Ottawa Amateur Radio Club

Groundwave

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

December 2016

Social meeting (eyeball QSOs), mini-fleamarket, show & tell, door prizes, finger food, coffee, Christmas music (both live & taped), mini-presentations .... All of the above and more are welcome at the December Christmas meeting

The editor takes this opportunity to wish everyone a very Merry Christmas and a Happy New Year (with more sunspots).

See you at the meeting.

Ian Jeffrey, VE3IGJ
Editor

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

Next Meeting 7:30 pm, Wednesday, December 14th in the Colonel By Room at Ottawa City Hall

In This Issue....

Ottawa Amateur Radio Club
Groundwave

December 2016

Membership
Greg Danylchen-ko,VE3YTZ
(H) 613-236-9291
greg.danylchenko@gmail.com

Groundwave Editor
Ian Jeffrey, VE3IGJ
(H) 613-837-7393
ve3igj@rac.ca

Delegated Examiner
Mike Kelly, VE3FFK
(H) 613-322-0669
ve3ffk@rac.ca

Historian
George Roach, VE3BNO
(H) 613-234-0885
ve3bno@rac.ca

Webmaster
Dianne Bruce, VA3DB
(H) 613-225-9920
va3db@rac.ca

IRLP
Cary Honeywell, VE3EV
ve3ev@rac.ca

Repeater
Harrie Jones, VE3HYS
(H) 613-978-1557
harriej59@gmail.com

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

Ottawa Amateur Radio Club
Groundwave

December 2016

November Minutes

Ottawa Amateur Radio Club
Monthly General Meeting held at MakerSpace North in City Centre facility.

November 9, 2016

19:33 Meeting started by Glenn VE3XRA

Guests
Bob (no call)
Erhan VA3KUM

Membership
Greg is taking renewals.

Reports
NVIS (Mike VE3FFK & Al VE3ZTU)
(Near Vertical Incident Skywave)
Objective: To try for reliable comms between Ottawa and locations between 100km and 300km away such as Kingston and Oshawa.
Two sites set up: Corkery Community Centre and Petrie Island (about 50km apart). Petrie Island was manned by Mike & Al. Poured with rain and strong winds. Pretty good comms with everyone they worked, both local and short distance to Kingston. Antenna was about 2m off the ground.

Corkery CC (Dave VE3KL)
Weather much better with light breezes and occasional drizzle. Operated 80, 40, 60m. Used an 80m multiband antenna, with a VE3KL designed 60m antenna. Antennas were about 0.1 wavelength high at the center, set up as inverted V's with the ends about 5 feet high.

Corkery CC operated by VE3KL, VA3ZTF, VA3VXN, VA3DGN, VA3BIT
60m was particularly solid comms. Discussion followed on the merits and applications of NVIS.

Participants were enthusiastic and would like to take part in more exercises in future.

Glenn's absence from the October Meeting (Glenn VE3XRA) Glenn attended the 19th General Assembly of IARU Region 2 in Vina del Mar, Chile

Dates to Remember

2016	
Sep. 10	Hamfest
Sep. 30	Membership Renewals Due
Nov. 1	Joe Norton Award Subm. Due
Dec. 17	RAC Winter Contest
2017	
Feb. 11, 12	Canada Ski Marathon
Apr. 12	Homebrew Night
Jun. 14	OARC AGM and Elections
Jun. 24, 25	Field Day
Jul. 1	RAC Canada Day Contest

Glenn, as RAC president, attended the IARU meeting and informed us about his experience there, including a presentation from Cuban amateurs on emergency operations such as during Hurricane Matthew.

Joe Norton Award (Glenn VE3XRA)
No applications were received this year.

