May—June 2012

Volume 31, Issue 3

Royal Astronomical Society of Canada

Niagara Centre

THE NIAGARA WHIRLPOOL

Vice-President's Report by Dr. Brian Pihack

Stan and I have been busy. We had a meeting with the Niagara Parks people, at the Horticultural centre. The itinerary for Astronomy Day was laid out. We will be at the "Glen" this year for the full day. Stan will be there about a week before setting up displays. If you would like to help; please give him a call. New pictures for the boards would be nice as well. The day starts at 1:00 p.m., with the solar scopes going up. Throughout the day there will be presentations on the sun, auroras, and of course the upcoming transit of Venus, either at the pavilion or inside the building. As evening sets in, the scopes and presentations of course change as well. We will be set up right in front of the Nature Center at the top of the Glen in the sectioned off parking lot. This is our first real venue with the parks, so it would be nice to see as many people as possible out there. A good impression is important for many reasons. We are also in the process of setting up a full scale public event. Whirlpool Restaurant for dinner, followed by an astronomy presentation, complete with wine tasting. Then outside for a laser guided tour of the night sky and of course the big scopes for the public to look through. Stan and I were taken through the Whirlpool restaurant, met with the managers. It looks very good. We will supply the details as they come available.

Respectfully submitted.

Brian G. Pihack

Inside this issue:

This is the last edition of "The Whirlpool" until September 2012

Have a great summer!!!

Clear Skies,

RASC Niagara Centre Executive

M51 Photo
by Greg Taylor

Here is my first attempt at M51 Whirlpool Galaxy and it's partner NGC5195. I have a Messier list that says it's 37 million light years away and more recent studies on the internet claiming it is only 23 million light years away. M51 is home to an estimated 100 billion suns! It is beautiful to observe through the eyepiece. My first time seeing it was two years ago through our big 16" telescope at the CCCA Observatory - that was awesome!!

This is a stack of 50 shots, 4.25 minutes each, taken over two consecutive clear nights in March! (I actually shot 140 shots total but only 50 were good enough to stack). Many of my shots from the second night were lost as the wires from my guide scope came in contact with the focusing knob on my telescope... As my mount slowly tracked across the sky, the wire slowly de-focused my images... All the while, I was inside sleeping and dreaming of perfectly focused, crystal clear images. Another painful lesson learned!

Members Only Solar Filter Workshop

For those who signed up, the workshop has been moved

to the April meeting to ensure that members have filters available for International Astronomy Day

Saturday, April 28th

For further information:

Email Stan Sammy at *stansam@niagara.com*

Light Abatement Chairman's Report
By Wayne Liebau

At the general meeting of March 15, guest Steven Megannety of the Niagara Lighting Initiative outlined the project that is testing various LED streetlights in Niagara Falls. He then answered questions from members.

The City of Welland has started replacing existing streetlights with new LED fixtures. The manufacturer, Appalachian Lighting Systems of Pittsburgh, says that Welland is the first North American city to do a complete retrofit. Based on projected electricity savings, the City expects the retrofit to start paying for itself after only three years.

The lights can be controlled remotely, including dimming, down to the level of individual luminaires.

Of course we applaud advances that reduce electricity consumption and maintenance costs while offering the potential to reduce light pollution, but some concerns remain. Dark-sky advocates might be alerted by newspaper headlines alone: "Cheap daylight for nighttime", and "LED there be light in Welland".

One concern is overall brightness. The manufacturer says the new 30-watt units are brighter than the 70 - 100 watt high-pressure sodium units they will replace. If every existing luminaire is replaced, overall brightness would increase.

Of greater concern, the colour spectrum of the LEDs is close to daylight, rather than the familiar yellowish glow cast by HPS lamps.

While everyone seems to be pleased about white lighting, no one seems to be worried that the increased proportion of blue wavelengths means greater negative effects on human health and wildlife.

