

Nova Notes

The Newsletter of the Halifax Centre of the Royal Astronomical Society of Canada



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From the Editor —

When putting Nova Notes together, I go through all of the articles submitted to give them a look over for any noticeable mistakes that might have slipped through the author's keen vision. Now, that being said, I am in no way perfect and this edition will undoubtedly go through a revision or two.

However, grammar isn't what this piece is about. It's about what I read during my review of the submissions, and it comes from the meeting report for May. While I won't go into all the details here, it was said that a large quantity of outreach did not seem to translate to many new members.

Now there could be many different factors involved in that, but I think a possible one is outreach with huge pieces of kit and tech. There's nothing wrong with having incredible and equally expensive telescopes at outreach events. The "wow factor" alone can draw quite a crowd, and the GoTo

function makes showing lots of people an object with ease since it tracks. However, coming from personal experiences before I was a member, I thought that I would have to invest tons of money into a telescope to give me any sort of decent views. It wasn't until my early twenties that a friend of mine dug out his 70mm Celestron Astromaster and showed me the moons of Jupiter that I realized that I can do astronomy on a smaller budget. Or a large aperture dobsonian, that is no more expensive than a pair of good skates, can do wonders and is pretty easy to learn how to operate. Some of you might remember when I showed up to My first Nova East with my own 70mm Celestron Astromaster, only two months into my own membership.

So some possible food for thought is for some more of us to leave the high-tech behind and go for a more entry level friendly approach. Show that the hobby, as every other pastime, be as expensive as you want to make it. If we are striving to get more youth looking up and involved with astronomy, we should be showing them, and their parents what can be bought for the price of a Play Station.

Another thought on this, and I've brought it up in this column before, is to have ongoing Centre observing projects. Not to the extent as one of the national programs, but something that brings the Centre together to observe a shared goal. Thanks to the multitude of communication platforms we have at our disposal, coordinating observations, and sharing the evenings successes, or failures, is easier than ever. For an individual like myself, who lives over an hour a way from the city and even further from SCO, having a collaborative project would be great. A person on the fence, who maybe considering joining the RASC but lives in Tatamagouche, Canso, or Sydney might not be inclined to pay the membership dues given the distance they would have to go to partake in anything. Centre observing projects could be a selling point, because then it doesn't matter where we are across the globe, we can all feel like we're apart of the community and that's what is important.

We have wonderful people doing wonderful things in the RASC Halifax Centre. So lets try and build our community even more, get down to the grass roots level and demonstrate hands on that this pastime is rewarding and you can start out with a pair of binoculars if you so choose. As it is so eloquently put, "the stars belong to everyone," and we should be letting kids, parents, and all people know that.

Nova Notes: The Newsletter of the Halifax Centre of the RASC

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Nova Notes is published five times a year, in February, April, June/July, September/October and December.

The deadline for the next edition is 27September 2019.

The opinions expressed herein are not necessarily those of the Halifax Centre.
Articles on any aspect of astronomy and related activities will be considered for publication.

May Members' Meeting

(4 May 2019)

Pat Kelly

We had 41 in attendance for the meeting. As Paul Gray was unable to make it, Judy Black was put emcee for the day. Paul Heath covered outreach but had been so busy he had not had time to come up with a new poem for the meeting so he "recycled" one about astronomy volunteers. John Read gave the library report, the main item being that the library cart had a wheel fall off while en route.

He had been unable to keep it from falling over sideways and the hallway ended up littered with books! He was able to bring four books to the meeting for a quick show and tell. He noted that we do have a copy of Paul Heath's book of poems as well as the new novel from Andy Weir (author of *The Martian*) called *Artemis*, about a part-time smuggler who gets caught up in a conspiracy for control of the Moon's only city.