Field Trip (Tyler VA3DGN)
Field trip to the CFRA Transmitter site on Saturday, Nov 12, starting at 13:00.
Location: 5630 Prince of Wales Drive
Tour led by Harrie VE3HYS

RAC Winter Contest (Dave VE3TLY)
17 December 0000Z to 2400Z but we will only be operating from the Diefenbunker Museum during their open hours 07:00 to 19:00 EST. Will be operating from the Diefenbunker as a club using their call VE3CWM. Dave will pass around a sign-up sheet at the December meeting, or email Dave at ve3tly@rac.ca. Distributed stations are allowed, but not eligible for awards. Since we haven't won any awards in the past, we intend to operate in space diversity fashion from multiple stations outside the Diefenbunker opening hours.

Club Project Proposal
Dave VE3KL: Hands on plus simulation & design of a suite of antennas. $50 gets you a working 10m dipole that is extendable to other bands, 3-30MHz high performance state of the art 1:1 balun and Line Isolator -

(Continued on page 5)

Ottawa Amateur Radio Club
Groundwave
December 2016

mk's Word

November saw an uneventful tune up of the 160m antennas at VA2BW, home of the VE2OJ contest team. So now we are ready to take on the challenge of the ARRL 160m CW contest in the first weekend of December, and the CQ world wide (yes, world wide contacts happen on that band) contest in January.

A week after the ARRL 160 is the their 10m contest. What a contrast. If you can't contemplate getting on 160 because you are in a tiny space with antenna restrictions, or just don't like the idea of operating from dusk to dawn, consider this one. It is both phone and CW. When the band opens (and with stations all over North America on the air it usually opens for a while to somewhere) it is a feeding frenzy. When the band is open, it is usually during daylight, so you don't need toothpicks on the eyelids to keep going.

Of course, the RAC winter contest is coming up Dec 17. We will be out at the Diefenbunker again, using VE3CWM. If you can't come out, please try to work us, especially on bands where we often don't get contacts, such as 6m, 2m, or 160m. Just now, in mid November, we aren't certain whether or not the rules will let us operate from different locations on Friday evening and Saturday daytime, so stay tuned. Once upon a time, I couldn't imagine following propagation through the ups and downs of an entire 11 year solar cycle. Now having done so, I realize that each part of the cycle, even the quieting part we are in now, has something to offer. As the solar activity drops, people will push the limits of the lower bands. The experimenters among us will work on noise reduction techniques, remote station implementation, and antennas and modes that will allow us to continue to operate as the MUF and SFI head to the basement. Take a look back at amateur radio magazines published around the last minimum and you will see what I mean.

Although it is mentioned in the boiler plate of every Groundwave, I'd like to remind you of the slow CW, Pot Lid Net on 3.620 MHz every Sunday at 11AM local. We are trying to bring the speed down and the activity up, to make it easier for those whose code is rusty, or just developing, to come aboard.

At the last meeting, Ralph's talk reminded me about some of the bits and pieces of the Lake Traverse site I picked up from his stock of salvaged material. There are some attenuators around here that see frequent use, and every so often a chassis box from there gets repurposed to do something else. Even having a piece of gear with NRC and VLBI markings on it is kind of cool.

I like Dave Conn's idea of an antenna project. Not being much of a ones and zeros kind of guy, I'm glad to get back to building things I can see without a magnifier and use without a computer. Even so, having built both 6m and 2m Moxon antennas this year, I can use some help learning a simulator like 4NEC2 as well. Less cut and try means less frustrating raising and lowering of antennas, and more enthusiasm for trying out new antenna types.

While on the subject of the meeting, how about makerspace north? Not a great place for a meeting maybe, nice to have as a "port in a storm", and maybe next year's field trip. What do you think?

73 mk
VE3FFK

Conditions for maximum power transfer through a transmission line require source and load impedances to be conjugates, respectively, of the line input impedances seen from each end with opposite-end terminations connected. However, conditions for no-reflections at the ends of a line require that source and load impedances equal line impedance. Those two requirements are mutually incompatible unless a line's impedance is pure resistance (i.e., unless a line's impedance has no inductive or capacitive reactance component).