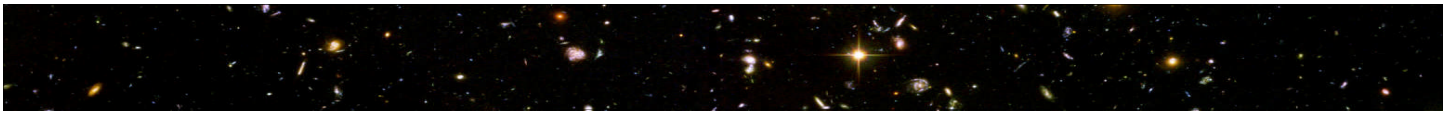
Earlier in the testing process, the Niagara Centre recommended to the City that lower colour temperature spectra are greatly preferable. Given the anticipated long life-span of LED lamps, "daylight" is an unfortunate choice.

Another crucial factor is placement and orientation of the luminaires. While they appear to be of cutoff design, optimal control of light distribution depends largely on proper installation.

Also of concern, the City plans to install about 2300 decorative "acorn" fixtures in the second phase of the project. This style of luminaire has traditionally been among the worst for light pollution and waste; the general design makes it much more difficult to aim light appropriately. So far we have no information about the new luminaires.

Electricity and maintenance savings are predicted to be impressive. It remains to be seen how improved lighting control will balance out with the unfortunate colour choice and possible overall greater brightness. Some before-and-after photos, not only of streetlights but also of the overall skyglow dome above the City, would be very useful. If any Welland-area members can assist by obtaining such photos, please keep detailed records and send us the results.

New lighting will likely be installed in all municipalities sooner or later, so it is important for everyone to follow this project carefully.



Earth has just one moon, right?
by Dr. Robert Jedicke

The Moon causes the ocean's tides, determined the length of the month and the bio logical rhythms of many species including humans, and has inspired poets and lit the night since nearly the beginning of the Earth. Most planetary scientists now believe that the Moon was formed in a short period of time more than 4 billion years ago after a gigantic collision of a approximately 6500 km (about 4000 miles) diameter planetesimal with the proto-Earth. The massive impact hurled material from the proto-Earth's crust into orbit around the Earth that quickly accumulated into what we now know as the Moon. For the entire time that humans have been on the planet it was the only moon we knew even as astronomers discovered tens of satellites around the giant planets Jupiter and Saturn and even two little moons orbiting Mars. Then, in 2006, the University of Arizona's Catalina Sky Survey north of Tucson, AZ, discovered another satellite of the Earth - a rocky mini-moon about the size of a car that is known by the unimaginative designation 2006 RH120. Now, a team of three astronomers at the University of Helsinki, Paris Observatory and the University of Hawaii claim that many small chunks of rock are in orbit around the Earth at any time, the largest being about 1-2 meters (yards) in diameter. Too small to be seen by the naked eye but close enough and small enough to think that some day it might be possible to bring one back to Earth.

Dr. Mikael Granvik at the University of Helsinki and the lead author on the results that were recently published in the Journal Icarus says that 'while these mini-moons are a million times smaller than the Moon and only stay in orbit around the Earth for 9 months on average they are truly Earth's satellites in that they are firmly yet temporarily in the Earth's gravity well.' While the Earth is constantly bombarbed by small asteroids and comets that appear in the night sky as meteors or 'falling stars' many more of them simply fly by the Earth, too small and too fast to be detected by the telescope surveys that detect the larger more distant objects. Roughly only one in a million of the objects that approach the Earth come close and slow enough to be captured by the Earth's gravity. During the course of a year it is estimated that 1-2 million asteroids pass by the Earth that are at least a meter in diameter (1 yard) resulting in the capture of one or two objects of that size each year.

To measure the capture rate and the trajectory of the mini-moons while they orbit the Earth Dr. Jeremie Vaubaillon at the Paris Observatory in Paris, France, used the Jade supercluster containing over 1,000 nodes to simulate the passage of 100 billion asteroids past the Earth and then tracked the trajectories of the 16,000 objects that were capured. 'This was one of the largest and longest computations I've ever done' exclaimed Vaubaillon, 'if you were to try to do this on your PC at home it would take about XXX years. And of course we had to check our results half a dozen times to ensure that we did the simulation correctly!'

