

Nova Notes

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

PO Box 31011, Halifax, Nova Scotia, Canada B3K 5T9 www.halifax.rasc.ca halifax@rasc.ca



SEPT / OCT 2024

VOL 55 NO 4

FEATURING:

CELEBRATING DAVE LANE	2
A MESSAGE FROM THE PRESIDENT	4
NOTHING MINOR	7
ASTERIODS WITH A NOVA SCOTIA CONNECTION	8
MOONSCAPES: MARE CRISIUM	10



PLUS ALL YOUR FAVOURITE REGULAR FEATURES!

In this issue:

From the Editors - Celebrating Dave Lane	2
Centre Information	3
A Message From the President	4
Nothing Minor by Judy Black	7
Asteroids with a Nova Scotia Connection. By Dr. Roy Bishop & Judy Black	8
Moonscapes: Mare Crisium	10
Food for the Soul	12
Member News	12
Moonscapes: Mare Imbrium By David Hoskin	10
Members' Universe	14
Puzzle Corner	19
Annual SCO BBQ September / October 2024 Member Meeting	19

Cover Photos:

Main Photo:

Happy Halloween!
The Boogie Man Nebula
St. Croix, Nova Scotia
Zwo ASI2600MC-Pro
Prime focus of a SkyWatcher
Esprit 120 f/7 APO refractor with a
focal length of 840 mm
Optolong L-eNhanse filter
by **Blair MacDonald**
Full information here:
[https://
www.nightanddayastrophotogr
aphy.com/gallery/
ZwoFilteredLDN1622.html](https://www.nightanddayastrophotography.com/gallery/ZwoFilteredLDN1622.html)

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 Editors

Celebrating Dave Lane

By Nova Notes Staff

Mary Lou Whitehorne shared many nights under the stars with David Lane over their 38-year friendship but one evening stands out for her. "It was a very clear and still night at St. Croix when the observatory was new," Whitehorne said. "Telescopes are great but sometimes you just need to look at the universe with the Mark I eyeball. And at that time there were a couple of very graceful birch trees that leaned out over the lake beside the observatory. We leaned out over these trees and we looked down into the surface of the lake, which wasn't black, it was full of stars."

Funny, generous and brilliant

Whitehorne and others who spoke at a celebration of Lane's life on Sept. 21 recounted his love for the stars and the seas, his generosity of spirit and an uncanny ability to turn ideas into reality.

Lane died March 24 of brain cancer at the age of 60.

An astronomy technician at Saint Mary's University for over 30 years, he revolutionized the capabilities of Burke-Gaffney Observatory and played a crucial role in implementing changes at the university's physics and astronomy departments.

He was also a longtime active member of the Royal Astronomical Society of Canada. He garnered many awards for public outreach work and leadership at the local and national level. He was a regular contributor to the RASC's famed *Observer's Handbook*, edited *Nova Notes* and operated the Halifax Centre's website. "He was funny, generous and brilliant," said Whitehorne, who joined the RASC at about the same time as Lane in the mid-1980s. "He revelled in the camaraderie and the activity of the local group, leading the drive to raise funds and design and build the St. Croix Observatory."



Friends remember Dave Lane at SCO
Photo courtesy of John Read

(Continued on page 5)

Upcoming Meeting Dates

- **November 2, 2024 Martin Connors (100 Years Ago, Galaxies Did Not Exist)**
- **December 2 AGM + Lisa Ann Fanning (Stereoscopy)**

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.

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 outlets, a warm-room, and toilet 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 and conditions.



St. Croix Observatory
drawing by Mary Lou Whitehorne

NOTE: As of Fall 2023, the building has lights again!
 (Thanks to Tony McGrath and Peter Hurley, the lights have been connected to 110v AC power.)

Halifax RASC Board of Directors, 2024

Elected	
President	Tony McGrath
Vice-President	Judy Black
Secretary	Peter Hurley
Treasurer	Gregg Dill
Director	Jeff Donaldson
Director	Matthew Dyer
Director	David Hoskin
Director	John Nangreaves
Director	Dave Robertson
Appointed	
Honorary President	Mary Lou Whitehorne
Auditor	TBD
Communications Committee, Chair	Judy Black
Dark-Sky Preserve Committee, Co-Chair	Peter Hurley
Dark-Sky Preserve Committee, Co-Chair	Tony Schellinck
Education & Public Outreach (EPO) Chair	David Hoskin
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
Webmaster	Jerry Black

SAVE THE DATES FOR 2024!



Dark-Sky Weekend
 August 15-17, 2025

New Moon August 23, 2025

Nova East Star Party
 August 22-24, 2025



A Message from the President

I hope everyone had an enjoyable summer and are looking forward to the fall. For the amateur astronomer fall is ideal: Longer nights, cooler temperatures, generally better seeing conditions and, best of all, no bugs! It is a great time for both beginner and experienced observers to restart their observing activities. Keep an eye on the Halifax discussion list for opportunities to observe at SCO.

I would like to thank the Nova East 2024 committee, who under the guidance of chairman Chris Young, successfully navigated significant challenges, from the unavailability of Nova East's traditional home, Smileys Provincial Park, to the challenges posed by post tropical storm Debby, to deliver a successful Nova East. Well done!

The annual SCO BBQ was also a success. The event was held Sept. 14 on International Observe the Moon Night and was attended by a mix of new and longtime members. Judy Black noted in her remarks that there was a cumulative total of 287 years of observing experience in attendance.

A special thank you to Dave Chapman who was inspired to produce an "ACE Lunar Observers Certificate" for the event. This is a great introduction to lunar observing, and is available on the RASC Halifax website under the Observing tab <https://halifax.rasc.ca/index.php/observing>.

I am also very excited to announce that the Celestron EdgeHD 200mm Howard telescope is now available for use by members interested in astro imaging. This fast f1.9 telescope, equipped with an Atik CCD camera, is a very capable instrument and allows members to carry out astro imaging projects without having to make any investment in equipment! Go to the Observing tab on our website and click on the K-Star Automation link at the bottom of the page to learn more. Many thanks to Jerry Black, who recognized the potential in this equipment and invested considerable time and effort in getting the equipment and software up and running. If you're interested in using this setup, please reach out to any board member and we will help you get started.

Finally, I encourage all members to let us know about any ideas or suggestions for activities that you would like to see. The board is very keen to hear from the membership, so please do not hesitate to reach out. The email addresses are on the website.

Best Regards

Tony McGrath
president_AT_halifax.rasc.ca

Email the Centre Executive:
president@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.

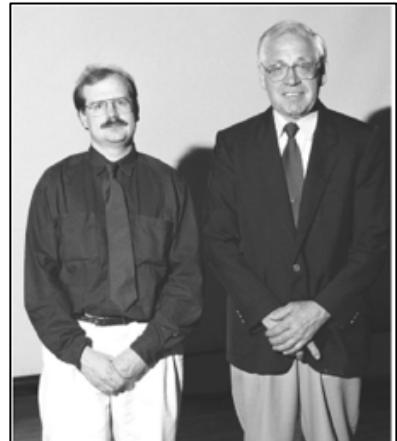
Articles on any aspect of astronomy and related activities will be considered for publication.

