Ottawa Amateur Radio Club

Groundwave

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

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

November 2007

Membership renewals are now overdue. A membership form is included in this newsletter. The cutoff date is November 1 after which un-renewed Groundwave subscriptions will be terminated. If you have not already done so, you may order a free club name badge. If you want additional badges they will cost about $8.

Dave Green is setting up a visit to the Military Communications and Electronics Museum in Kingston for Saturday, November 17. Email him to confirm attendance and get details.

Any new hams may apply for the Joe Norton award. The deadline is November 1. See the details on page 7.

The OARC executive is still looking for a secretary. Volunteers are welcome.

The November meeting speaker is Dave Conn whose talk is entitled “Impedance Measurements: Past, Present and Future”.

See you at the meeting.

Ian Jeffrey, VE3IGJ
Editor

NOVEMBER MEETING 7:30 pm, November 14th
in the Honeywell Room at Ottawa City Hall

In This Issue....

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Groundwave

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Membership
Al MacPhee, VE3ZTU
(H) 613-831-8920
ve3ztu@rac.ca

Groundwave Editor
Ian Jeffrey VE3IGJ
(H) 613-837-7393
ve3igi@rac.ca

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

Coffee Guy
Brian Campbell, VE3ZRK
(H) 613-737-3933
ve3zrk@rogers.com

Historian
George Roach, VE3BNO
(H) 613-234-0885
(Fax) 567-2372
ve3bno@rac.ca

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

IRLP Manager
Cary Honeywell, VE3EV
ve3ev@rac.ca

Repeater
Harrie Jones
(H) 613-739-9365
hjones@chumottawa.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 (2nd floor of the Old Teacher's College) 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 is 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** to pass traffic and to make announcements of interest to Amateurs in the National Capital Region.

The SWAP Net is a service provided and conducted by Ed Seib, VA3ES. This feature appears on theCapital City FM Net. To list items and make inquiries, call Ed at 613-738 8924 or e-mail him at va3es@rac.ca. Also available on the web: http://www.igs.net/~swap.

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 sponsored and conducted by Ed Morgan, VE3GX, and 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 Thursday evening at 20:00 hours on repeater VE3TWO **147.300+.** 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.

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.

Voice (VHF) 146.94/146.34 100Hz CTCSS required
(UHF) 443.300/448.300

VE3TVA Amateur Fast Scan Television Repeater
Video/audio beacon & input 439.25 MHz (audio sub. 443.75)
Video/Audio output 914 MHz (FM)

IRLP Node 2040 146.94/146.34 (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.

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October Minutes

Correction to the September minutes: Bob Sharp VA3QV/VA3RCS was also noted as a guest.

The president open the meeting at 19:30. There was one guest, Scott Murphy. The president reminded members of the Joe Norton award deadline and the upcoming tour of the Canadian Military Communications and Electronics Museum in Kingston.

Haves and Wants: Ernie Brown is looking for a coaxial relay.

Memorable QSO: Al MacPhee reported that several of the executive witnessed the 50th anniversary retransmission of the Sputnik signal on AO-51.

Show and Tell: Dave Conn described a 2m omnidirectional RHC polarized Lindenblad antenna for satellite work. Clare Fowler told of how the Sputnik retransmission was organized around the world and of his part in it.

The evening's speaker was Vladimir Sidorov , VE3IAE who spoke on RTTY basics. This was an expansion of his article in the May/June 2007 issue of The Canadian Amateur. Further information can also be obtained on his web site at ve3iae.bravehost.com/RY.htm.

Dave Conn made a short presentation on possible club projects related to the PIC computer.

The 50/50 draw prize of $16.50 was won by Harold Hamilton, VE3UNK.

The meeting adjourned at 21:45.

Dates to Remember

2007	
Sep. 1	Hamfest, RAC AGM, and Forum
Sep. 30	Membership Renewal Deadline
Nov. 1	Joe Norton Award Subm. Due
Dec. 29	RAC Winter Contest
2008	
Feb. 9,10	Canada Ski Marathon
Apr. 9	Homebrew Night
Jun. 11	OARC AGM and Elections
Jun. 28,28	Field Day
Jul. 1	RAC Canada Day Contest

(Continued from page 6)

designed to understand the killer-electron problem. Observations will enable the development of empirical models that engineers can use to design better radiation-hardened spacecraft. The models will also help physicists to predict geomagnetic storms in order to alert both astronauts and spacecraft operators to potential hazards.

