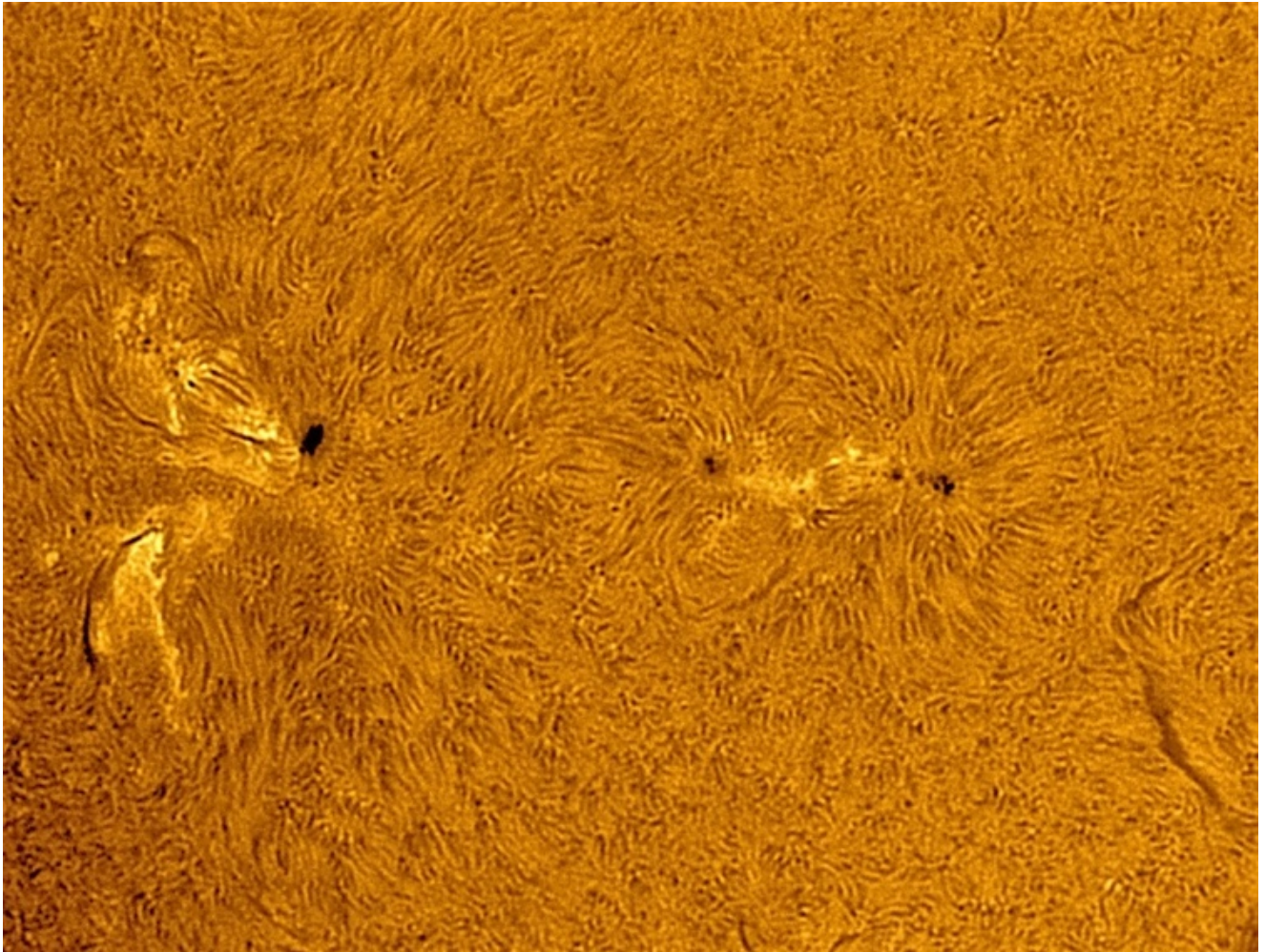


Nova Notes

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

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Main Photo:

Sunspots in hydrogen-alpha 16 June 2023 by **David Hoskin**

Thumbnails (L-r):

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

As I write this, we are on the cusp of yet another summer solstice. The spring wasn't very kind to many of us, as far as observing. Smoke filled the skies across Canada and here in the "Garden State" due to the hundreds of wildfires burning across the continent. On the days that weren't hazy and smoky, the clouds made an appearance. It seemed like anytime an interesting event was going to happen, well... you know the rest.



The smoky skies over New Jersey on June 7th made for an interesting (almost Martian) scene - and also made Sunspots visible without a filter.

The good news is that summer vacations are on the horizon for many of us. Personally, I could use the recharge and am looking forward to my second Nova Scotia trip (and Rob's first) and am thrilled that I will finally meet many of you!

In my three years as a member of the centre, I feel I have gotten to know so many of you, and am so grateful that of all things, a pandemic put me on this path and opened a whole new universe up to me.

With that, I'd like to give a special "shout out" to those who keep the centre running, and bring it a little closer to all of us. All the planning done by the board ensures we have a centre to be proud of, the monthly meeting tech squad has managed to make meetings more accessible for those who can't make it in person (myself included, as I am 1,500 kilometres away) and of course, each member who brings "something to the table" through photos, presentations, writings and participation. It is no coincidence that this year, Halifax Centre has THREE awards being presented to members at the AGM. (You'll have to read on to find out exactly who...).

I also continue to be extremely grateful for co-editor John McPhee and for "Team Nova Notes" who helps make Nova Notes a publication I am very proud of. They say it takes a village and Nova Notes is no exception. From all those who contribute, offer feedback, edit, review and help post and distribute, these editions would be just another file on my hard drive.

May wherever this summer finds you have clear skies and great views! Wishing you safe travels and a happy and healthy summer, and I'll hopefully see you at SCO!

With continued gratitude,

Lisa

Upcoming Meeting Dates

- September 9
- October 14
- November 4
- December 2 (Members Meeting + AGM)

We are now hosting hybrid live/Zoom Members' Meetings. Halifax Centre meetings are usually held on the first Saturday of the month, except for July and August.

