 2018-2019 membership dues will soon discover that they no longer receive the *Groundwave*. To avoid this sad event [nay, a real calamity, Ed], you can see me (or my deputy) at the February meeting and we will easily rectify the situation.

73 and wishing everyone the best for February

Greg/VE3YTZ

This stunning colorized photo shows a young radio operator working in the radio room aboard the Titanic. On the Titanic, there was only one radio operator who worked during the day and took time off at night. The operator woke up as the ship was sinking and did send out distress signals to ships up until his final minutes.

After the sinking of the Titanic, laws were enacted that made it mandatory to have a rotating radio crew on ships so that there was always someone awake and attentive to send for help.

73

Greg/VE3YTZ

The Diefenbunker ARC has inherited several pieces of World War II radio gear that was being used by a Montreal movie production during the making of a movie (*Midway ?*).

We have not yet decided what we want to do with the radios. We may keep some for display purposes although they are not particularly applicable to the Bunker's era. They'll be offered for sale on an as-is, where-is basic. We'll most likely put up an ad on KWARC should we decide to actively try to sell them.

In the meantime, we'll entertain offers from DARC members if any of these catch your fancy.

A copy of the description of the equipment can be requested from me, Brian Jeffrey by email at:

Brian AT VE3UU.com

2018-2019 **OARC Membership Application/Renewal**

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

◯ Single $25 ($20 after February 1)
◯ Family $30
◯ Junior $15 (under 18 years of age)
◯ New Ham $0 (licensed in current membership year)

◯ Emailed Newsletter $0 ◯ Mailed Newsletter $10

Name _____ Phone _____

Callsign(s) _____ Year Licensed _____

☐ Basic ☐ Honours ☐ Advanced ☐ Morse ☐ RAC Member

Email Address _____

Name _____ Phone _____

Callsign(s) _____ Year Licensed _____

☐ Basic ☐ Honours ☐ Advanced ☐ Morse ☐ RAC Member

Email Address _____

Postal Address _____

Membership year is September 1 through August 31. Paying members who are in good standing by the December General Meeting will be eligible for a free one-time name badge. Members who wish to purchase additional replacement badges may do so through the club for $10 each. Ordered badges will be available in January. All prices are listed in Canadian Dollars (CAD).

First Name on badge _____ Callsign on badge _____

First Name on badge _____ Callsign on badge _____

Notes _____