Michael Schulz, a space physicist at Lockheed Martin Missile and Space Co.'s Advanced Technology Center, in Palo Alto, Calif., agrees that the jury is still out on whether the Los Alamos team has solved the mystery. "What this really means is that radial diffusion is not the whole story," he says, pointing out that there are other physical processes that need to be studied in detail, too.

But Stanford electrical engineering professor Umran S. Inan is in the Los Alamos team's corner, having always suspected that electromagnetic waves were the main cause of killer electrons. Inan, along with colleagues in the U.S. Air Force, actually plans to see if they can do something about the high-energy radiation. By 2010, they plan to launch a satellite, dubbed DSX (Demonstration and Science Experiment), that will test Inan's theory that low-frequency electromagnetic radiation injected into the lower Van Allen belt could cause the high-energy electrons to prematurely rain out into the atmosphere, potentially ending a month-long geomagnetic storm in a matter of days.

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mk's Words

Summer is over. It was a good, long one and I had lots of fun but I'm still sad to see it go. Halloween is coming and the furnace is now ready for another winter. At least there isn't any s*** yet. There are a couple of reasons other than the weather why I am not a happy hammer just now.

The OARC still needs a secretary. How hard can it be? If you can't do it, talk your friend into stepping forward. If you are going to stand on a sidewalk waving a Yagi around the sky looking for satellites, you may as well do it with a bunch of radio club exec members around.

The city bylaw is pretty much done and, while it doesn't much affect me, I can see how it will make life difficult for hams in general. A good crew represented us to the city, and the implications of the bylaw are a lot better than if they hadn't been there. Thank you.

EMRG/Ottawa ARES needs members. They are in the process of re working their com center while at the same time the City EOC is undergoing renovations that will require EMRG to make changes to the equipment there. Meanwhile, the Red Cross is changing things around at their Ottawa office, making more work for EMRG. They can handle the technical changes, but still need enough operators to be able to run all those radio things when the fertilizer hits the ventilator. Don't worry about equipment, it is always easier to get radios than operators.

Collegeville needs operators. Several times a year the Canadian Emergency Management College (you might know them by one of their many previous names) runs courses on how to manage an emergency operations centre and how to run an emergency site. To do this they need amateur radio operators. You wouldn't think that with the demographics of amateur radio it would be hard to find four operators for a day and a half a month. It has been a struggle. Sometimes two of us have had to do the work of four, trying to be in two places at the same time. It really is fun, just ask any of us who has done it. If you can help, or just want to drop in for a look, let me know and I'll arrange to get you through the door. Don't worry about equipment, it's always easier to find radios than operators. This is their schedule for the next few courses.

Oct 31-Nov 1, 2007 (Collegeville)
Dec 5-6, 2007 (Collegeville)
Jan 8-11 (Grandville)
Jan 23-24, 2008 (Collegeville)

Collegeville times:
Wednesday: 1:00 to 3:15
Thursday: 8:00 to 10:15 and 1:00 to 3:15
Grandville times:
Thursday: 8:30 to 2:30
Friday: 8:00 to 1:30
(Lunch is provided)

I know there is at least one car rally coming up (The Tall Pines, Nov 24/25) that can always use more radio operators. It's a bit like the ski marathon on wheels. Don't worry about equipment, it ... wait, you know that already.

Pry open your calendars and DO something. That licence of yours isn't really free.
Enough nagging.

I'm looking forward to getting into the club project this year. I'm looking forward to "something" different in the December meeting. I'm looking forward to the slow sure rise of the sunspot cycle, making those higher bands more fun, for more of the day, more often. What are you looking forward to?

mk VE3FFK

Laws of the Natural Universe

Law of the Result

When you try to prove to someone that a machine will not work, it will.

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Brainteaser

This month's puzzle:

Two brothers sold a herd of sheep. For each sheep they received as many dollars as the number of sheep in the original herd. The money was divided as follows: the older brother took ten dollars; then the younger brother took ten dollars; next the older brother took another ten dollars; and the younger brother took another ten dollars; and so on. At the end of the division, the younger brother, whose turn it was, found that there was less than ten dollars left for him. He took what remained. In order to even things up, the older brother gave him his penknife. How much was the penknife worth?

Send your answers to editor@oarc.net.

Last month's puzzle: Fruit Crates

Three crates are labelled "Mangos", "Papayas", and "Mangos and Papayas". Each label is incorrect. You may reach in without looking, and select only one fruit from one crate (no feeling around allowed!) Which crate should you reach into in order to be able to label each crate correctly.