Come join us in-person in Room AT101 at Saint Mary's University or by pre-registering for the meeting on Zoom.

The meeting are recorded and become accessible shortly thereafter on our Halifax RASC YouTube channel. For information about the meeting and how to register for the Zoom session, please visit <https://halifax.rasc.ca/index.php/activities/rasc-events>

For past meeting replays, visit our YouTube Channel <https://www.youtube.com/c/raschalifax>



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 out-lets, 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!

Go to our website (<https://halifax.rasc.ca>) for the latest SCO usage guidelines.



St. Croix Observatory drawing by Mary Lou Whitehorne

Halifax RASC Board of Directors, 2023

Elected	
President	John Nangreaves
Vice-President	Patrick Kelly
Secretary	Peter Hurley
Treasurer	Dave Lane
Director	Judy Black
Director	Gregg Dill
Director	Matthew Dyer
Director	David Hoskin
Director	Tony McGrath
Director	Kathy Walker
Appointed	
Honorary President	Mary Lou Whitehorne
Auditor (2022-2023)	Dave Lane
Communications Committee, Chair	Patrick Kelly
Dark-Sky Preserve Committee, Co-Chair	Peter Hurley
Dark-Sky Preserve Committee, Co-Chair	Tony Schellinck
Governance Committee, Chair	Judy Black
Librarian	Jerry Black
National Council Representative	Judy Black
Nominating Committee, Chair	Peter Hurley
Nova Notes, Editor	Lisa Ann Fanning
Nova Notes, Copy Editor	John McPhee
Observing / EPO Chair	David Hoskin
St. Croix Observatory, Manager	John Liddard

Nova East Star Party

SAVE THE DATE FOR 2023!

August 18-20, 2023

(New Moon August 16)



Judy Black honoured with 2023 President's Award

Congratulations to RASC Halifax' Past President Judy Black on being awarded the 2023 President's Award.

On Saturday, May 13, 2023, at the RASC Halifax Centre members' meeting, Charles Ennis, President of the RASC, made the announcement via Zoom of the nomination for the 2023 President's Award. The Board had unanimously agreed to Mr. Ennis' nomination that will be made 'official' at the June 25, 2023, RASC AGM.

Established in 2008, this award is given at the President's discretion to a member who has made an important contribution to the Society. In his presentation to me, Ennis stated: "She has worked tirelessly...to bring the Board and the National Council together to work as a team on collaboration, communication and transparency, and doing an absolutely fabulous job. This is going to ensure the RASC will thrive and prosper going into the next few decades."

Judy Black shared these words on social media, "Since June 2022 when I was elected Chair of the RASC National Council, it has been busy (understatement) and at times stressful with numerous changes and challenges thrown at the Council and the Board. It is a true honour to receive this recognition, and I am humbled to be joining 15 other RASC recipients.

Thank you, Charles, for the nomination. Thank you to the Board of Directors for endorsing the nomination. Thank you to Mary Lou Whitehorne and Dave Lane for being part of the announcement. More than words can express, thanks to Jerry for his support and his ears for listening and at times counselling."



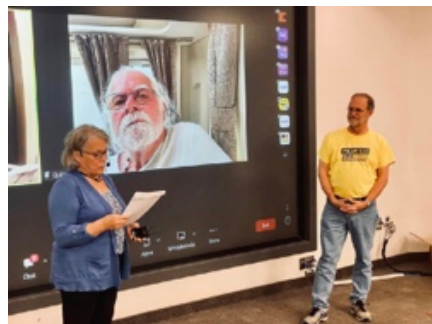
A surprised Judy Black receives news of her nomination for the 2023 President's Award by President of the RASC, Charles Ennis via Zoom during the May, 2023 Members' meeting.

Quinn Smith and Chris Young receive RASC Service Awards

Congratulations to RASC Halifax' own Quinn Smith and Chris Young on being awarded RASC Service Awards.

The RASC Service Award is a major award of the Society given to a member in recognition of outstanding service, rendered over an extended period of time, where such service has had a major impact on the work of the Society and/or of a Centre of the Society. To be eligible for the Award, a recipient must:

- Be a member in good standing.
- Have rendered substantial service of a well-defined nature to the Society and/or a Centre over a period of at least ten years. Such service should have had a major, constructive impact and would involve a very substantial and continued commitment on the part of the nominee.
- Not have received a RASC Service Award before.



Quinn Smith

- Member since 2004 – 19 years of continuous RASC membership
- Editor of Nova Notes for 9 years
- Chair of our Centre's committee for International Year of Astronomy in 2009
- One of the principal volunteers who initiated the designation of Kejimikujik National Park and National Historic Site to become an RASC Dark Sky Preserve (2010).
- He also represented RASC with Parks Canada for 12 years, including biennial lighting audits and initial consultations on a Partnering Agreement.
- Registrar of the Nova East Star Party for 4 years and chaired/co-chaired the NEPC for 2 years
- Volunteer extraordinaire at numerous outreach events
- a passionate amateur astronomer whose hard work has contributed much to the success of the RASC Halifax Centre. As a small tech business owner, he has superb organizational and managerial skills, along with an engaging personality in representational matters with outside organizations such as Parks Canada, local universities, and exhibitions. RASC Halifax Centre owes [him] a great vote of thanks."
- Congratulations to our incomparable Auctioneer – Quinn Smith

Chris Young

- Member since 2001 – 22 years of continuous RASC membership
- Served on Nova East planning committee since 2008, organizing prizes, shopping for and preparing food, setting up and taking down.
- Began his outreach activities at the 2009 International Year of Astronomy with the library talk "Observing the Night Sky for Beginners"
- Volunteer and night sky tour guide at the Kejimikujik Dark-Sky Weekend for past 9 years
- Given a sequence of mini-talks on cultural astronomy at our monthly meetings
- Served as Centre Secretary for 7 years
- Volunteers at numerous outreach events & serves as mentor to many
- Always willing to help when and where he can and always with a sense of fun.
- "One of those stalwart members who do not seek the limelight but is always ready to jump in to lend a hand without being asked. He has a level head and a calming manner, always helpful in problem-solving and providing guidance."

