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

JAN / FEB 2024

VOL 55 NO 1

FEATURING:

A MESSAGE FROM THE PRESIDENT 4

DAVE LANE RECEIVES HONORARY DOCTORATE OF SCIENCE 5

A RARE, DARK-SKY FACILITY IN A BEAUTIFUL LOCATION
A BRIEF HISTORY OF SCO BY ROY BISHOP 6

REVIEW: THE APOLLO-M MINI SOLAR CAMERA FROM PLAYER ONE ASTRONOMY BY DAVID HOSKIN 7

UNDER CUBAN SKIES WITH DAVE CHAPMAN 13

2023 ANNUAL REPORTS 20

PLUS ALL YOUR FAVOURITE REGULAR FEATURES!

In this issue:

From the Editor	2
Centre Information	3
A Message From the President	4
Dave Lane Receives Honorary Doctorate of Science by Mary Lou Whitehorne	5
A Rare, Dark-Sky Facility in a Beautiful Location - A Brief History of SCO by Roy Bishop	6
The Apollo-M Mini Solar Camera from Player One Astronomy by David Hoskin	7
Food For the Soul: The Poetry of Paul Heath	10
Puzzle Corner	11
Under Cuban Skies with Dave Chapman	13
Member News	15
Members' Universe	16
Annual Reports & January/ February Member Meetings	20

Cover:

Main Photo:
M1 "the Crab Nebula" view here
by **Jerry Black**
Exposure 20@1200 sec (6.7 hours). ISO.3200
Nikon Z7 [8856 x 5504]
Skywatcher Esprit 120mm Refractor, 840 mm focal length
Radian Triad Ultra Quad-Band Narrowband Filter | Phd2 using a ZWO 224MC on an Orion 60x240mm Guide scope
Images taken using Kstars on an Mele Quieter 3C under Unbuntu 22.04.3 | PixInsight Processing WeightedBatchPreprocessing Script | Dynamic Crop | Image Solver Script |SpectrophotometricColorCalibration | BlurXTerminator | NoiseXTerminator | GeneralizedHyperbolicStretch | CurvesTransformation
Lower Sackville, Nova Scotia.
2023-12-09

Thumbnail: St. Croix Observatory drawing by **Mary Lou Whitehorne**

From the Editor

When it comes to astronomy, let's just say it hasn't been a stellar year.

An immune system disorder has sapped my energy to the point where dragging my gear into the car and driving to the boonies has become a daunting task.

Aside from trips to PEI and the Annapolis Valley, I've done most of my celestial-gazing from our balcony in Portland Hills. If you know this area, it won't come as a surprise when I say the night sky isn't exactly pristine.

But the visibility is better than I expected when we moved here a couple years ago. We look south so in the winter I can enjoy the bright stars of Orion and Canis Major and I can tease out the nebulae in the Sagittarius/Scorpius region in the summer.

We're a few stories up so I can angle my scope and binoculars over the balcony glass to get a decent low-horizon view.

I do need something to block the Berlin Wall-level lights from the plaza across the street so I bought a few artificial trees that I can move around as needed.

And of course there's good ole' Grandmother Moon. Its craters, maria, rays and other geological features never cease to fascinate. I recently picked up a small Sky-Watcher refractor (Evolux 62ED Doublet Apo), which has pretty sharp optics for a reasonable price.

A big ole waxing gibbous moon out there January 22, 2024. The moon's craters, maria, rays and other geological features never cease to fascinate.
Photo by John McPhee

The high winter ecliptic complicates matters when viewing from the balcony so I try to get out soon after moonrise at this time of year.

The moon's also an easy and fun photographic target. I use my 400mm lens for close shots or more panoramic views of the crescent phase at sunset.

When things get more civilized weather-wise, I hope to put the Evolux to work for some lunar photography.

But even a glimpse of the moon through the window is enough to lift the spirit. Whatever form it takes, the night sky is a gift that I'll always appreciate.

- John McPhee

Upcoming Meeting Dates

- **March 2, 2024 Ian Short** (Student Spectography at the BGO)
- **April cancelled** (to allow for those traveling for the eclipse.)
- **May 4, 2024 Members' eclipse stories**
- **June 1, 2024 Tiffany Fields** (BGO Astronomy Technician)
- **September 7, 2024 - BBQ in lieu of meeting**
- **October 5, 2024 – Luigi Gallo** (JAXA's XRISM satellite)
- **November 2, 2024**
- **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.

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

YouTube

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 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	Matthew Dyer
Director	David Hoskin
Director	John Nangreaves
Director	Dave Robertson
Director	Jaime Whynot
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 2-4, 2024

New Moon August 4, 2024

Nova East Star Party
August 9-11, 2024

Updated 2024 location to be announced

A Message from the President

Hello Halifax RASCals.

I would like to outline for you the work the 2024 Board of Directors has been engaged in since beginning our term in January.

Our No. 1 priority was to develop a solid understanding of the wants and needs of the Halifax Centre membership. Our primary mechanism for starting that journey was the survey completed in January: 47% of the membership responded.

Informed by the survey results, the board has adopted the following goals and objectives for the year:

- Re-establish monthly SCO members night
- Promote observing and the RASC observing programs
- A focused effort on attracting, welcoming, engaging and mentoring new members
- Create a Maintenance & Development plan for the St. Croix Observatory
- Promote and develop volunteering with RASC Halifax.

It is with respect to volunteering that I would like to offer some comments for your consideration.

Volunteering not only contributes to the success and sustainability of RASC Halifax, but it also offers personal benefits to those who participate, making it a rewarding experience:

- Personal Growth - whether it's learning new skills, gaining leadership experience, or stepping out of your comfort zone, volunteering offers a platform for individuals to grow and evolve.
- Sense of Purpose - Engaging in volunteer work gives individuals a sense of purpose and fulfillment. Knowing that you are making a positive impact on RASC Halifax Centre, and sometimes the wider community, can be a rewarding and gratifying experience.
- Networking - Volunteering allows you to connect with fellow members and build relationships, which can lead to new friendships, mentorships and further opportunities.

Before asking someone to volunteer, it is important to properly describe the role and the time commitment, as well as what resources and training will be provided to help the volunteer be successful. We are working on developing this material, and we shall share it with the membership as it is developed.

In order to be successful and achieve the goals and objectives we have established, we need volunteers. Working together we will be able to provide quality programming, events, and services to our members. I encourage each and every one of you to give some consideration to getting involved in our volunteer initiatives.

Best Regards,

Tony McGrath
President, RASC Halifax Centre

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.

Dave Lane Receives Honorary Doctorate of Science

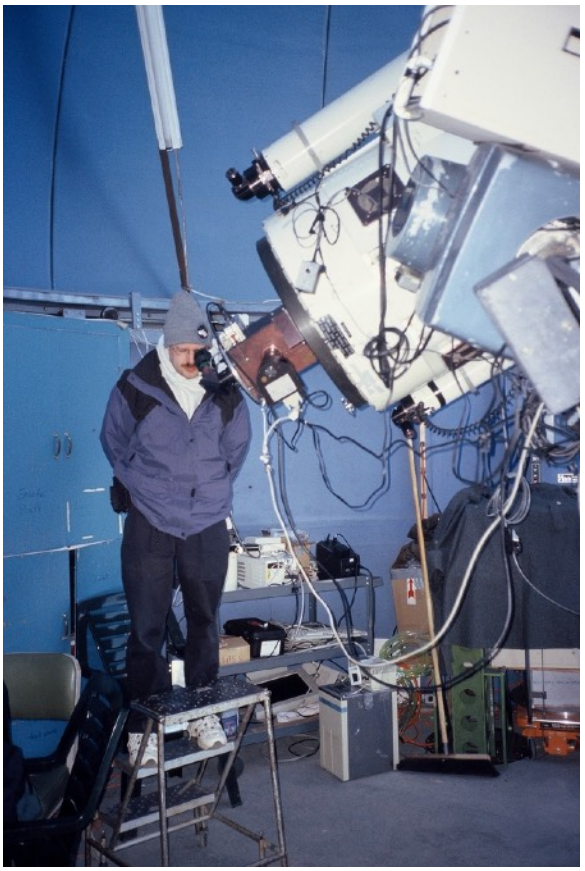
It is with great pleasure that I can inform Halifax Centre members that Saint Mary's University has bestowed on Dave Lane a Doctor of Science, Honoris Causa, for significant and extraordinary contributions to academic life, knowledge, and society. The presentation of Dave's DSc took place at SMU's winter convocation on Saturday, Jan. 27, 2024.

