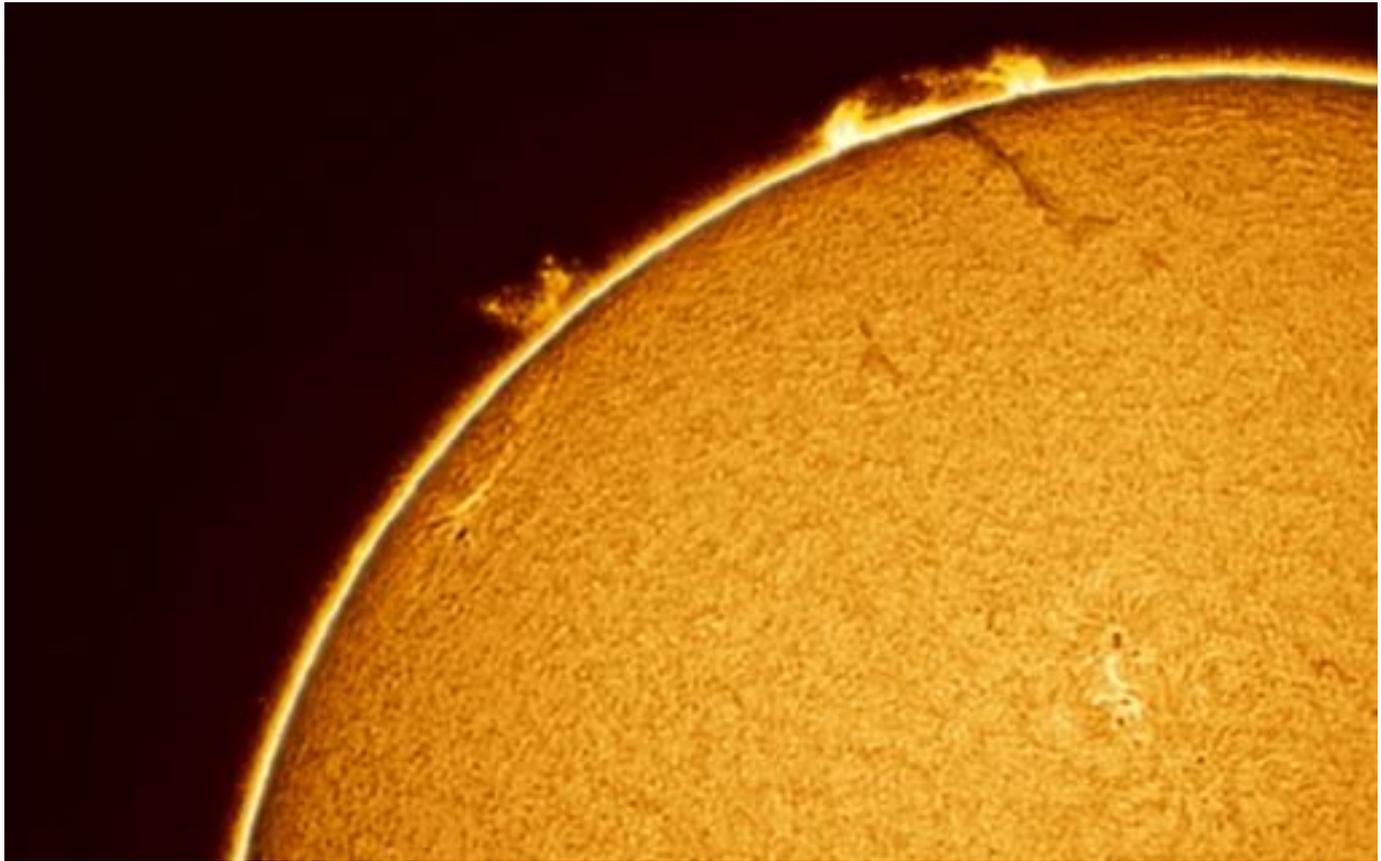


Nova Notes

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

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Sun, Moon and More Edition

Highlights

MAY / JUNE 2021

VOL 52 NO 3



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Cover Photos:

Main Photo:

Solar Activity (taken with Lunt 40mm scope)
By David Hoskin

Thumbnails (l-r):

"Solar Eclipse"
by Lisa Ann Fanning

"Pre-Penumbral Eclipse"
by Lisa Ann Fanning

St. Croix Observatory
drawing by
Mary Lou Whitehorne

Note: All photos and original works in this edition are the copyrighted property of the photographers, writers and artists. Permission to use any of their photos for other purposes must be obtained from the photographer.

From the Editor

This particular edition brought me so much joy to work on! When David Hoskin told me a few months ago he planned to pen a review on his new Lunt Solar Scope, I was excited because my curiosity about solar viewing was starting to pique. At the time, I had no idea this edition would start to take on a definite theme, "Sun, Moon and More."

June 10 brought us the Solar Eclipse, and with it came so many wonderful images from members. I couldn't help but smile as I assembled a whole range of photos and getting to see *how* everyone got to enjoy the eclipse. Through personal observatories, through outreach, having paddled to get a clear view, sketches, and even from the steps of a bus. Personally, I woke up at 3:30 AM and drove 30 minutes to the Jersey Shore to be sure to be in place as the sun came up over the Atlantic Ocean.

One event, the same sun, but so many ways to celebrate such a wonderful celestial event. I'm excited for you to flip through all the submissions and see how your fellow RASCals experienced the moment.

Not to be "overshadowed," (hahaha) the Moon also gave us some wonderful moments - whether it was getting to see Lunar X and V once again, or the moon's regularly occurring features. Every single night of clear skies, the moon offers us a wonderful scavenger hunt, for anyone who wants to play!

The past year has been trying for so many of us between Covid and all the personal ups and downs that have resulted from it. At times, it feels isolating to be on lockdown, whether mandated or self-imposed, but one theme seems to emerge when I speak to others, Astronomy is one thing that gives so many a deep perspective. Not to mention that through channels like Facebook, the Listserv, live events broadcast on Social Media, and programs like Moon At Noon, we can all come together from our own spaces and share something beautiful in the moment.

To everyone who shares their clear skies with me when it is cloudy here, who share their works with *Nova Notes*, who offer wonderful perspectives of lore of cultures as they see the moon, who help guide me when I finally decide to go all in and buy a solar scope (thanks David Hoskin,) and of course, John McPhee, who helps make my job so easy and enjoyable - THANK YOU!

Wishing you all a safe, happy and healthy summer with lots of clear skies,



Lisa

Meeting Dates for 2021

- **September 11 (Labour Day is Sept 6.) Speaker - David Hoskin (Comet NEOWISE); Chris Young (Astronomy Lore)**
- **October 2 Guest Speaker TBD; David Hoskin (Hydrogen Alpha Solar Imaging)**
- **November 6 Guest Speaker TBD; Chris Young (Astronomy Lore)**
- **December 4 (+ AGM) - Speaker at Members' Meeting: Dr. Phil Groff, RASC Exec. Director)**

In lieu of a face-to-face meeting, we will now be hosting Members' Meetings using Zoom. You do not require a Zoom account to join in but you are required to register for this webinar. The webinar is limited to 100 registrants - first come, first served. The panelists' presentations are being recorded and will become accessible via a link on <https://halifax.rasc.ca>

St. Croix Observatory

Part of your membership in the Halifax RASC includes access to our observatory, located in the community of St. Croix, N.S. The site has expanded over the last few years and includes a roll-off roof observatory with electrical outlets, a warm-room, and washroom facilities. We welcome you to bring your own equipment or to use the Centre's 400-mm Dobsonian telescope, 100-mm binoculars, and the recently acquired SCT and gear for astro-imaging.

Enjoy dark pristine skies far away from city lights and the company of like-minded observers searching out those faint "fuzzies" in the night. Most clear Moon-free nights, you will find our keen observers out there! Announcements of members visiting SCO are made on the Centre's Discussion List. If you are not a key holder and would like to become one or need more information, please contact the SCO Manager, John Liddard at scomanager@halifax.rasc.ca.

SCO is Open!

(As of June 1, 2021)

Go to our website (halifax.rasc.ca) for the latest SCO usage guidelines.