Celebrating Dave Lane (con't)

'He found a way to tackle it'

It was a common theme among the speakers: When Lane was your partner, whether it was stargazing, sailing or tackling administrative challenges, you knew you were in capable hands.

SMU physics professor Malcolm Butler worked with Lane in the 1990s during the merger of the university's physics and astronomy departments. "All this involved bringing relatively high-end computers and technology to the table that hadn't really been part of the department before," Butler told the crowd who packed a meeting room at St. Margaret Sailing Club where Lane was an avid member. "The university really didn't have the capacity and didn't know what to do with it ... Dave took the lead on this and put things together and set the stage for what was going to become a strength of the department around computational astrophysics."



1998 RASC Service Award winner Lane (l) poses for a photo with fellow national award winner

Bert Rhebergen (r)

Photo from JRASC, August 1998

As the Burke-Gaffney Observatory (BGO) director, Lane automated the observatory and made it available to the world through Twitter and Facebook.

He also created *Earth Centered Universe*, an easy-to-use planetarium and telescope-control program. Many institutes used the software to operate their own educational astronomy platforms. "That's a lot of what Dave did throughout his career, doing things that were important that other people didn't necessarily know what to do with," Butler said. "He found a way to tackle it."

SMU astronomer Rob Thacker also marvelled over his value as a colleague, although he noted Lane could be frank in his appraisal of other people's ideas. "The raised eyebrow when someone said something that wasn't making sense, the wry little smile that would come with it," Thacker said as chuckles spread throughout the room. "I don't think I ever saw Dave angry or upset. His approach was to get on with things. He was an extraordinary person, an extraordinary colleague and an extraordinary friend. And we very much miss him."

Astronomical mentor

RASC colleague Paul Gray spoke of the crucial role Lane played in nurturing those new to astronomy, including himself. Gray joined the RASC as a teenager in the 1980s.

"He saw me as young, enthusiastic, wanting information and wanting to observe," Gray said. "We quickly became friends under the stars. One of the many gifts he gave me, along with others in the club, was not just sharing knowledge." As a "poor student," Gray said he didn't have a lot of money to invest in astronomy. "He loaned me an eyepiece that had the dollar value of my telescope!"

Their partnership included a mutual interest in supernovae. The pair spent many long hours poring over images in the search for these colossal stellar explosions. Gray's children, Kathryn and Nathan, took an interest in the work, leading to international fame when they became the youngest people to discover a supernova at 10 years old. "Kathryn went to conferences, talked to Nobel laureates, cosmonauts, musicians, and astronauts, including Alexei Leonov and Neil Armstrong. They both had their worlds broadened, and their lives enriched."

Celebrating Dave Lane (con't)

A loved family man

Lane's sister-in-law Denise Gallant admitted it could take a while for him to warm up to people, including his new family members. She recounted the evolution of their relationship beginning with brief conversations when he quickly turned over the phone to his wife Michelle, leading to the point where they became close friends and sailing partners.

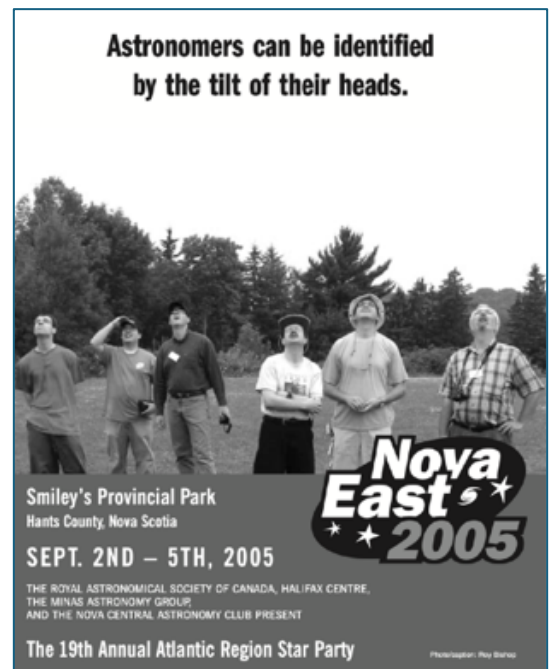
"Dave came into our family, and because Michelle loved him, we loved him too," she said. "We didn't know him all that well. It took some time. Like a very, very precious bottle of liquor. You have to give it time." Her voice faltering with emotion, Gallant recounted the shocking and difficult time after Lane was diagnosed with cancer. "We talked a lot about what came after. Dave said 'I've seen so many wonderful, amazing things in the sky through my work and through my research that I have to believe that there's something there'."

The speakers included sailing colleagues, who told tales of Lane's skills and adaptability on the water, particularly in races. Family members including brother Doug and Dave's wife Michelle also spoke. "Though Dave left many legacies that will endure for generations to come, I think it's his life of kindness, caring and love for all that were his greatest gifts," said Michelle, who thanked all those who supported the family during Lane's illness and after his death. "Together with that incredibly infectious zest for life, zest for adventure and that beautiful smile. All those things and more were certainly his gifts to me, and as we've heard in so many of your stories today, to all of you. What gifts, and what a legacy!"



Astrophoto of the Month – Gravity Well?

Image of the new facilities at St. Croix taken recently by David Lane. The St. Croix Motley Crew, Starting from the left: Ian Anderson, Larry Bogan, David Lane, Clint Shannon, Paul Evans, Mike Gatto, Shawn Mitchell, Darren Talbot, and Steve Tancock.
From *Nova Notes* Vol 31 No 3 (June 2000)



Promotional Poster for Nova East 2005

Nothing Minor

By Judy Black

It's nothing minor to have an asteroid named after you.

The International Astronomical Union (IAU) is the official body for naming them and, as you can imagine, there are naming rules; Dave Chapman provided a great explanation at our March 2022 Members Meeting (<https://www.youtube.com/watch?v=FRnnQrlqMfs>).

Many asteroids are named by their discoverer but in the cases where this is not the case, the RASC steps in, specifically Peter Jedicke (London Centre member, RASC Past President) who has taken the lead in this initiative since 2018. In 2023, Peter invited Centres across Canada to submit nominations to him and formatted the application as per the requirements of the IAU's Small Bodies Nomenclature Working Group (WGSBN). A group of Canadian nominees submitted in January 2023 was accepted at once instead of a few per cycle.

There are now twenty asteroids with Canadian connections, thanks to the efforts of the RASC, with 15 from our Centre or from our province prior to the existence of our Centre. It is because of this I felt members should be aware of our astronomy history through the recognition these men and women received and for which they will be remembered in perpetuity.