Building Stargaze Nova Scotia

By John Read

My wife, Jennifer, and I host the YouTube Channel LearnToStargaze and have written several stargazing guidebooks. One of the challenges we've had is finding reliable access to dark skies close to the city, where we can test new telescopes for our videos and conduct research for our books. We've also dreamt of having a place to host stargazing events for the public.

With these goals in mind, we purchased 26 acres of land on Prospect Road, about 10 minutes from Peggys Cove. We're going to call this place Stargaze Nova Scotia.

Why this location? It's close, dark, and accessible to everyone. We bought the land back in February. In May, we constructed the driveway, a parking lot, and an observing site on top of the hill. We've already filmed several videos on the site, and the quality of our productions has drastically improved. Make sure to subscribe to LearnToStargaze on YouTube to see our progress.



Sunset at Stargaze Nova Scotia



Venus and Jupiter from Stargaze Nova Scotia



Stargazing Plateau

We have a lot of plans for the property, and we'll implement them as funding becomes available. The first thing we'll need to add is a restroom, which will probably be a porta-potty at first. Then, we'll get a storage container to store telescopes on-site and construction gear. Next year, we hope to build a roll-off roof observatory, an observation deck, and a gazebo for watching the sunset (the property offers truly amazing sunsets).

Other plans include a Stargazing Lodge for meetings, conferences, and talks. This facility could be rented out as a venue for other events, such as weddings. Eventually, we'd like to construct 10 year-round stargazing cabins along the lake, with docks in the front for canoeing and patios in the back for stargazing.

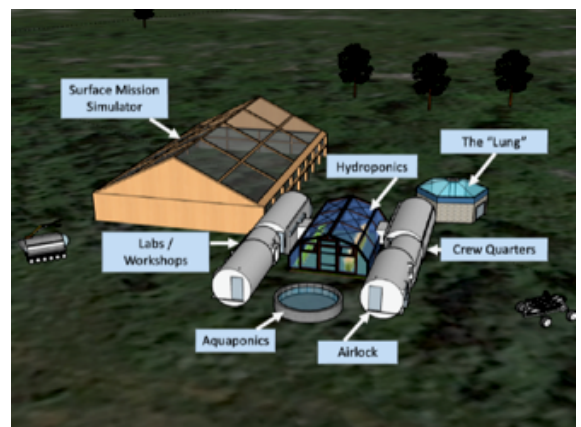


Stargaze Nova Scotia (all plans open to revision).

One idea that I'm particularly excited about is the creation of a Space Research Center where universities and companies can test space-related experiments, such as rovers, drones, hydroponics, and virtual reality. Currently, this work is done at Canada's Flashline Arctic Research Station on Devon Island in Nunavut. However, this location is extremely remote, which poses logistical challenges for researchers. Our site in Nova Scotia would host research labs specializing in what Atlantic Canada does best, including aquaculture, hydroponics, robotics, and communication systems.



Future site map (existing roads only)



Space Research Nova Scotia:

How can RASC members get involved? Follow Stargaze Nova Scotia on Facebook for updates, events, and observing nights. While you're there, be sure to take photos and share them with your friends, and spread the word about the location. If you'd like to support us financially, consider joining our Patreon at <https://www.patreon.com/join/LearnToStargaze> or reach out to us on our website, LearnToStargaze.com.

Soviet-Russian Amateur Astronomy

Meet Ivan

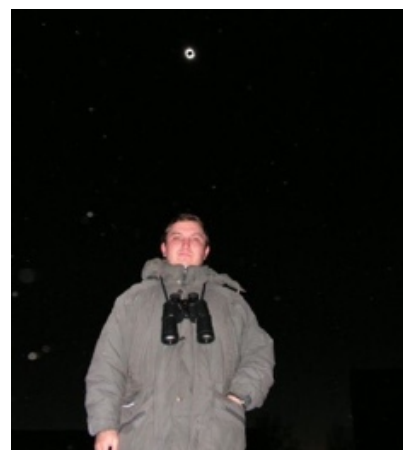
By Michael Boschat

Astronomy in now Russia is still active, my one contact I still have contact with for past 30+ years is Ivan, who lives in city of Krasnodor - south area of Russia and not far from the 236" reflector telescope of the Special Astronomical Observatory.

He and his astronomy friends have their astronomy club there and do go on expeditions when weather permits to dark observing sites outside Krasnodor. On their trips they have a few telescopes and binoculars from a 20cm Schmidt-Cassegrain to 15cm binoculars.

Also, there are 2 amateurs from Kiev, Ukraine that travel to Krasnodor and help out.

But recently to travel to their observing sites they have to pass through four military police checkpoints. On one trip, they were stuck at one checkpoint because of the telescope tube to which the military police did not know it was a telescope. But Ivan and his friends set it up and showed them the Moon which was at 1 quarter and luckily had a clear sky. The officers were all amazed and let them pass plus called ahead to the other 3 checkpoints informing them if four people with tubes; come let them pass they are astronomers.



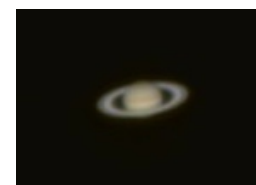
Ivan in 2006 eclipse



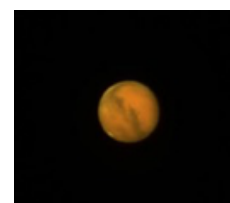
Ivan and amateurs setting up



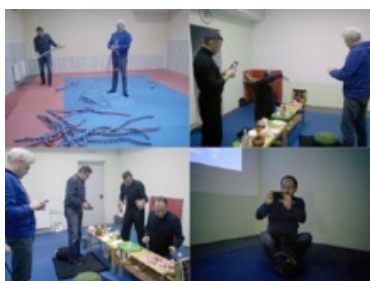
Astrofest 2006



Saturn



Mars



Setting up for an open house



Small Snack

During their observing, they look at objects like we look at here. We have our BBQ in September but they have a lot of food and drink when they take a break and BBQ at 2-3 am!

During the day before observing they drive and just explore different areas of Krasnodar and as seen from the included photos mud volcanoes! and other areas.

