Regulus

Newsletter of the RASC Kingston Centre

Vol. 50, No. 11 November 2023

Albireo - "The Hen's Beak"

On the Horizon ....

Centre Meetings

13 December 2023
Holiday Dinner

Regular Monthly Meetings

10 January 2024
14 February 2024

Centre meetings occur on the second Wednesday of every month at 7pm EST from September through to June.

For more information visit us online
https://kingston.rasc.ca

In this issue ...

President's Nook

Kim Hay

This is my last President's Nook before our Elections on November 8, 2023. It has been an interesting four years. We all got through the COVID 19 pandemic, brought our meetings and social gatherings online using ZOOM, and have returned to in-person meetings and Star Parties. Our Centre is in great financial shape, and it's been a joy to work with such a great Executive. Thank you all!

We had a small volunteer contingent (Susan Gagnon, Laurie Graham, Devon Graham-Ancsin, Kevin Kell, and me) at the University setup on the deck and the sidewalk on October 14, 2023, for the partial Solar Eclipse. Many telescopes and HA telescopes were setup. Though we fought with cloud there were breaks of Sunshine and the Cookie bite was to be had. There was a breeze and temperatures were between 15.3C and 16.3C. The sky was also shared with many helicopters that were in training exercises. There was a talk to kick start the event at 11:00 am by Livia Comeau on The Mid-Day Midnight Sky.

Several had tried doing the pinhole camera, which worked. The pinhole through the cheese grater did not work- but a new colander will be bought for next year! Great fun, I hope everyone got too see the Partial eclipse no matter where they were.

As a side experiment, I had set up to measure the temperature and humidity using a ThermPro temperature and humidity reader (purchased from Amazon). The table shows the times and temperatures and % humidity, so I just let it run and checked later. This experiment was run in 2017 at the TSE that we viewed in Wyoming. A temperature drop was seen then, so I was testing this out now.

First Contact at 1203hrs, peak at 1314hrs, and end at 1425hrs - full cloud by 1407hrs.

With the 16.1 breeze, and cloud I am sure this hampered the temperature drop, not that I expected a lot of a drop 15.9 since we were only in a partial, but it is still interesting, and something that can be conducted for the TSE on April 8, 2024.

There are projects in the works for the Centre, and I do hope that you will be excited and want to participate. These will come to light when the details are worked out.

The planning for the Total Solar Eclipse for April 8, 2024 is underway, with the Centre assisting Queen's University in any capacity that we can, but because this is a once in a life time event, the volunteer base may be low, so if you would like to assist, please send a note to kingston@rasc.ca.

Planning is also underway for Science Rendezvous May 11, 2024, if interested in helping the Centre out at the Astronomy booth, let the Executive know.

The next Open House for Queen's is on November 4th, marking Dark Matter Day!

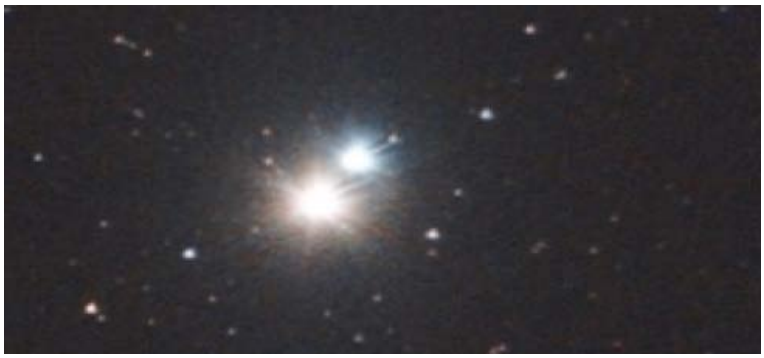
There is a possibility of a meteor shower on December 2, 2023, from Andromeda. This was announced at the BAA Annual meeting on October 25, 2023. Dress warm and keep watch! This should be interesting!

Also don't forget to observe T Cr B which is a recurring Nova, and happens every 80 years!! You can get a star chart from any planetarium program or check out the AAVSO HQ YouTube channel for Dr. Brad Schaefer's talk on T Cr B. Aavso.org also has charts for binoculars and telescopes.

The time changes back to Standard Daylight Savings on November 5, at 2:00 am!! Extra sleep, but earlier Observing time for the winter months.

Clear Skies! Keep looking up!

Time (EST pm)	Temp C	Humidity %	Time (EST pm)	Temp C	Humidity %
1202	16.3	59	1301	15.9	52
1209	15.8	62	1311	15.8	49
1216	15.3	62	1316	16.1	50
1232	15.5	60	1324	15.9	52
1236	15.5	58	1341	16.6	49
1245	16.0	54	1347	16.5	48
1248	15.9	52	1407	16.3	49



On the cover: RASC Past President Rick Wagner caught this great image of the double star Albireo (Beta Cygni) with his ZWO ASI2600MC Pro on the Hankscope (Meade 0.25m f/4 Schmidt-Newtonian.) Stacked as 28x 5s exposures, this image has been cropped and scaled down by 50%. Situated 420ly from our solar system, it is the fifth brightest star in the Cygnus constellation.

Editor's Eyepiece

Andrew B. Godefroy

Welcome to the (late!) November issue of Regulus. It's the start of the sickly season and unfortunately our household wasn't spared, so I am a couple of weeks behind where I want to be with club business. My apologies to all members for the delay in getting this issue out.