I approached Roy Bishop almost a year ago about co-authoring a series of documents about these asteroids, to which he agreed. Consequently, we are presenting a series of six articles in which we collaborated – me finding the asteroid names, their official citations and histories, and Roy providing the science for each. There are six instalments to this series:

- 1: Introduction: Names and Orbits
- 2: Introduction to the Asteroid Belt
- 3: The Inner Main Belt
- 4: The Main Belt, Zone I
- 5: The Main Belt, Zone II
- 6: The Main Belt, Zone III

While I may have instigated the series, I will state categorically that Dr. Roy Bishop is the lead author with me providing the non-science information. I have learned much from a knowledgeable gentleman, and with this series hope to share these learnings with you.



Roy Bishop (l) and Judy Black (r)
September 12, 2024

Asteroids with a Nova Scotia Connection

Dr. Roy Bishop & Judy Black

Instalment 1 of 6 — Introduction: Names & Orbits

Most asteroids (*aka* minor planets) orbit the Sun in the wide space between the orbits of Mars and Jupiter. They are believed to be remnants of the primordial solar nebula from which the Solar System formed some 4.6 billion years ago.

With apparent visual magnitudes below the usual threshold of unaided human vision, the asteroids were unknown until dedicated telescopic searches were undertaken. On January 1, 1801, Giuseppe Piazzi, at Palermo Observatory in Sicily, discovered Ceres, the largest asteroid. William Herschel proposed the name “asteroid” (Latin for “star like”) because in Earth-based telescopes asteroids are too small to show noticeable disks. When closest to Earth, Ceres has an angular diameter of less than one arcsecond. Today the orbits of more than half a million asteroids are known.

Once an asteroid’s orbit is determined well enough so it can be located in future years, asteroids are numbered sequentially in that order. Once assigned a number, an asteroid can be named. Hence 1 Ceres, 2 Pallas, 3 Juno, 4 Vesta, etc.

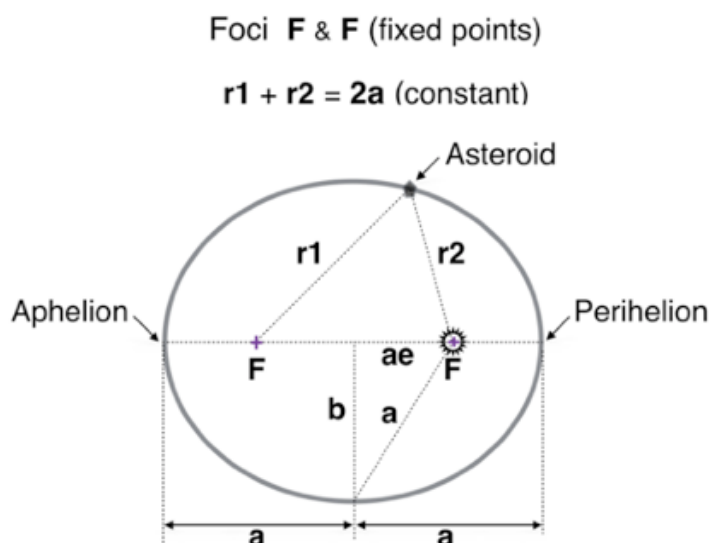
Traditionally, the discoverer of an asteroid suggests a name. Since the founding of the International Astronomical Union in 1919, the IAU has become the world authority for certifying the names of all objects beyond our planet. Yes, you can send money to a commercial firm to name a star, a crater on the Moon, or celestial whatever, but all you will have to show for the money you parted with is a paper certificate that has no formal or official validity.

Ignoring time, space is three-dimensional, yet an asteroid’s orbit about the Sun is a planar (two-dimensional) curve. It is planar because the Sun’s gravity is isotropic, directed toward the Sun’s centre, a so-called central force. In this situation there is nothing to deflect an orbiting body out of its plane. The inclination “*i*” of an orbit is the angular tilt of the plane of the orbit to the plane of Earth’s orbit, the ecliptic.

As Kepler discovered to his delight, orbits around the Sun are ellipses, an elegantly simple curve that closes upon itself, with the Sun at one focus. Using nature’s language, mathematics, Newton showed that orbits are ellipses because the Sun’s gravity weakens inversely with the square of the distance.

Because of small gravitational effects or perturbations from other bodies, no orbit is precisely an ellipse, but to a good approximation over not too long a time span, those perturbations can usually be ignored.

To better appreciate an asteroid (and the subsequent five instalments to be presented), you the reader should know something about orbits. Meet the ellipse:



Asteroids (continued)

The two statements at the top of this diagram **define** the ellipse. If you have never done the following simple exercise, *DO IT* once in your life so your brain will understand the ellipse: Place a sheet of paper on a cork board (or pine board), secure it with two small nails placed a few centimetres apart somewhere in the middle of the paper. Tie the ends of a piece of string to the nails (one end to one nail, the other end to the other nail, leaving some slack in the string). With the point of a pencil extend the string so it resembles r_1 and r_2 in the diagram. Then keeping the string taut, carefully move the pencil point across the paper wherever the string allows it to move. The nails ensure that F and F are fixed points, and the string ensures that $r_1 + r_2$ is constant . . . Voilà, an ellipse! Play around by altering the spacing of the nails (producing ellipses having the same major axis) or altering the length of the string (producing ellipses having different major axes).

F and F are the foci of an orbit, and the Sun resides at one focus (more about the other focus in the last paragraph). The size of an orbit is specified by “ a ”, its semi-major axis, half of the maximum diameter of the ellipse. “ a ” determines the orbital period, and the total energy (kinetic energy plus gravitational potential energy) per unit mass of the asteroid in its orbit. “ b ” is the semi-minor axis, half of the orbit’s minimum diameter.

The eccentricity “ e ” specifies the shape of an ellipse (the “out of centre-ness” of its foci, how much the ellipse deviates from a circle), where “ e ” is defined as the dimensionless fraction: (distance between the foci) / (major axis). Thus “ e ” = 0 is a circular orbit for which $r_1 = r_2 = a$. Apply Pythagoras’ Theorem to the right-angled triangle in the diagram to obtain a formula for e in terms of a and b . (The ellipse in the diagram has an eccentricity of 0.52).

As its eccentricity approaches 1, an ellipse becomes more and more flattened. In the limit $e = 1$, either $b = 0$ and the asteroid falls into the Sun, or the asteroid has gained sufficient energy through a favourable encounter with another body to cause its semi-major axis to become infinitely large. In the latter instance the asteroid’s path has become parabolic or hyperbolic (depending upon its total energy per unit mass), and the asteroid escapes the Sun’s grasp, leaving the solar system never to return.

