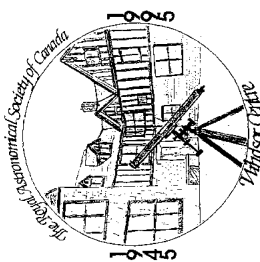




AURORA



February 2006

The Royal Astronomical Society of Canada - Windsor Centre

Volume 31, Number 7

A letter FROM the Editor by the editor

My needs - YOUR needs.....

It's been about a year now that I took over the editing of the Aurora Newsletter and the Aurora Flyer. It hasn't been too bad a battle working with Microsoft Publisher. Some things are easy, some a little more difficult and some downright frustrating. It goes for their other products too but you have to wonder some times why Microsoft did something they way they did. Oh well, it's a learning experience and I am doing that all be it a bit slowly. It does pay big time to have backups of your work before diving into something and have it blowup. Dave Panton has circuit breakers and fuses to protect his work—I have nothing like that.

I would like to remind everyone that I am looking for articles and tidbits for the Aurora. The Flyer is pretty well set every other month as the meeting minutes pretty well take up the whole issue. But take a look at this issue. There is a lot of available space after I've inserted Dave's minutes. And as you can see, that space varies from page to page.

Which means that I can use just about any length article you can write. I scan the magazines and their webpages for upcoming astronomical events but may not catch them all. So if you spot something of note coming, let me know. Find an interesting website or related software, pass the info along.

Did you capture something really interesting on the your scope? Pass it along.

Please remember that I can only print what I have and I don't think you'd appreciate a newsletter with large areas of white space or even a missing issue as we experienced for a while.

You'll find submission information on page two. Ignore the information on the issue months for the moment. It's in flux until I can finalize my publishing schedule.

Help me out if you can, and everyone will appreciate your efforts.

Ken Garber

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Calendar of Events

Our next meeting...

Tuesday, March 21, 2006 8:00 p.m.
at
K of C Maidstone Recreation Centre
10720 County Road 34 (Old Hiway 3)
just west of beautiful downtown
Maidstone (and the railway crossing)

Main Speaker...

TBA

Topic...

TBA

Coming Events

Astronomical Events:

Penumbral Lunar Eclipse (Europe/Africa) Mar 14
Total Solar Eclipse (Asia/Africa) Mar 29

Earth Day Apr 23
International Astronomy Day May 6

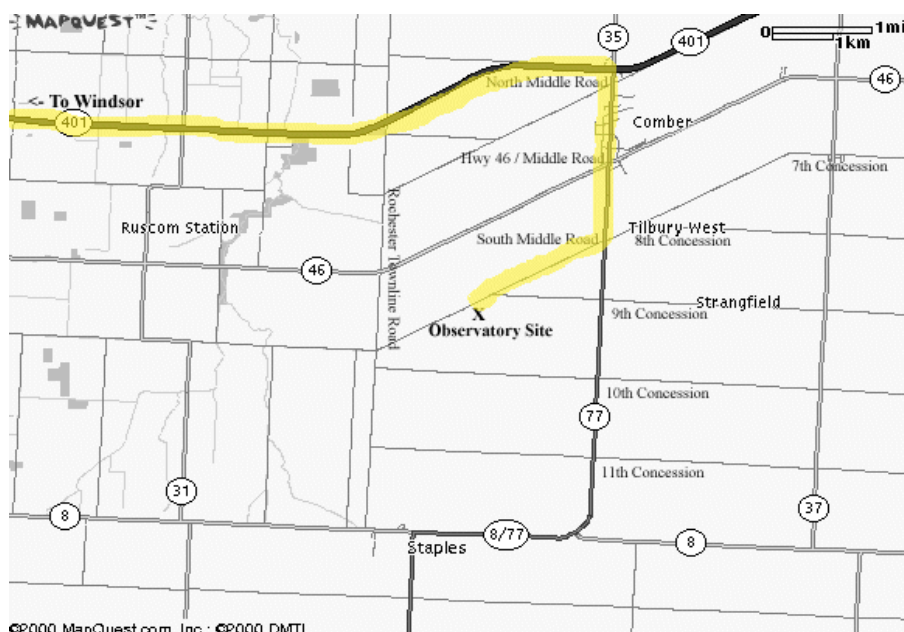
General Assembly -Ottawa May 21

Annual Picnic (tentative) June 17

Open House:

March 4th 7:30 p.m.
April 1st 8:30 p.m.

Council Meeting 7:30PM June 13



Hallam Observatory Site

Directions: The map above shows the Comber area and it includes the major highways (401, 77, 8 and 46) that are in the area of the observatory.