Martek International

(Continued from page 3)
universal connection to above antennas. AND, you learn to design antennas not limited to HF, by using 4nec2. Dave passed around a sign-up sheet.

December Meeting (Janice VA3PAX)
Back at City Hall, probably Colonel By Room
Social meeting mini-fleamarket, show & tell, door prizes. Finger food, coffee, Christmas music (both live & taped) Mini-presentations are also welcome
Location will be confirmed on the OARC website oarc.net.

Tall Pines (Mike VE3FFK)
Bancroft. Saturday, Nov 26. Hams needed as safety marshals. Contact Mike if interested.

Upcoming Contests
Nov 20: ARRL Sweepstakes SSB
Nov 26-27: CQ WW CW
Dec 17: RAC winter contest

Have & Wants
Greg VE3YTZ is looking for VE3JCT
Dave VA3AE is selling his ICOM IC-7000

Interesting Contacts
African stations are being heard more often lately.
VE3QN: EL2BR (Liberia) on 20m
VE3TLY: a Namibian (V5A) station

Show & Tell
Peter VE3XEM: Has constructed a WSPR transceiver kit for 30m. Has laid a stealth loop antenna on his roof and hopes it will tune up. Suggestions of other stealth antennas are welcome.
Tyler VA3DGN: Open-source waterproof DMR HT

Presentation (Ralph VE3BBM)
Decommissioning of the Algonquin Park Solar Observatory

Meeting ended at about 21:39.

50/50 won by Jean VE3DNI.

Minutes taken by VA3BIT.

HobbyPCB SDR Transceiver

Announcing the HobbyPCB RS-HFIQ 5W HF SDR Transceiver Kickstarter campaign. Early bird backer levels starting at $209, don't miss out.

Back the RS-HFIQ Kickstarter Today!

Not just another SDR - The RS-HFIQ offers real RF performance for serious communications. Covering the 80-10M HAM Bands with excellent RX performance and 5 watts of TX power, using open-source SDR software for CW, SSB, AM, FM and digital modes, the RS-HFIQ sets a new standard for shortwave SDR communications.

Early Bird backer levels starting at $209, but don't delay, they will go fast!

https://www.kickstarter.com/projects/hobbypcb/rs-hfiq-5w-software-defined-radio-sdr-tranceiver

Our mailing address is:
HobbyPCB
3373 E. Lake Shore Ln.
Clearwater, FL 33761

From Greg Danylchenko, VE3YTZ

Contest Club Ontario Lunch and Learn

Those interested in contesting and DXing can gather on Saturday, January 21, 2017 for a light lunch and talks on remote rig operation and low-band antennas. Registration is $20 at the door, beginning at 11:45am at St. Paul's Presbyterian Church, 971 Woodroffe Ave., Ottawa (last year's venue). Registrar: Dave Parks VE3AV, davidrobparks@gmail.com.

STODDART AND THE RADIO RESEARCH RECEIVER

by Harold A. Layer, KK6HY (update of article published in: "OTB," journal of the Antique Wireless Association, Vol. 34, No. 2, May 1993)

Radio historians have divided the development of radio receivers into several popular categories. Consoles, Deco, Wireless, Classics, Transistors, and Communications are examples of categories based on size, style, historical era, historical significance, circuit, or function, respectively.

I would like to propose another "function" category that has been neglected, yet vital to the history of radio communications: Research. This category would include those state-of-the-art, laboratory radio receivers designed for scientists and engineers in scientific studies of man-made, narrowband RF signals; naturally-occurring, broadband RF energy; communications surveillance and spectrum signature plotting; EMF field intensity and radio inteference; and antenna propagation surveys and measurements.