Dave is well known in the Halifax Centre as a Past President of the Centre and a key Centre volunteer in many roles for the last 38 years. He is also a Past President of the national Society, where his deep knowledge, broad experience, unique skills, and many contributions have had lasting positive impact across most aspects of the Society's work.

I am sure every Centre member willl join me in offering our heartiest congratulations to Dr. Dave!

Mary Lou Whitehorne
Honorary President, Halifax Centre RASC

"Tame Dave" at a CASCA event in 2010.
Credit: unknown



"Wild Dave" in his natural habitat; in this case, setting up the U of Hawaii 60cm scope on Mauna Kea for a research project in 2002.
Credit: ML Whitehorne/RL Bishop

A Rare, Dark-Sky Facility in a Beautiful Location - A Brief History of SCO

By Roy Bishop

Following the Members' Night at the RASC Halifax Centre's Saint Croix Observatory on Jan. 12, on the Discussion List our Centre President, Tony McGrath, posted his inspired summary of that special evening at SCO. I emailed my thanks to Tony, and for the benefit of our recent members I included a brief history of SCO. That history, slightly altered, appears in the following paragraphs.

I first encountered the SCO area 68 years ago. Then 16, I was one of six men using hand scythes to clear brush from under the power line running from the generator in the large dam at the north end of Panuke Lake to the village of St. Croix (our pay: 80¢ per hour). Thirty-eight years later, on Oct. 28,1994, I brought the Halifax Centre's Observatory Land Search Committee to the SCO area. They were impressed by the dark sky, by the absence of lights in any direction, by the low southern horizon, and, compared to the strong, cold wind they encountered at another site that evening, by the lack of wind.

During the next two years, with the leadership of Centre presidents Dave Lane and Dave Chapman, Centre members raised the necessary funds, surveyed the site, cleared the forest, constructed an entrance road and parking lot, excavated foundations, and built the observatory and warm room. SCO opened officially at solar noon on the day of the 1997 summer solstice. A shed for a composting toilet and storage was added a few years later.

Recently, in 2020 and 2021, thanks to the initiative of SCO Manager John Liddard, the leadership of Centre president Judy Black, the support of John Woods at Minas Energy, and the financial support of Centre members, SCO was connected to 120/240-volt "green" electricity from the generator in the large dam 2.4 kilometres upstream.

For anyone who has not been to SCO, below is a photo I took from a Cessna 182 in July 2015. From left-to-right: the roll-off-roof observatory, warm room, and storage shed. Note the three observing pads for portable telescopes on the south side. The trees on the left protect SCO from W, NW, and N winds that frequently bring clear skies. The trees on the right hide a minor HRM light bubble in the SE and protect SCO from winds often associated with storms. The water at the lower right provides a low southern horizon (no trees!), beyond which there is nothing but dark forest for more than 30 kilometres all the way to the South Shore.

SCO is located within the large, protected watershed of Minas Energy's St. Croix hydroelectric system, constructed between 1933 and 1938. The RASC Halifax Centre owes its good fortune for the SCO site to Scotia Investments Limited of Bedford, the owner of the area, for leasing the peninsula upon which SCO sits for $1 per year plus HST, renewable at five-year intervals (next time, in 2026).

Saint Croix Observatory is a tribute to the foresight, planning, monetary donations, and labour of many members of the RASC Halifax Centre during the past three decades. May SCO continue to provide those whose thoughts soar beyond our small planet with a quiet, beautiful place to spend a few hours under a blanket of stars.

The Apollo-M Mini Solar Camera from Player One Astronomy

An Economical Full Disk Imaging Solution

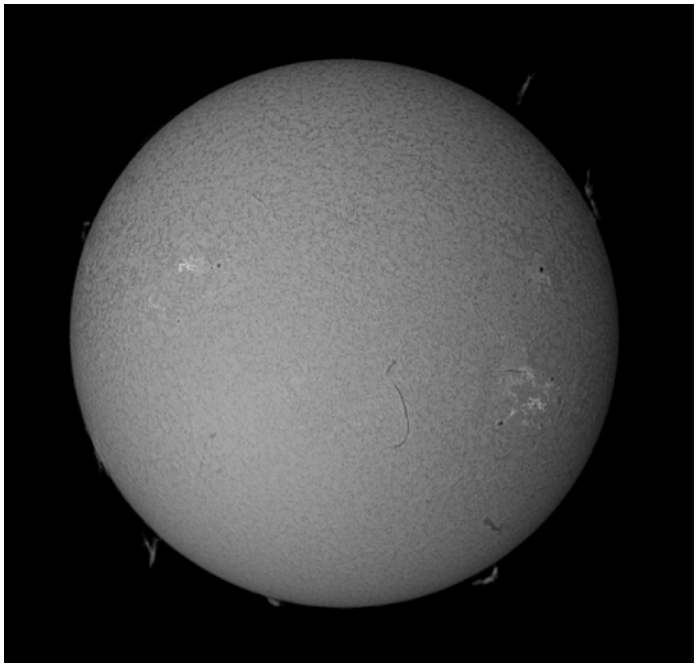
By David Hoskin

Until recently, most Canadian amateur astronomers who wished to purchase a dedicated astronomy camera were restricted to offerings from ZWO Optical and QHYCCD. However, there is now a third option for astro-imagers. Player One Astronomy offers a range of dedicated astronomy cameras in uncooled and cooled formats for one-shot colour and monochrome imaging. Soon after purchasing my Lunt 40mm solar telescope, I realized that I needed a new monochrome camera to capture an image of the full solar disk. The Apollo-M Mini solar camera from Player One, at an affordable $549 Cdn, was perfect for this task.

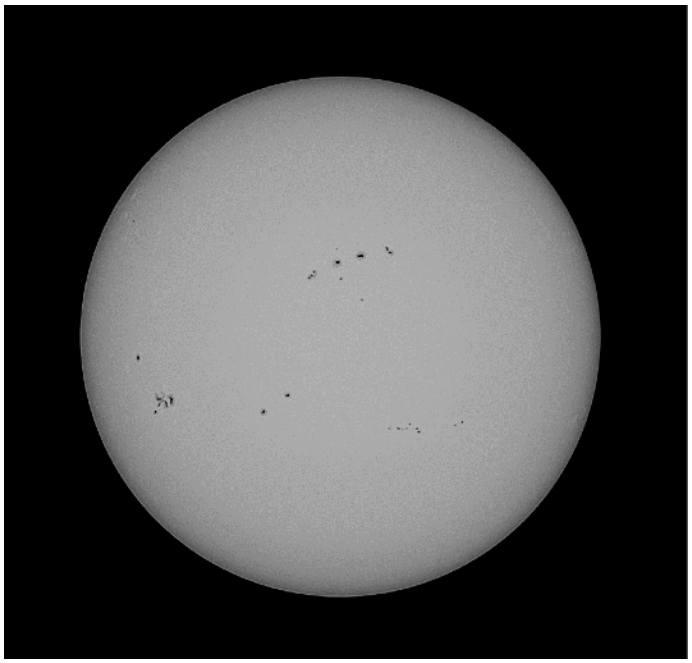
The Apollo-M Mini solar camera with T-mount came in a sturdy and attractive drawer-style cardboard box that also contained a USB 3.0 cable, a ST4 guide cable, a M2 hexagonal wrench, and an air blower for removing dust particles from the sensor. Camera software and the user manual are available from the Player One Astronomy website. The warranty period is a generous two years.

The Apollo-M Mini solar camera is well-constructed with an excellent finish. Its attractive gold colour and distinctive hexagonal shape sets the Player One Astronomy camera apart from its competitors. The camera has a global shutter and is based on the Sony IMX429 2/3” format monochrome sensor. Pixel size is 4.5 µm and the resolution is 1944x1472, yielding 2.8 MP and 84 frames per second at full resolution. Full well depth is 24.8 Ke. A 258 MB DDR3 cache minimizes frame dropping and reduces read noise while dead pixel suppression technology eliminates abnormal pixels from the image.