Even were he lives, there is light pollution.



One photo taken during Soviet times shows an amateur with 6 in binoculars and a Tal-1 telescope as a guide scope!



Ivan is shown at his home with a newer Tal-2 15cm reflector plus a Tal-1 guide scope not to mention the 8x60 finder scope on the main telescope.



20 cm reflector



Launching model rockets on Cosmonautic Day to celebrate Yuri Gagarin's 1st flight.

The Dwarf II Smart Telescope – Astro-Imaging Made Easy!

By David Hoskin

I was immediately intrigued when Cuiv the Lazy Geek, a YouTuber/Astrophotographer who I follow, posted his preliminary impressions of the Dwarf II Smart Telescope from DwarfLab. Could this little robotic telescope really deliver all that was promised by the developer? A few more favorable reviews prompted me to order my own Dwarf II near the end of February so that I could see for myself whether the Dwarf II was as good as early reviews suggested. However, I had to be patient as the Dwarf II was still in pre-production when my order was placed.

What is the Dwarf II Smart Telescope? It is a compact (12.7cm x 6.1cm x 20.3cm) and lightweight (1.4 kg) device that is designed for astrophotography, as well as wildlife and landscape photography. The Dwarf II uses a 4-core Cortex-A7 CPU running at 1.5GHz to power the AI that is responsible for the telescope's go-to function, plate-solving routine, and star/object tracking. Wireless control is via an APP (iOS and Android versions are available) that runs on a smartphone or tablet. The heart of the Dwarf II is a high-sensitivity 8-megapixel Sony IMX415 Starvis sensor (1.45µm pixels in a 3864 x 2192 array) paired with wide-angle (50o FOV) and telephoto (3o FOV) cameras having an equivalent focal length of 48mm and 675mm, respectively. Aperture of the telescope is 24mm and focal length is 100mm. The battery life for the D2 is about 90 minutes and it has an integrated dew heater.



Current pricing for the Dwarf II is \$459 USD for the Classic version and \$595 USD for the Deluxe version. Shipping from China to Canada is

\$36 USD, which includes customs tax. The Classic version consists of the Dwarf II telescope, padded carry bag with strap, rechargeable 5600 mA battery, 64GB microSD card, and mini table-top tripod. The Deluxe version adds an extra battery, an ultra-high contrast filter, 2 neutral density solar filters, and a metal filter adapter that holds the 1.25" filters in place on the Dwarf II.

UPS delivered my Dwarf II (Deluxe version) in April, surprisingly, without the requisite clouds! Packaging was very good – a cardboard box that contained a shrink-wrapped and foam-padded cardboard box protected the Dwarf II and its accessories. The sturdy and well-padded carry bag contained the telescope, which provided additional protection from the rigors of transoceanic shipping. The included instructions are very brief and refer the user to several informative tutorials on the DwarfLab website. Surprisingly, the Dwarf II does not ship with the USB-C cable that is needed for charging the battery and downloading images to a PC; however, wireless downloading of images to your tablet or smartphone is an option. Firmware and software updates are also found on the DwarfLab website.



First light for the Dwarf II involved imaging the Sun, which requires the use of neutral density solar filters to protect the wide-angle and telephoto cameras. The Dwarf II was placed on a flat surface, turned on, paired with the Dwarf APP on my smartphone, and the cameras were pointed towards the Sun. After centering the Sun on my smartphone screen with the virtual joystick and wide-angle camera, I switched to the telephoto camera to focus and adjust exposure, gain and sharpness. The autofocus function works but may need to be tweaked using the +/- manual buttons. Solar tracking can also be enabled if needed. Single jpeg images of the Sun are quite good and can be further enhanced using typical smartphone camera software; however, I obtained my best results (seen above) by taking a 20-second mp4 video that was then converted to SER format with PIPP, followed by use of AutoStakkert and Photoshop for some limited post-processing, including the addition of false color. The result was a crisp image showing sunspot structure and some surface granulation. I used a similar approach for imaging the Moon but, of course, without the neutral density solar filters! With a bit of practice, I was able to obtain sharp images of the Moon with subtle colors being revealed by adjusting saturation in post-processing.

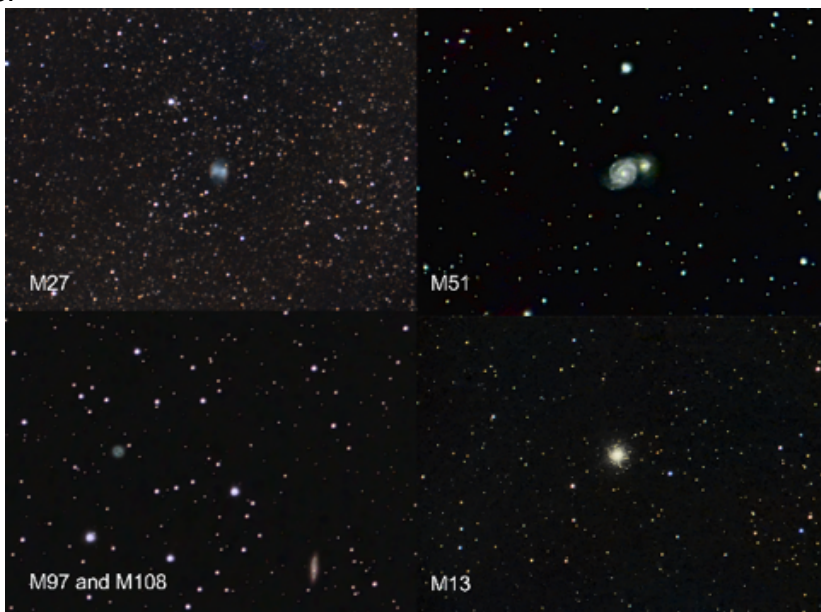
The best solar and lunar images are obtained using 1 x 1 binning in Photo and Video mode.