The most direct route from Windsor is "highlighted" on the map which is to take 401 East to Highway 77 South to South Middle Road. While on South Middle Road you go about 1 kilometer and just after the barely discernable point where Concession 9 joins it you will find the observatory site on the South side of the road.

If you hit the Rochester Townline Road (i.e. you come to a stop sign and have to turn left or right) you have gone too far.

Submissions

Aurora is published monthly except for August. The September, November, January, March, May and July issues are full newsletters (usually 6 pages) with a number of member submitted articles. The October, December, February, April and June issues are short flyers (2 pages) with one short article. Submitted articles can be of any length from a paragraph to multiple pages. I can scan pictures and/or diagrams (both prints and film) to support your article and the originals will be returned to you.

Submission deadline is the 1st of the month. I will accept Emails at the address below, floppy disks, CD's, or written submissions.

Editor: Ken Garber Email: kgarber@cogeco.ca
Ass't: Dan Anzovino Email: danzovino@sympatico.ca

Membership

The Windsor Centre of The Royal Astronomical Society of Canada meets on the 3rd Tuesday of every month (except July and August) at the K of C Maidstone Recreation Centre. In addition to regular meetings the centre hosts a number of observing nights, a picnic and a December social. Members receive a copy of the Observer's Handbook, the RASC Journal, a subscription to SkyNews magazine and access to the Centre's library and telescopes.

Annual Membership Fees are Regular - \$55.00, Youth - \$34.25 and Life - \$1100.00. ** **NOTE New Rates** **

Contact Ken Garber at (519) 966-3478 or visit our website at: <http://www.mnsi.net/~rasc> for more information.

Annual Meeting minutes of January 17, 2006 as recorded by Dave panton

Chaired by President Steve Mastellotto

Steve wished us a happy new year and thanked everyone for coming out on such a foul night.

November's meeting minutes were read and Susan Sawyer Beaulieu made the motion of acceptance then seconded by Joady Ulrich and carried.

Correspondence Secretary: Joady Ulrich

Joady reported Dorothy Hallam was still writing and always pleased to hear any news of the Hallam Observatory.

Treasurer: Ken Garber

Ken reported our bank account balance was currently \$7380.09. New and renewed membership cards to the end of December are available at the desk.

Newsletter Editor: Ken Garber

Ken requested articles for the next newsletter. Steve expected the most recent newsletter to be mailed this week and asked members to send new or changed e-mail addresses.

Pierre Boulos told members our Yahoo website now has 60 people enlisted.

Librarian: Rick Marion

Rick made his first report as new Librarian. His plan is to first prepare a list of all the books at the observatory and post it on the Yahoo website.

Of the several loaner telescopes, three are working OK and one is out on loan. The C8 Celestron is missing its big metal tripod. The orange 8 inch Celestron from St. Clair College was never mounted on a tripod.

Director of Public Education: Randy Groundwater

Randy was unable to attend the meeting.

Director of Public Relations and Observatory: Peter Bondy

Peter reported there is a project underway to power the shutter opening mechanism and retire the crank. A list of potential improvements was prepared at a recent meeting of the observatory committee.

Raising funds for them is a distinct possibility via the Trillium Foundation. A meeting with their representative was very positive. Their initial support for our observatory proved justified. In turn this will help us to obtain approval for a further Trillium Fund grant.

They prefer a theme for each project (equipment to observe the sun for example). No funds can be spent on buildings, property acquisition or operating costs. Renovating, upgrading and new equipment are all eligible. In our case we may be able to qualify for as much as \$75,000.

Light Pollution Committee: Dan Taylor

The City of Windsor street lighting people have agreed to hear a presentation by Dan next week. That alone is a major

achievement by Dan given their prior reluctance to consider light pollution.

Dan reported he will be joining a group called the "Build Canada Green Council"

The new mercury vapour light across the road from the observatory is a problem to be considered at the February Council meeting.

National Council Representative: Tim Bennett

Tim attended the recent meeting in Hamilton and reported there were two key issues, both financial. Last year a deficit of \$63,000 was incurred and this year a further deficit of \$25,000 is expected. The Ruth Northcoate trust fund can only be accessed on a loan to be repaid basis.

Publishing the Journal and its mailing costs are part of the deficit problem. Another issue is revenue sharing between National and Local Centres. Changing either will require a formal bylaw change. Proxies for both were distributed to members, signed and taken to the next National meeting on February 11th in Toronto.

Revenue from World wide sales of The Observers Handbook has suffered via the increase of the Canadian Dollar Exchange rate. Sky Publishing has made the decision to market only their own publications and have removed the handbook from their catalog.