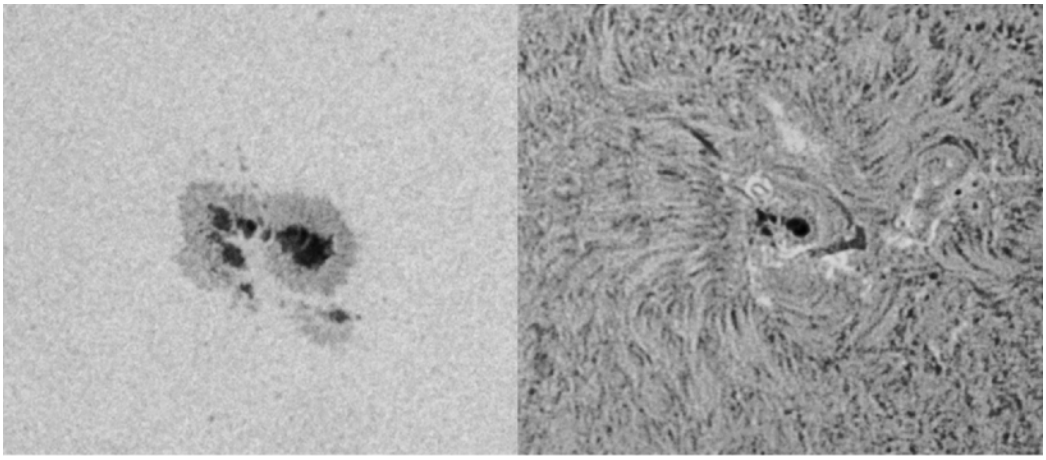
The camera also incorporates a passive cooling system that conducts heat from the sensor to the camera body, reducing sensor temperature by 10-15 degrees Centigrade. This is a useful feature, given that a solar camera operates in the daytime when the ambient temperature is higher than at night. In addition, there is a built-in sensor tilt plate that can be adjusted to remove annoying Newton’s rings from solar images. Competitors’ cameras do not have this feature and require purchase of a separate sensor tilt adapter. A USB 3.0 connection will ensure optimal data transfer; however, the camera is also compatible with USB 2.0. The ST4 port allows the camera to do double duty as a guide camera for other imaging projects.



The Apollo-M Mini solar camera was recognized by the most recent version of SharpCap Pro, which is the software that I routinely use for data capture. Post-processing of the SER video file resulted in a nicely detailed image (above), showing that the Apollo-M Mini pairs well with my Lunt 40mm f10 solar telescope. Sunspot groups, surface detail, filaments and prominences are all well defined in the hydrogen image of the full solar disk.



The Apollo-M Mini solar camera also pairs well with my 80mm f/6 Orion ED80T-CF refractor and APM Herschel wedge for white light imaging of the solar disk, revealing surface granulation, bright faculae, and the structure of sunspot groups.



The addition of a 2.5x Barlow to the imaging train allows for the capture of more detailed images of the Sun's photosphere (left) and chromosphere (right), although at this longer focal length the seeing conditions determine the quality of the final image.

Although I purchased the Apollo-M Mini solar camera primarily for solar imaging, the camera also provides nicely detailed lunar images when paired with my Orion 102mm f13 Maksutov-Cassegrain telescope, as shown by the above photograph of Copernicus crater and surrounding lunar features.

In summary, I am delighted with the performance of the Apollo-M Mini solar camera and will look to Player One Astronomy for any future purchase of a dedicated astronomy camera.

Food for the Soul: The Poetry of Paul Heath

Geminid

Upon the stroke of 2 Am,
The wind, sharp and brisk to face
Did sweep the western sky of cloud,
So stars did sharpen on the eye.

At 2:02 A blazing line was cut
A fiery sword did slice
The darken tapestry above,

So quick the blazing sword had struck
The Twins their feet no time to lift
And Jove no time his head to duck.

So swift, so bright the fiery sword
The startled Stars, did blink
And might Jove his beaming form,
Thrice dimmed by the blazing slice
That cut the darkened tapestry above.

Upon the eye,
The memory of the fiery slice endures,
As Stars unblinked their eyes
And Jove, his gleaming glory regained,
Only the wind darkened tapestry remained.

By Paul Heath

Photo: news.cgtn.com

Sunless Sky

Demons attack the God of Light
Their battle fierce steals ones sight,
Kings in fear do hide
Their misdeeds, a punishment
Now written on the sky.

With Cymbals crash and beaten Drums,
With rockets bursting, blazing flash,
With shouts and cries so loud,
They sought to drive the Demons
From the Sky.

As ages passed, and Reason rose
The paths of Night and Day were told
And understanding did unfold,
Yet in Fear, most praying, still hid from Sunless Skies.

A Mask of cloud led the way
To keep ones sight and watch the play,
Of Night and Day,
As Wonder slipped unconscious, into the fray.

Then the Fear to film was trapped
Amazed, multitudes now could watch
With sightless fear held to bay,
The dance of Night with Day, replayed.

Then Sunless Skies they did seek out,
To hold Wonder within ones own eye
And stand beneath a Sunless Sky
Became a louder, louder cry.

We gather soon upon the road
A journey to fill ones Mind and Soul,
To feel the primal fear unfold,
As rushing darkness our sight enfolds,
And Nature pauses, a deep breath to hold.

We will stand beneath a Sunless Sky,
As Night reveals the Spirit within the light of Day,
And Natures Wonder, fills us all with AWE.

By *Paul Heath*

Photo by Jerry Black

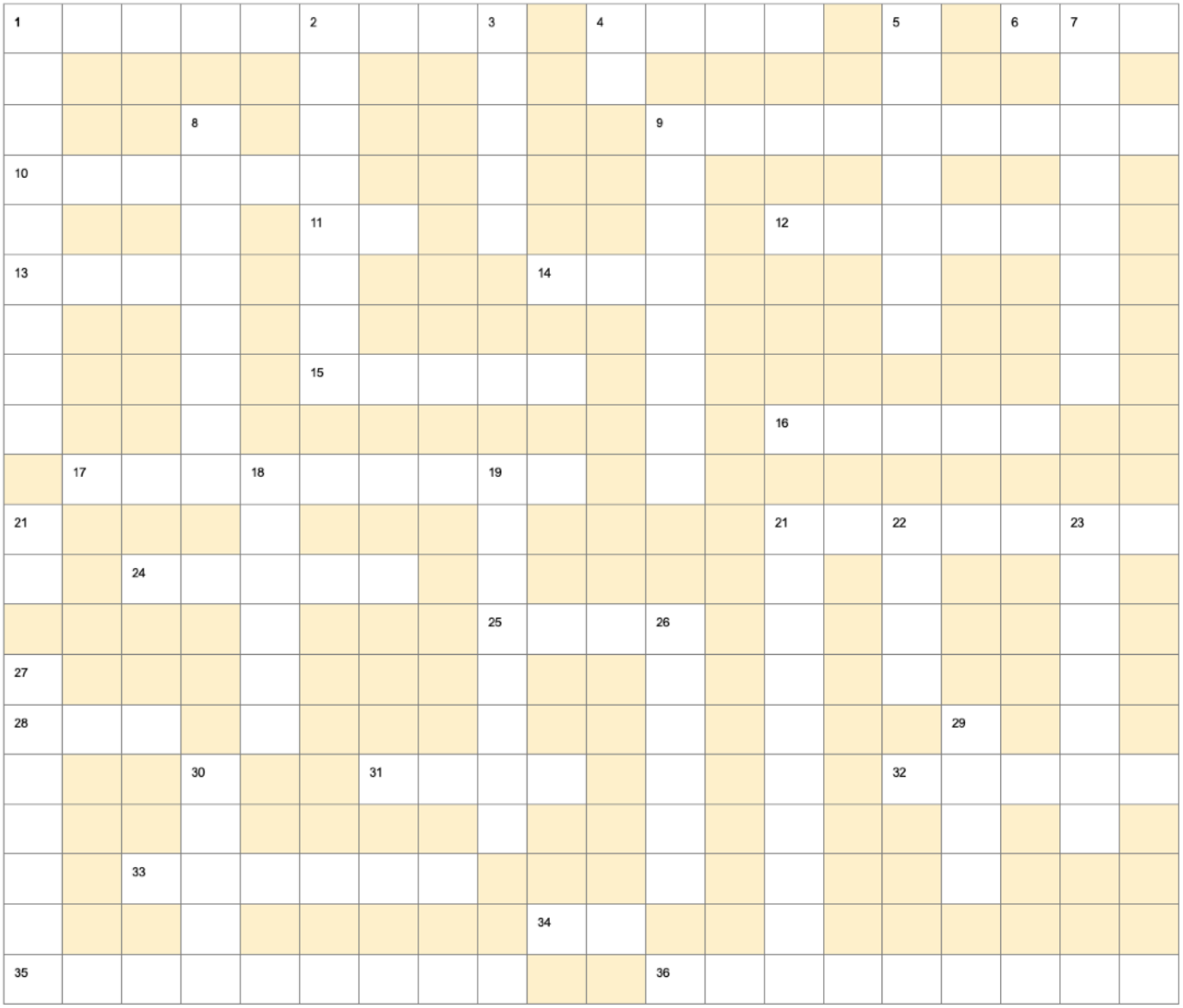
PUZZLE CORNER – Messier Catalogue

(See next page for clues)