I had to wait for a clear and moonless night before I was able to image deep-sky objects with the Dwarf II. The process for imaging deep-sky objects is different from that used for solar/lunar imaging but not at all difficult. In Astro mode, binning is set at 2 x 2 to give an effective pixel size of 2.9µm. After placing the Dwarf II on a flat surface and pairing with the smartphone APP, I instructed the telescope to take Astro Darks that the AI uses for noise reduction. I next pointed the cameras at Vega (any bright star will do) and adjusted focus until the star was pinpoint. After this, the cameras are pointed at a clear area of sky and the Dwarf II takes 3 calibration frames. It is then ready for find and photograph deep-sky objects selected from a list. Coordinates (RA and Dec) can be entered for targets not on the list. Future updates are expected to add additional targets to the list. The Dwarf II slews to the chosen target, plate solves to confirm location, and begins taking and stacking images (up to 999) using the user-specified exposure (up to 15 seconds) and gain. Image quality and detail



improves with each image that is stacked in real-time and can be optimized using a histogram function. The final stacked image is saved as a png file to a folder on the microSD card. The Dwarf II rotates around the altitude and azimuth to track stars and uses a field-rotation-correction algorithm. However, as shown in the above image of M101, the effect of field rotation is apparent but can be removed by cropping the image during post-processing. Noise reduction and tweaking levels, color, and sharpness results in a pleasing image with minimal effort. Although field rotation can be eliminated by polar alignment of the Dwarf II, this may stress the positioning motors. Individual frames can also be collected in the microSD card folder as FIT files for subsequent stacking and post-processing; however, this adds complexity to the process and does not, in my view, result in a dramatically better final product.

Shown below are images of M27, M51, M97/M108, and M13 that were captured with the Dwarf II in a Bortle 7 zone. The ultra-high contrast filter was used to reduce the impact of light pollution. Final images were the result of post-processing the stacked image from the microSD card. Keeping in mind the Dwarf II's small aperture and the short focal length, I think that the results are quite good. The Dwarf II should give even better results when imaging larger deep-sky objects. I have not yet imaged any nebulae, but other users have reported good results, especially when using a dual band filter that selects for hydrogen-alpha and oxygen III wavelengths.



In my opinion, the Dwarf II is an affordable and portable option for anyone who wants to dabble in astrophotography. I intend to use the Dwarf II for public outreach as a supplement to eyepiece observing. Although the Dwarf II is not suitable for planetary imaging due to its short focal length, solar, lunar, and deep-sky object imaging will provide many hours of enjoyment. Importantly, DwarfLab continues to improve the Dwarf II's software and firmware. Finally, when astro-photography is not possible due to inclement weather, the versatility of the Dwarf II allows for its use in landscape and wildlife photography until the sky clears.



I've Got to Share This.....

By Judy Black

How many times have you said this in relation to an aspect of astronomy you enjoy? You know others may be interested in this as well.

Is it a book you've read (science, autobiography, imaging)? Was it an observation or an image that gave you an "oh, wow" moment? Were you alone during the observation or perhaps others were with you and it was a group "oh wow"? What about that new piece of equipment or software that has taken you a step further in creating your images, either in quality or just in ease of taking them? Did you travel somewhere and have experiences there you would like to share?

Whatever it was, now is your chance to share it. You can take 5 minutes, 10 minutes or longer to describe what you read, saw or did and have the opportunity to discuss it with others in our Centre. The Board agreed the October 14, 2023, Members' Meeting will be about you – our members.

You have some time to think about it (and we will remind you come September). After all, you have the past months to consider and the whole summer ahead. Can't wait to see and hear what you want to share!

"If you have knowledge, let others light their candles in it."
- Margaret Fuller

Food for the Soul: The Poetry of Paul Heath

Prodigious our leap, eyes locked
Second Star to the right,
Yet tethered as *Nana* we float, straight on to morning,
Then to night, then straight into morning again.

Prodigious our leap,
Yet we drift in emptiness, looking back
Tethered within a bubble of our world,
We seek the Second Star to the right
As we measure the voids altering, of self.

Prodigious our leap, eyes locked
Nights Sun beckoning beyond our carried shell,
Tethered, *Nana's* warning call unheeded, rebounds
Second Star to the right, still so far, so far.
Yet Our first steps, within a bubble still are kept.

'Second Star to the Right and . . .'

Prodigious leap, eyes locked
We look deep within, to unlock Our altered bodies beat,
To untether within the Void
We float, seeking through a sheltering glass,
The Second Star to the right and . . .

Prodigious our leap, farther into the void
We seek an unfettered expanse,
Free of Our bubble carried far, with need
To step unsealed, within Neverland's dream.

Prodigious our leap, eyes locked
On the Second Star to the right,
Then flying
Straight on 'till morning.

~ Paul Heath, June 2023

Member News

Gaurav Singh photo featured by CSA



Gaurav Singh's beautiful photo of the Milky Way was featured by the Canadian Space Agency's social media pages on May 25, 2023.

Hoskin Sun photo featured in BBC Sky At Night Magazine



David Hoskin's solar image was selected for publication in the May issue of *BBC Sky at Night Magazine!*

David Hoskin photos featured in Earth Sky Newsletter and Article



June 2, 2023 - Earth Sky writes: "Tonight: Mars bids farewell to the Beehive"

David Hoskin in Halifax, Nova Scotia, Canada, took this photo of Mars near the Beehive. Thank you, David! The Beehive is an open star cluster full of 1,000 sparkling stars! We see it in the constellation Cancer the Crab. Read about Mars buzzing the Beehive on June 1 and 2. Or watch a video about it. Did you miss it? Never fear. There's always more. The brightest planet, Venus, will be passing through the Beehive around June 12 and 13. For more sky events, visit EarthSky's night sky guide."