John continued on with the handbook talk. It was a follow-up from his first handbook talk, which had been about lunar craters. but this instalment was called "Women with Impact" and looked at lunar features (mostly craters) that were named after women, as well as showing how to find them. When Giovanni Riccioli published his lunar map in 1651, there were only two craters named after women: one for Hypatia, a philosopher, astronomer, and mathematician, who lived in Alexandria (Egypt) and was murdered in the year 415 CE by a Christian mob. The other is named for St. Catherine of Alexandria, who most modern scholars believe did not actually exist! She was supposedly killed in her late teens by the order of the pagan emperor Maxentius (which justified the later murder of Hypatia) but most modern scholars consider Catherine's story to be based on the life and murder, with reversed roles of Christians and pagans.

More modern-day women include the American astronomer Maria Mitchell, Caroline Herschel (sister of Sir William Herschel), Mary Sommerville (Scottish science writer and polymath), Nicole-Reine Lepaute (French astronomer and mathematician) and Marilyn Lovell (wife of astronaut Jim Lovell (*Gemini 7 & 12* and *Apollo 8 & 13*)). In the case of Marilyn Lovell, the feature named after her is a distinctive three-sided mountain.

The "What's Up" section was done by Judy Black. We watched the NASA video on highlight for the coming month, including the Eta Aquarid meteor shower which would peak in the following days. She also noted that Moon would pass through M44 (the Beehive Cluster) on the night of May 10 and that as the leading edge of the Moon is dark, one could watch stars wink out as they were occulted. Dave Lane also noted that there was an upcoming occultation by an asteroid whose path would only track over Nova Scotia and eastern New Brunswick. He gave a quick summary of why these observations are important and how they are done. Hopefully, when the track of the asteroid's shadow is more refined, he will send out a notice to see if people are willing to try to make the observation.

Dave Chapman gave a brief history of the Mi'kmaw moons project as a lead in to a project which had been undertaken to teach people how to pronounce the names in Mi'kmaw. It was funded by a small grant from the RASC. Four graphics (one for each season) were prepared by a 13-year-old Mi'kmaw artist, Curtis Michael agreed to be the presenter, and Halley Davies did the video work.

Dave Chapman collaborated on the writing and deriving the "phonetic" translation to help people. Each presentation is brief, so that it can be purposed for other uses. We were the first people to see one of the finished segments, on the current Frog Croaking Moon.

It turns out the Mi'kmaw word for "frog" is based on the sound it makes!

This meeting's youth activity was crater making, lead by Paul Heath. After a lot of experimentation he has found that the best material to simulate the lunar surface is a 50-50 mix of sifted flour and baking soda. This is placed in a rectangular pan and cocoa powder is sprinkled over it to act as the layer of regolith.

Dropping various item (acorns, nuts, etc.) into the mix produced craters with ejecta and raised crater rim. (To get a rim, you need lots of baking soda in the mix!) The "splash" even shows the direction of the impact if it hits at a very shallow angle. We got a good view of the craters as the device at the podium has an overhead video camera. The largest (and final) crater made was a lot larger than the other one. Paul dropped it while standing on a chair, and told people that they might see a plume of debris. Jerry Black videotaped it, and was able to play it back in slow motion and the effect was quite remarkable, as well as they amount of the table that ended up in the ejecta field! We then had the break for social time and snacks.

The main talk for the meeting was Jenna Hinds, the RASC's youth outreach coordinator. She has only been in the position for about six months. She started out taking marine biology at Mount Allison University in Sackville, N.B. She found that she was more attracted to science communication and took a course in it in Scotland. She returned to work at the Ontario Science Centre (OSC) which was where she was required to use the planetarium, and discovered a whole new science. She got involved with the RASC as the Toronto Centre did monthly solar observing programs at the OSC and when the youth coordinator job came up she applied for it.

The youth outreach committee has 10 people at the moment, with ages ranging from 9 to 20.

The committee members are currently mostly from Ontario and the West Coast, but more spots are opening soon so hopefully some more areas of the country will get representation.

The committee is currently doing a review of Centre outreach. Nationally, about 8.5% memberships are youth members; the number for Halifax is 4.7%. Someone noted that they may all be Paul Gray's children! Jenna noted that larger centres typically have higher averages as they often have a separate group for youth, if there is an interested volunteer to coordinate efforts.