No company better represents this category than the Stoddart Aircraft Radio Company of Hollywood, California. It was founded by pioneer radio engineer, Richard R. Stoddart (born: 12/1/1900 - died: 9/26/1972). According to his official obituary he began his electronics career at age 15 by working for the Telefunken Wireless Company in New York, although another report indicates that he had a radio contract from Lee de Forest at age 14! After working as a radio operator on merchant ships, he also pursued another interest as a pilot, and barnstormed around the Poughkeepsie Airport during the 1920s. In the 1930s he was a field engineer for NBC. In 1938, Stoddart and Charles D. Perrine (W6CUH) designed the elaborate radio system for the historic Howard Hughes 1938 round-the-world flight. As the flight's radio officer,he was one of its five-man crew aboard the Lockheed two-engine plane and coordinated the complex communications links from country to country as the plane flew around the world in a record-breaking 91 hours, 8 minutes at an average speed of 218 miles-per-hour. The main radio room for this endeavor was on display at the New York World's Fair. In 1958, he was made a Fellow of the IEEE. The EMC Society now offers an annual "Stoddart Award" for technical excellence in the EMC field.

In 1939 Stoddart worked for Lear Jet, but about a year later in 1940, he founded the Stoddart Aircraft Radio Company. In the beginning, it designed and manufactured VHF communication receivers and transmitters for airborne use, and these were important for the American support of England during World War II. Also, during the war, Stoddart produced its first research receiver, a VHF unit that featured both an average detector and a quasi-peak detector to measure narrowband and broadband radiation. In 1945, the company added the slide-back peak detector and precision signal calibration with a direct display of "microvolts-per-meter-per-kilocycle". Based on the value of this remarkable receiver to meet the growing sophistication of military communications research, the Navy contracted with Stoddart over the next decade to design and manufacture a group of receivers covering the entire RF spectrum from ELF to SHF (almost "DC to Daylight" as expressed during those years). Fig. 1 includes all models that I have been able to identify and date.

The 1956 NM-40A is a fascinating case-study of a Stoddart receiver and shares the fine design and craftsmanship of all Stoddart models. It was one of the most revolutionary receivers of the product line as well as one of the most bizarre radio receivers ever made. The NM-40A was the first "audio-spectrum-only" radio receiver, a scientific instrument that extended downward the detectable and measurable RF spectrum to 30 Hertz! The only other audio-spectrum-only radio receiver located by the author is the Empire NM-315, a 1963 transistor model that tuned from 20 Hz to 15 kHz.

In addition to being a narrowband, tunable superheterodyne (.1 µv sensitivity @ 100,000 ohms), the NM-40A also could be operated as a broadband receiver (10 µv sensitivity) for such signals as man-made RFI, natural ELF or VLF whistlers and atmospherics. The NM-40A was equipped to receive separately the electrical and magnetic components of a radio wave, and it included the precision detector and metering system that are basic features of a research receiver.

The NM-40A is a single-conversion superheterodyne with many novel features. It may have been the first radio receiver with a double-balanced crystal quad mixer. Its sensitive, untuned RF amplifier is housed in a rubber-suspended, Mumetal shielded compartment with additional Mumetal shields surrounding each of its three tubes. The receiver's local oscillator is a Wein bridge type and, also, is housed in a separate Mumetal shield-

ed compartment. The 25 kHz IF section contains four stages, each of which is a two-tube amplifier. Two elaborate rack-and-pinion assemblies connect seven individual bandwidth and equalization potentiometers to coaxial panel controls. This allows the extremely narrow IF bandwidth window of 8 Hz to 60 Hz to be continuously adjustable--perhaps another engineering first for Stoddart.