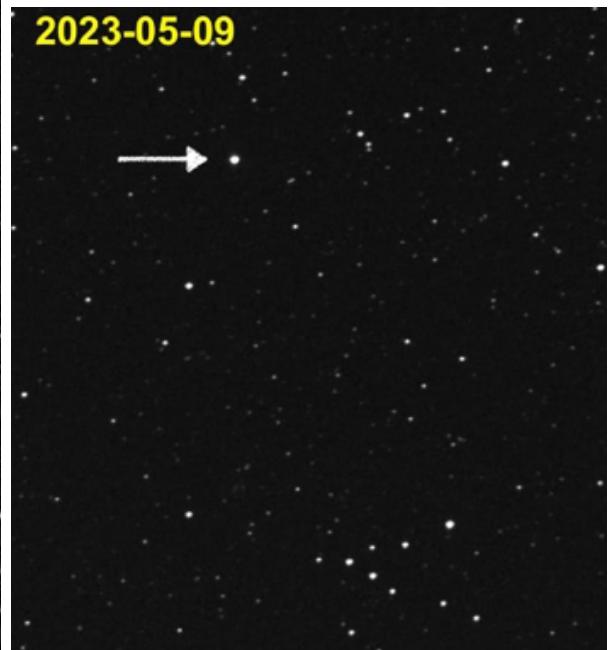
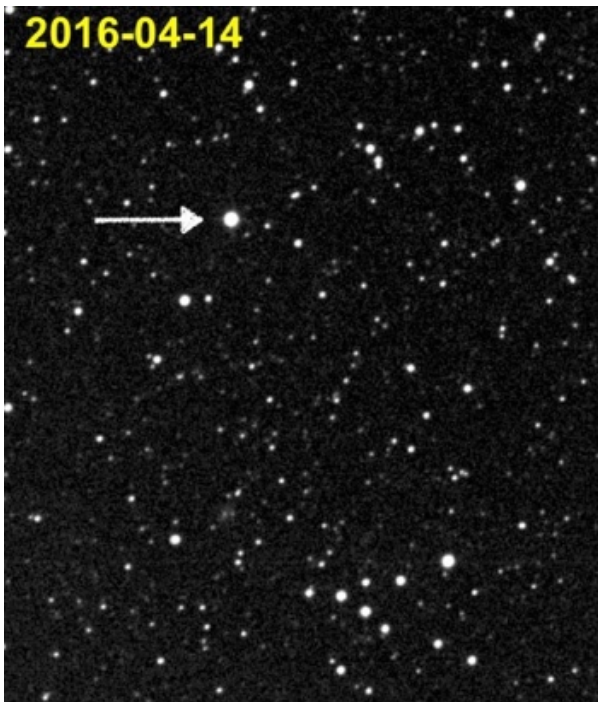
Two of his photos were also featured in a June 13th article from EarthSky. View the article here: https://earthsky.org/tonight/venus-and-the-beehive-see-them-together-june-12-and-13-2023/?fbclid=IwAR2xslKxGeJpyY9-r_hDn_hx9d2gUYi9AvNWr8kmv6XqJN52XFH-5WoYRUU

Members' Universe

Dave Chapman Captures Barnard's Star's Movement

Dave Chapman writes: “Barnard's Star—this star is only 6 light years away; the only stars closer to us belong to the α Centauri system (not visible from Canada). Barnard's Star is a dim (mag. 9.5) red dwarf that's moving quickly through our night sky: 10.3 seconds of arc per year—more than any other star. E. E. Barnard discovered this motion in 1916. I took two robotic photos* of Barnard's Star on two dates about 7 years apart—it is easy to see its “proper motion” in the celestial north direction (the pair of stars just below Barnard's Star are separated by 36”). Caution: most star atlases and much sky software have an inaccurate location for Barnard's Star, owing to its large proper motion.”

* <https://observatory.smu.ca/>



Members' Universe: Blair MacDonald

Blair MacDonald shares "Here is an urban effort on the Leo Triplet, three bright galaxies in Leo. The original image was taken last year and was a two hour exposure. This year I added another two hours of data taken under an almost full Moon. The three galaxies, M65, M66 and NGC3628 are all spirals with NGC3628 also known as the Hamburger Galaxy. NGC3628 has a tidal tail at the bottom of the galaxy that is faintly visible in this image."

Leo Triplet (M65, M66 and NGC 3628) RA 11:19:54
Dec +13:19:46
30 March, 2022 & 6 May, 2023
Exposure 4 hours (24 X 10 minutes)
Bright urban Bortle 8 skies in the direction of Leo looking straight into the city light dome. An almost full Moon was about 70 degrees away during the May 2023 exposure.
Gain 100
Camera Zwo ASI2600MC-Pro
Optics Prime focus of a SkyWatcher Esprit 120 f/7 APO refractor with a focal length of 840 mm
Filter None
Location. Bedford, St. Croix, Nova Scotia
Processing. This image was captured using Sequence Generator Pro. Split star processed similar to this.



Blair MacDonald writes: "Weather forecast finally called for a clear night with reasonable seeing. The seeing needed to be stable to get the best data when shooting globular clusters with stars so densely packed that it is hard to distinguish individual stars near the core of the cluster. Here is an urban attempt imaging M3 from my driveway. This shot was taken with a bright first quarter Moon in the sky."

M3 Object RA 13:42:12, Dec +28:22:59
28 April, 2023
Exposure. 150 minutes (15 X 10 minutes)
Conditions Bortle 7 skies, high light pollution levels with a first quarter Moon nearby.
Gain 100
Camera. Zwo ASI2600MC-Pro
Optics. Prime focus of a SkyWatcher Esprit 120 f/7 APO refractor with a focal length of 840 mm
Filter. None
Location. Bedford, Nova Scotia
Processing. This image was captured using Sequence Generator Pro, telescope control provided by Mosaic Engine and processed entirely in Images Plus.

Enjoy more of Blair's work here: <http://www.nightanddayastrophotography.com/>

Members' Universe: David Hoskin's Universe



David Hoskin captured before (r) and after (l) Supernova SN2023ixf in M101, the Pinwheel Galaxy,



David Hoskin captured M108 and SN2023dbc
15 April 2023



Waxing gibbous Moon 29 May 2023 by **David Hoskin**



Sun white-light and hydrogen-alpha 23 May 2023 by **David Hoskin**

PUZZLE CORNER – Terms Used in Astronomy

(See next page for clues)

Astro Cross Words

By Laureen Burgoyne & Norman Scrimger
Reprinted from Nova Notes 1982, Vol 13(5)

Astro Cross Words became a regular feature in Nova Notes. Five puzzles were provided to members over the course of a year's editions. Each puzzle had a common astronomical theme. This, the fifth and last in the series to be published, is Terms in Astronomy. Laureen Burgoyne and Norman Scrimger, the creators of the puzzle series, noted that "the answers for this puzzle are all derived from terms used in astronomy. Some are more obscure than others." Good luck to everyone! Answers will be in the next edition of Nova Notes (no cheating by those with access to previous Nova Notes editions).