The committee has been coming up with a lot of recommendations including having an annual collectable patch for youth members. There was a discussion about the role of outreach in membership numbers. Dave Chapman noted that for the International Year of Astronomy, we did lots of outreach but had no increase in membership. He felt that the best way to keep members was to give them something to do, especially something related to observing. Another idea that was raised was creating activities to give to teachers that they can do with their students. Apps related to astronomy (possibly with a game component) but the main issue is that the cost of producing them would be prohibitive. One approach has been for teachers to get RASC memberships but the way of tracking them with the computer system is problematic, and often schools will refuse to pay for such a membership.

June Members Meeting

(1 June 2019)

Dave Chapman

Paul Gray chaired the meeting of 29 members at 1:00 p.m. in SMU Atrium 101 for the regular monthly meeting. He announced a cleanup at Saint Croix Observatory for 8 June, as it turned out, this had a low turnout, but some work was done that day and the next. Paul also announced another meeting, and BBQ, at SCO for 7:00 p.m. Friday, 21 June, at 7:00 p.m. It is hoped that the prospect of food may attract more members to this event. The BBQ is for RASC Halifax members only

Jerry Black entertained those present with his slo-mo video of Paul Heath's May demonstration of impact craters on the Moon (not the real Moon). vimeo.com/341597710 Then Paul H read to the assembled multitude from his writings "Food for the Soul"—this time his topic was the mixed blessing of the Starlink satellite trains that will light up the heavens and somehow help us communicate better. He is constantly looking for outreach volunteers, so give him a shout. The next opportunity will be over by the time you read this!

Judy Black regaled us with news from the Board of Directors (minutes are online at halifax.rasc.ca/minutes.html). She played Jerry Black's promotional video for the 2019 Nova East Star Party, which is now open for registration <http://tinyurl.com/y2wug4sp>. Judy also presented the What's Up segment, with the help of NASA solarsystem.nasa.gov/resources/2454/whats-up-june-2019-skywatching-tips-from-nasa/

Paul Gray regained the floor with tales of upcoming summer star parties, such as Nova East.

Next up was Dave Chapman, who first presented Explore the Moon pins to Paul Evans and Jim Millar. Both gentlemen had previously completed their observing programs and received their certificates, but the pins have only become available recently, owing to an initiative by the RASC Observing Committee. Melody Hamilton had received a pin the night before at a meeting of the Nova East Committee.



Above: Jim Millar (right), Paul Evans (left), receive their *Explore the Moon* pins from Dave Chapman (centre).

Below: Dave Chapman presents Melody Hamilton with her *Explore the Moon* pin.





Above: A close up of the pin that was award to the recipients of the *Explore the Moon* observing program.

Dave also revealed the latest in his video projects with co-creator Halley Davies: the Mi'kmaw Moons language video series, featuring Mi'kmaw teacher Curtis Michael sneaking the names of the 12 Moon Times in Mi'kmaw. To see these, go to [YouTube.com/c/Mi'kmawMoons](https://www.youtube.com/c/Mi'kmawMoons). This initiative was supported by the RASC Special Projects Fund.

Pat Kelly then explained why observing the natural satellites of Saturn is so challenging, especially when the rings and equatorial plane is extremely tilted. Even with the Handbook diagrams, it can be hard!

Following the refreshment break, we had the main event: Mark Rector, recently retired (17 years) Professor and Program Coordinator the Electrical Engineering Program at Humber College, Toronto: "Oh Canada—Our Home and Inventive Land." Mark is a Nova Scotian who has a summer home near Five Islands, and (I believe) is a member of RASC Mississauga.

He has published a book of the same title and he recounted many, many stories of Canadian inventors, some better known than others: Elsie McGill (Maple Leaf II biplane trainer), Dianne Croteau (CPR "dummy"),

Beatrice Worsley (early computer languages), Joseph Bombardier (snowmobile), Reginald Fessenden (AM radio broadcasting), Mathew Evans (light bulb, sold patent to Edison!), Clarence Chant (David Dunlap Observatory), Alexander Graham Bell, Sir William Stephenson (Special Operations Executive, trained Ian Fleming).