Astro Cross Words

By Judy Black

Astro Cross Words is a regular feature in *Nova Notes.* This edition's puzzle, the *Messier Catalogue*, contains nebula, star clusters and galaxies that you would find while out conducting the Messier Marathon, and also includes terminology and who's-who. Apostrophes are ignored. Most times the name of the DSO is needed; other times it's the designation, e.g., M1. Answers will be in the next edition of *Nova Notes*. Have fun!



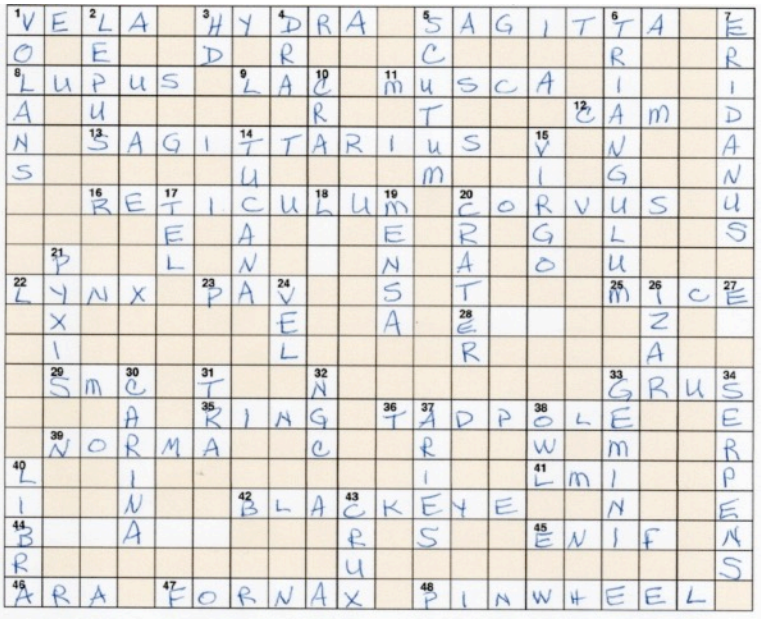
Across

1) Interacting spiral galaxy (and an appliance brand name)
4) Designation for the Pinwheel Galaxy in Ursa Major
6) Can you hear this nebula silently fly past you?
9) Open cluster in Scorpius resembling a winged insect
10) A gas or dust cloud seen as a “grey fuzzy” or dark silhouette
11) Update to the NGC serving as supplements to it in 1895 and 1908 (abbreviation)
12) 3-Lobed nebula in Sagittarius
13) Nebula that inspired Messier to begin his catalogue
14) Astronomical catalogue of DSOs compiled by Dreyer in 1888 (abbreviation)
15) Barred spiral galaxy in Cetus; chefs know it as calamari
16) Open cluster in Serpens also known as the Star Queen Nebula
17) Globular cluster southeast of Capricornus. Careful not to get stung!
20) One of the largest known globular clusters designated as NGC 7089
21) Beautiful open cluster in Scorpius named after a Greek astronomer
24) Galaxy too far away to light up and smoke
25) Planetary nebula in Lyra
28) 3-Letter abbreviation for the bull constellation
31) Globular cluster in Serpens. “This” by any other name is still “this”.
32) Grand design spiral galaxy in Ursa Major; reidentified by Messier & Méchain as M81
33) Supergiant elliptical galaxy in Virgo containing several trillion stars
34) Globular cluster in Scorpius. Many are afraid of this arachnid.
35) Type of emission nebula made of ionized gas ejected from red giant stars
36) Spiral Galaxy containing about 400 billion stars named after a very tall flower

Down

1) Optical double in Ursa Major
2) Also known as the Seven Sisters
3) The hoppy critter hunted by Orion
4) Globular cluster in Ophiuchus near Eta Ophiuchi and above Barnard 64
5) Open cluster in Cancer; also referred to as Praesepe
7) This fowl cluster in Scutum cannot be caught
8) Planetary nebula also called Apple Core Nebula. It’s insulting to be called this.
9) Spiral galaxy in Coma Berenices with dark bands of dust across one side of its nucleus
18) Emission nebula in Sagittarius. Have you visited Iceland’s Blue one?
19) Open cluster in Auriga, and a marine invertebrate
20) Globular cluster in Aquarius discovered by Jean-Dominque Maraldi while observing a comet
21) Author of the *Year-Round Messier Marathon Field Guide*
22) Type of looser grouped cluster of younger stars, typically with only few hundred stars
23) King Louis XV gave him the nickname “The ferret of Comets.”
26) Huge collection of dust, gas and billions of stars and their solar systems held together gravitationally
27) To find your way to a desired object by going from one star or group of stars to another
29) Female astronomer who added M105, M106 and M107 to the Catalogue
30) One of the most recognizable winter constellations containing 3 nebula

Answers to Last Edition’s Puzzle



Under Cuban Skies with Dave Chapman

Relax in paradise with these wonderful photos and captions from Cuba courtesy of **Dave Chapman**.

Feb. 7 2024—Venus and the waning crescent Moon rise together (Cayo Coco, Cuba). The view of the Moon in binoculars was lovely, with much Earthshine.

Saturday night, a thin crescent Moon appeared at our Cuban resort just after sunset. It was only about 24 hours after new Moon. Happy Lunar New Year!

When I travel south, I look for stars I can't see from home. Here, in evening twilight at 22°N, I captured two bright stars, Achernar at lower left and Ankaa at the right.

Achernar (α Eridani) is "The End of the River," the river being Eridanus. From Canada, we only see the northern stretch of the river, starting west of Orion and proceeding south below the horizon.

Ankaa (α Phoenicis) is "The Head of the Phoenix."

Both are classic Navigation stars.

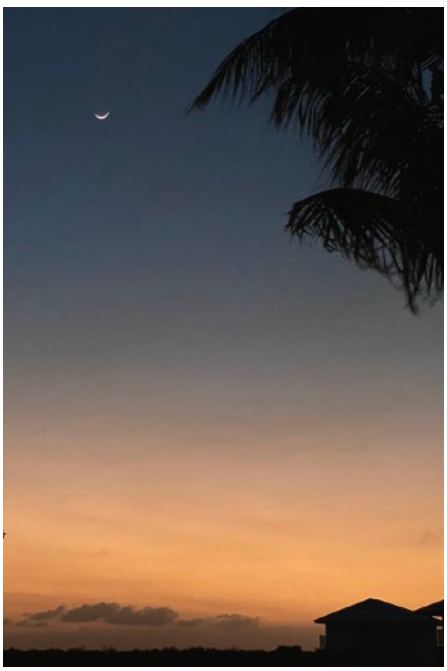
Under Cuban Skies with Dave Chapman (con't)

From Cuba (22° N) you can see The Southern Cross (Crux, lower right), but you need to look at the right time of night. In mid February, that would be about 3:30 a.m. As a bonus, you can see Alpha Centauri (lower left), the closest star to the Solar System. From the north coast (where most of the resorts are) we look over the mainland to the south, where cities are marked by their light domes.

From Cuba you can see stars that can't be seen from Canada.

At the upper right is the Belt of Orion and his legs. To the left and down is the Great Dog, with its principal star Sirius, the brightest star in the night sky. All these stars CAN be seen from Canada.

Just above the rooftop is Canopus, which is the second brightest star in the night sky, but you CAN'T see it from Canada. I always look for Canopus when I come to Cuba.