Tim also reported David Levy had a "National Share the Sky" project whereby members might have access to telescope via the internet.

The next National Council Meetings:

1. February 11th in Toronto
2. General Assembly in Ottawa May 21st

International Astronomy Day is May 6th 2006

Council Meeting:

Steve announced the upcoming Windsor Centre Council meeting will be held at his home at 7:30 p.m. February 14th. While business matters and voting is handled only by Council, members are welcome to come on a sit in basis. Call Steve in advance so he can plan for seating space.

Director of Observing: Steve Pellarin

Largely hidden by heavy cloud cover this season there are still many sights to be seen in the Winter Sky. Some Messier objects in the Southern Sky are at their best and the clear air offers excellent viewing of our Moon's finer details, best observed along the terminator as it changes night by night.

Saturn's rings are well tipped, revealing its ring detail. Asteroid Vesta is clearly visible as are some shadow transits across Jupiter's huge surface as its moons orbit the planet.

continued....

Meeting Minutes (continued)

Coffee Break and 50/50 Draw:

The draw was won by K.C. Masterson and donated back for next month's draw.

Main Presentation by Dr. Pierre Boulos.

Pierre is a professor in the faculty of Science and Computer Technology at the University of Windsor. Among his many interests is the lives and accomplishments of pioneers in science and astronomy.

We have all marveled at the latest photographs taken from the Cassini spacecraft and its moon lander Huygens. Pierre presented a nicely detailed picture of both their namesakes, Cassini the scientist and Huygens the genius. Both born in 1600's Europe and had the good fortune to be from well off, educated families.

Most of us know Cassini from as the person who discovered the largest gap in Saturn's rings and named after him. He proposed they were formed from tiny satellites orbiting the planet. Fewer know him for discovering Jupiter's rate of rotation and his (quite good) estimate of the speed of light.

His name is again before us in the Cassini spacecraft orbiting Saturn and looping around many of its moons and returning spectacular photographs.

Huygens, a very influential and critical mathematician of his day studied lens grinding and confirmed the shape of Saturn's rings. He also built clocks and worked out the formula we use today to calculate the period of the pendulum.

He theorized centrifugal forces made Earth bulge a little at the Equator. Extraterrestrial beings were also his theory. Now he is further remembered by his name on the Huygens lander resting forever on the surface of Titan, one of Saturn's many fascinating moons.

Pierre's presentation was accompanied by a series of well prepared illustrations and delivered, marveling at the accomplishments of these two men so long ago.

Steve thanked Pierre for his presentation hoped he could do another in the coming year.

Meeting adjourned 10:19 p.m.

David J. Panton
Recording Secretary

Time to Renew???

Don't forget that you can renew your membership at the treasurer's desk, by snailmail to the National, or online at the RASC 'store' at
<http://www.store.rasc.ca/>

NEW Centre Communications

A Newsgroup/discussion board has been set up for Centre members on Yahoogroups. Created by Pierre Boulos, the list is called **RASCWINDSOR**.

To find out more about the *rascwindsor* group and to subscribe, please visit

<http://groups.yahoo.com/group/rascwindsor>

A Little Fund Raising

Got any Canadian Tire money lying around that you'd like to get rid of?



Why not donate them to the Centre?

We're always buying bits and pieces - be it nuts and bolts or a can of bug spray - to use out at the observatory.

Bring them along to any meeting and throw them into the box on the treasurer's table, and they will be made to good use.

Virtual Moon Atlas

For those Lunar Observers and others interested in the Moon there is a new version of the Virtual Moon Atlas v3.0 aka "Pro."

Go to

http://www.astrosurf.com/avl/UK_index.html

Earthquake Signs in the Sky? By Bert Huneault

All too often we hear about devastating earthquakes causing terrible loss of life, abominable homelessness and widespread damage to buildings and infrastructures. How many lives could be saved if major earthquakes could be forecast minutes, hours or days in advance?

In the past, earthquake predictions have been vague at best and were based on historical records, monitoring the motion of the earth's crust by satellite, and taking measurements with stress monitors below the earth's surface. And scientists could only predict the probability of an earthquake in a certain area within about 30 years.

Accurate earthquake warnings now seem to be within reach, at long last. Oddly enough they will come not from mechanical phenomena such as movements of the earth's crust but, rather, from electromagnetic signals detected not only at the earth's surface but also from the ionosphere, high in the sky.

For decades, scientists have detected strange phenomena in the form of odd radio noise and eerie lights in the sky in the weeks, days or hours preceding earthquakes. But recently researchers have finally been successful in correlating those phenomena to earthquakes.