An asteroid in an elliptical orbit traveling from aphelion (furthest from the Sun) to perihelion (closest to the Sun), accelerates as it falls deeper into the Sun’s gravitational well, moving fastest as it passes perihelion, and then slowest as it passes aphelion again. As Kepler discovered and Newton proved, a line between the asteroid and the Sun (r_2 in the diagram) sweeps out equal areas in equal times.

The other (empty) focus has a rarely mentioned, interesting property; an observer located there would see the asteroid moving with constant angular speed against the background stars, neither speeding up nor slowing down as it moves around its orbit! (Imagine a clock with an elliptical dial and the clock hands pivoting at the empty focus.) As viewed from the empty focus the asteroid’s transverse linear speed varies directly with its distance. Thus, in the diagram, an asteroid spends half of its time in the shorter segment of its orbit to the left of the empty focus.

Next instalment: *Introduction to the Asteroid Belt*.

Moonscapes: Mare Crisium

By David Hoskin

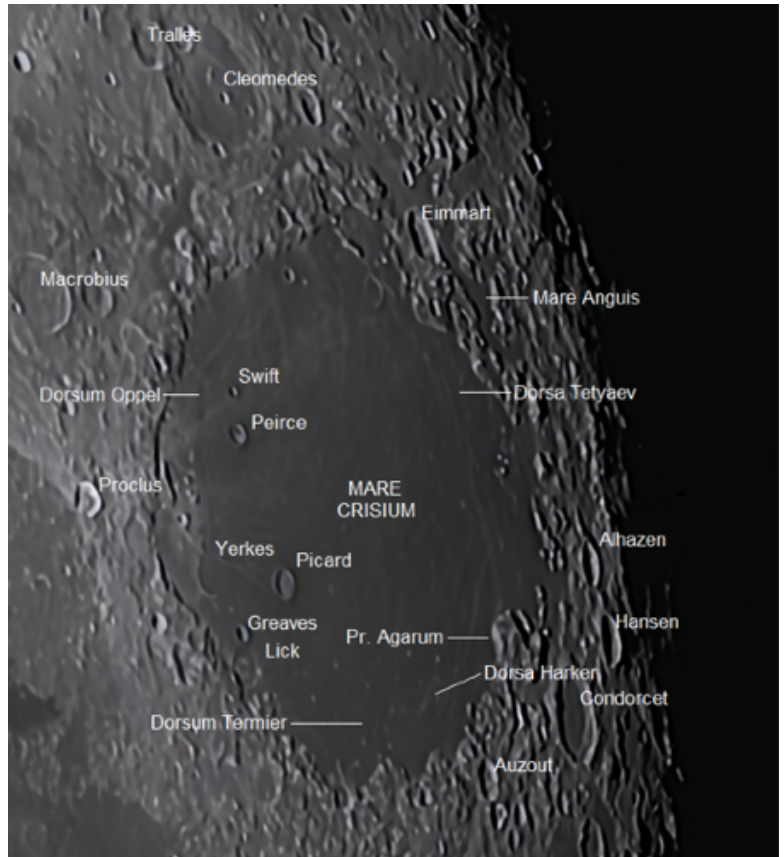


Mare Crisium (Sea of Crises – the circled area in the above image) covers about 176,000 square kilometres with a span of 450 kilometres north-south and 560 kilometres east-west. The Crisium basin was created by a major impact event that occurred between 3.8 and 3.9 billion years ago, after which the basin was flooded with dark basaltic lava during a period of lunar volcanism. The centre of Mare Crisium contains a mascon (mass concentration/gravitational high) that was identified in 1968 by a series of Lunar Orbiter spacecraft.

The whole of Mare Crisium becomes visible on day 3 of the lunar cycle while the Moon is still a thin crescent. Although Mare Crisium is one of the smaller lunar maria, it is easily seen with the unaided eye. Mare Crisium is notable for standing alone, without any connection to other maria. The boundary of the mare is well defined but is not made up of any high mountains. The basaltic plain of Mare Crisium is very flat and is the site of only a few modest-sized craters. “Ghost” craters are also a feature of Mare Crisium. When the lighting is optimal, a ring of wrinkle ridges (dorsa) can be seen near the edges of Mare Crisium. Just to the east of Mare Crisium and 800 metres higher in elevation, but still within the Crisium basin, lies Mare Anguis (the Serpent Sea). Downward sloping channels that may have been the site of lava flows connect Mare Anguis to Mare Crisium.

Moonscapes (con't)

The close-up image of Mare Crisium showing the mare's major features, as well as prominent craters in the surrounding highlands, was captured near the full Moon phase of the lunar cycle. Picard, with a diameter of 23 kilometres and a depth of 2.5 kilometres, is the largest impact crater in Mare Crisium. To the north lie the smaller craters Peirce and Swift, with diameters of 19 and 11 kilometres, respectively. Bowl-shaped Greaves, with a diameter of 14 kilometres, is a short distance to the south of Picard. Yerkes and Lick are two prominent "ghost" craters located in Mare Crisium. The walls of Yerkes, which is 36 kilometres across, are partially covered by an ancient lava flow. Lava-flooded Lick, with a diameter of 31 kilometres, is found just to the south of Greaves. Promontorium Agarum is an easily observed mountainous cape that juts into the lava plain from the southeast border of Mare Crisium.



Several wrinkle ridges, which are tectonic features formed after lava has solidified, are located on the floor of Mare Crisium, near its borders. The longest and most easily observed of these wrinkle ridges is Dorsum Oppel, which is quite broad and parallels the western boundary of Mare Crisium for about 300 kilometres. Dorsa Tetyaev and Dorsa Harker, both of which are over 150 kilometres in length, are located on the eastern side of Mare Crisium. The central southern floor of the mare is the site of 90-kilometre-long Dorsum Termier.

Mare Crisium is notable in the history of lunar exploration, as well as in popular culture. Mare Crisium is where the unmanned Soviet spacecraft Luna 15 crash-landed in 1969. In 1976, another unmanned Soviet lunar mission, Luna 24, succeeded in obtaining a soil sample from Mare Crisium and returning the sample to Earth. Science fiction fans may recognize Mare Crisium as the location of the mysterious pyramidal structure in Arthur C. Clarke's classic short story "The Sentinel".