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Across

- 1) Locus of dwarf stars on the Hertzsprung-Russell diagram
- 6) Distance unit used by astronomers
- 10) Having to do with the moon
- 11) Sea
- 12) Prefix referring to the sun
- 13) Abbreviation of a local coordinate of azimuth
- 14) Pulsating Radio Source
- 17) Gas cloud
- 19) Far point of an Earth orbit
- 20) All planets travel in one of these
- 21) Distance unit related to radiation
- 22) Light travels 11.8 inches in this length of time
- 23) Indicates the brightness of celestial objects
- 25) A measure of the speed of a telescope
- 27) Cycle of eclipses
- 28) Abbreviation for the coordinate of celestial longitude
- 29) Every body has this physical property
- 32) Shift that causes light to change frequency
- 36) The coordinate of celestial latitude
- 37) Radio Detection and Ranging
- 38) The near or far point of an orbit
- 39) The falling behind of any event
- 40) Used to delineate time before the sun crosses the local meridian
- 41) It becomes this when the sun sets
- 42) An outburst on the sun or a star
- 43) Having to do with the sun

Down

- 1) The diffuse band of light spanning the sky
- 2) Tides diminished by competition between the sun and moon
- 3) Quasi-stellar radio source
- 4) This side of the moon always faces the Earth
- 5) Only equipment used in making unaided observations of the heavens
- 7) Point of an orbit farthest from the sun
- 8) Name given to the Sun
- 9) Stars of temperature only 3000°K are said to be this
- 14) Shape of a good reflecting mirror
- 15) Measures the amount of light reflected by a celestial object
- 16) Variable stars used as yardsticks for the extragalactic distance scale
- 17) An exploding star
- 18) The inner part of a shadow
- 24) Measurement of force in the cgs system
- 25) Bright regions best seen near the limb of the sun
- 26) All spiral galaxies have at least one
- 27) Having to do with the stars
- 30) A solar eclipse when the moon is far from the Earth
- 31) The alignment of the sun, Earth and moon
- 33) Ionized gas
- 34) Microwave Amplification of Stimulated Emission Radiation
- 35) A Theorem relating kinetic and potential energy
- 36) A star the size of the sun or smaller

Answers to Last Edition's Puzzle

A	C	H	I	L	L	E	S	E		H	I	M	A	L	I	A
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A	M	A	L	T	H	E	A					T	E	T	H	Y

May 13, 2023 RASC Halifax Centre Meeting:

(38 attendees)

To watch a replay of the meeting, please visit: <https://youtu.be/3zdzBPHPw1Y> on the RASC Halifax YouTube Channel.

Welcome - Judy Black

RASC Halifax Director and program emcee Judy Black welcomed everyone to the monthly meeting, explained the benefits of membership and reviewed the agenda. She acknowledged the Indigenous lands in which the meeting was held and read the Centre's inclusivity and diversity statement.

David Hoskin - Photo Montage

David presented photographs and sketches from Centre members Jerry Black, Michael Boschat, Dave Chapman, Jason Dain, Paul Evans, Melody and Bruce Hamilton, Nancy Hughes, David Hoskin, Bruce MacDonald and Kathy Walker

A Word From MaryLou Whitehorne, Honorary President: Judy Black Awarded 2023 President's Award

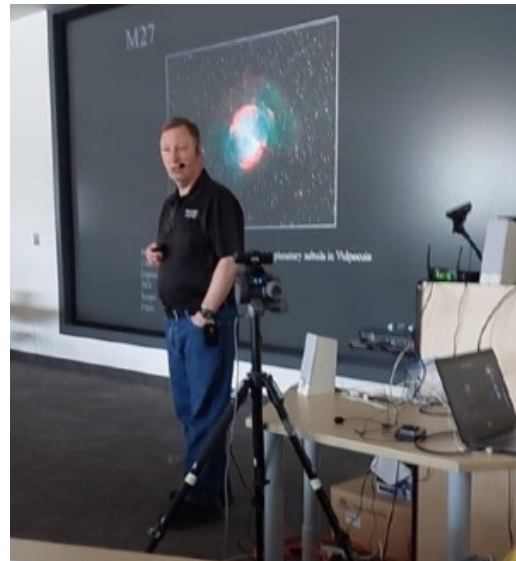
MaryLou relayed a video message from RASC President, Charles Ennis announcing that Judy Black has been awarded the 2023 President's Award for her work in helping to improve communications and relations across the RASC. Congratulations, Judy!



Challenge Images of Dying Stars - Blair MacDonald (Halifax Centre)

Blair MacDonald has been involved with the RASC, Halifax Centre, for over 25 years and has been interested in, and talking about, astrophotography for every one of them. Blair is currently working as an electrical technologist for a local technology company where he gets to use electrical design and signal processing skills to save endangered marine mammals. Shortly after getting interested in astrophotography he realized that the same techniques used in his day job can be applied to processing astrophotos.

The talk is the fourth in his Astrophotographer's Skies series and is entitled Challenging Images of Dying Stars. The talk uses some challenging images of stellar remnants to explain how stars of different masses die. It includes a little of the science along with lots of details about the images and how they were taken.



Halifax Centre's very own Blair MacDonald
Photo by Dave Lane

Special Presentations: Look up! The Skies are open! **Get certified - Blake Nancarrow (London Centre)**

Blake Nancarrow taught himself astronomy, acquired his first telescope in 1990, and joined RASC in 2007 as an experiment. He operated the 74-inch telescope at the David Dunlap Observatory. Now, Blake chairs the Observing Committee and administers the software training programs. He's crazy about double stars and has split over 1700 pairs. In the summer of 2022, Blake worked at the Killarney Provincial Park Observatory, in association with the York University Allan I Carswell Observatory, as the first Astronomer-In-Residence.



programs

- first-time stargazer / planetgazer
 - Explore the Universe
 - Explore the Moon (2 flavours)
- intermediate observer
 - Messier Catalogue
 - Finest NGC Objects
 - Double Stars [NEW!]
- advanced astronomer
 - Isabel Williamson Lunar
 - Deep-Sky Gems
 - Deep-Sky Challenge

Watch our YouTube videos!