Halifax RASC Board of Directors, 2021

President: Judy Black	(Elected)
Vice-President: Patrick Kelly	(Elected)
Secretary: Peter Hurley	(Elected)
Treasurer: Gregg Dill	(Elected)
Director: Tim Doucette	(Elected)
Director: Mathew Dyer	(Elected)
Director: Wayne Harasimovitch	(Elected)
Director: Paul Heath	(Elected)
Director: David Hoskin	(Elected)
Director: Kathy Walker	(Elected)
Honorary President : Mary Lou Whitehorne	(Appointed)
Auditor (2020-2021): Ian Anderson	(Appointed)
Co-Chair, DSP Committee: Dave Chapman	(Appointed)
Co-Chair, DSP Committee: Tony Schellinck	(Appointed)
Librarian: Wayne Harasimovitch	(Appointed)
Observing Chair: Dave Chapman	(Appointed)
Outreach Chair: Paul Heath	(Appointed)
National Council Rep: Judy Black	(Appointed)
SCO Manager: John Liddard	(Appointed)
Co-Editor, Nova Notes: John McPhee	(Appointed)
Co-Editor, Nova Notes: Lisa Ann Fanning	(Appointed)

Nova East Star Party

NOTE: The 2021 Nova East Star Party has been cancelled due to Covid restrictions



SAVE THE DATE FOR 2022!

August 26-28, 2022

(New Moon August 27 @ 5:17 AM)

A Message from President

While waiting for a post-tropical storm to pass, I reflected on what we at the RASC Centre have experienced over the past year. Talk about ups and downs!

Let's get the downs out of the way first. The big one – province-wide lock downs followed by partial re-openings. This affected how we interacted with each other, and how we worked to keep everyone informed. The second big one – cancellation of the Nova East Star Party for the second consecutive year.

However, there were upsides!

Members have increased astronomical observing from home and shared a virtual observing session or sent photos and sketches through the Halifax Discussion List. Some participated in the RASC explore the universe and the moon at noon programs. Many thanks to John Read for his involvement in presenting such energized, informative programs. So many phenomenal photos and sketches of observations – lunar, solar and DSOs. Then there's Tony Schellinck with the SCANS courses online that educate and engage seniors across the province. Thanks to the many who contributed to bring our exciting Universe to others.

Guest presenters for our monthly meetings have logged in from all across Canada – from PEI to BC. Their presence and that of members from other Centres at our meetings in the pre-COVID world simply would not have happened. The Board is considering ways in which members can attend and guest speakers can provide new knowledge in person or virtually, even after Saint Mary's University (SMU) open its doors to us once again.

Members gave donations for the SCO electrification project. Thank you to John Liddard as SCO Manager for overseeing the project and to Mary Lou Whitehorne for her donation of the SCO graphic used in all communications regarding SCO. Also thank you to Dr. Roy Bishop for his guidance throughout the planning and implementation phases. The Warm Room and Observatory now have electrical power – inside and outside to accommodate the ever-growing interest in astroimaging.

SCO is open once more! What a gift our Centre has to enjoy! There are still restrictions regarding its use, but they are fewer than before. Hopefully, restrictions will be lifted even further during the summer. In the meantime, up to 25 of us can now go to SCO to enjoy the dark skies with those like-minded. Go to our website for the details.

Now we have a whole year to plan the *Gathering of the Scopes* at Smiley's Provincial Park. Mark your calendars! August 26-28, 2022 for the next Nova East Star Party.

Until we meet again in September, virtually or in person, stay safe. Stay positive. Stay well. Keep looking up. Our summer skies are open.

With regards,
Judy Black, President

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

PO Box 31011, Halifax, Nova Scotia B3K 5T9

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

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.

Thumbs Up for the Lunt 40mm Dedicated Hydrogen-Alpha Solar Telescope!

By David Hoskin

Until recently, if you wanted to buy an entry level hydrogen-alpha solar telescope your options were the Coronado PST (Personal Solar Telescope) or the Daystar Solar Scout. Lunt Solar Systems, which is the other major manufacturer of solar instruments, at one time sold an entry level 35mm hydrogen-alpha solar telescope that was highly regarded; however, the model was discontinued about 5 years ago. Enter the Lunt 40mm Dedicated Hydrogen-Alpha Solar Telescope, now available at Canadian retailers!

I have been using white light filters and various refractors to image sunspots since I started in this hobby. Now that the Sun is becoming more active, I wanted to see additional solar features, which meant taking the plunge and purchasing a dedicated hydrogen-alpha solar telescope. I briefly considered the entry level offerings from Coronado and Daystar but neither was suitable for my needs.

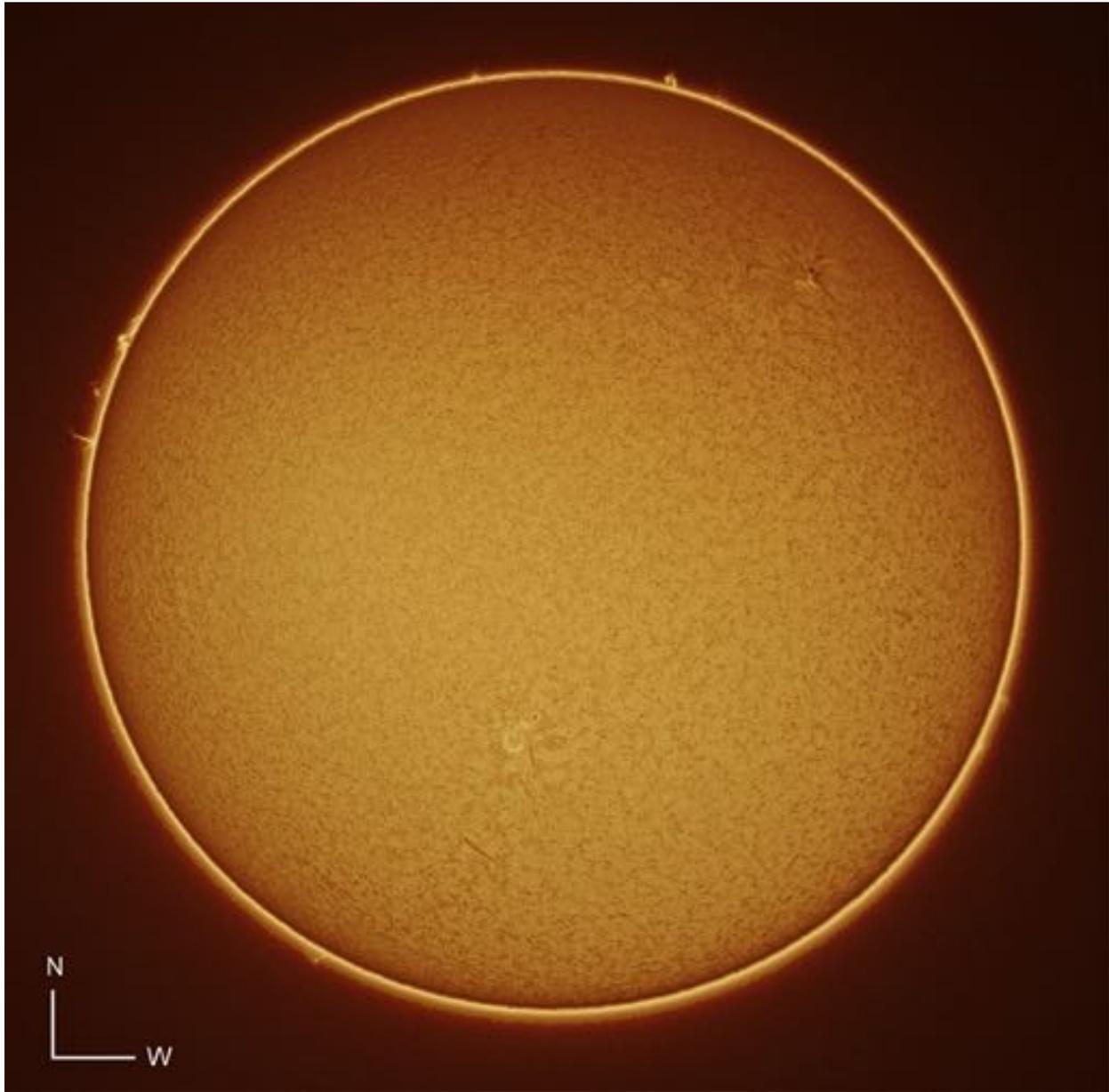
The Solar Scout (\$993.75 plus tax and shipping) requires a power source and has an effective F ratio of 15.5, which would not allow me to image the full solar disk with any of my ZWO cameras, while the single stack PST (\$961.25 plus tax and shipping) lacks a dovetail and has a fixed 5mm blocking filter that is not optimal for imaging. I settled on the Lunt 40mm F/10 Dedicated Hydrogen-Alpha Solar Telescope that was announced last summer but only became available early this year. The current retail price is \$748.75 (plus tax and shipping) for the base model with the B500 diagonal filter, which in my opinion is an incredible deal.