Two-day Moon over Lagoon (Cuba, Feb. 11)

Member News

Gaurav Singh's Photo Chosen For NASA APOD

Jupiter and the Geminid (APOD: 2023 Dec 28)
Image Credit & Copyright: **Gaurav Singh**
https://apod.nasa.gov/apod/ap231228.html

Explanation: For a brief moment, this brilliant fireball meteor outshone Jupiter in planet Earth's night. The serendipitous image was captured while hunting meteors under cold Canadian skies with a camera in timelapse mode on Dec. 14, near the peak of the Geminid meteor shower. The Geminid meteor shower, asteroid 3200 Phaethon's annual gift, always arrives in December. Dust shed along the orbit of the mysterious asteroid causes the meteor streaks, as the vaporizing grains plow through our fair planet's upper atmosphere at 22 kilometers per second. Of course Geminid shower meteors appear to radiate from a point in the constellation of the Twins. That's below and left of this frame. With bright Jupiter on the right, also in the December night skyview are the Pleiades and Hyades star clusters.

https://apod.nasa.gov/apod/lib/about_apod.html

https://www.instagram.com/skywatchercanada/

Members' Universe

Jeremy Kuzub's project update

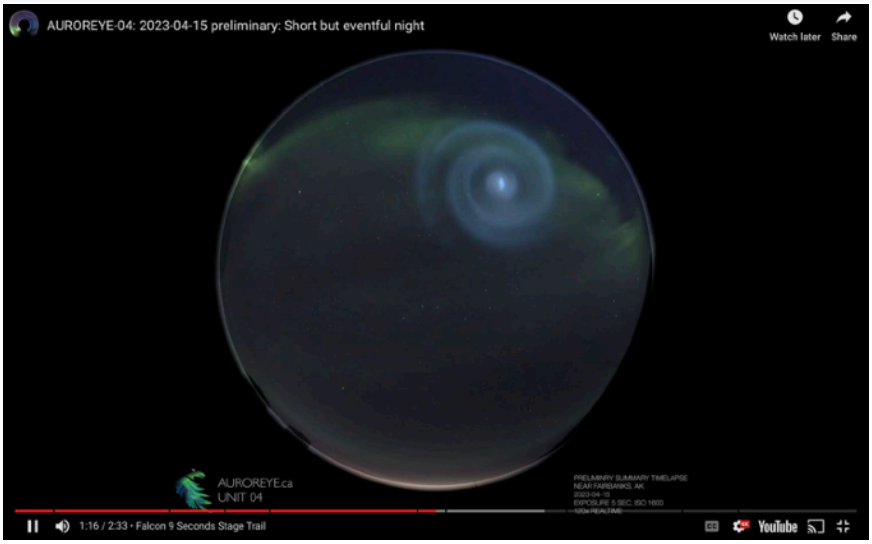
Photos and text by Jeremy Kuzub

The cameras

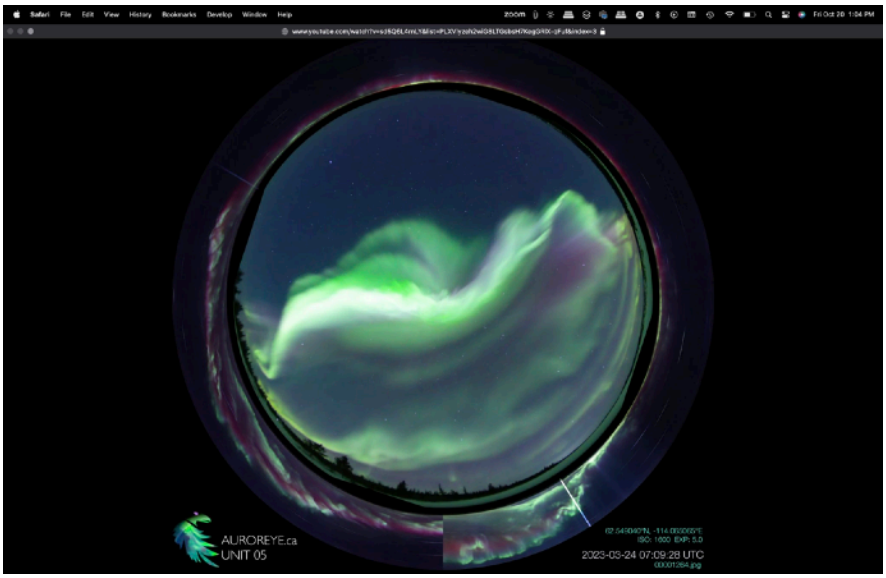
Hi from Cow Bay!
In an ongoing project, I developed portable all sky cameras for citizen science applications.

This year I am sending two cameras out to aurora chasers - one in Alaska, and one in Manitoba.
Here are some of the images they captured last spring. More video and details at auroreye.ca

Watch the video timelapse playlist on YouTube:
https://youtube.com/playlist?list=PLXVlyzeh2wiG8LTGsbsH7KegGRIX-qFuf&si=cnLnJ8Rsf6id8Sm4



Falcon 9 upper stage exhaust spirals from Alaska



Overhead aurora near Yellowknife

Members' Universe

James Edgar FRASC, UE. Shares this wonderful photo and writes;

"Snapped with my Samsung Galaxy S22 Ultra at f/1.8 and 1/4509 sec -- a wonderful camera!

My wife and I were driving down our street in Melville, Saskatchewan, on Jan 18, and I just had to stop the car and quickly frame the Sun behind the tree. On crisp winter days we see lots of sundogs!

These are particularly pleasing."

Blair MacDonald shares this image of Sh2-308, also designated as Sharpless 308, RCW 11, or LBN 1052, commonly known as the Dolphin-Head Nebula.

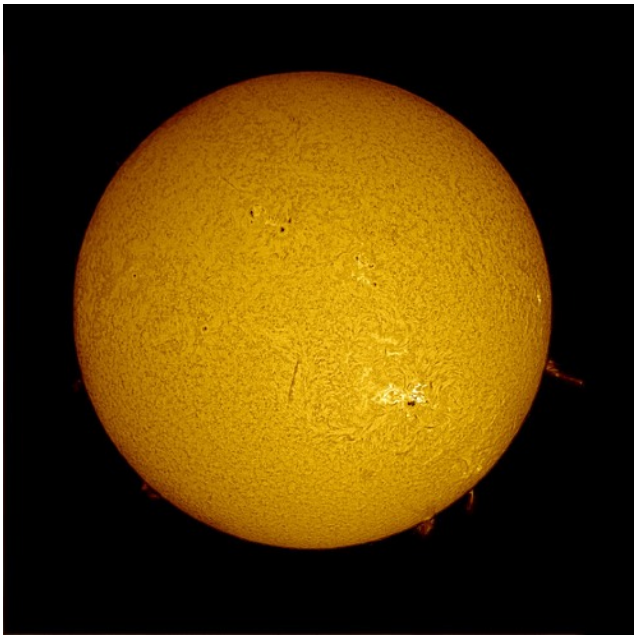
He writes: "Adding another two hours or so to the data did wonders for this image. As I added more data, less noise reduction was needed so the detail in the filaments of the nebula become sharper and it was able to stand up to a more extreme stretch making the stars less prominent."

Members' Universe: David Hoskin's Universe

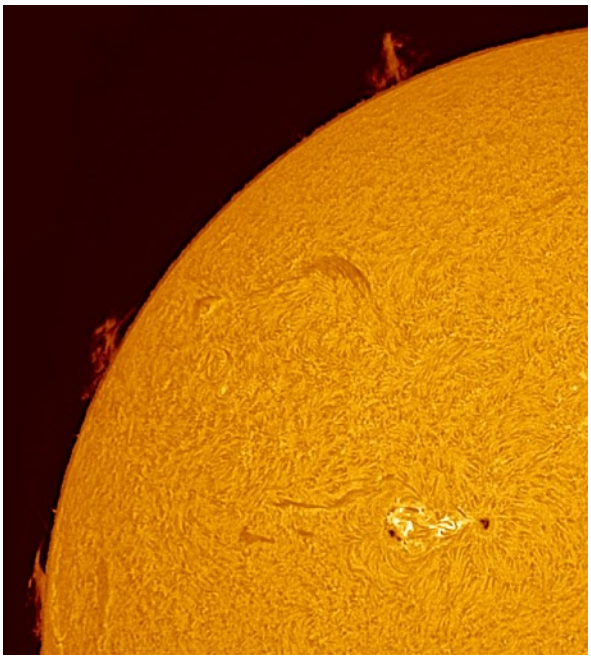
Photos and Captions by David Hoskin

Comet 12P/Pons-Brooks passing through Lacerta on 21 Feb 2024.
Imaged with the Dwarf 2.