Congratulations to Bryan Campbell and Dave Conn who got the right answer.

This one is easy. By symmetry you can guess that the answer cannot be either the crate labelled "Mangoes" of the crate labelled "Papayas". Hence the answer must be the crate labelled "Mangoes and Papayas".

But for proof, you reach into the crate labelled "Mangoes and Papayas". Assume you get a mango. (If you get a papaya just change the names in what follows.) Hence that crate should be labelled "Mangos". Therefore the crate labelled "Mangos" should be labelled "Papayas" and the crate labelled "Papayas" should be labelled "Mangoes and Papayas".

QED

A Modern Elmer Story

A lot of people have been making the claim that the internet is what has destroyed the numbers of Amateur Radio operators. "It's too easy for them to just chat with people all over the world, what do they need Amateur Radio for?" I've also seen the internet help the numbers in Amateur Radio. Remember, the internet is just another communication tool, like the telephone to be used as any other communication tool we have.

I met Chris, on one of the myriad of internet chat rooms one can find. I casually mentioned I was doing Amateur Radio and the next thing I knew, I was fielding questions left right and centre from Chris. I showed her web pages, I helped her find study materials, I helped her find a local club using the same internet some of us blame for the lack of number of Amateur Radio operators! I answered her questions the best I could via e-mail and online. The next thing I knew, she had passed her technician (KE5EJD). This is a woman in Amarillo Texas, miles and miles from me in Ottawa Canada.

Chris has just finished her first field day and is now working on her general, so she has HF privileges for next year. Now, how is the internet killing Amateur Radio again?

Diane Bruce, VA3DB

Laws of the Natural Universe

Oliver's Law

A closed mouth gathers no feet.

Law of Location

No matter where you go, there you are.

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Killer Electrons

31 August 2007—Los Alamos, New Mexico

Researchers at Los Alamos National Laboratory, in New Mexico, say they have solved the mystery of satellite-zapping "killer electrons" that are sometimes produced in Earth's outer atmosphere. These highly energetic electrons—strong enough to damage electronics and human tissue—pose a danger to spacecraft, satellites, and astronauts. For many years, the mechanism by which they are produced has remained little understood, in spite of physicists' attempts at solving this puzzle.

Now, Yue Chen, Geoffrey Reeves, and Reiner Friedel say they have conclusively proved that killer electrons come about because very-low-frequency electromagnetic waves—themselves of somewhat mysterious origin—accelerate ordinary electrons in the Van Allen radiation belts to a point where they are traveling at velocities close to the speed of light. The three scientists published their results in the July 2007 issue of the journal Nature Physics.

If they are right, it would be a big step toward understanding the physics of the Van Allen belts and could pave the way to space-weather forecasts. Such reports would be valuable to airlines and operators of satellites and telecommunication systems, because storms in the Van Allen belts regularly disrupt communications and occasionally damage satellites.

"Our results are crucial for the development of a predictive model of space weather," says Chen. And with space-weather forecasts, "actions can be taken to protect satellites."

The Van Allen belts, named after their discoverer, James Van Allen (1914–2006), are two concentric, roughly doughnut-shaped zones of radiation containing electrons and ions that extend thousands of kilometers into space. They are caused by interactions of the Earth's magnetosphere with cosmic rays and the solar wind—the stream of charged particles that is continuously emitted by the sun. Geostationary satellites orbit within the outer belt; many low-orbiting satellites encounter the belts only if they pass near the poles, where both belts bend in toward Earth.

The electrons in the Van Allen belts are normally not dangerous to satellites and spacecraft, but every month or so radiation levels spike to as much as a thousand times their usual intensity. These surges—called geomagnetic storms—are related to increased intensity of the solar wind and are associated with spectacular auroral displays over the poles. But until now there was no definitive understanding of how relatively harmless electrons get accelerated to become killer electrons.

"Debates on the source of the acceleration have lasted for at least a decade, and this paper finally settles the argument based on observations," Chen says.

Part of the reason the problem has been so tough to crack is that some of the electromagnetic wavelengths that need to be studied to understand the electrons' behavior range in the tens of kilometers—far too long for laboratory experiments. Addressing the problem also requires data from more than one altitude above the Earth's magnetic equator, where differences in a key term called "electron phase space density"—a measurement of the flow of electrons traveling through an area divided by the square of their momentum—would be the most telling. Getting more than one data point from the magnetic equator was something scientists had not previously done.