My new solar telescope arrived by courier from David Astro in late April, double boxed, wrapped in plastic, and nestled in a piece of die-cut foam that fit nicely in an old sports bag, eliminating the need to purchase the optional carrying case. The fitted foam also has cut-outs for 3 eyepieces and additional accessories. The telescope, which is made by Lunt Solar Systems in Tucson, Arizona, is finely crafted and its pearl white colour with black and red accents is eye-catching. Since I planned to use the scope for solar imaging, I went for the optional 6mm blocking filter instead of the standard 5mm blocking filter. The current price for the Lunt 40mm Solar Scope/B600 blocking filter combination is \$842.50 plus tax and shipping. A 12mm blocking filter is also available as an option for an additional \$375 over the price of the base model. The non-rotating helical focuser that comes standard can be upgraded to a feather-touch focuser that, while nice, is not, in my experience, essential. The scope comes with an instruction manual and 2 Allen keys for adjusting the included Tele Vue Sol Searcher.



The base model is single stacked but can be upgraded to a double stack configuration for increased contrast of surface features on the Sun. The objective is a doublet that is optimized at 656 nm for hydrogen-alpha. The Lunt etalon is 40mm and full aperture with a peak transmission efficiency of better than 88% and bandpass of less than 0.65 Angstrom. Etalon tuning is via a conventional tilt mechanism that is controlled by a brass tuning dial at the front of the scope. The integrated Vixen style dovetail has tapped holes for use with a standard camera tripod. The scope, at less than 1.3kg, can be mounted on a small tracking mount such as the Celestron Nexstar GT. The Sun is easily found and centred in the eyepiece using the Sol Searcher. I use an Orion 20mm Expanse eyepiece for visual use. Coarse focus is achieved by pulling the blocking filter diagonal about 20mm out of the draw tube. The helical focuser is used to produce the sharpest possible image, which is then tuned and refocused, if needed, to give the best view of the desired solar feature. My first view through the eyepiece was breath-taking. Delicate solar prominences are easily seen, as are sunspots, plages and filaments. For solar imaging, I have been able to achieve focus with my DSLR camera and my ZWO cameras (ASI183MC for full disk imaging and ASI290MM or ASI224MC for close-ups), without or with a 2x Barlow. The full solar disk image in this article was obtained using my ASI183MC camera under at best average seeing conditions, showing the impressive imaging capacity of this entry-level solar telescope.



My only criticism is that the helical focuser can develop a little play with use; however, this is easily remedied by tightening a small screw at the base of the focuser. Of course, this would not be an issue with the optional feather touch focuser. I have been having a blast with my new Lunt 40mm solar telescope! I strongly recommend this little solar scope to anyone wanting to get started in hydrogen-alpha observing and imaging. There is only one problem with being able to image interesting targets both day and night...when do I sleep?

Thoughts on the June 10th Solar Eclipse

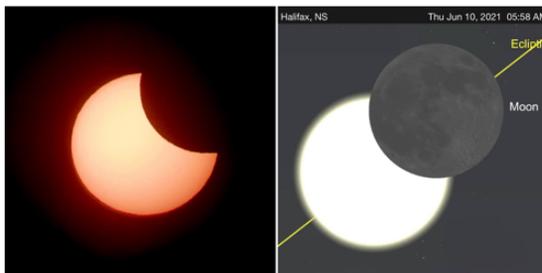
Thoughts and photos by David Chapman

As a veteran of 3 total and 1 annular solar eclipses, I was prepared to be underwhelmed by June 10th's partial eclipse, but I surprised myself with the following observations:

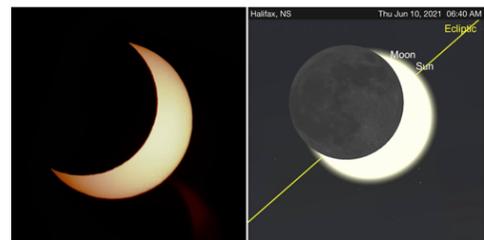
1. I found myself excited to witness a totally predictable celestial event. I still felt a thrill observing the Sun emerge from the horizon cloud layer with a small bite missing.
2. Even though the event lasted 2 hours, the view seemed to change quickly.
3. When you are situated on the central line of a total or annular eclipse, the "bite" of the Moon progresses in a symmetrical fashion, with orientation of the "horns" fixed. When you are off that line significantly, the horns steadily rotate, adding a lot of drama to the view.
4. I could tell right away that the Moon's disk was smaller than that of the Sun, by comparing the curvature of the limbs. It was unmistakable. The last Full Moon was the largest of 2021, and this New Moon was at a distant apogee. I have not yet compared it with other annular eclipses.
5. At peak eclipse here, with 70% of the Sun's disk covered, the lighting was a bit spooky. The Sun was glaring in a clear blue sky, but the light was clearly diminished.
6. There was no time you could even glance at the Sun to notice the eclipse. Almost everyone was going about their day none the wiser. I imagine that unanticipated partial eclipses over history went unobserved.
7. I received a small number of solar eclipse viewers only days before the event. I was able to distribute those to a handful of individuals and families who contacted me looking for them. I enjoyed making those personal connections, most involving young people, and all of them reported back with appreciation. That feels good.



Halifax 5:58 a.m. ADT. Woo hoo! One thing I can see already is that the Moon's disk is smaller than the Sun's.



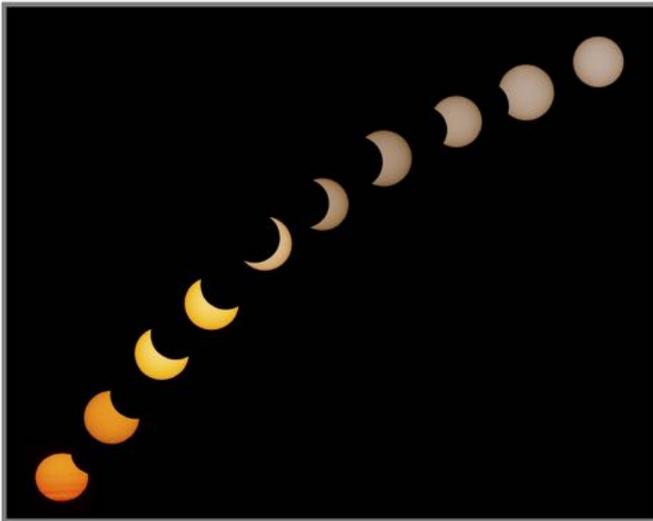
Three minutes past maximum eclipse in Halifax at 6:40 a.m. ADT! Even though the eclipse takes 2 hours from start to finish, it's interesting how quickly the "crescent Sun" changes in orientation and thickness as you watch. [#RASCmoonatnoon](#)



In summary, I found a lot to think about during and after this partial eclipse.