There's a great story of Ian Fleming living in Toronto across from a church that no longer stands. It was formed from two churches and had the name St. James Bond United Church!

Prof. Rector went on to tell the awful history of the Avro Arrow project that was axed by the Canadian Government on Black Friday (20 February 1959) after political pressure from the USA to support their interceptor missile program. Engineers and technologists from that project went on to work for NASA and others, designing the Concorde aircraft, and working on the Apollo program, the Canadarm, and so on. Apparently, it was Canadians that designed the rescue gizmo that saved the Apollo 13 mission.

Finally, Prof. Rector told the tale of his students who designed and built a budget communications system to directly communicate with astronauts on the International Space Station. I guess they passed!

It was a great talk, buy his book!

Finally, Paul Gray thanked those who were present for attending, and invited the those interested for a bite to eat at a nearby restaurant. Next meeting is on the 7th of September, same time, same place.

Food for the Soul

Paul Heath

Fallen Stars

Eons past the Sages say
Steady wanderers and brilliant swords,
Would dance across the twinkling skies.
The nights were filled with majesty,
With gems that glittered and amazed.

Stories joined those glittering notes
And told of Hero's woes and Hero's victories
And looking up, so easy found the Wonder was.

Look up.
A million flashing orbs,
Winding forever across our sky.

Eons past the Sages say
Night would switch with Day,
The Moon would swell to fill the night
Then shrink and slide on into day.
As waters matched its revolving play.

Stories filled the darkening nights
And held our wonder up to sparkling heights,
As distant marvels drifted slow across the skies.

Look up.
A million flashing orbs,
Wrapping our world with rushing light.

Eons past the Sages say
The Stars were beacons, such guiding lights
Softly glowing through each seasons nights,
A changing tale Written across each darkened sky,
A slow march to last the whole year through.

Stories flowed slowly, through those glittering
skies,
As a glowing river drifted, rising upon the air,
Its hidden gems tossed within its silent flow.

Look up.
A million flashing orbs,
Have tied the day upon our world.

Eons past the Sages Say
Our skies would change at end of Sun lit days,
And Stars, a glistening host of wonder
Did Shine, from out the darkness of the Skies.

Look up!
To a million flashing orbs.
It was Eons past the Sages say,
When Our Nights, Did pass away.

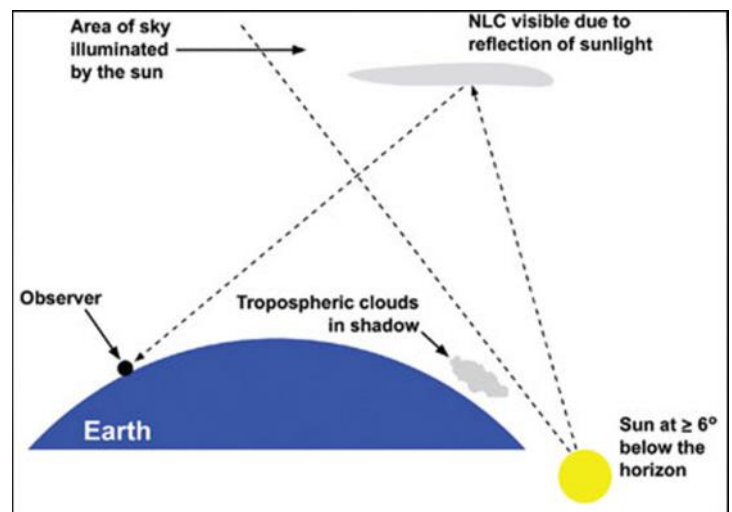
NLC = Noctilucent clouds

Michael Boschat

On June 12/13, 2019 we had our first display of Noctilucent clouds over Nova Scotia and New Brunswick. It was for me, my first observation in 30 years of observing for them.