Hyades and Pleiades - 2 open star clusters in the constellation Taurus. NGC 1647, a third open star cluster is visible above and slightly to the left of the red giant star Aldebaran.



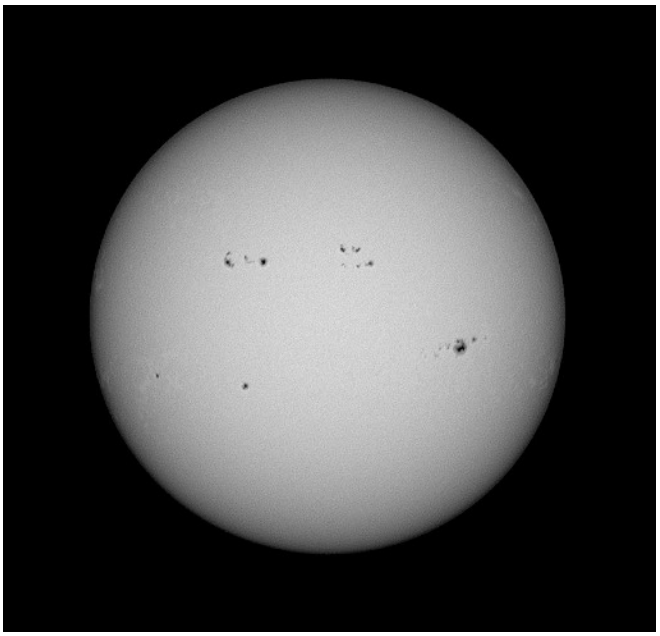
Hydrogen alpha Sun 12 Feb 2024



Close-up hydrogen alpha image from 12 Feb 2024 of sunspot group AR3583 showing some nice filaments and prominences.

Equipment: ES 2x focal extender, PO Apollo M-mini camera, Lunt 40mm solar scope, Celestron SLT mount

Members' Universe: David Hoskin's Universe (con't)



White Light Sun 12 Feb 2024

Waxing gibbous Moon 23 Jan 2024

NGC 4216, a spiral galaxy in the constellation Virgo, is home to a new type 1a supernova (indicated by the white lines) Supernova 2024gy that was discovered on 4 Jan 2024 by Koichi Itagaki. I captured this image last night between intermittent clouds.

I got up before dawn this morning,Feb. 21, 2024, to photograph the Mars - Venus conjunction. Temperature was -22 centigrade! The planets were very close to the horizon. Venus was visible to the unaided eye but not Mars, although the camera captured both planets. This is a single frame that was cropped.

The following Annual Reports were omitted from the previous edition of Nova Notes

2023 Annual Report: Dark-Sky Preserve Committee

Tony Schellinck and Peter Hurley served as co-chairs of the RASC Halifax Centre Dark-Sky Preserve Committee in 2023. Activities involved interacting with Kejimkujik National Park staff, preparing for a lighting audit of the Park, planning and delivery of the annual Dark-Sky weekend, reviewing activities within the Park that might impact the DSP designation, and corresponding with the RASC Light Pollution Abatement Committee and the RASC Dark-Sky Sites Program. Planning and scheduling of events were assisted by Dave Chapman, Chris Young, Judy and Jerry Black, David Hoskin and Wayne Mansfield.

Lighting Audit activities

There were plans to complete a lighting audit of the Park in Fall 2023 and discussions of changes in lighting within the Park occurred in planning meetings and during the Dark-Sky weekend. Unfortunately, due to personal time constraints, Tony and Peter were unable to complete a lighting audit in the fall before the Park closed for the season. They plan to complete a lighting audit in early 2024.

Dark-Sky Pop-up Observing Events

Following the success of these pop-up events in 2022, it was planned to continue this activity in 2023. Tony attempted one pop-up in June but the skies clouded over. Unfortunately, other pop-up events didn't happen due to weather conditions and personal schedules.

Provision of Outreach Materials

We assisted Park staff in obtaining RASC Outreach materials from RASC National Office for the Park and for the Friends of Keji group.

Maintenance of Park telescope

The Park telescope, a 10" Sky-Watcher Dobsonian, had not been used in their programs for several years. During DSW 2022, Dave Chapman and Chris Young offered to service the telescope. Upon examination, they determined that the telescope required cleaning, collimation, and repair or replacement of several parts. They took the telescope home to complete this service to have the telescope ready for the 2023 season. Dave and Chris travelled to the Park in June 2023 to return the re-furbished telescope and train Park staff in its use and care.

Training of Park Staff

Tony Schellinck gave a slide presentation in the Kejimkujik theatre on May 11, 2023 for interpreters and other interested parties, that introduced them to the spring and summer skies and the DSOs that could be found there. He covered how to star hop to find many of these targets.

August 11 – 13, 2023 Dark-Sky Weekend

Friday, August 11

9:30 pm – 10:00 pm (Sky Circle): Tour of the Night Sky by Chris Young and Dave Chapman.
10:00 pm – midnight (Sky Circle field): Jerry Black, Matt Dyer, Paul Gray, David Hoskin, Peter Hurley, Wayne Mansfield, Andrea and Kevin Misner, Karl Penney, and John Read were in the field with telescopes. Tony Schellinck was at the binocular table with assistance from Judy Black, Daphne Themelis and Niko Hurley. Dave Chapman and Chris Young answered questions in the Sky Circle.

Saturday, August 20

1:00 pm – 4:00 pm (Merrymakedge Beach): solar telescope observing with Paul Gray, Wayne Mansfield and John Read. Information booth crewed by Judy and Jerry Black, Dave Chapman, David Hoskin and Peter Hurley. Telescopes and binoculars set up at the Merrymakedge Beach Canteen with Matt Dyer, Karl Penney, and Andrea and Kevin Misner in attendance. Tony Schellinck demonstrated sketching in astronomy.
4:00 pm – 4:45 pm (Sky Circle field): "Walk the Solar System" with David Hoskin.
9:30 pm – 10:00 pm (Sky Circle): Tour of the Night Sky by Dave Chapman and Chris Young
10:00 pm – midnight (Sky Circle field): Telescope & binocular observing. Same people supported as on Friday night.

Sunday, August 21

1:00 pm – 4:00 pm (Merrymakedge Beach): Information booth crewed by Jerry Black, Dave Chapman, Matt Dyer, David Hoskin, and Peter Hurley, until the rain started.
Unfortunately, the 4pm "Walk the Solar System" program and the evening programs in the Sky Circle were cancelled due to rain.

Despite the rain and cancellations on Sunday, it was a very successful Dark-Sky weekend with record attendance.

The final attendance numbers tabulated with assistance from the Park's staff are listed below.

Friday, August 19	
Sky Circle	257
Saturday, August 20	
Astronomy Drop-in	100
Walk the Solar System	35
Sky Circle	540
Sunday, August 21	
Astronomy Drop-in	20
Walk the Solar System	-
Sky Circle	-
Total	952

We want to recognize the amazing work put in by Parks Canada staff Colleen Anderson in organising this event on behalf of Parks Canada. This involved months of preparation and planning, numerous meetings, and lots of emails to make this happen as smoothly as it did. Other Parks Canada staff including Ashley Moffat, Marilyse Theriault-Comeau, Sam Shepard, Oryan Currie and Jonathan Oikle also assisted and we thank them all for their efforts on our behalf.

Thank you to all the RASC volunteers who made this happen. Their names are mentioned above. We hope you enjoyed this weekend event and will consider participating again next year.

Still images and time-lapse photography were taken by Niko Hurley and Jerry Black respectively. Here is a link to a video produced by Jerry Black to highlight the 2023 Kejimkujik Dark-Sky weekend.

https://vimeo.com/858386580

2024 Dark-Sky Weekend plans
Planning for 2024 DSW are already underway. The dates August 2-4, 2024 have been set and 8 campsites have been reserved for Centre members volunteering for the weekend.

Respectfully submitted,
Peter Hurley, DSP Committee Co-chair
Tony Schellinck, DSP Committee Co-chair

2023 Annual Report: Webmaster

Our websites hosted by St. Mary's University have been based on the Joomla content management system for some time. Dave Lane was able to migrate the Halifax RASC and Nova East websites to Joomla4 in January 2023.