Special Feature:

Members Celebrate the June 10, 2021 Annular Solar Eclipse



PARTIAL SOLAR ECLIPSE
HALIFAX, NOVA SCOTIA - JUNE 10, 2021

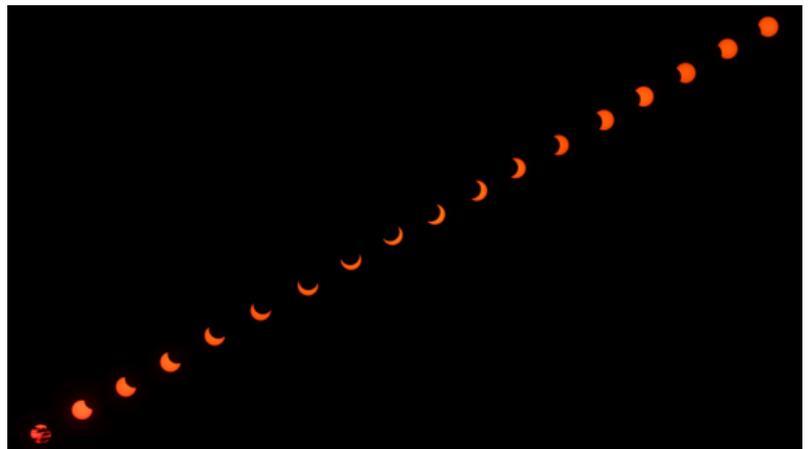
Composite by Jason Dain showing the full eclipse from the sun clearing the horizon at 5:42AM until the end of the eclipse at approximately 7:20AM. He took photos about every minute during the event and compiled this image to show the different phases.



John Read at Citadel Hill sharing live views of the eclipse via his @learntostargaze YouTube channel as the lens flare projects the eclipse on his arm. Photo used with permission by Blair Sanderson (@blairhfx on Twitter)



Partial solar eclipse at maximum from Halifax "The Devil's Horns" by David Hoskin



Partial solar eclipse from start to finish. The Sun was just emerging from a cloud bank at the start. Composite by David Hoskin



(Left) Field sketch by Melody Hamilton, about every 15 minutes. She used a toonie and a quarter in an effort to maintain some form of continuity in the size of the sun while the eclipse evolved. (Right) Post-field “processing”



Sun rising with eclipse under way.
Photo by Kathy Walker



Hand-held shot through glass of near maximum eclipse. Photo by Kathy Walker



Eclipse at 6:46am taken with Solar eclipse viewer (received from Dunlap Institute at University of Toronto) over iPhone 8. Photo by Jaime Whynot



Annular Solar Eclipse
Avon-by-the-Sea, NJ
June 10, 2021
Taken in Avon-By-The-Sea, NJ - Bottom rows extracted from Facebook Live video.
Photos by Lisa Ann Fanning

Solar Eclipse from Kejimikujik National Park & National Historic Site

Photo Essay by Judy and Jerry Black

After camping overnight at site #1 in the backcountry of Kejimikujik National Park & National Historic Site, Judy and I paddled across Big Dam Lake to have a view of the sunrise.



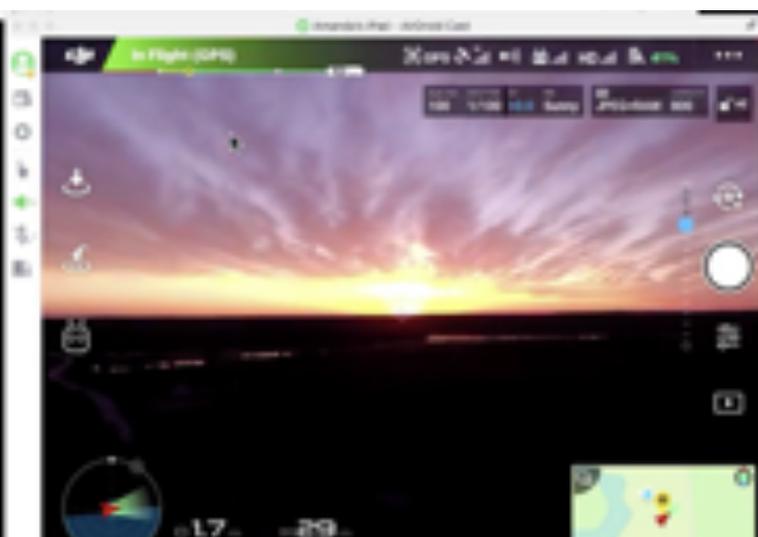
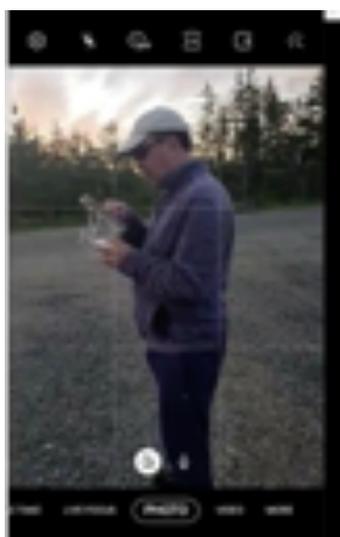
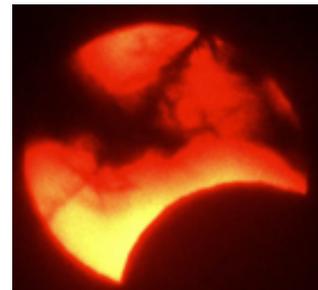
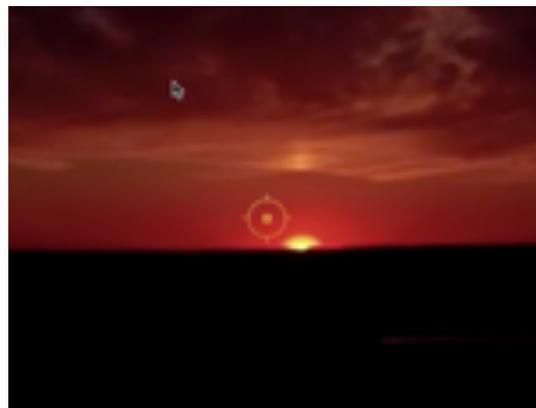
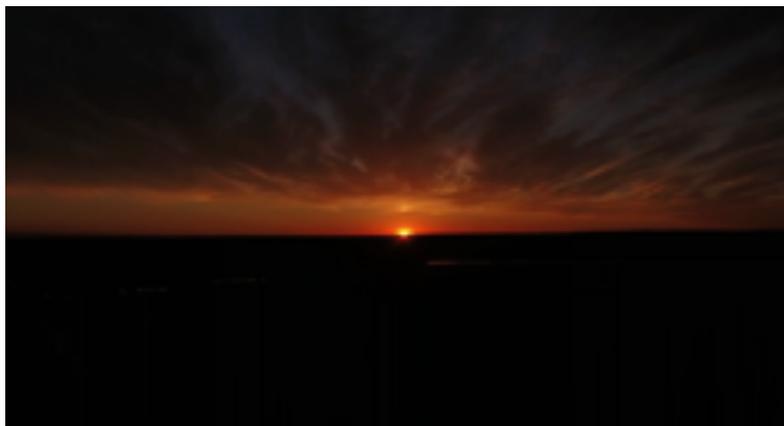
That evening we paddled to the middle of the lake to get a better view of the dark sky. (We left a light on, onshore to find our way back.)



Solar Eclipse from Deep Sky Eye Observatory - Quinan, NS

Photo Essay by Tim Doucette

“A beautiful morning for an eclipse.”



The Moon



"Earthshine" 14 May 2021
By David Hoskin



First quarter moon - April 20, 2021
Skywatcher Classic 200p 8 inch dob telescope;
Skywatcher 25mm Super MA 1.25" eyepiece;
Gosky smartphone adapter; iPhone 8
Photo by Jaime Whynot



Copernicus crater - May 21, 2021
Skywatcher Classic 200p 8 inch dob;
Skywatcher 10mm Super MA 1.25" eyepiece;
Gosky smartphone adapter; iPhone 8
Photo by Jaime Whynot



16% Waxing Crescent moon - May 15, 2021
Skywatcher Classic 200p 8 inch dob telescope;
Skywatcher 25mm Super MA 1.25" eyepiece;
Gosky smartphone adapter; iPhone 8
Photo by Jaime Whynot



Straight Wall (Rupes Recta) - May 21, 2021; Skywatcher Classic 200p 8 inch dob; Skywatcher 10mm Super MA 1.25" eyepiece; Gosky smartphone adapter; iPhone 8
Photo by Jaime Whynot



May 18, 2021 - Lunar X and V
Photo by Lisa Ann Fanning



May 26, 2021 Penumbral Eclipse (Blood Moon) setting in Aberdeen, NJ
Photo by Lisa Ann Fanning

Venus and the Moon



Thin crescent Moon and Venus taken after sunset
12 May 2021 Photo by David Hoskin



“Trees Fully Leafed Time” began this year on the evening of Friday, June 11, when Venus joined the slender crescent Moon in the twilight just before it set. The Full Moon will take place on June 24, three days after Summer Solstice.
[photo © 2021 David M.F, Chapman]

Members' Universe

FOOD for the SOUL

Our World Above

By *Paul Heath*

We watched, from within sheltering leaves,
We watched the open grasslands wide,
We watched sands, with rushing waves upon.