So, what are these clouds? They are tenuous cloud-like phenomena in the upper atmosphere of Earth. They consist of ice crystals and are only visible during astronomical twilight. They occur from mid-May to mid-August in the northern hemisphere and between mid-November and mid-February in the southern hemisphere.

They are very faint and tenuous, and may be observed only in twilight around sunrise and sunset when the clouds of the lower atmosphere are in shadow, but the noctilucent cloud is illuminated by the Sun. They are best seen when the Sun is between 6° and 16° below the horizon. Recent studies suggest these clouds are seeded by meteoroids.



NLCs float at the edge of space more than 80 km above the planet's surface. The clouds are very cold and filled with tiny ice crystals. When sunbeams hit those crystals, they glow electric-blue.

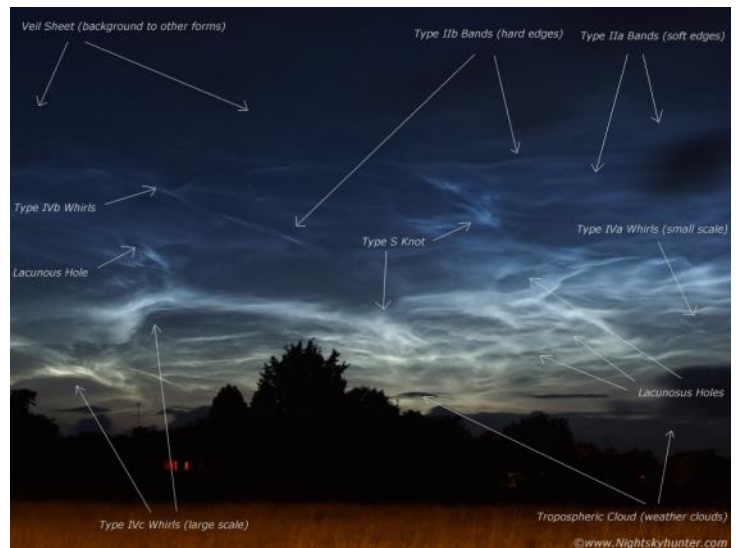
Noctilucent clouds used to be a polar phenomenon. In recent years, however, researchers have noticed their electric-blue forms creeping south-- a trend which has accelerated in 2019. Record-setting outbreak of NLCs produced sightings as far south as California, Utah, Oklahoma, and New Mexico.

What's happening? Previous studies have shown that noctilucent clouds sometimes intensify during solar minimum. Solar minimum conditions are in effect now as the sun has been without spots for 26 consecutive days. This is a situation that may favour the frosting of meteor smoke high above Earth.

Noctilucent clouds are generally colourless or pale blue, Although occasionally other colours including red and green occur. The characteristic blue colour comes from absorption by ozone in the path of the sunlight illuminating the noctilucent cloud. They can appear as featureless bands, but frequently show distinctive patterns such as streaks, wave-like undulations, and whirls.

Noctilucent clouds may be confused with cirrus clouds, but appear sharper under magnification. Those caused by rocket exhausts tend to show colours other than silver or blue, because of iridescence caused by the uniform size of the water droplets produced.

The clouds may show a large variety of different patterns and forms.



Above: A break down of classification of NLCs by www.NightSkyHunter.com

In closing, please report any observation to the following clearing house in Canada:

By postal mail:

Mark Zalcik
 NLC Can-AM
 #7-14130 80 Street.,
 Edmonton, Alberta
 T5C 1L6

By email: with images also to Mark at: bgg_skymerchant@hotmail.com

Get Drawn In! Come to Nova East!