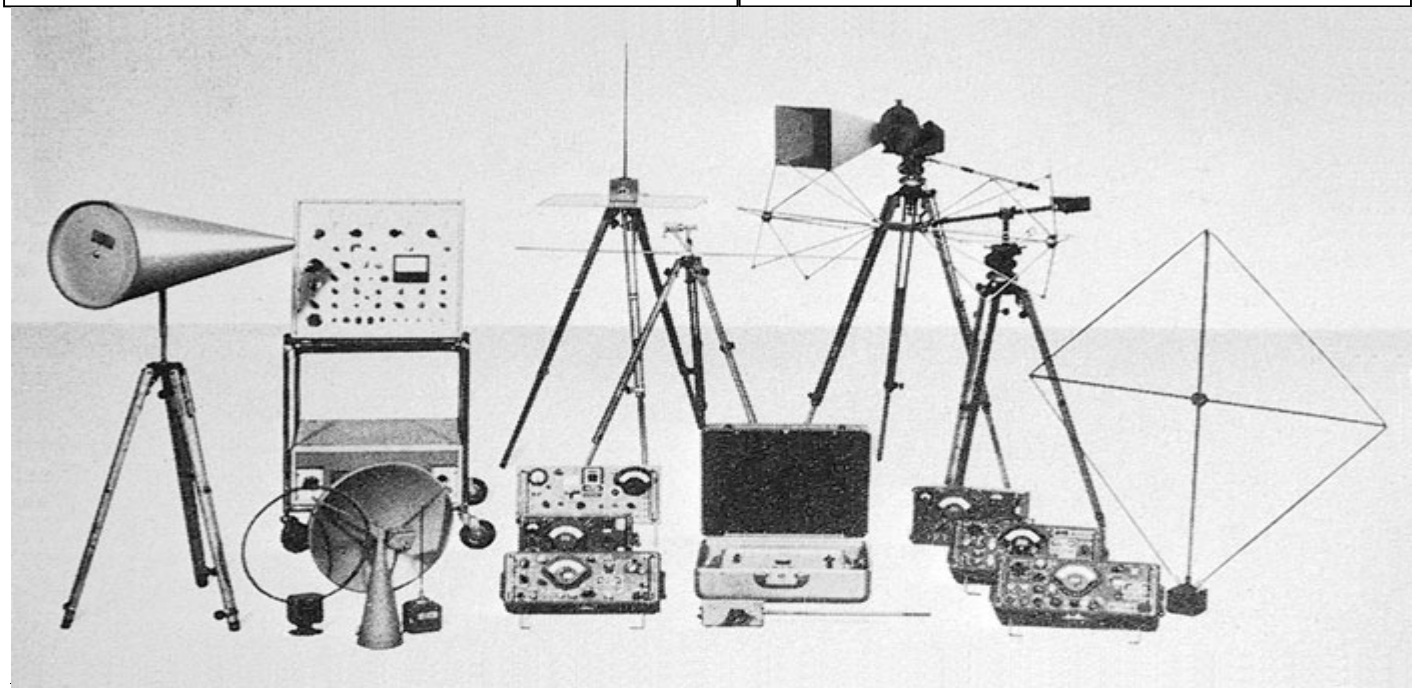
Many of the NM-40A's components are mounted on a large printed-circuit board. A built-in 400 Hz tuning fork oscillator (accurate to within +/- 0.2 Hz) is used to provide a reference signal, calibrate the frequency dial, and the output level meter. This meter is calibrated in decibels and microvolts with a full range of 140 db (.1 µv to 1 v). Other features include headphone, oscilloscope, remote output meter, and chart recorder outputs; a neon lamp overload indicator; input impedances from 50 ohms to 1000 megohms (with separate inputs for the magnetic and electrical components of an RF signal) and detector functions of: average, peak, quasi-peak, and rms. The separate power supply regulates the plate voltage and includes a time delay relay to lengthen the life of the receiver's 34 tubes. An extensive array of accessories were available for the NM-40A, some of which are shown below.

The little-known Stoddart 533Rs are a set of three solid-state receivers of exquisite workmanship. The 533R-3, for example, features analog tuning: 100 MHz to 1Ghz, calibrated attenuation that is achieved with a precision Stoddart attenuator (for which the company is famous) and variable bandwidths of 2, 6, 15, and 30MHz, and triple (detector?) outputs providing "AM LOG," "AM LIN," and "FM," as well as special X-axis and IF outputs. The portrayed receiver has a serial number of "3" and appears to be either a limited production unit. I have no schematic or other information about these receivers and would welcome any help.