Glowing lights

On January 17, 1995, for example, there were numerous sightings in Kobe, Japan, of a white, blue or orange light extending some 200 metres in the air and spreading a few kilometres across the ground. Hours later, a 6.9-magnitude earthquake killed several thousand people. Similar lights before earthquakes were documented elsewhere in Japan since the 1960s, and in Canada in 1988.

Ultralow frequency radio signals

Another sign of an impending earthquake is a disturbance in the lowest part of the ultralow frequency radio band (ULF = 0 to 30 Hz) noticed in the weeks or in the hours before an earthquake. Such signals were documented before the 1989 quake which devastated the San Francisco Bay area.

Both the lights and radio waves appear to be electromagnetic disturbances occurring when rocks are deformed or broken by the slow grinding of the earth that precedes the dramatic slip which constitutes an earthquake. This cracking of rocks apparently creates very large electric currents (positive charges) in the ground, which travel to the surface and into the air. Exactly how the currents are produced remains something of a mystery. The generated currents alter the rocks' magnetic fields surrounding the earthquake zone. And because the magnetic-field disturbances occur at such low frequencies (e.g. 1 hertz and below), they can easily penetrate kilometres of solid rock and be detected at the surface. Signals at frequencies above a few hertz would rapidly be attenuated by the ground and be lost.

Conductivity of the air

The air's electrical conductivity over a quake zone can be altered by charged particles welling up from the ground when rocks are under stress; the electric charge congregates on rock outcroppings and ionizes the air. Normally air is a good electrical insulator, but when ionized its electrical resistance

is lowered and a small but detectable current flows through the air in conductivity sensors.

Satellite and ground-based detectors

Ground-based sensors can be used to monitor changes in the ULF magnetic field; and to measure variations in the conductivity of the air. And satellites can allow the monitoring of noise levels at extremely low frequencies (ELF= 30 to 300 Hz) and to observe the infrared radiation that is thought to be emitted when positive electrical charges migrate to the surface and then recombine with electrons.

The ionosphere and GPS

Sometimes the charged particles generated under the ground before an earthquake change the total electron content in the ionosphere. The electron concentration is decreased over an area as much as 100 kilometres in diameter, and the ionosphere is pulled closer to Earth.

Researchers in Taiwan monitored numerous earthquakes over a period of two years and found that for those registering 6.0 and higher the ionosphere's content changed significantly one to six days before the earthquakes.

The changes in electron content can be detected by alterations in the behaviour (phase differences and signal amplitude) of Global Positioning System (GPS) navigation signals as well as high-frequency (HF= 3 to 30 MHz) and very-low-frequency (VLF= 3 to 30 kHz) radio signals.

Conclusion

The connection between large earthquakes and electromagnetic phenomena in the ground and in the ionosphere is becoming increasingly solid; and lab demonstrations have shown that cracking rock can produce positive electrical charges which could form significant ground currents and infrared emissions. But scientists are not yet ready to issue warnings based on such signals because the phenomena need to be better understood.

Researchers are currently trying to get funding to integrate space- and ground-based sensors to detect all these precursor signals, i.e. ELF and ULF magnetic field changes, ionospheric changes, infrared luminescence and air-conductivity changes; along with traditional mechanical and GPS monitoring of Earth's crust movements. This would require a very large number of ground-based sensors as well as a dedicated satellite, at a cost of tens of millions of dollars. But it is thought that a practical system able to generate timely warnings could be operational in about ten years, saving lives and minimizing the chaos of earthquakes.

The Internet provides additional information on the subject. A couple of interesting articles can be found at these URLs:

<http://www.quakefinder.com>

and

[http://science.nasa.gov/
headlinesy2003/11aug_earthquakes.htm](http://science.nasa.gov/headlinesy2003/11aug_earthquakes.htm)

The Two Year Clear Night Report by Dan Taylor

After a minor delay of about a year, the cloudy night report is back. Both 2004 and 2005 are presented here.

This is a numerical compilation of clear nights totaled on a monthly basis. My working definition of a clear night is as follows; one clear to mostly clear hour before midnight. It's that simple.

There is a growing body of scientific evidence that is suggesting the Earth overall is becoming cloudier. This is a report on conditions in our corner of the world.

2004

J	F	M	A	M	J	J	A	S	O	N	D
10	07	10	09	08	09	05	12	13	10	09	06

2005

J	F	M	A	M	J	J	A	S	O	N	D
09	06	11	13	13	11	13	16	22	08	07	07

The long term statistics can be gleaned from this graph with my clear night counts from 1988 to 2003 with 2004 and 2005 for comparison.