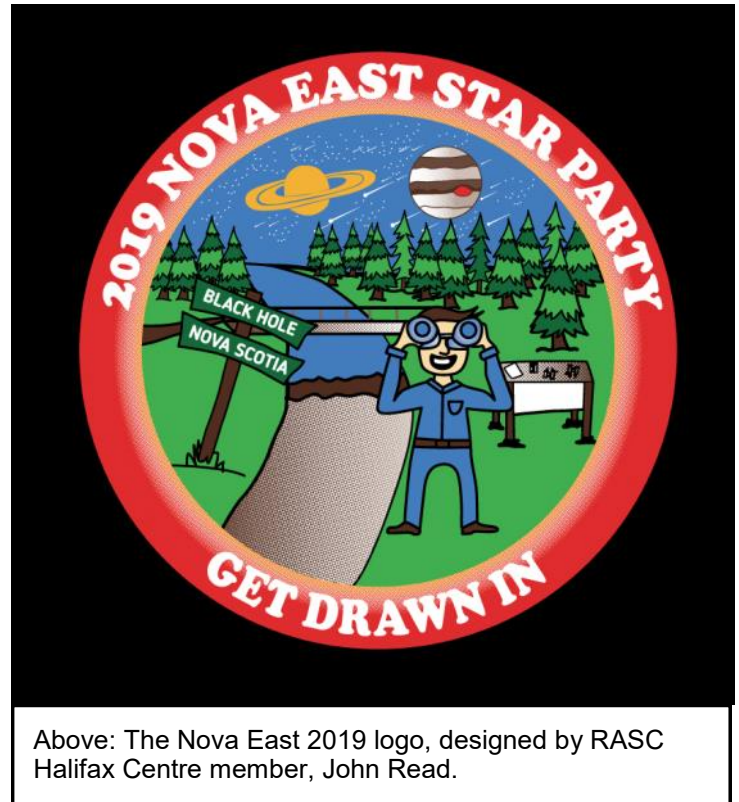
Judy Black, Chair
Nova East Star Party Planning Committee

It's the event you have all been waiting for and registration has begun! Thanks again to John Read for a great job designing this year's logo depicting all the elements of our Star Party encircled by a black hole emission ring. So, look at our schedule of events (<https://novaeast.rasc.ca/index.php/schedule/schedule>) and get drawn in – so much to see and do. Come to Smiley's Provincial Park on August 30 – September 2!

The Nova East Star Party has a speaker series that will intrigue astronomers of all interests. Our Public Talk on Saturday evening is being presented by Tiffany Fields, a MSc student at St. Mary's University in Halifax. Dr. Roy Bishop will address the large Fundy Tides and lead us on a road trip to view the tidal bore. The potluck BBQ, Astronomer's Lounge, Astronomers' breakfasts on Saturday and Sunday morning, will satisfy everyone's appetite. Telescope Medics will again assist with telescope woes. The evening sky tour and the binocular table will once again star in the agenda along with this year's addition of a telescope plaza.

The Astrophotography Contest and People's Choice Award will be hosted by Nova East. Prizes? Of course, there will be prizes – door prizes for all ages and for the Astrophotography Contest and People's Choice Award. For the new photography contest format, go to: <https://novaeast.rasc.ca/index.php/contest>.

Not a camper? You can still register to attend the events! Take up residence for the week-end in a B&B or motel in the area. Or perhaps drive in from home for the day and enjoy the daytime presentations. Join in the camaraderie. Hope to see you there!



Above: The Nova East 2019 logo, designed by RASC Halifax Centre member, John Read.

How do you Register?

Go to our site: <https://novaeast.rasc.ca/index.php/registration>

Payment can be made:

- By cheque or money order *if mailed in with the completed registration form*, or
- By cash, cheque or money order *if pre-arranged with the Registrar to pay upon arrival at NE*.
- By e-transfer to treasurer@halifax.rasc.ca

2019 Deadlines?

- July 19: T-Shirt & Fleece Hoodie orders (Nova East Logo on both these items)
- August 9: Submissions to Astrophotography Contest
- August 17: Mail-In Registration
- August 29: Email Registration (by midnight)