We watched,
Our bodies needs to meet.

We watched, the fur and feather and fin,
We watched until we learned, to gather in,
And by the fires warming glow, we told the tales
Of fur and feather and fin, why and how we gathered in.

We watched the last logs, spark strewn fall,
And followed the motes with lifted eyes, into the darkening skies.
We watch the glittering darkness, till dawns brightening light.

We watched,
Our Souls needs to meet.

Ages passed, around countless, warming fires glow,
The tales, of fur and feather and fin, were told, and retold.
Until, watchers of the starry heavens found,
Glittering images, of fur and feather and fin
Did abound, the shimmering darkness, within.

We watched both Earth and Sky,
To fill our Bodies, to fill our Souls,
Our Tales, still sparkle high, above our warming fires glow.



Elephant Trunk Nebula (IC 1396)
in Hydrogen Alpha
(monochrome)
Photo by David Hoskin

Namesake Eye

By *Paul Heath*

Long nights in patience sat
His eye held to the glass,
Until faint wisps of light revealed
That they,
Beyond our whirling home of Stars did dwell.

With joyous hubris we launched
Above the skies, His Namesake Eye.
Yet through joyous tears, our vision blurred,
Until a cry arose, to 'Mend His Eye'.

In glories hope we rose into the sky,
Mended and improved our EYE.
Images beyond our wildest dreams
Poured upon the pages, of our coloured magazines,
The glory of a Universe now seen.

Then, in the silence of an endless stare
We reached within a darkened mote.
Gathering on a thousand, flickering nights,
A billion, billion Sols
We collected from the darkest night.

Our world was shrunken, beyond our Dreams
As the Universe hurled out, beyond Light's speeding need,
Back to a time, when Man had never been
And whirling Stars were newly seen.

His Namesake Eye, the Universe unravelled,
Wonders filled our eyes
From out the Deepest, darkest night.
Yet a cry, 'MORE' was overheard.
So for a hundred, thousand flickering nights,
A million, billion, billion Sols
We collected from the deepest, darkest Night.

A legacy of knowledge we have found,
Out now, from this tiny grain of sand
The Universe has stretched unbound.
For we have in wonder peeked,
Through his Namesake Eye.



Abell-31 (a.k.a. Sh2-290), a very large planetary nebula in the constellation Cancer. It is about half the width of the full Moon, one of the largest in the sky, but it is described as “not very bright” (Wikipedia). I don’t know about its intellectual abilities, but photographically, that is quite an understatement! It is astoundingly dim. It is located about 2000 light-years away from us.

This image consists of 26 frames with an Oiii filter, at 15 minutes each (6h30m), and 28 frames with an Ha filter at 10 minutes each (4h40m), for a total of 11h10m exposure time. Even so, I am planning to acquire more data next year for a cleaner image. The data for this image was acquired from March to May of 2021. It is processed using the HOO palette, which gives approximately true colours.



M101: a redo of the processing of used on data captured in 2014 at SCO, the dark sky observatory of the Halifax Centre of the RASC. Photo by Blair MacDonald



Urban **M108**: Blair MacDonald writes “This image was a bit of a new camera test taken to see how my new Zwo camera works under urban conditions. I’ve used the camera here in the city with an Optolong L-eNhanse filter, but I wanted to see if the combination of extremely low noise and reasonably good full well depth would allow unfiltered imaging of galaxies.”

Do you have something you would like to share in an upcoming edition of *Nova Notes*?

Send your photos, poems, articles and other works to

novanoteseditor@halifax.rasc.ca

SOLSTICE

By Paul Heath

The narrow road wound tightly up the high hill, its edges contained by the dark greens of full leafed trees. Dawn had just silenced the bright, beaming street lights. From the hill top, the road swept in long slow curves to the lake shore. Shadows of tree boughs had begun to appear faintly, on the road bed, as the sun reached the horizon.

A walking trail, rose and fell alongside the empty road, its tight packed gravel, a narrow band of gray, within the deep greens and browns of the brightening forest.

Coming out of the last, sharp bend, the road straightened before us as it passed along the lake shore. The leaf enshrouded trees had spread their leaves wide, to catch the promised light of day. Many leaves uncurling from the comforting hug, of the cool nights passing.

As the placid lake came into view, its stillness held our gaze. A calm anticipation seemed to fill the air about us. The expanse of grey-blue waters, showed not a ripple. No wind, no gentle zephyrs touch, marred the flat, glass like surface of the lake. The rich and verdant greens of the far shore, reflected perfectly upon the unwavering stillness of the lakes waters. White birches stood upturned upon the lakes surface, so clear, that one felt you could reach out from the near shore and grasp their papery bark in your hand.

The rising light lent starkness and detail to the distant shore, sharpening the upturned reflections upon the mirrored tarn. An osprey swept across the lake to our left, until suddenly, he appeared above the tree tops. One could not tell if he chased his image across the placid waters, or if his reflection raced after him across the waters deep stillness. As quickly as they appeared, both fled towards the sunrise and out of view.

There was not even a gentle wisp of air to draw motion from the leaves, that so thickly shrouded the trees standing so calmly along the near shore. Each upturned reflection laid its vibrant hues, sharply and clear upon the grey-blue glass. Our gaze slowly moved down the motionless lake. Turning slightly, we saw the faint shadows from the unmoving trees across the roadway, sharpen. A shiver went down our backs. It seemed the trees' shadows were pointing. Turning, from our so brief glance, back to the lake, we met the gaze of two loons. They rested in the near distance, their gaze directed at us. Again, the shiver went down our backs. No ripple marred the placid, glasslike surface of the lake. Behind them, the tree tops on the far shore brightened, the upper boughs reflections flared brighter upon the mirrored surface of the lake.

Pulling our focus in again, it was as if the loons had been pulled from the depths, by the rising sun. Its light brightened behind us and on the tree tops of the far shore. The near shore waters darkened, as if to blend its blue-grey colours to those of the loons. No ripple marked their arrival on the mirrored glass of the lakes surface. Time was held for a dozen heart beats, then a dozen more. Then as if to pronounce an ending, or perhaps a beginning, the loons, together dropped beneath the placid, unmoving surface of the lake. With no rippled trace, they were gone.

With them they had taken the motionless silence of the dawn. A rustling of leaves surrounded us as a gentle gust of wind blew our hair to slight disarray. A winding tongue of ripples, twisted out across the grey-blue waters of the lake. Shadows sharpened about us as the sun broke the tree tops behind. Birds greeted the new day with a rushed cacophony of musical notes, as if they had been suddenly released from caged silence.

Looking to the far shore, the upturned reflections now wavered and lost their sharply defined form. The lake showed gentle undulations and rippled rings of fish feeding, dotted the surface of the newly freed lake waters.

Into the brightening day, the new season had arrived.

The Bookshelf:

RASC Halifax Member, John A. Read Pens New Book About ISS

RASC Halifax Member and 2020 RASC Simon Newcomb Award recipient for Excellence in Science Communication, John A. Read has published his 7th book in his “50 Things” Space Series (additionally, many titles are available in multiple languages.) The latest title, “50 Things To Know About the International Space Station” is available now in bookstores and online booksellers, including Amazon.

From the publisher, Formac: “This book tells young readers everything they want to know about life in space. With a focus on international collaboration, it details how men and women in space celebrate the holidays, watch the latest movies, go to sleep, call home, eat and drink, use the toilet and so much more. Featured astronauts include Canadians Chris Hadfield and Julie Payette — the only Canadian woman to visit the ISS.

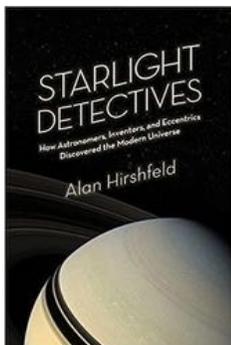
Each page of this book is heavily illustrated with photos showing the space station and the astronauts in action. Short texts and cutlines engage readers and make this book fun to browse.