Sources

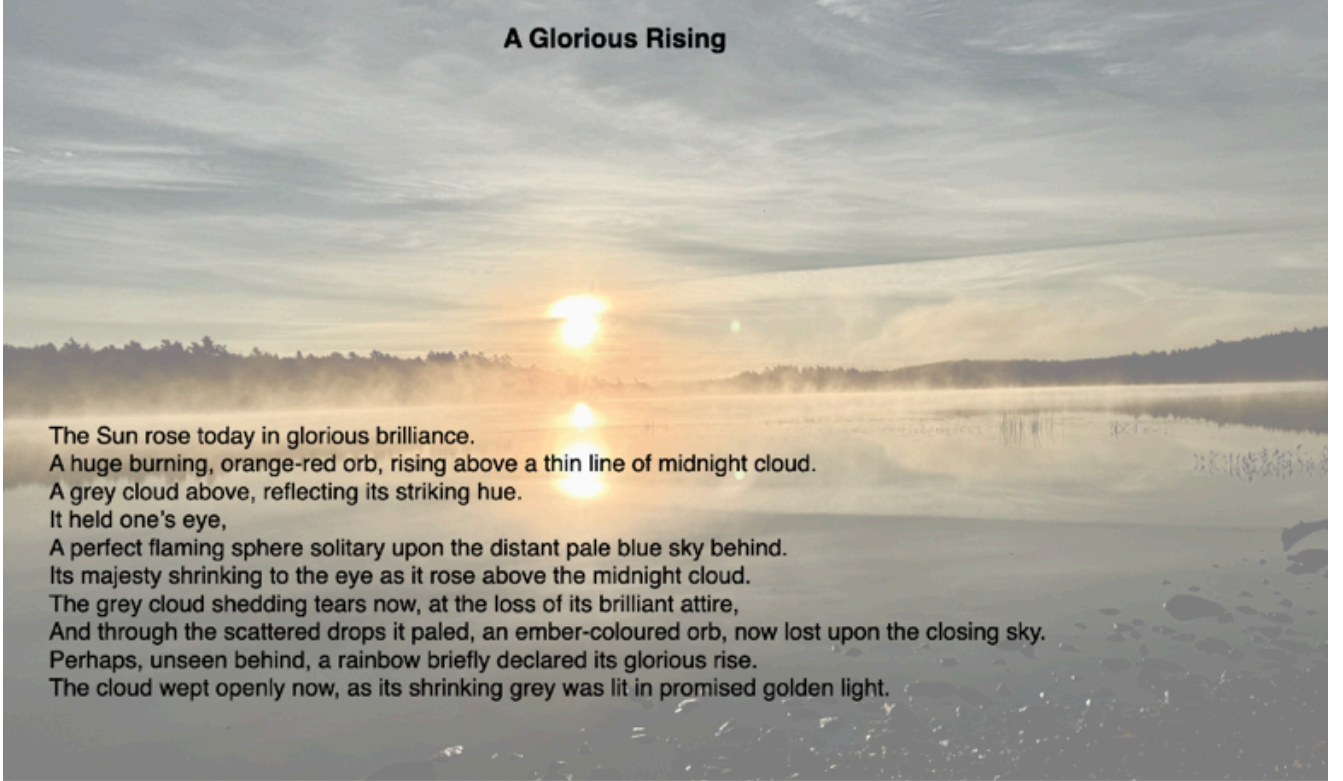
A Guide to the Moon's Mare Crisium by Sir Patrick Moore, *BBC Sky at Night Magazine*

Mare Crisium - Wikipedia, en.wikipedia.org

Moon Observer's Guide by Peter Grego, Firefly Books Limited

Food for the Soul: The Poetry of Paul Heath

A Glorious Rising



The Sun rose today in glorious brilliance.
A huge burning, orange-red orb, rising above a thin line of midnight cloud.
A grey cloud above, reflecting its striking hue.
It held one's eye,
A perfect flaming sphere solitary upon the distant pale blue sky behind.
Its majesty shrinking to the eye as it rose above the midnight cloud.
The grey cloud shedding tears now, at the loss of its brilliant attire,
And through the scattered drops it paled, an ember-coloured orb, now lost upon the closing sky.
Perhaps, unseen behind, a rainbow briefly declared its glorious rise.
The cloud wept openly now, as its shrinking grey was lit in promised golden light.

Photo: Head of Second Lake in Lower Sackville looking East at Sunrise. Credit: **Jerry Black**

Member News

Jason Dain awarded NASA APOD

Meteor Borealis (APOD: 2024 Aug 16)
Image Credit & Copyright: **Jason Dain**

Explanation: A single exposure made with a camera pointed almost due north on August 12 recorded this bright Perseid meteor in the night sky west of Halifax, Nova Scotia, Canada. The meteor's incandescent trace is fleeting. It appears to cross the stars of the Big Dipper, famous northern asterism and celestial kitchen utensil, while shimmering curtains of aurora borealis, also known as the northern lights, dance in the night. Doubling the wow factor for night skywatchers near the peak of this year's Perseid meteor shower, auroral activity on planet Earth was enhanced by geomagnetic storms. The intense space weather was triggered by flares from an active Sun.

From <https://apod.nasa.gov/apod/ap240816.html>



Member News

Tiffany Fields featured on CTV News Atlantic story



Tiffany Fields, an RASC Halifax member and Saint Mary's University astronomy technician, was interviewed for a story by CTV News Atlantic, "Northern lights, Perseid meteor shower light up Maritime skies." The article and video can be viewed here: <https://atlantic.ctvnews.ca/northern-lights-perseid-meteor-shower-light-up-maritime-skies-1.6997687>

David Chapman advises Mint on a unique coin design

The Royal Canadian Mint has issued a collectible coin that is a functioning sundial. David Chapman had the honour of advising the Mint on this project.



Chapman writes: "A sundial is capable of marking the passage of time within a few minutes if designed with precision, taking into account the observer's geographic location and the time of year. The sundial collectible project was an artistic, technical, and fabrication challenge—I congratulate the Royal Canadian Mint for creating this beautiful piece that demonstrates the essential function of a sundial in the Canadian context. Telling time by the movement of the Sun reveals the connection between the earth and the sky as first perceived by early humanity, our ancestors. It was my pleasure to advise on this unique project."

Learn more here:
<https://www.mint.ca/en/shop/coins/2024/fine-silver-coin-the-sundial>

Members' Universe

Barry Burgess captured this wonderful image of Comet C/2023 A3 (Tsuchinshan-ATLAS) on October 1, 2024.