There used to be a link on the Halifax RASC website to ask to be added to our rascals email discussion list. This link was removed as a result in increased internet security policies at SMU. There is possibly an alternative using Joomla which has yet to be implemented on the site. In the interim, contact the secretary or webmaster via email.

Joomla4 has been updated as security/feature updates are made available. The current version is 4.4.3. Although Joomla5 has been released, neither website has been migrated to Joomla5.

The website is generally not updated as frequently as might be beneficial. Meeting notices and What's Up? and Nova Notes are updated when available.

Recommendations:

Upgrade to Joomla5 for both websites when time permits Tiffany to do so.

Review the content informally and update web content where appropriate.

Respectively submitted,

Jerry Black, Centre Webmaster
RASC, Halifax Centre

Annual Report:
2022-2023 Treasurer's Report

The fiscal year 2022-23 was the first after COVID-19 year with a higher level of activity. Membership continuously dropped through the year. It was a successful year financially for the Halifax Centre. Halifax Centre achieved a loss of $554 before allowance of $1,056 for depreciation and write-offs.

Details of the 2022 Income Statement

REVENUE:

Membership Fees $3,365: Lower than 2022 (166) with 150 members including 19 life members. Membership fees were $3,413 before a one-time payment from RASC National ($591).

Donations $350: Donations made by members when renewing their membership.

Interest $63: Interest on our bank account and GIC investments matured in 2022-23.

Sales of Merchandise $340: For the sale of calendars and Explore the Universe books.

Nova East $1,190: Registration fees received prior to the cancellation of Nova East.

EXPENSES:

Meetings $230: Annual Zoom subscription fee to hold members and board meetings as well as technical sessions offered by members.

Depreciation and write-offs $1,056: Depreciation of observatory and library. Increased from 3% to 10% on auditor's recommendation.

Purchase of merchandise $490: Purchase and mailing 2023 calendars.

Educational Activities (Outreach) $36: Sky News magazines ($36). National made a decision not to cash small outstanding invoices for Sky News.

Insurance $1,837: Insurance for SCO. An 8% increase from 2022.

Operating expenses - SCO $711: This includes installation of electric heat in the warm room and extension of electricity to the storage room in addition to the propane tank rental and taxes to West Hants Regional Municipality.

Details of the 2023 Balance Sheet

ASSETS:

Cash $10,175: This is the balance in our chequing account at year-end.

Investments $8,000: This is the value of the principle in our investments. We have two GICs that come due in 2024. Interest is accounted for at maturity.

Accounts payable $2,111: Includes $1,190 refund of registrations for the cancelled Nova East sky party.

EQUITY:

Common Equity $21,708: After $5,000 Nova east working capital is deducted and accounts payable are paid.

I am pleased to serve as Treasurer. Thank you to our auditor, Dave Chapman, for ensuring the books are in order at year-end.

Respectfully submitted,

Gregg Dill

_____

Gregg Dill
Treasurer, RASC – Halifax Centre

Continued on next page

Royal Astronomical Society of Canada, Halifax Centre
Comparative Income Statement
Years Ending September 30, 2022 and September 30, 2023

	Years Ended September 30		Amount of Increase or (Decrease)
	2023	2022	during 2023
Revenue			
Membership Fees	$3,364.77	$4,003.58	($638.81)
Donations	$350.00	$857.88	($507.88)
Observatory Donations	$0.00	$240.00	($240.00)
Education& Outreach	$0.00	$50.00	($50.00)
Interest	$63.14	$2.25	$60.89
Sales of Merchandise	$340.00	$525.00	($185.00)
Nova East (Net)	$1,190.00	$996.19	$193.81
Nova Notes Print Subs	$0.00	$260.00	($260.00)
National Processing Fees (Income)	($4.91)	$0.00	($4.91)
Miscellaneous	$0.00	$20.00	($20.00)
Total Revenue	$5,303.00	$6,954.90	($1,651.90)
Expenses			
Meetings	$230.00	$230.00	$0.00
Newsletter	$80.46	$265.97	($185.51)
Depreciation and write offs	$1,056.23	$490.47	$565.76
Equipment and Supplies	$0.00	$0.00	$0.00
Purchase of merchandise	$490.51	$453.47	$37.04
Office Administration	$0.00	$444.69	($444.69)
Educational Activities	$35.80	$231.14	($195.34)
Insurance	$1,837.00	$1,706.00	$131.00
Awards and Donations	$120.00	$0.00	$120.00
National Office Processing	$106.53	$113.01	($6.48)
Operating Expenses SCO	$710.76	$1,076.39	($365.63)
Miscellaneous (NE refunds)	$1,190.00	$0.00	$1,190.00
Total Expenses	$5,857.29	$5,011.14	$846.15
Operational Surplus (Deficit)	($554.29)	$1,943.76	($2,498.05)

Royal Astronomical Society of Canada, Halifax Centre
Comparative Balance Sheet
Years Ending September 30, 2022 and September 30, 2023

September 30, 2023 Activity to: September 30, 2021	Years Ended September 30		Amount of Increase or (Decrease)
	2023	2022	during 2023
Assets			
Cash	$10,175.49	$8,539.13	$1,636.36
Investments	$8,000.00	$8,000.00	$0.00
Accounts Receivable	$282.22	$240.38	$41.84
Library Estimated	$1,183.11	$1,219.70	($36.59)
Observatory Equipment	$9,178.78	$10,198.42	($1,019.64)
Miscellaneous Estimated	$0.00	$0.00	$0.00
Total Assets	$28,819.60	$28,197.63	$621.97
Liabilities			
Accounts Payable	$2,111.30	$935.04	$1,176.26
Capital			
Nova East Working Equity	$5,000.00	$5,000.00	$0.00
Common Equity	$21,708.30	$22,262.59	($554.29)
Total Capital	$26,708.30	$27,262.59	($554.29)
Total Liabilities and Capital	$28,819.60	$28,197.63	$621.97

RASC Halifax Auditor's Report
FY October 2022 – October 2023

Preamble
I was asked to step in as auditor owing to the re-arrangement of du8es within the Centre during 2023 whereby the previously nominated auditor was unable to complete the task. I agreed, but I have no training in accounting or auditing beyond balancing my personal chequebook. What follows is more of a "reality check" on the RASC Halifax Treasurer's report presented in December at the 2023 AGM.

Statement
I have reviewed the Treasurer's Report and find that it is a faithful account of the Centre's financial dealings in the time period.

At first, I had problems reconciling the Bank Details (BD) with the Comparative Income Statement (CIS), but that was before I understood the role of "accounts payable" and "accounts receivable." These details were included in other supplied documents. That realization resolved about half of the discrepancies in my mind.

Then I had to call the Treasurer to resolve the remaining apparent discrepancies. Here is a typical example:

The term "RASC Fees" is used in two different senses in two different places. In the BD, it refers to the Centre share of membership fees MINUS a National Office processing fee; in the CIS, the membership fees and processing fees are entered separately as revenue and expenses, so "RASC Fees" appeared to not add up.

Additionally, the monthly bank deposits are based on previous month's membership, which adds to the confusion. Furthermore, donations included in the membership fees in the BD are broken out in the CIS.

There were a number of similar issues involving minor sums. I was eventually satisfied, a]er discussing them with the Treasurer.

Some of the confusion comes from "split transactions" with individuals or organizations that are entered differently in the BD and CIS. It would be helpful to have some notes added for amateur auditors like myself.

Depreciation of Assets
The annual depreciation of assets is acceptable, based on previous practice, but there are some minor discrepancies with actual holdings according to the SCO Manager. For example:

- There are items on the inventory we no longer own (4" Skywatcher Telescope).
- There are items we own but are not on the asset list (new electric heater, BBQ).
- There is inconsistent valuation of op8cal systems (Vandenberg telescope $800, Celestron XLT $1).
- There is a very large amount of miscellaneous or unspecified assets ($916.96).
- There are items that need more description (shroud, 16" cover, propane tank).