Author John Read has extensive experience as a space educator and as a bestselling author of books for young people on astronomy. In this book he provides an up-to-date account of the most exciting ongoing example of space exploration today.”



Book Review: *Starlight Detectives*

Alan Hirshfeld Bellevue Literary Press 2014



Review by Tony McGrath

For those who enjoy reading and exploring some of the “back stories” of astronomy, *Starlight Detectives* will certainly fill the bill. Targeted at the general reader, the book covers the period between 1840 and 1940. It tells the story of astronomers, inventors and eccentrics who helped discover the modern universe, and provides an overview of the science involved.

With William Parsons and Edwin Hubble acting as bookends for the journey, Hirshfeld very effectively takes the reader on a passage through time exploring how astronomy evolved from the classical positional astronomy of the Victorian era to the modern science of astrophysics. This is the story of how the human eye was replaced by the camera, and how the spectroscope coupled with photography redefined the science of astronomy. It also chronicles a period in the history of astronomy where amateurs were able to make significant contributions to science and were considered part of the mainstream professional establishment.

In the first half of the nineteenth century, the work of astronomical observatories, almost all of which were in Europe, was focused on extending our knowledge of stellar position and the mechanics of our solar system. This was a time when observers spent their time at the eyepiece. If you wanted to record what was observed, then sketches and words were the tools available.

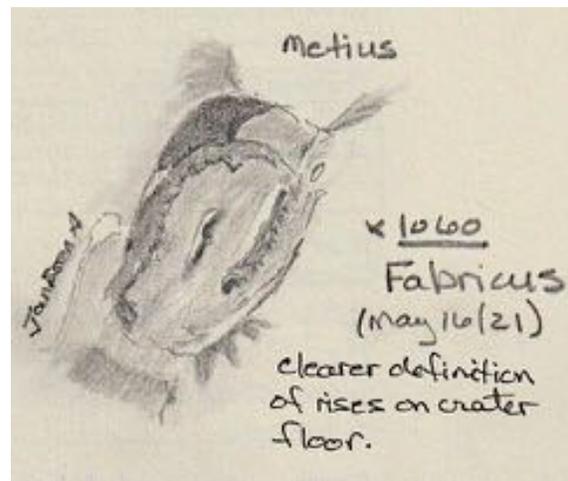
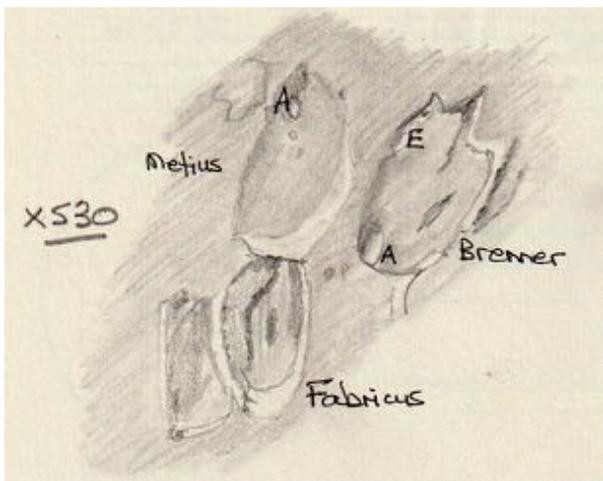
This was also an era where amateur astronomers could stand on equal footing with the professionals. Wealthy gentlemen-scientists such as Henry Draper, Andrew Common, William Huggins and many others worked on the leading edge and were considered equals with the academics of the day. Indeed, many of the breakthroughs that changed astronomy into the more all-encompassing astrophysics were accomplished by these amateurs.

The focus of the story is not only on the evolution of astronomy, but also how technological developments in other fields found application in astronomical work. Some of the interesting aspects of the story describe how these developments were received by the scientific establishment of the day. It is clear that photography and spectroscopy would not have reached their heights as quickly as they did had not the path been blazed by a cadre of volunteer scientists, inventors and amateurs. It is also clear that in a strange twist of fate, the changes brought to astronomy by these gentlemen scientists would in the end create a circumstance where the relationship between the amateur and the professional astronomer would change forever.

Hirshfeld is a Professor of Physics at the University of Massachusetts and an Associate of the Harvard College Observatory. He is to be complimented for his thoroughness. While I was aware of the work of both Henry Draper and William Huggins, I had no idea how closely these gentlemen were connected nor the dispute that developed following Drapers visit to Huggins observatory. The facts of this story are recounted, without bias, and both points of view are represented. It is left to the reader to form an opinion based on the information presented.

Overall, I found the book to be a nice balance of history, science, and storytelling.

Sketchpad: *Metius & Fabricus*



President Judy Black writes:

"What a Difference a Day (& Magnification) Makes!

IWLOP Objective 20: Metius & Fabricus was observed on May 15 using my 10" Meade SCT with a 4.7 mm eyepiece (x530 mag) of the sketched targets. The Rukl chart #68 showed Fabricus with 2 central ridges that I didn't see. Thankfully, the night of May 16 was clear so took another look, this time with the x2 Barlow attached (x1060). Much clearer view of the floor and its peaks."

(SCO) during COVID-19

(Phases 2 and 3 reopening)

Effective Date: June 16, 2021

Given the current status of COVID-19 and the provincial requirements for physical distancing, requirements have been developed for the safe use of our dark-sky observatory by all members wishing to enjoy the night skies.

These precautions are in place to protect both you and those with you at the facility. They will change as the provincial restrictions change.

Required:

1. No more than 25 people may be on site at SCO at any one time without social distancing; however, masks are recommended.
2. Members must announce their intention to go to SCO through the RASC Halifax Centre Discussion List.
 - Include the date of the evening you are planning to attend in the subject line. For example, **Going to SCO, June 20 @ 8 PM**
 - In your email, include the number of other people also going out with you.
 - Check the list to determine how many have said they were going to SCO that evening.
 - If 25 people have already expressed their intention to go (it could happen!), do not go.
3. The Warm Room and Roll-off Observatory may be used.
 - No more than 3 people in the Warm Room at any one time, with masks.
 - No more than 4 people in the Roll-off Observatory at any one time, with masks.
 - If lens fogging is a problem, masks may be temporarily removed from the nose for the duration of the task, provided no one is within 2 metres.
 - The 2 metre physical distancing requirement should be followed as much as possible.
 - The Thurlow Binoculars with parallelogram mount and all SCO eye pieces cannot be used due to challenges of on-site sanitization.
 - The 16" Dobsonian may be used provided you bring your own eyepieces. Treat the 16" Dobsonian as all other contact surfaces and clean prior to use and after use.
4. Members must bring their own sanitizing equipment to clean all common surfaces they touch with their hands, such as doorknobs, keypads and locks, tables and counters, chair backs, light switches, toilet paper container, toilet seat and toilet crank. Hand sanitizers must contain at least 60% alcohol to be effective.
5. Clean and disinfect common high-touch surfaces after use with the bleach solution or disinfectant wipes.
6. Practice good hand hygiene, cough etiquette and staying home if you are sick. If you feel unwell after visiting SCO, go to 811.novascotia.ca and use the self-assessment questionnaire to find out if you need to call 811. Also notify them of others who were at the site who may have become exposed.
7. **Garbage in, garbage out!** Please provide your own garbage bag for used cloths and paper towels, used disinfectant materials, facial tissues, food wrappers, napkins, disposable beverage containers, etc.

Recommended:

1. Avoid touching your face. To protect yourself and others, masks should be worn when using the site, especially when in any of the three buildings or there is a required need to come less than 2 metres from someone not in your “family bubble”.
2. Plan ahead! Prepare a SCO sanitization kit with all necessary items ahead of time and have it packed ready to go along with your observing gear, to ensure nobody arrives at SCO having forgotten to bring these required items. Your kit should include surface sanitizer, hand sanitizer, face mask, gloves and paper towels. Bleach disinfecting solutions should be made same day as your visit to SCO.
3. Become a member of the RASC Halifax Centre Discussion List if you are not already. If you require assistance to become a member of the List, contact president@halifax.rasc.ca.
4. The following articles may be of benefit to read regarding disinfecting spaces and camera equipment:
 - a. Source: <https://www.canr.msu.edu/news/covid-19-disinfecting-with-bleach> : The CDC and WHO recommend a solution containing 2% - 10% sodium hypochlorite active ingredient in household bleach (recipes for various percentages of sodium hypochlorite below). **Leave on the surface for at least 5 minutes before wiping off the excess.** You will need gloves and paper towels. **Remember:** Discard the solution by adding more water and pouring it down a sink drain after **24 hours** as it can lose its potency quickly.