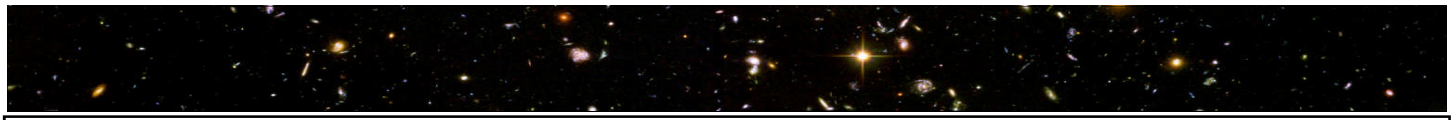
Once an asteroid is captured by the Earth's gravity most of them do not orbit the Earth in nice

(continued)

elliptical paths but instead follow trajectories reminiscent of a child's crazy straw. The typical mini-moon is not tightly held by the Earth's gravity but instead gets tugged into its crazy path by the combined effects of the Earth, Moon and Sun. They remain captured by the Earth until one of those tugs breaks the pull of the Earth's gravity and the Sun once again takes over control of the object's trajectory. While the typical mini-moon capture time is about 9 months some of them can last for decades.

'There has only been one officially recognized mini-moon discovery but we know that there are many more out there' says Dr. Robert Jedicke at the University of Hawaii, 'it would be scientifically extremely interesting if we learn how to discover them on a regular basis. We can imagine that it might eventually be possible to bring one back to Earth.' The opportunity of having a pristine 1 meter-diameter asteroid sample in the laboratory would be unprecedented. The only other sizable samples of planetary objects in our solar system come from spacecraft missions to the moon or meteorites found on the Earth's surface that are chunks of asteroids that passed thru the atmosphere. The moon rocks remain invaluable for scientific study but they are actually just parts of the proto-Earth's surface, and the meteorites are incredibly useful but they have all passed through the Earth's atmosphere and most have been sitting on the Earth's surface exposed to the elements for many, perhaps thousands, of years. A mini-moon brought back to Earth may eventually provide an opportunity for a low-cost asteroid sample return mission - a sample of material that will not have changed much since the beginning of solar system over 4.6 billion years ago and yet will retain clues allowing scientists to unravel the object and learn more about the solar system's formation and ongoing evolution.

Dr. Robert Jedicke has been a member of the RASC Niagara Centre for 35 years and the initiator and first editor of "The Whirlpool". Dr. Jedicke is a professional astronomer at the University of Hawaii's Institute for Astronomy. Above is the original press release from an interview by NPR on Dr. Jedicke's recent research.



Buy, Sell or Trade

For Sale - Meade Lightbridge Telescope (12.5") including the following:
- Components/software
- Custom built storage boxes
- 26mm Meade QX Wide Angle Eyepiece
- Silver carrying case for eyepieces

The mirror was recently re-coated (February 2012) by Alan Ward.
Price is $700 cash, firm.
All interested parties can contact me (Andrew Beaton) via my email address: scuderiaferrari@hotmail.com. Please include "Meade Lightbridge" in the subject line.

Astrophoto page
By Rob Lenz and Les Marczi

Shot Mars from my backyard with a Celestron C8 and a Philips toUcam. April 6 2012

Photo by Rob Lenz

The Rosette Nebula (Caldwell 49) & Star cluster NGC-2244
Taken with my Astro-Physics 130 EDF telescope
Astro-Physics 900-GTO GEM mount(PHD guiding)
Hutech modified Canon XSi
1 1/2 hours of H/a @ ISO 800
3 hours @ ISO 800 LPS filter
Deep Sky Stacker, ImagesPlus, Photoshop

Photo by Les Marczi

Secretary's Report
By Philip Downey

We have had no new members since my last report. Our current total is 63.

It may seem early to think about, but our club's biannual elections will take place at our October meeting. We will be electing a new executive to lead the club for the next two years. If you are interested in running for an elected position (President, Vice-President, Secretary, Treasurer, National Council Representative and four positions on the Board of Directors), or would like to serve in an appointed position (everything else), please let Stan Sammy or I know. Nomination forms will be available at the September and October meetings. You can nominate yourself. You must obtain someone else's permission before nominating them for a position.