Chen and his colleagues managed to work out the logistics by using data from an electron detector aboard a Global Positioning System satellite, and by using other particle detectors aboard a geosynchronous satellite and NASA's Polar satellite.

Their observations seem to imply that the killer electrons could result only from an acceleration process produced by the interaction of charged particles and electromagnetic waves. However, the experiment did not explain the exact mechanism of the interaction, says Reeves, adding that while they had conclusively proved the process, much work still needed to be done to understand how it works. The source of the electromagnetic waves is not a settled issue. They may be born of turbulence in the flow of electrons within the Van Allen belts themselves or they may emanate from lightning in the Earth's atmosphere.

In a competing theory of killer electrons called "radial diffusion," the Earth's magnetic field lines are thought of as acting like an elastic band. When plucked by a burst of solar wind, the field wobbles and vibrates. If an electron in the Van Allen belt happens to be wobbling at the same rate, it will gain energy and accelerate across the magnetic field. But the pattern of electron phase space density picked up by the three satellites matched what you'd expect if the electrons were driven by interactions with electromagnetic waves, not radial diffusion.

The Los Alamos team's experiment "certainly represents a major step in an area of research where controversy still exists and has grown, even after some four decades of radiation-belt investigations," says Louis Lanzerotti, professor of physics at the New Jersey Institute of Technology, in Newark, and an expert in the physics of charged particles in space.

But Lanzerotti says it is still too early to say whether Chen and his colleagues have proved beyond doubt the mechanism behind killer electrons. He says that the definitive answer will probably come when the NASA Radiation Belt Storm Probes mission is launched in 2012.

That mission, involving two spacecraft, was specifically

(Continued on page 3)

Joe Norton Award Announcement

The OTTAWA AMATEUR RADIO CLUB INC. annually awards the Joe Norton Trust Award for the advancement of amateur radio. The amount of this award is $500 and a wall plaque.

ELIGIBILITY

To be eligible, a candidate must:

1. Be a resident of the National Capital Region as defined by the official federal government map.

2. Have received a Certificate of Proficiency in radio from Industry Canada during the period June 1, 2005 to June 1, 2007.

3. Send a written submission of no less than 600 words and no more than 900 words to the executive of the Ottawa Amateur Radio Club Inc., setting out his or her interests, achievements and plans to contribute to the advancement of amateur radio.

4. Present him/herself for an interview if so requested by the judges.

RULES

1. Entries must be received on or before 17:00 local on November 7th, 2007. Entries received after that date will be considered.

2. The OARC will send an acknowledgment in writing upon receipt of an application.

3. A panel of judges appointed by the executive of the Ottawa Amateur Radio Club Inc. will evaluate all entries.

4. Finalists may be interviewed by members of the executive of the Ottawa Amateur Radio Club Inc. , the panel of judges, or both.

5. Submissions will not be returned.

6. If the judges do not select a candidate in any year, no award shall be made in that year and the monies shall return to the trust fund.

7. All decisions of the executive of the Ottawa Amateur Radio Club Inc. are final.

8. The winner will be notified on or before November 21rd, 2007.

9. The winner will inform the Ottawa Amateur Radio Club Inc. of his or her acceptance of the award no later than November 30th, 2007.

10. The award presentation will be made during the regular meeting of the Ottawa Amateur Radio Club Inc. in December.

11. The winner agrees to have his or her name, photograph and address published in club bulletins, trade papers and magazines, and on the airwaves.

ENTRIES

Send your entry, to be received no later than 17:00 on November 7th, 2007.

By mail, to:

Joe Norton Trust Award
Ottawa Amateur Radio Club Inc.
Box 8873
Ottawa, ON
K1G 3J2

Entries may also be e-mailed, in plain ASCII text only. No word processor formatting, no word processor attachments allowed to:

executive@oarc.net

Be certain to include your full name, address, call sign, and your e-mail address if you have one, in your submission. Both mail boxes, paper and electronic, will be cleared at 17:00 on the closing date.

Membership Application/Renewal

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

☐Single ($25, $20 after Feb 1)
☐Family ($30)
☐Junior ($15, under 18 years of age)
☐New Ham (Free if licensed in current Membership year)
☐Emailed *Groundwave* ☐Mailed *Groundwave* (add $5.00)

Please Note: Membership year is September 1 to August 31

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

OARC NAME TAG Yes ☐ Second or Replacement Yes ☐

ORDER DETAILS - As to appear on badge:

First Name _____ Call Sign _____