Liquid Bleach Type	Amount of Bleach	Amount of Cool Tap Water
2% Sodium Hypochlorite Active Ingredient	15 mL	240 mL
3% Sodium Hypochlorite Active Ingredient	10 mL	240 mL
4% Sodium Hypochlorite Active Ingredient	7.5 mL	240 mL
5% Sodium Hypochlorite Active Ingredient	6 mL	240 mL
6-7% Sodium Hypochlorite Active Ingredient	5 mL	240 mL
8-10% Sodium Hypochlorite Active Ingredient	4.5 mL	240 mL

- b. Source: <https://wordpress.lensrentals.com/blog/2020/03/how-to-disinfect-camera-equipment-and-spaces/>

Nova Scotia – COVID-19 Directives and Information: <https://novascotia.ca/coronavirus/>

Includes information such as:

- a. When to Seek Help
- b. News Releases
- c. Alerts and Notices
- d. Support
- e. Staying Healthy / Mental Health and Wellbeing
- f. Outdoor Activities

Workplace COVID-19 Prevention Plan – <https://novascotia.ca/coronavirus/docs/COVID-19-prevention-plan-checklist.pdf>

Government of Canada – COVID-19 Information:

- a. Hard-surface disinfectants & hand sanitizers (COVID-19): List of disinfectants with evidence for use against COVID-19 – <https://www.canada.ca/en/health-canada/services/drugs-health-products/disinfectants/covid-19/list.html>

News from the Governance Review Committee

Thanks to the Governance Review Committee, there has been some activity regarding the RASC Halifax Centre policies. Two policies received approval by the Board of Directors on June 1, 2021.

Revised: G6: Procedures Regarding Nominations, Elections & Appointments

Bylaw #1 does provide guidance regarding some of the timelines, such as call for nominations, notice of elections, and voting as they relate to elected Board members, but none is provided for appointed positions. However, the procedures for nominations, elections and appointments with the recommended timelines will provide guidance to the Board of Directors and to the Nominating Committee. This version clarifies the procedures leading to the election of the 10 members on the Board of Directors and of the appointment procedure by the Board for positions such as Observing Chair, Outreach Chair, SCO Manager, etc.

NEW: G11: Policies Regarding RASC Halifax Centre Membership and Conflict Resolution

The need for this policy was instigated by a request from the national RASC that while RASC has such a policy so should each Centre. It can be expected that, from time to time, disputes, conflicts and complaints will arise. When the participants in the conflict are unable to resolve the issue quickly and satisfactorily themselves, the policy exists to guide the RASC Halifax Centre Board of Directors towards resolution of the conflict where that is possible. If a conflict cannot be resolved at the RASC Halifax Centre level, the complaint and all support documentation will be forwarded to the Society Board of Directors who will appoint a Mediator and address the issue under *Policy G23: Conflict and Complaint Resolution*. The decision and recommendations made by the Society will be final.

All eleven of the Centre's policies can be found on our Centre website (www.halifax.rasc.ca) in the menu item "About Us," as can other aspects of our governance. Members' input regarding any of the Centre's policies are welcomed.

May Members Meeting

May 1, 2021 (34 attendees)

To watch a replay of the meeting, please visit <https://www.youtube.com/watch?v=BA-Vj2V9y1g> on the RASC Halifax YouTube Channel.

President's Remarks

RASC Halifax President Judy Black welcomed everyone to the monthly meeting, explained the benefits of membership and reviewed the agenda.

"RASC as well as RASC Halifax Centre believes in and practises inclusivity and diversity. All are welcomed regardless of age, disability, gender, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, ethnic origin, colour, nationality, national origin, religion or beliefs or sex and sexual orientation. And we are opposed to all forms of unlawful, unfair discrimination."

"We would also like to acknowledge our indigenous lands. RASC, Halifax Centre would like to begin by acknowledging that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People. This territory is covered by the "Treaties of Peace and Friendship," which Mi'kmaq and Wolastoqiyik (Maliseet) Peoples first signed with the British Crown in 1725. The treaties did not deal with surrender of lands and resources but in fact recognized Mi'kmaq and Wolastoqiyik (Maliseet) title and established the rules for what was to be an ongoing relationship between nations."

Photo Montage (Paul Gray)

Paul Gray presented members' astrophotos and sketches from the past month. He highlighted some wonderful contributions by Jerry Black, Judy Black, Michael Gatto, Paul Gray, David Hoskin, Fabian Pittman, Charles White. Members can send their images to the email chat list or directly to his email.

Light Pollution (Paul Gray)

Paul Gray also discussed how to mitigate light pollution, and shared some recent changes he implemented to cut down on light pollution.

Special Presentations

Chris Gainor (RASC Victoria Centre) with Special Guests, two amateurs who used HST, George Lewycky & Jim Secosky - Amateur Use of the Hubble Space Telescope (HST)

Chris Gainor is the author of six books about space exploration and aeronautics, including his latest book Not Yet Imagined: A Study of Hubble Space Telescope Operations, which has just been published by NASA and is available for download from NASA. Chris is also Editor of Quest: The History of Spaceflight Quarterly, and Past President of the Royal Astronomical Society of Canada.

For a few years early in the lifetime of the Hubble Space Telescope, time on HST was made available to amateur astronomers. This talk featured the story of the amateurs who got to use the world's top space telescope, and discussed some of the opportunities still available for amateurs to use HST data. Two amateur astronomers who have used the HST described their experiences with the HST.

Tony Schellinck (RASC Halifax Centre) - Basics of Lunar Sketching

Creating satisfactory sketches of features on the Moon is possible for even the least talented among us. The tools are easily available, minimal skills are required; a little practice helps. And as your skills develop you can easily go back and improve earlier sketches. For those hesitating to create sketches, Tony Schellinck illustrated how to create sketches that will meet the objectives/aims of sketching.

Tony Schellinck is an avid observer and astroimager. He has earned the RASC Explore the Universe, Messier Catalogue, NGC Finest and Explore the Moon (Telescope) certificates and through this experience he has learned the value of sketching as an aid to observing. He is no artist but has found that acceptable sketches are possible if you use a few simple tricks. Tony also teaches observing and astronomy related courses for the Seniors' College Association of Nova Scotia (SCANS) and gives presentations to audiences at venues throughout Nova Scotia.

Food for the Soul (Paul Heath)

Paul Heath recited the most recent poem in his monthly Food for the Soul presentation called *Namesake Eye*. (Refer to Members' Universe - page 16)

New Members' Question Period

President Judy Black presented a brand new segment that encourages members to submit questions.

No questions were submitted for this meeting in advance. A question was asked in the chat of Judy about how she is enjoying the NexYZ mount for her telescope. See YouTube video for response. All are invited to submit questions for future meetings by emailing president@halifax.rasc.ca.

What's Up in the Sky? with Dave Chapman

Dave Chapman provided his monthly rundown of what's up in the night sky. For May 2021, he highlighted objects included in the *Explore the Universe* observing program. His presentation can be viewed in the meeting video or accessed directly on the RASC Halifax Centre website.

News from the Board

Effective April 27, 2021, SCO has been closed in accordance with COVID guidelines until further notice. (Note update in June Minutes.)

Halifax Centre Stars:

- Jason Dain was featured on AstroBackyard's website as "Backyard of the Week" for April 26, 2021. www.astrobackyard.com/backyard-of-the-week.

The new edition of *Nova Notes* has been posted - If you have submissions for the next edition, please send them to novanoteseditor@halifax.rasc.ca.

Become a member of RASC Halifax Centre! Visit the RASC website for more information. There is an emergency fund allocated for dues for those who need financial assistance. Contact Adela Zyfi at mempub@rasc.ca for more information.

Upcoming meetings - June 5 - see Meeting Dates for 2021 on page 3 for more detail.