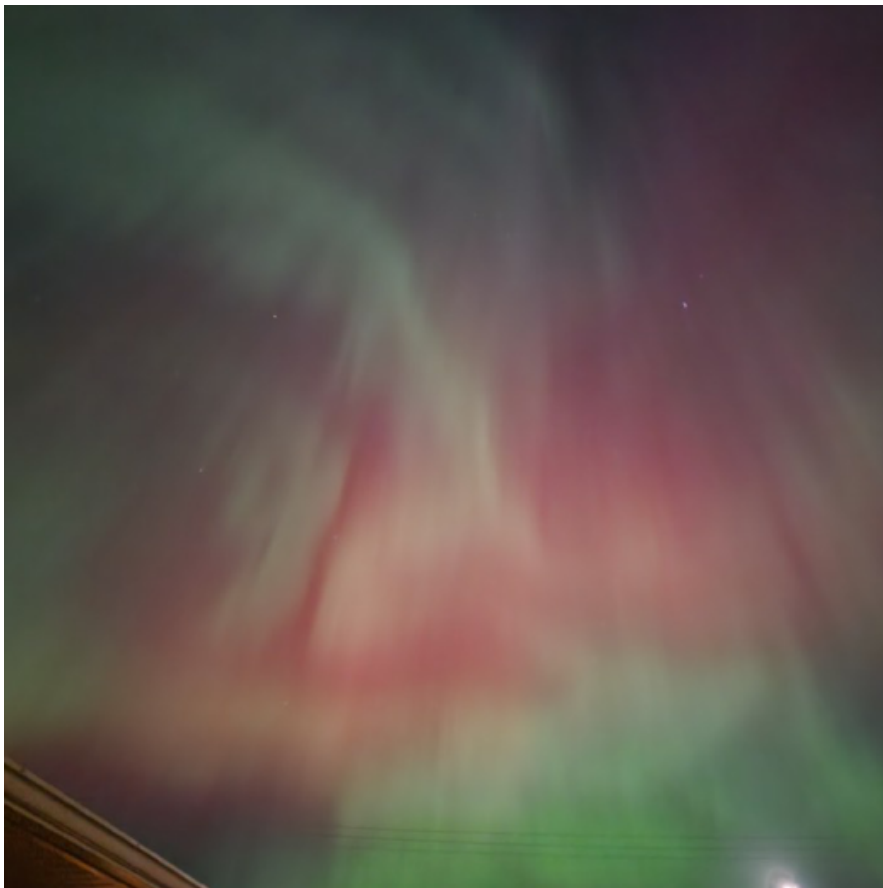
He shared “Another day another photo of Comet C/2023 A3 (Tsuchinshan-ATLAS) from Queensland, Nova Scotia this morning. This comet only rises above the horizon at our latitude after morning twilight has begun making it difficult to photograph: you will not see it with the naked eye. The comet is very close to the sun and rises only about an hour before the sun. If you live in more southerly latitudes you are lucky since the comet rises in a darker sky. In a couple weeks the comet should be visible low in the western sky shortly after sunset and there will be a full moon to contend with. The best views may be in late October under a dark moonless sky but by that time binoculars may be needed to spot it since it will have dimmed as it moves farther away from the earth and sun. I am not as optimistic as all the media hype about this comet.”



Members' Universe

James Edgar Captures Aurora Over Saskatchewan

James Edgar, FRASC took some nice aurora photos on October 10, 2024 with his Samsung S22 Ultra phone from Saskatchewan.



Members' Universe: David Hoskin's Universe



Europa (lower left) and the moon's shadow cast on Jupiter
by **David Hoskin** on October 3, 2024



Saturn imaged by **David Hoskin** with the live-stack feature in SharpCap Pro. 2000 frames stacked with a 25% inclusion setting. Colour tweaked with some additional sharpening and noise reduction. Imaging train consisted of a C8 SCT, ES 2x Focal Extender, ZWO ADC, and ZWO ASI224MC camera - all on a SkyWatcher EQ6R mount. imaged on September 29, 2024



Comet C/2023 A3
(Tsuchinshan-ATLAS)
by **David Hoskin** on
October 12, 2024

Members' Universe: David Hoskin's Universe



Harvest Moon rising over Halifax Harbour by **David Hoskin**
September 17, 2024

Partial lunar eclipse imaged by **David Hoskin** on September 17, 2024

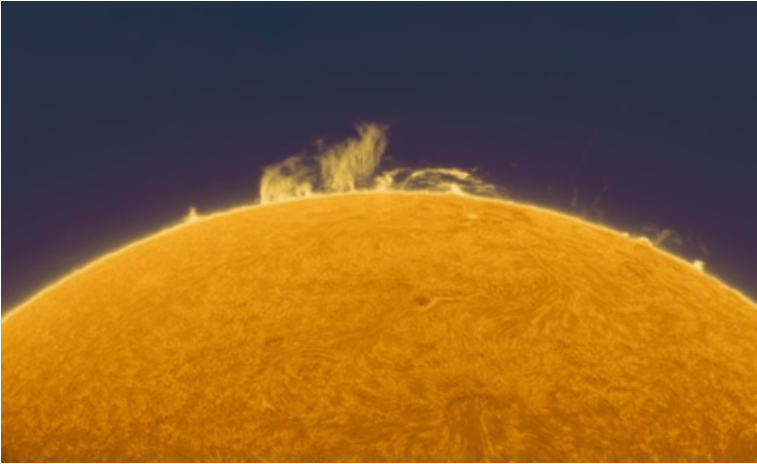
Left to right: prior to start of the eclipse, midway through the penumbral phase, maximum umbral phase.

Captured with a Dwarf 3 smart telescope.

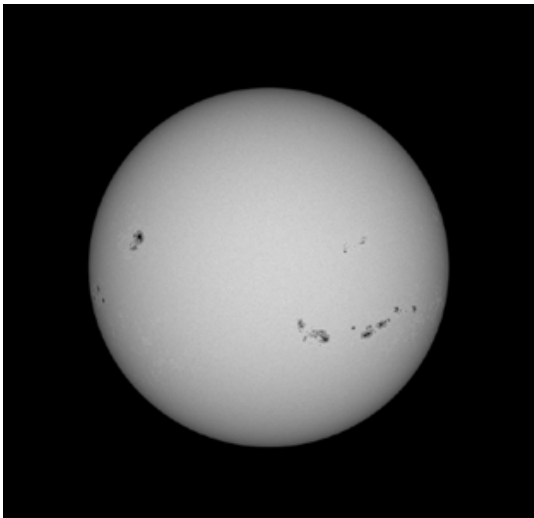


Waning Gibbous Moon imaged by **David Hoskin** on October 19, 2024

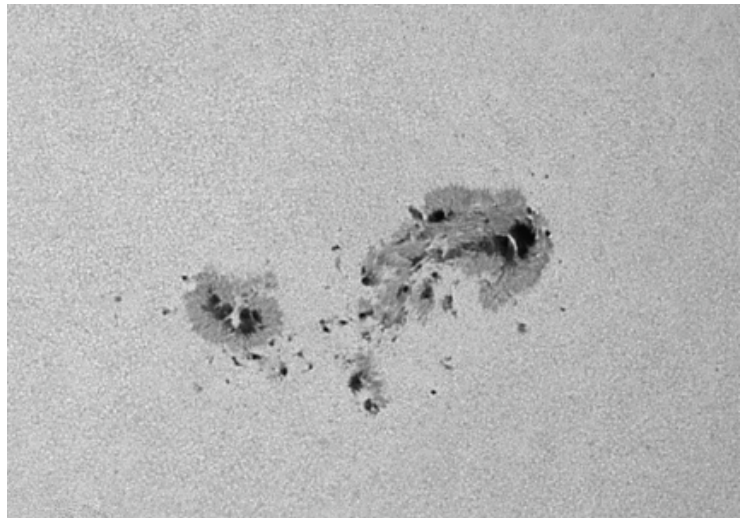
Members' Universe: David Hoskin's Universe