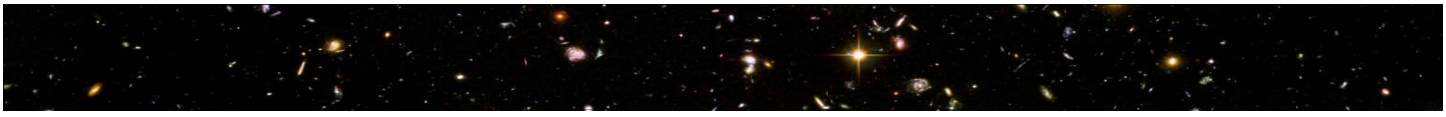
As well, you must have an active membership to vote at the meeting or hold a position on the Board of Directors. If you have let your membership lapse, or you are in the three-month grace period, you will not be permitted to vote. So, don't forget to renew your membership as soon as possible.

We have plenty of great events scheduled for the summer. Some of the highlights are the Transit of Venus on June 5, the Cherry Springs Star Party on June 14-17, our StarBQ on July 21, and Starfest on August 15-19. I hope to see you at these events. Check the Event Horizon section of this issue or our website for the full lineup of summer happenings.

Glen Pidsadnick and I have been taking astrophotos throughout the winter, when clear skies, work schedules and the Moon permitted. Some pictures come out far greater than we expect, while others are a disappointment.

In February I was at a science conference in Vancouver. Canadian astronaut Chris Hadfield was there and I was able to interview him. He will be taking command of the International Space Station in December. Obviously, he had many interesting things to say about his career and the space program.

This is the open cluster, M46. The green circle is the planetary nebula NGC 2438.



Observatory Progress Report
By Bad Bob Winder

I have been working indoors a bit on my 19.4-inch Gregorian observatory telescope. I am currently constructing a large plywood dew shield, which has light baffles inside, for the primary mirror. When the weather turns warmer, I intend to clean the primary mirror and add some extra collimating bolts to the primary mirror cell, thus enabling me to achieve reasonably accurate collimation. (I plan to use an extremely safe method for cleaning the primary mirror that I discussed on the telephone with the owner of Spectrum Coatings in Florida, who aluminized my mirrors several years ago: with the mirror resting nearly on its edge and leaning back slightly on a secure support for safety, spray the mirror surface with a ten percent solution of isopropyl alcohol and distilled water, and then immediately rinse with abundant pure distilled water; then blot any drops on the mirror surface with the very edge of a piece of paper towel, not having touched this portion of the paper towel with fingers, to avoid natural skin oils being placed on the mirror surface; the paper towel does not thus need to actually contact the mirror surface or rub against it in any way; this will probably remove approximately 80 or 90 percent of the dirt on the mirror, which will be adequate for my purposes; I would prefer to have a slightly dirty mirror with a coating that lasts a very long time).

This telescope is rather complicated; there are several entities which require collimation: the primary mirror, the Gregorian secondary mirror, the Newtonian-style diagonal flat mirror near the bottom of the telescope, the 8-foot-long secondary mirror light baffle tube, the light baffle tube for the diagonal flat mirror, the eyepiece holder, two finderscopes, and one open ring finder, plus an accurate calibration of the declination setting circle and a possible attempt to utilize the R.A. setting circle. This sounds complicated, but I have already lined up everything reasonably well except for the primary mirror. Once the telescope is functional, it should be a pleasure to look through, because the eyepiece holder is in a very convenient location approximately four feet above the observatory floor; the observer can either stand or sit on a tall chair, without the need for a ladder. Also, the diagonal flat mirror is inclined in such a way that the observer is looking slightly downward most of the time, an extremely comfortable situation. The lowest power eyepiece is approximately 150 power and the maximum field of view is almost thirty minutes of arc in diameter, almost the size of the full moon. In preliminary tests last year, I saw very sharp star images at 150 and 250 power.

I currently have a helical 2-inch eyepiece focuser that is functional and I am constructing a special adapter that will permit me to easily switch to a 2-inch rack and pinion focuser, which will likely be a lot more convenient for rapid focusing when I use my binocular viewing device; this is the focuser that I will likely use when visitors are at my observatory, because it is a very rapid, "natural" way to focus the eyepiece, and some visitors will likely want to adjust the focus a bit. I can switch to the helical focuser when I want to achieve the utmost precision in focusing, although the rack and pinion should do this quite well at the f25 focal ratio. I will remove both focusers when I use the 150 power eyepiece, which is actually a homemade Huygens eyepiece with a 95mm diameter field lens! It actually works extremely well, and I have a built-in coarse extra focusing adjustment for focusing this eyepiece, which works OK if you are patient.