In 1953 Richard Stoddart was an American delegate to the International Conference on EMI held in London. In 1958 he was made an IEEE Fellow. In 1962 he retired and sold his company to Tamar Electronics. By the early 1970s it became part of Singer Instrumentation and in the late 1970s merged with Ailtech, a division of Cutler-Hammer. In 1978 Cutler-Hammar was acquired by Eaton Corporation, and in 1991 Carnel Labs aquired Eaton's EMI/RFI line of products. In spite of the mergers, the respected name, Stoddart, continued to appear on new receiver models well into the 1980s.

Stoddart did not have the field of research receivers entirely to itself. After World War II, other companies, such as Empire Devices, Fairchild Electro-Metrics, Ferris, Hewett-Packard, Polarad, Singer, and Watkins-Johnson entered the market, but Stoddart will be remembered as the pioneer company that led the way in the evolution of radio research receivers of outstanding specifications and workmanship. Its influence in the development of radio communications needs further study.

See http://http://online.sfsu.edu/hl/src.html for more details and many pictures.



"The Night Before Christmas", Ham Radio-style

'Twas the night before Christmas, when all through the town,
The snowstorm was raging, the phone lines were down;
The wind it did howl, the tree limbs did crack,
I hope that St. Nick isn't forced to turn back.
The wife making cookies, the kids making noise,
While away in the shack, by my rig I was poised.
The finals were glowing, the mike gain was set,
I was chasing DX to see what I could get.
The bands were all empty, the frequencies clear,
Except one lone station that sounded quite near.
He was calling CQ and my interest did pique,
When he ended transmission with the words,
"Old St. Nick".
I answered back quickly, I used great dispatch,
If this were St. Nicholas, good God, what a catch!
We exchanged information, it was really quite graphic,
Then he came back and said,
"I've emergency traffic!"
His reindeer were tired, his elves in a grump,
If he didn't land soon, then his sleigh he would dump.
I thought very carefully, I thought very hard,
Then I gave him directions to my snow covered yard.
As he flew past my window, his hair like a mane,
He reined in his chargers and called them by name:
"Whoa, Anode! Whoa, Cathode! Whoa, Zener! Whoa, Diode!
Stop, Heater! Stop, Grid leak! Stop, Bias! Stop, Triode!
You're flying too low! you're flying too fast!
Look out, you dumb reindeer, his antenna mast!"
So into the backyard the reindeer did drop,
St. Nick, the elves, and the sleigh went kerplop!
Then at the back door, I heard this loud knocking,
"Open up in there, or I won't fill your stocking!"
As I turned off the light and was leaving the shack,
Into the house Saint Nicholas came from the back--
His two-meter rig held to his hip with a strap,
"Hams do it in the shack" on the front of his cap.
The sack that he carried made his aged brow furrow,
And he handed me a card that read,
"QSL Via Bureau".
His clothes were all sooty, from his shoes to his vest;
I felt like a novice taking his test.
His fingers were calloused and from what I could tell,
This came from a straight key that I'll bet he used well.
I offered him coffee, I offered him smokes,
I tried easing the tension by telling ham jokes.
Then he nodded his head and raised up his thumb,
He smiled like an Elmer, did I ever feel dumb.
He grabbed up his sack and went straight for the tree,
And placed in it a large present for me.
When he finished his work, he stood up, took a bow,
Then out the back door to his team he did plow.
But I heard him exclaim as he flew o'er the land,
"Beware the FCC, friend, we were both out of band!"

Author unknown

2016-2017 **OARC Membership Application/Renewal**

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

◯ 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, inclusive. 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. $7.50 plus tax). Ordered badges will be available in January.

First Name on badge _____ Callsign on badge _____

First Name on badge _____ Callsign on badge _____

Notes _____