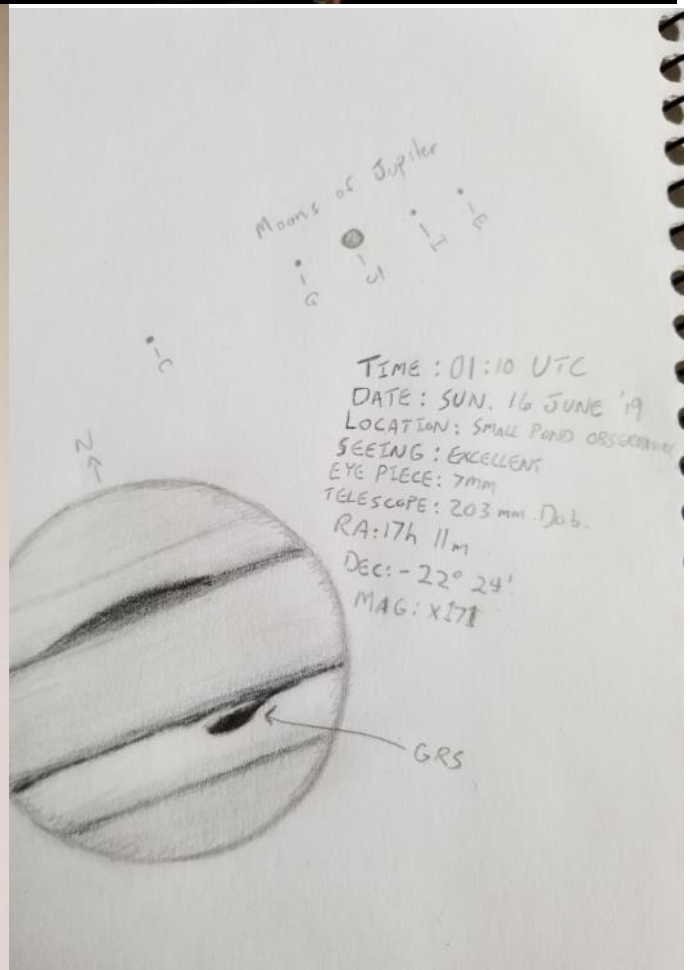
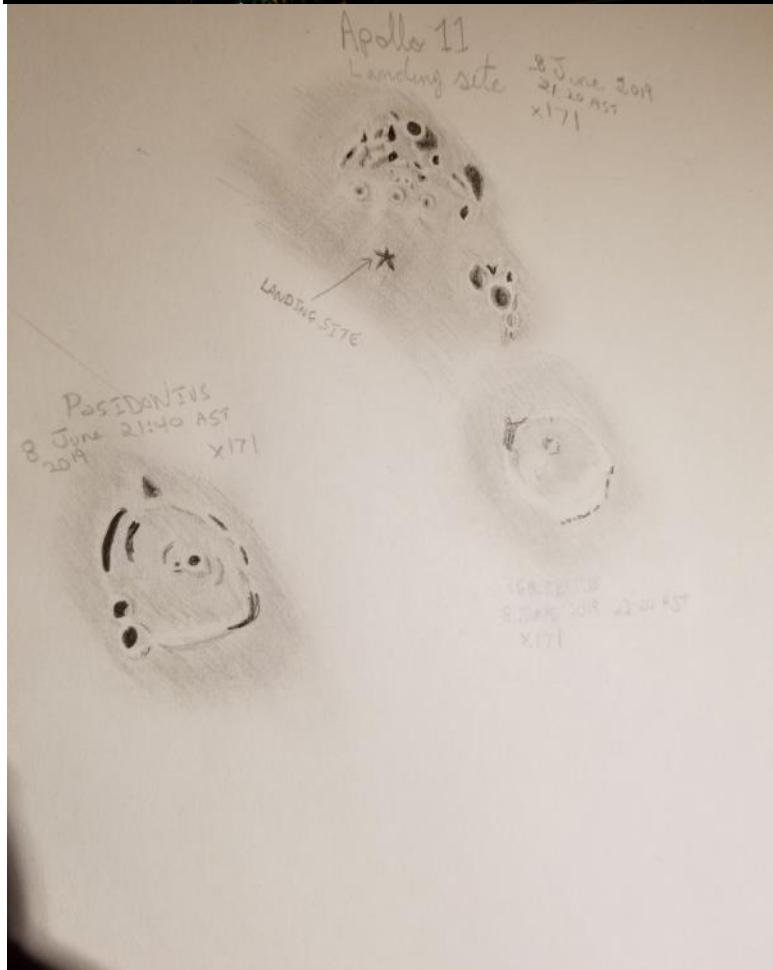
A thank you is extended to my fellow NEPC members for their ongoing work behind the scenes to ensure another successful Nova East – Dave Chapman, Melody Hamilton, Gregg Dill, Chris Young, Liz Greenough and consultants Pat Kelly, Paul Gray and John Read and Mary Lou Whitehome.