The light baffling system for the telescope as a whole should be extremely good, giving me reasonably good contrast on faint deep sky objects from my suburban back yard. Actually, I can envision myself gradually making more improvements to this telescope over a period of several years. One of its limitations is that it requires a night with almost no wind; fortunately, such nights seem to be surprisingly abundant during the warm summer months.

It was wonderful last year looking at the moon and a few deep sky objects remain absolutely still in the 250 power eyepiece with the clock drive running. Actually, the stars did shift around a tiny bit, by about one arc second, likely due to image shifting by the slightly seeing conditions.

Niagara Centre members are welcome to look through this telescope, and I will likely try to send advance e-mails to interested persons when a really good observing night is in the weather forecast. I will try to keep submitting progress reports on the telescope and hopefully I will not encounter any serious problems during the final stages of construction.

Events Horizon

Thursday, April 19th
Beginners' Astronomy Workshop. 6:45pm to 7:30pm.
General Meeting starts 7:30pm Everyone welcome. No Charge.
Niagara Falls Library at Victoria and Morrison Streets

Saturday, April 21st
Members Night
CCCA Observatory

Saturday, April 28th
International Astronomy Day
Public Observing Event
The Glen, Niagara Parkway
Solar and Nighttime observing

Thursday, May 3rd
Beginners' Astronomy Workshop at AN Myer High School
7:00pm—9:00pm. (**Centre Members Only**)

Thursday, May 10th
Executive meeting at 7:00pm. Members welcome.
Chatters Eatery. Banquet room next to restaurant.

Thursday, May 17th
Beginners' Astronomy Workshop. 6:45pm to 7:30pm.
General Meeting starts 7:30pm Everyone welcome. No Charge.
Niagara Falls Library at Victoria and Morrison Streets

Saturday, May 19th
Members Night
CCCA Observatory

Saturday, May 26th
Public Star Night
Heartland Forest

Saturday, June 2nd
Public Solar observing
Niagara Glen opening—Niagara Parks Commission

Tuesday, June 5th
Transit of Venus—(**Centre Members Only**)
(Location to be announced)

Thursday, June 7th
Beginners' Astronomy Workshop at AN Myer High School
7:00pm—9:00pm. (**Centre Members Only**)

Thursday, June 14th
Beginners' Astronomy Workshop. 6:45pm to 7:30pm.
General Meeting starts 7:30pm Everyone welcome. No Charge.
Niagara Falls Library at Victoria and Morrison Streets

Saturday, June 16th
Members Night
CCCA Observatory

Thursday, June 21st
Executive meeting at 7:00pm. Members welcome.
Chatters Eatery. Banquet room next to restaurant.

Saturday, June 23rd
Public Observing
CCCA campground, Wellandport

Wednesday, July 11th to Sunday, July 15th
Rock Point Provincial Park
AV presentation on Friday night
Observing for campers held on Saturday night

Saturday, July 21st
Annual Star-B-Q (**Centre Members Only**)
Members Night
CCCA Observatory

Saturday, July 28th
Public Observing
CCCA campground, Wellandport

August 13th to 19th
Starfest
Mount Forest, ON

Saturday, August 18th
Members Night
CCCA Observatory

Saturday, August 25th
Public Observing
CCCA campground, Wellandport

Thursday, September 13th
Executive meeting at 7:00pm. Members welcome.
Chatters Eatery. Banquet room next to restaurant.

Saturday, September 15th
Members Night
CCCA Observatory

Thursday, September 20th
Beginners' Astronomy Workshop. 6:45pm to 7:30pm.
General Meeting starts 7:30pm Everyone welcome. No Charge.
Niagara Falls Library at Victoria and Morrison Streets

Please check the Event Horizon for updates or changes at www.astronomyniagara.com

RASC NIAGARA CENTRE

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We're on the web!
www.astronomyniagara.com

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Moon Phases
For April, May, June, July and August 2012

New Moon	First Quarter	Full Moon	Last Quarter
Apr 21	Apr 29	May 5	May 12
May 20	May 28	Jun 4	Jun 11
Jun 19	Jun 26	Jul 3	Jul 10
Jul 18	Jul 26	Aug 1	Aug 9
Aug 17	Aug 24	Aug 31	




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