I have recommendations for the Board to consider going forward. These have been discussed casually with the Treasurer and the SCO Manager:

- The current Capital Equipment Depreciation document should be discontinued and archived.
- In spring 2024, a sub-committee consisting of the SCO Manager, the Treasurer, and other members should perform a fresh inventory and valuation of the assets. This would be the staring point for the 2024 Financial Report with no depreciation in 2024; in following years the depreciation rate should be 10%.
- Systems no longer in use or not expected to be used should be liquidated.
- Endowed systems such as the Thurlow binoculars and the Celestron XLT are rarely used, but rather than liquidate them, the Board should create initiatives to encourage their use, with training opportunities offered.
- There are at least three collections of eyepieces in our assets that are under-documented. These should be consolidated and inventoried. Surplus eyepieces should be liquidated; the remainder should be stored properly at SCO for the use of members on site. Perhaps individual eyepieces should be identified as RASC-owned to prevent accidental disappearance.

Respectfully Submitted,

David M F Chapman FRASC
2024 January 8

January 6, 2024 RASC Halifax Centre Meeting:

(38 attendees)
To watch a replay of the meeting, please visit: https://www.youtube.com/watch?v=t2dLIOlF6lU on the RASC Halifax YouTube Channel.

Welcome - David Hoskin

RASC Halifax Director, Observing / EPO Chair and program emcee David Hoskin welcomed everyone to the monthly meeting, shared the Indigenous Land Acknowledgment 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, Barry Burgess, Dave Chapman, Jason Dain, Tim Doucette, Paul Gray, David Hoskin, Blair MacDonald, David McMullen (and his puzzle which provided a distraction during overcast weather,) Bob Russell and Gaurav Singh and his APOD.

Special Presentation: Pat Kelly (Halifax Centre) - New ESA probe launched to survey Europa

Pat described to us the ***New ESA probe launched to survey Europa.*** Pat has spoken to our Centre and to Nova East about Jupiter and its numerous moons.

Outreach Opportunities

The Young Naturalist Club in Parrsboro wants to put together stargazing as part of their Winter Carnival the dates have not yet been set, but will be sometime between February 15-19.

February 10th, there may be an opportunity in Wolfville for a fundraiser for Valley Regional Hospital.

Additionally, the Air Force may be looking for a program to celebrate the 100th anniversary of the Air Force. Details to follow.

Paul Heath - Food for the Soul - *Geminid*

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

Paul Heath's second book, *Food for the Soul: Of Love and Passing,* has been released and is available on Amazon.

News from the Board with President Tony McGrath

President Tony McGrath thanked the incoming 2024 Board, and acknowledged the new and returning members.

Five goals have been established for the year.

- Develop a solid understanding of Wants and Needs of the membership (a survey will be circulated to help with this goal - watch your email)
- Implement Monthly Members Night at SCO (a great opportunity for those who want to pursue their Explore the Universe certificate)
- Promote RASC Observing Programs & Astro Imaging Contest
- New Member Recruitment & Initiation
- Implement SCO Maintenance & Development Plan

David Hoskin (EPO/Observing Chair) - What's up for Jan. 2024

David reviewed highlights of the January sky. Days are getting longer! 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. Each month, you can find David's presentations on the homepage at http://halifax.rasc.ca

February 3, 2024 RASC Halifax Centre Meeting:

(36 total (includes 3 non-members for the AGM)) To watch a replay of the meeting, please visit: https://youtu.be/hrUNS0-pP94?si=xtvwgVDMBDJfcOep on the RASC Halifax YouTube Channel.

Welcome and Announcements - David Hoskin

RASC Halifax Director, Observing / EPO Chair and program emcee David Hoskin welcomed everyone to the monthly meeting, shared the Indigenous Land Acknowledgement and read the Centre's inclusivity and diversity statement.

There are no remaining calendars for sale, but Explore the Universe guides and eclipse glasses ($2 each, maximum of 10 per person) will be available for sale during the March meeting. If you can not make the meeting, eclipse glasses are available through National.

For anyone staying in Halifax, and would like to help as a volunteer at an eclipse event, reach out to David Hoskin.

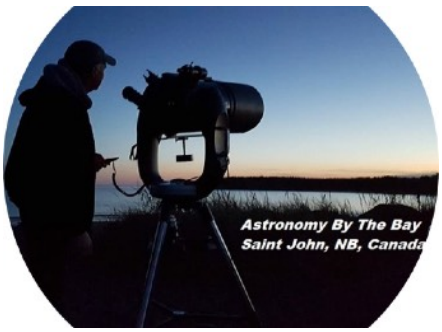
David Hoskin - Photo Montage

Last month, there were not too many great nights for observing. David presented photographs from Centre members including Jerry Black, Michael Boschat, David Chapman, Jason Dain, David Hoskin, Blair MacDonald, John McPhee, and Bob Russell.

Special Presentations:

Chris Curwin (New Brunswick Centre, Astronomy By the Bay) - Outreach by the Bay

Lisa Ann Fanning introduced her friend, and host of the Sunday Night Astronomy Show, Chris Curwin, an amateur astronomer who has been a member of the Saint John Astronomy Club and the RASC NB Centre for about 20 years. His interest is primarily outreach through schools, youth groups, and sidewalk astronomy for the public. His "Astronomy by the Bay" social media channels begin their ninth year on Feb 1st. In 2019, He was awarded the RASC Qilak award for astronomy outreach.On Sunday evenings, he is joined by RASC NB members Mike Powell and Paul Owen to offer a "Sunday Night Astronomy Show," which celebrated its 200th episode on January 21st.



Paul Gray - Eclipse 2024! Be there!

"So, you hear there is a total eclipse of the sun coming to Atlantic Canada and you want to see it? On April 8th of 2024 we will have a front row seat to the most spectacular of astronomical events one can witness. Have you planned your travel and location yet? No? Have you considered the weather prospects, travel and traffic? No? Well then this presentation is for you! Come learn how to plan your eclipse excursion to improve your chances of success."

Outreach and Observing Opportunities
The following events could use outreach assistance. To help out, contact David Hoskin for details.
- The Eclipse event at SMU (April 8th)
- Feb. 10th, there is a fundraiser for the local hospital at a winery
- Feb. 18th, the Young Naturalist Club in Parrsboro

Next Members Observing Night (weather permitting)- Friday, Feb 9th. Check the discussion list for updates.

Paul Heath - Food for the Soul - *Sunless Sky*
Paul presented his poem *Sunless Sky,* which can be read on page 12 of this edition of Nova Notes.

News from the Board presented by Judy Black
Astroimaging Contest submissions are due by the end of Nov. 2024. See the RASC Halifax website for details.

Observing nights and specialty nights (focused on specific pieces of the night sky) are being planned throughout the year.

Nova Notes deadline is Feb. 24, 2024. Email novanoteseditor@halifax.rasc.ca.

David Hoskin (EPO/Observing Chair) - What's up for Feb. 2024
David reviewed highlights of the February sky. 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. Each month, you can find David's presentations on the homepage at http://halifax.rasc.ca.

SAVE THE DATES - 2024 Members Nights

Month	Mi'kmaw Moon	Date of New Moon	Date of Members Night	Alternate
January	Punamujuik'us	Thur 11th Jan	Friday 12th Jan	Saturday 13th Jan
February	Apuknajit	Fri 9th Feb	Friday 9th Feb	Saturday 10th Feb
March	Siwkewiku's	Sun 10th March	Friday 8th Mar	Saturday 9th Mar
April	Penatmuiku's	Mon 8th April	Friday 5th Apr	Saturday 6th Apr
May	Sqoljuiku's	Wed 8th May	Friday 10 May	Saturday 11 May
June	Nipniku's	Thur 6th June	Friday 7th Jun	Saturday 8th Jun
July	Peskewiku's	Fri 5th July	Friday 5th Jul	Saturday 6th Jul
August	Kisikewiku's	Sun 4th Aug	Friday 2nd Aug	Saturday 3rd Aug
September	Wikumkewiku's	Mon 2nd Sept	Friday 6th Sept	Saturday 7th Sept
October	Wikewiku's	Wed 2nd Oct	Friday 4th Oct	Saturday 5th Oct
November	Keptekewiku's	Fri 1st Nov	Friday 1st Nov	Saturday 2nd Nov
December	Kesikewiku's / Kjiku's	Sun 1st Dec	Friday 29th Nov	Saturday 30th Nov
December	Kesikewiku's / Kjiku's	Mon 30th Dec	Friday 27th Dec	Saturday 28th Dec

Above is a list of proposed Members Nights at St Croix Observatory.