RASC Halifax Centre Showcase

Thank you to all those who submitted images and sketches to this edition of Nova Notes. It is a privilege to showcase such great work on these pages.

Jupiter - David Hoskin
NLCs - Michael Boschat
NLCs - Michael Boschat
Lunar features - Charles White
Jupiter sketch - Charles White





St. Croix Observatory

Part of your membership in the Halifax RASC includes access to our observatory, located in the community of St. Croix, NS. The site has expanded over the last few years and includes a roll-off roof observatory with electrical outlets, use of the Centre's new Go-To 400-mm Dobsonian telescope and 100-mm binoculars, a warm-room, and washroom facilities.

Enjoy dark pristine skies far away from city lights and the company of like minded observers searching out those faint "fuzzies" in the night. Observing nights (Fridays close to the New Moon or Saturday backup) are open to both members and their guests. If you are not a key holder and would like to become one, or need more information, please contact the SCO Manager, John MacPhee

Meetings usually begin at 1:00 p.m. at Saint Mary's University in Room 101 of the Atrium Building (AT).

All meeting locations and presentations subject to change

Meeting Dates for 2019

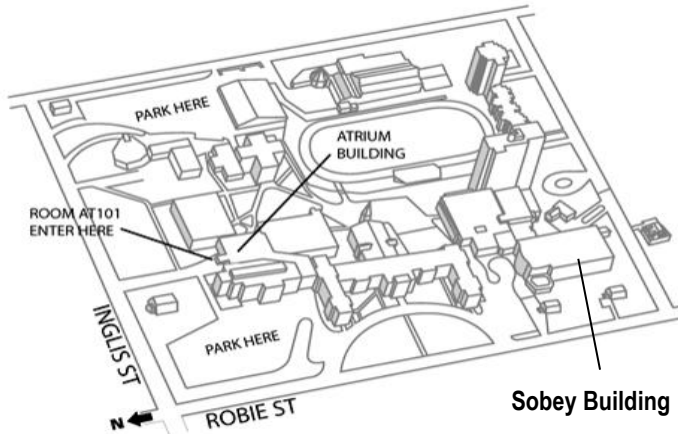
No regular meetings until 7 September.

Nova East Star Party:
30 August - 2 September.

Meeting Location: Saint Mary's University

Atrium Building (AT) Room AT 101

The Atrium is located in front of the Patrick Power Library, between the Burke Building and Science Building.



Meetings are usually held on the first Saturday of the month, except for the months of July and August.

Executive meetings begin at 11:00 a.m., usually in room AT306, and all members are welcome.

Halifax RASC Board of Directors, 2019:

Honorary President : Mary Lou Whitehorne	(Appointed)
President:	(Vacant)
Vice-President: Charles White	(Elected)
Secretary: Judy Black	(Elected)
Treasurer: Gregg Dill	(Elected)
National Council Rep: Patrick Kelly	(Elected)
Director: Paul Grey	(Elected)
Director: Peter Hurley	(Elected)
Director: Paul Heath	(Elected)
Director: John Read	(Elected)
Director: Tom Crosman	(Elected)
Librarians: John Read	(Appointed)
SCO Manager: John McPhee	(Appointed)
Observing Chair: Sean Dzafovic	(Appointed)
Outreach Chair: Paul Heath	(Appointed)
Nova Notes Editor : Charles White	(Appointed)

Cover Photo By:

Michael Boschat "NLCs"

Photo taken in Halifax. After 30 years of Searching, Michael finally managed to capture these elusive clouds.