Prominences on the SW limb of the Sun imaged by **David Hoskin** on September 13, 2024

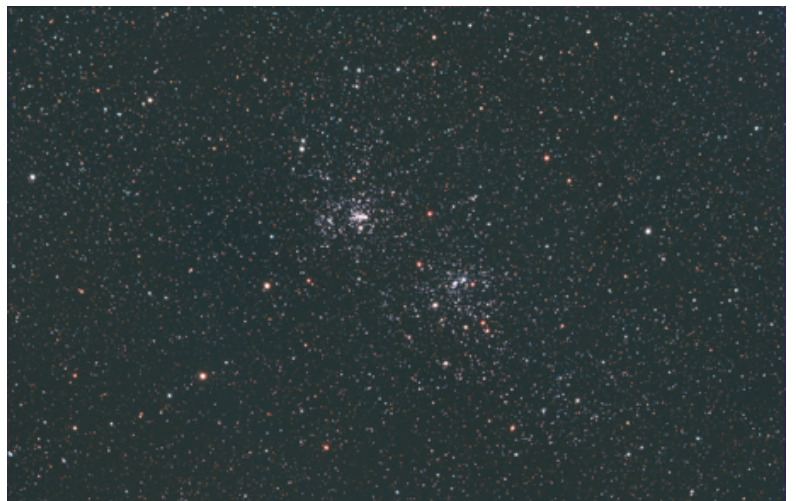


Filtered image of our nearest star showing a line of large sunspots by **David Hoskin** on October 4, 2024



Sunspot group AR3842 was the source of two consecutive x-class solar flares that birthed CMEs by **David Hoskin** on October 4, 2024

This image of the Double Cluster (NGC 884 and NGC 869) in Perseus was captured over 2 nights using a Touptek ATR2600C camera and Orion ED80T-CF refractor for a total integration time of just over 3 hours by **David Hoskin**



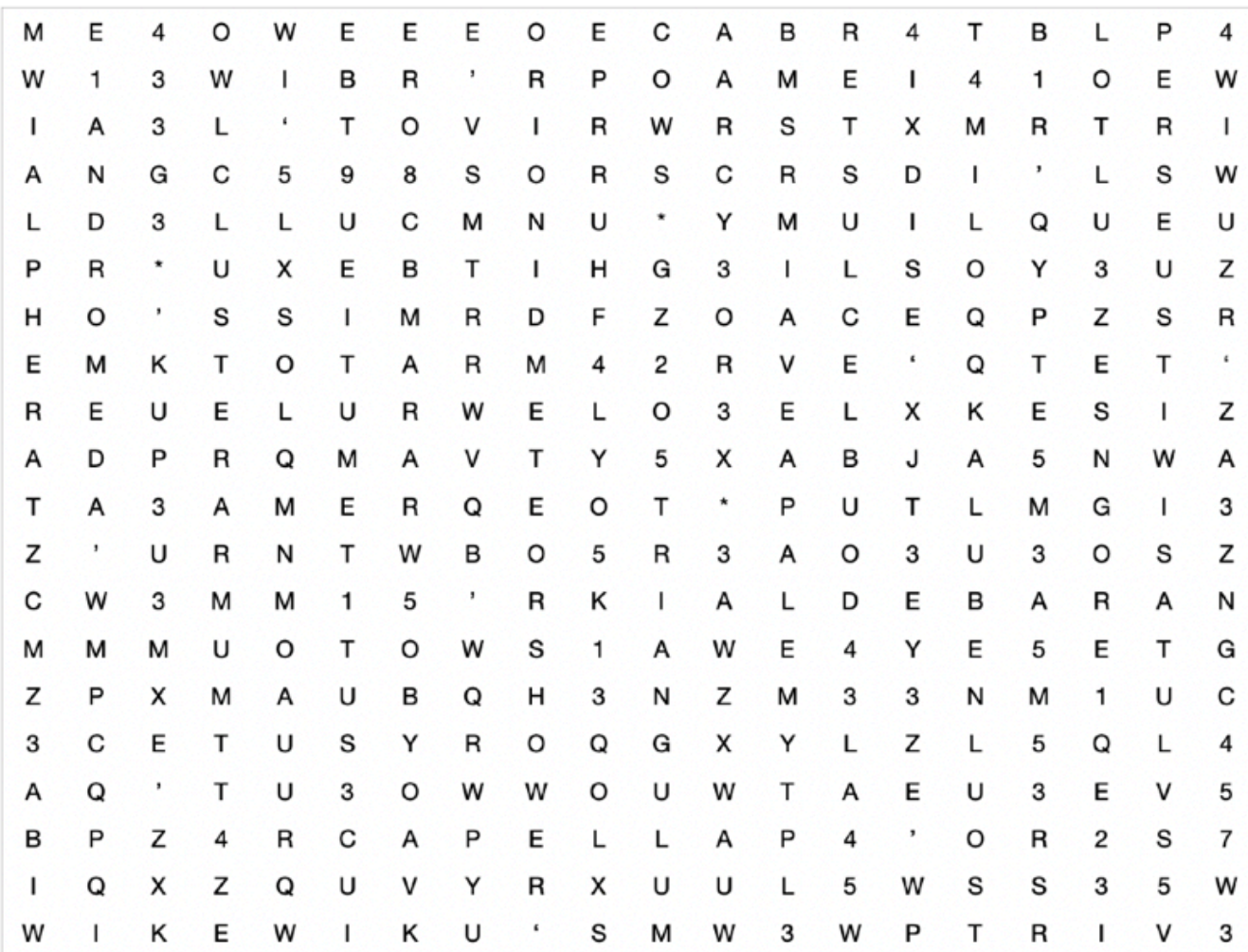
PUZZLE CORNER

Word Search - Autumn Sky

By Lisa Ann Fanning

Terms may appear up, down, diagonally, forward, or backward

Answers will be in the next edition of Nova Notes. Have fun!