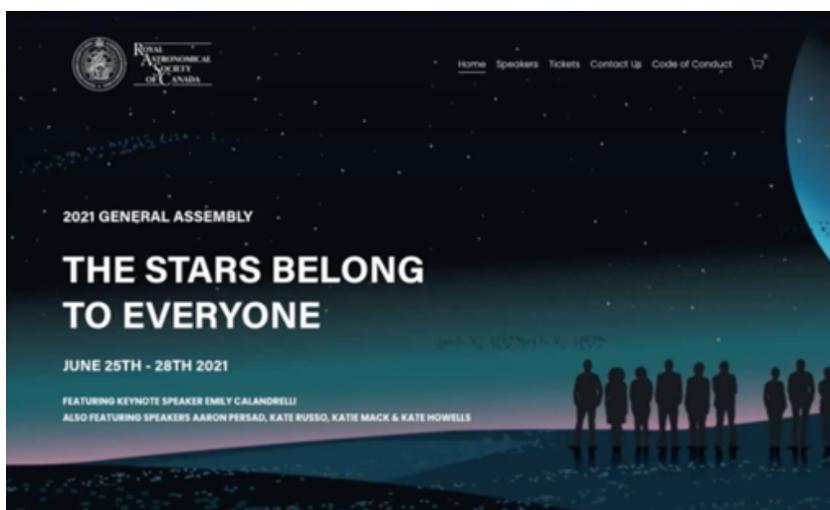
2021 Nova East Star Party has been cancelled as an on-site event.

May 15 is International Astronomy Day. While Halifax Centre is not organizing any formal events, links to online programs will be posted.

Moon At Noon - Every Thursday at 1pm AT until June 17.

Insider's Guide to the Galaxy with Host Chris Vaughn and Jenna Hinds Every other Tuesday at 3:30 PM ET

RASC General Assembly (GA) will be held virtually June 25-28, 2021 Visit rasc2021ga.ca to purchase tickets, register for the AGM and for more information.



June Members Meeting

June 5, 2021 (37 attendees)

To watch a replay of the meeting, please visit <https://www.youtube.com/watch?v=Sg3vMFszth8> on the RASC Halifax YouTube Channel.

President's Remarks

RASC Halifax President Judy Black welcomed everyone to the monthly meeting, she explained the benefits of membership and reviewed the agenda.

"RASC as well as RASC Halifax Centre believes in and practises inclusivity and diversity. All are welcomed regardless of age, disability, gender, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, ethnic origin, colour, nationality, national origin, religion or beliefs or sex and sexual orientation. And we are opposed to all forms of unlawful, unfair discrimination."

"We would also like to acknowledge our indigenous lands. RASC, Halifax Centre would like to begin by acknowledging that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People. This territory is covered by the "Treaties of Peace and Friendship," which Mi'kmaq and Wolastoqiyik (Maliseet) Peoples first

signed with the British Crown in 1725. The treaties did not deal with surrender of lands and resources but in fact recognized Mi'kmaq and Wolastoqiyik (Maliseet) title and established the rules for what was to be an ongoing relationship between nations.”

Photo Montage (Paul Gray)

Paul Gray presented members’ astrophotos, videos and sketches taken over the month. He highlighted some wonderful contributions by Jerry Black, David Chapman, Jeff Donaldson, Lisa Ann Fanning, Michael Gatto, Paul Gray, David Hoskin, Karl Hudson. Members can send their images to the email chat list or directly to his email.

Special Presentations

Leslie Sage (Astronomy Editor for Nature magazine) - My Life with Nature

In mid-July 1993, Lesley Sage flew to London to start his new job as the astronomy editor of Nature. He spent almost six months in London, then relocated to the Washington DC office, where he has been for the past 27 years. He is also a senior visiting research scientist in the department of astronomy at the University of Maryland. He talked about some of the highlights of his time at Nature, which include handling papers that won Nobel Prizes in 2019 and 2020.

Chris Young (RASC Halifax Centre) - Astronomy Lore

Chris is well known in Halifax circles for his knowledge of astronomy lore from numerous cultures. This presentation was his first in a series.

Food for the Soul (Paul Heath)

Paul Heath recited the most recent poem in his monthly Food for the Soul presentation called *Our World Above*. (Refer to Members’ Universe - page 16.)

Members’ Question Period

President Judy Black hosts a segment that encourages members to submit questions. This meeting, one question was submitted asking about how to participate in robotic telescope viewing. Dave Lane responded and noted that he has given a presentation on the subject which can be viewed by searching YouTube. You can also visit observatory.smu.ca and select the “robotic telescope” menu option.

To see Dave’s response, please visit the June 2021 Meeting YouTube video. All are invited to submit questions for future meetings by emailing president@halifax.rasc.ca.

What’s Up in the Sky? with Dave Chapman

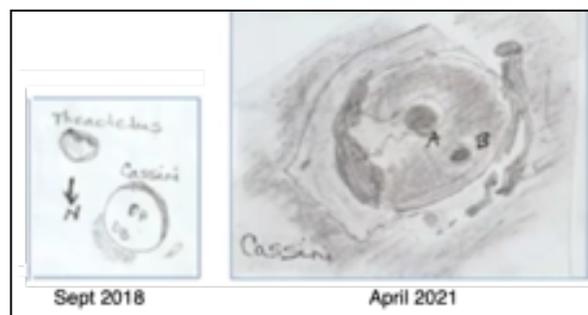
Dave Chapman provided his monthly rundown of what’s up in the night sky. For June, July and August 2021, he highlighted objects included in the *Explore the Universe* observing program. His presentation can be viewed in the meeting video or accessed directly on the RASC Halifax Centre website.

News from the Board

Effective June 1, 2021, SCO is re-opened. Please visit the website for up-to-date COVID guidelines.

Observing Certificates:

- Judy Black earned her Explore The Moon (Telescope Edition) Certificate.



RASC Halifax President, Judy Black shares her lunar sketches to show progression of style over the course of her observing. The 2 sketches were made with 2 different telescopes - 2018 with a 6” Skywatcher Dobsonian, 2021 with a 10” Meade SCT; hence, the mirrored positions of the interior craters A and B.

If you have a submission for the next edition of *Nova Notes*, please send it to novanoteseditor@halifax.rasc.ca.

Governance:

Two new policies were approved by the board recently. Visit the RASC Halifax Website (About Us) for more info.

- Revised G6: Procedures regarding Nominations, Elections & Appointments
- G11: Policies Regarding RASC Halifax Centre Membership and Conflict Resolution

2021 Halifax Centre Survey has been emailed. The survey has 9 multiple choice questions to gauge members' feedback. Responses are confidential. Deadline is June 15, 2021.

Halifax Centre Fee Review has been underway this past year. The membership fee will be increased to stabilize the centre's finances.

★ Revised Fee Structure

Classification of Membership	Fee (before June 4)	Fee (as of June 4)
Centre Family (Primary Member)	\$23.00	\$28.00
+ Regular Family (each additional adult)	\$5.00	\$10.00
+ Youth (each youth)	\$2.50	\$5.00
Centre Regular Membership	\$23.00	\$28.00
Centre Youth Membership	\$13.70	\$18.00

Become a member of RASC Halifax Centre! Visit the RASC website for more information. There is an emergency fund allocated for dues for those who need financial assistance. Contact Adela Zyfi at mempub@rasc.ca for more information.

Upcoming meetings - September 11, October 2, November 6 and December 4 - see Meeting Dates for 2021 on page 3 for more detail.

Note: there are no meetings during the summer, but members will be notified if a "special presentation" is planned.

Nova East is cancelled for 2021, but mark your calendar for 2022! August 26-28, 2022 (New Moon is August 27 @ 5:17 AM)

Insiders Guide with Host Chris Vaughn and Jenna Hinds is on hiatus for the moment, but upcoming sessions include July 20 (Summer Astronomy Catch-up,) August 17 (Gas Giant Special,) September 14 (Space Books,) September 28 (Life Cycle of the Stars.) Visit www.rasc.ca for more information.

RASC General Assembly (GA) will be held virtually June 25-28, 2021 (AGM will be held June 27) For more information, to purchase tickets and register for the AGM, visit www.rasc2021ga.ca.