David Hoskin (EPO/Observing Chair) - What's up for May, 2023

David reviewed highlights of the May sky. We are at the end of “galaxy season” but there is still more to see! Of course, days are getting longer: by the end of month of May, there will be 15.3 hours of sunlight. He highlighted the sun, solar activity, the Moon, and targets needed to check off for Explore the Universe, and when they can be viewed. He also highlighted planetary positions, constellations, stars (including double and multiple) and deep sky objects. Also highlighted were zodiacal light and the Messier Marathon. Remember, each month, you can find David’s presentations on the homepage at <http://halifax.rasc.ca>

News from the Board presented by Pat Kelly

- Governance - Updated Policies:
 - G8: Astroimaging Contest - minimum of six photos per category. Submission deadline fixed at November 10.
 - G13: Green-laser Pointers (NEW) 2 trained people must be present - 1 to use the green-laser pointer and one to look for airplanes. Courses and refreshers will be
 - B2: Ordinary Committees - Clarified Nominating Committee procedures. All committees now have set dates for appointment of Chair and a later set date for appointment of members.
 - PD10: Defined new role for Webmaster
- Nova Notes content deadline is June 17. Submit any content to novanoteseditor@halifax.rasc.ca
- Centre Stars:
 - ★Kathy Walker’s photo of NGC 5634 was featured in the June 2023 issue of *Sky & Telescope*
 - ★Jason Dain was interviewed on Global TV regarding his aurora images.
 - ★Jason Dain and Tiffany Fields - *Saltwire (The Chronicle Herald)* story about the aurora display.

Upcoming Events:

Members’ Meetings

- June 3
- RASC AGM will be held on June 25 (register online)
- Sept. 9

Other events:

- Kejimikujik Dark Sky Weekend will be held August 11 - 13
- 2023 Nova East will be held August 18 - 20, 2023 (New Moon is August 16)
- 2023 St. Croix BBQ will be held Friday September 15 / rain date September 16

June 3, 2023 RASC Halifax Centre Meeting:

(33 attendees)

To watch a replay of the meeting, please visit: <https://youtu.be/7DjQQ3aE6K8> on the RASC Halifax YouTube Channel.

Welcome - Judy Black

RASC Halifax Director and program emcee Judy Black welcomed everyone to the monthly meeting, explained the benefits of membership and reviewed the agenda. She acknowledged the Indigenous lands in which the meeting was held and read the Centre's inclusivity and diversity statement.

David Hoskin - Photo Montage

David presented photographs and sketches from Centre members Jerry Black, Michael Boschat, Dave Chapman, Jason Dain, David Hoskin, Fabian Pittman, Blair MacDonald and Kathy Walker

RASC Awards Announcement

Quinn Smith and Chris Young were named recipients of 2023 RASC Service Awards for more information, see page 6.

Space Medicine: A History and A Look Ahead - Laura Maclarnon

The beginning of manned space flights was a venture into the unknown. A strategic and cautious approach was undertaken during the Mercury and Apollo missions to determine if man could survive the extreme environment of space. Although in low Earth orbit, both MIR and ISS allowed for long-term living analysis to be conducted. All these results have now allowed us to push further into space exploration. This presentation will discuss the history of manned spaceflight and extrapolate these results for a possible Mars mission.

John Read Halifax Centre - Stargaze Nova Scotia - A new stargazing site within the HRM

Located on Big Lake, Stargaze Nova Scotia will provide experienced and curious newcomers alike an accessible year-round haven for observing the night sky. Plans include a stargazer's lodge for lectures, roll-off roof observatory for visual observations, and a domed observatory for astrophotography. Decks will also be constructed for sky tours and binocular viewing. In recognition of nature's unpredictability, John is considering the addition of a planetarium.

<https://www.learnstargaze.com/stargaze-nova-scotia>



Chris Young (Chair, NEPC) - Update: 2023 Nova East Star Party


Chris Young gave an update on Nova East that will occur ... the update the theme this year is Stars and Birds - The keynote speaker Jason Dain will talk about astrophotography and birding, and Pat Kelly and Dave Chapman will also participate. Logo and T-shirt will be designed by Lisa Ann Fanning who designed last year's T-shirt.

The format of the event will be similar to last year's event. Visit the soon-to-be updated website for more info. <https://novaeast.rasc.ca/>

Announcements

Dates to remember:

RASC Heads Up!



© Tarek el Wazli, 2023 Nova East


June 25
RASC Annual General Meeting
(AGM)

August 11-13
Kejimikujik Dark-Sky Weekend

August 18-21
Nova East Star Party,
Smiley's Provincial Park

September 9
RASC Halifax Centre
Members' Meeting
(Sept 5: Board Meeting)

October 14 (proposed)
Members' Presentations



Note the October 14 proposed Members' Presentations - consider presenting about something you enjoy speaking about

Paul Heath - Food for the Soul - *Second Star to the Right and...*

Paul presented his poem *Second Star to the Right and...* which can be read on page 13 of this edition of Nova Notes.

David Hoskin (EPO/Observing Chair) - What's up for June, 2023

David reviewed highlights of the June sky. We are getting towards "the longest day of the year," Summer Solstice is June 21 at 11:57 AM. Doing the summer, be sure to look for Noctilucent Clouds, caused by sunlight below the horizon reflecting off tiny ice crystals. Also highlighted are the Sun, solar activity, the Moon, and targets needed to check off for Explore the Universe, and when they can be viewed. He also highlighted planetary positions, constellations, stars (including double and multiple) and deep sky objects. Remember, each month, you can find David's presentations on the homepage at <http://halifax.rasc.ca>

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.