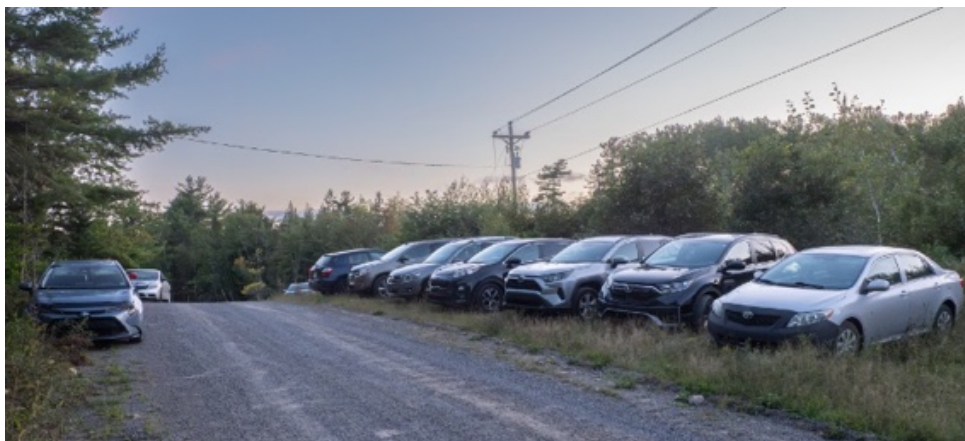
Terms To Find:

Aldebaran	Cassiopeia	M42	Perseus
Alpheratz	Cetus	NGC457	Pisces
Andromeda	Double Cluster	NGC598	Soul Nebula
Aquarius	M15	Orionid Meteor Shower	Triangulum
Capella	M33	Owl Cluster	Wikewiku's

September 14, 2024

Annual SCO BBQ in lieu of Formal Meeting

This year's BBQ just happened to coincide with the International Observe the Moon Night (InOMN). Members enjoyed traditional BBQ fare along with some lunar observing to celebrate. BBQ Photos courtesy of **Gary Weber**





As far as the “International Observe the Moon Night” portion of the event goes, **Judy Black** described it as “a spectacular evening, under the light of the silvery moon.”

Here are some of her favourite photos from the lunar observing portion of the evening.

All photos by **Judy Black** taken with:

Equipment: EvoStar 80 ED telescope

Eyepiece: Svbony 30mm-10mm Zoom eyepiece

Photo taken with iPhone 15 MaxPro on a NexYZ 3-Axis Universal Smartphone Adapter

The Diamond Ring on Mare Nubium (below)

South of Oceanus Procellarum is Mare Nubium. On its northern shore, you see the large crater Gassendi with its two central peaks and its broken southern rim. Because of being inundated by lava during the formation of the Mare, only the rim and central peaks remain above the surface. On its northern wall is the crater Gassendi A. Together, they give the impression of a diamond ring. To the right of Gassendi is a crater with a darker floor and shadows - Marsenius.



In Oceanus Procellarum - Aristarchus, Herodotus & Vallis Schröteri (Schröter's Valley) on the Aristachus Plateau (below)

On the right, are two craters - Aristarchus (the bright-rimmed one) and Herodotus. From the northern (left) rim, you can see a snake-like valley heading NW - Vallis Schröteri, the largest sinuous valley (rille) on the moon (~ 155km). The start of the rill has been termed the “Cobra's Head” due to its resemblance to a snake. You will also see the remnants of another crater (Prinz) near Aristarchus, and to the left/above Prinz are two small craters Krieger (with a small crater on its wall) and Wollaston. On the far left is Marian.



West of Copernicus - Kepler & Encke with T. Mayer (left)

Copernicus and its spectacular ejecta field were very easy (lower left out of FOV) to find, but what I wanted to have a closer look at Kepler and Encke. Kepler (right of centre) certainly has a larger ejecta field than Encke and is deeper given the shadows on both, but both are much smaller than Copernicus. To the left of Kepler, is T. Mayer with its very flat floor, bright-ish, low-rimmed walls. On the upper right very close to the terminator is Marius and to its lower left is Marius A.

October 5, 2024 RASC Halifax Centre Meeting:

Attendance (39 total) To watch a replay of the meeting, please visit: <https://www.youtube.com/watch?v=yEMGxrK2BHU> on the RASC Halifax YouTube Channel.

Welcome - Judy Black

Today's emcee, RASC Halifax Centre Vice-President Judy Black, welcomed everyone to the monthly meeting, shared the Indigenous Land Acknowledgement and read the Centre's inclusivity and diversity statement.

David Hoskin - Photo Montage

David presented photographs and sketches from Centre members Jerry Black, Judy Black, Barry Burgess, David Chapman, Jason Dain, Jeff Donaldson, Tim Doucette, Lisa Ann Fanning, Paul Gray, David Hoskin, Blair MacDonald, John McPhee, Kathy Walker

Reminder, the deadline for the RASC Halifax Centre Astroimaging Contest is coming up on November 11

Explore the Universe Guides available for purchase - Judy Black

The Explore the Universe guide is available for purchase for \$20. Contact the Centre to obtain your copy.

Special Presentation: Dr. Luigi Gallo (SMU) - JAXA's XRISM X-Ray Observatory

Dr. Luigi Gallo, professor of Astronomy and Physics at Saint Mary's University, "is one of two Canadians involved in an exciting new three-year space mission named XRISM. This mission involves a powerful satellite being launched into space to take X-ray images of black holes, galaxy clusters, and will resolve mysteries regarding the formation of the universe."



Photo credit: Saint Mary's University

The meeting was paused for a short social break, and reconvened at 2:46 PM ADT

Paul Heath - Food for the Soul - A Glorious Rising

Paul presented his poem *A Glorious Rising*, which can be read on page 12 of this edition of *Nova Notes*.

News from the Board with Tony McGrath

A donation was received by Jane and Alfred Howard of an 8" EdgeHD HyperStar (SCO-HyperStar.) "The combination of a Celestron C8" Schmidt Cassegrain EdgeHD telescope mounted on Celestron AVX mount, paired with a Starizona HyperStar v4 and the Atik 428ex CCD camera provides the opportunity to capture images of the night sky with an amazing f/1.9 f ratio providing very fast imaging (i.e. shorter exposures). With post-processing you can create stunning images."

Continued on next page

Jerry Black realized the potential of the equipment and set it up at SCO so it was available for use by anyone. He's in the process of creating documentation.

Initial documentation can be found here: <http://halifax.rasc.ca/index.php/observing/sco-hyperstar/using-kstars-with-the-sco-hyperstar-system>

Note: further improvements to the documentation is pending.

An image gallery appears here: <http://halifax.rasc.ca/index.php/observing/sco-hyperstar/hyperstar-image-gallery>

Several volunteer opportunities are available - contact Judy Black or Tony McGrath for more information.

1. A position is open for Director at the National level
2. December is the end-of-year for Centre Board of Directors - feel free to express interest in becoming involved!

Review the 2024 Halifax Centre plan - feedback is appreciated. Reach out to Tony McGrath to discuss.

Judy Black added: Governance review committee Pat Kelly, Gregg Dill and Judy Black reviewed position descriptions. In November, changes to By-Law number 1 will be announced.

David Hoskin (EPO/Observing Chair) - What's up for October, 2024

David reviewed highlights of the October sky. Days are getting much shorter now that we are past September's equinox. We can now enjoy nine hours of darkness, which will increase to 10.5 by the end of October.

He highlighted the sun, solar activity, the Moon, planetary placement 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.

Each month, you can find David's presentations on the homepage at <http://halifax.rasc.ca>.

The meeting concluded at 3:09 p.m. ADT.

Answers to Last Edition's Puzzle