That said, one of the few advantages of being stuck at home sick is that I was able to catch up on my TBR (to be read) pile of astronomy books and magazines. Going through the pile there were a few issues of *Sky & Telescope* - which always publishes a few months ahead, the November issue of *Astronomy* devoted largely to the history end evolution of the science of quasars, two issues of the RASC Journal - the October issue sports a great close up of the sun, a nice change from the seemingly endless nebula covers, two issues of the *Journal of the Association of Lunar & Planetary Observers*, as well as an unexpected copy of *StarDate*, the magazine of the University of Texas at Austin McDonald Observatory. Where to begin?

The plethora of publications is a reminder of the seemingly endless amounts of astronomical data that is now available to us. Trying to sift through it all can be a challenge, even when one actively chooses to focus their energy and attention. That said, this issue of *Regulus* seeks to help one slow down with astronomy and get the most out of whatever aspect of it interests you the most.

David Levy recounts his time with one of his early telescopes, and reminds us of a time when one had to accept the slower and wonderful pace of night after night in search of worthy targets. Centre member Stephen Craig is another that comes to mind when thinking about how slow but sure produces lasting results - his pursuit of Messier and NGC targets night after night is both impressive and rewarding for all.

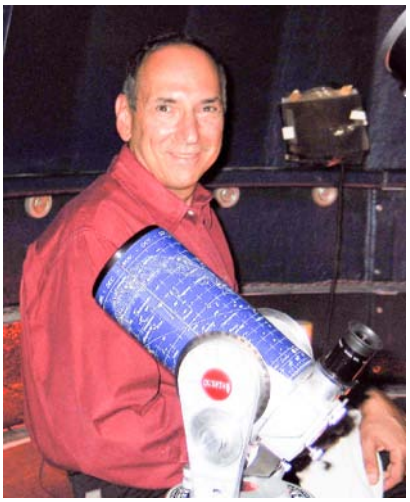
Another new feature along these lines I'm pleased to introduce is the return of Susan Gagnon's column 'Target for Tonight'. This monthly entry will focus on a single constellation at a time and hopefully encourage readers to slow down a little at the scope, pick a constellation, and really get to know its features. By digging into one constellation at a time, observers have the opportunity to see the night sky in new and meaingful ways.

Last but not least, the Astronomer's Bookshelf is back again, this time offering two of the more interesting volumes I recently cleared off my TBR pile. One of them, the *Yearbook of Astronomy*, is a perfect companion for those slow evenings or cloudy nights, when one just wants to shut off the world and stretch out in their favourite chair or couch with a good book.

We often talk about how busy we are and that time (especially weekends) seem to pass by too quickly, but the universe changes at a pace so slow that most cannot even imagine the timelines involved. A colleague who knew I was interested in astronomy once asked if I was aware that another galaxy was going to smash into ours someday and wanted to know if it worried me. When I explained that the inevitable collision between our Milky Way and the Andromeda Galaxy was still about 4.5 billion years away according to most predictions, their reply was simply 'Wow. I guess we won't be here to see it'. That sentence spoke volumes - try not to worry about the future, and make the most of living in the present.

Every time I step outside under the night sky I'm reminded of how fortunate I am to be here on Earth right now. In just the few short years since I rekindled my interest in amateur astronomy, I've been treated to many 'once in a lifetime' events, whether it be comets passing through, planets lining up, fantastic lunar and solar eclipses, or deep sky objects igniting our imaginations - let's face it whatever the risks we were all secretly hoping that Betelgeuse was actually going to go supernova.

As we begin to wrap up 2023 and consign our observer logs to the archives, be sure to take a moment and just slow down, soak in the last of the season, and enjoy whatever part of the night sky you love most. As for me, feeling better I'm heading outside to see old friends - the Pleiades and eventually, Orion. Keep looking up!



Pegasus

As a youngster growing up in Montreal, Canada in the early 1950s, I was impressed by the seeming simplicity of Montreal's weather. It appeared to me as though there were just two kinds of weather, in wintertime a grey sky, and in summertime a blue sky. I wasn't completely wrong about this. In 1961, while trying to run a small astronomy club for young people, I counted an unbroken string of cloudy Friday nights that lasted for months. And sure enough, when the weather began to moderate the following spring, we were treated to, at last, a clear night.

As I grew older, my thoughts turned to finding a different locale where the sky would be clear more often. In September 1979, I packed my bags and telescopes and headed for the American southwest. I was rewarded immediately. My first season here, the Autumn of 1979, was punctuated by a virtually unbroken string of more than 50 clear nights in a row.

There was a specific reason for my wanting more clear nights. In the fall of 1965, I was planning a search program for comets, and it began on December 17 of that year, just before midnight. I used the largest telescope I had at the time; the 8-inch reflector named Pegasus. Less than a year later, Miss Isabel K. Williamson, director of observations of the Royal Astronomical Society of Canada's Montreal Centre, wrote this in the November 1966 issue of the center's newsletter Skyward: "The increase in the number of observations over the previous year can be attributed to David Levy who has made the search for and observation of comets and novae his main astronomical project. In addition to patrolling assigned areas, he has made a total of 360 observations of the dome, the twilight horizon and the sky in the sun's vicinity, and on 33 nights spent a total of 48 hours at the eyepiece of his telescope, sweeping the sky for comets."

Miss Williamson's words from all those years ago remain among the highest compliment I have received from anyone. And I still use Pegasus for some of my comet hunting, including the evening of October 11, 1987, when I used Pegasus to find my third comet, 1987 T1. In fact, to celebrate the completion of this article, I went outdoors and used Pegasus for a short comet search this very evening.

I may have been right about my childhood weather forecast. Southern Arizona offers many more clear nights than one can appreciate from the frequently cloudy sky over Montreal, Canada. And from the Chiricuaha Astronomy Complex, a two-hour drive southeast of my Vail, Arizona home, observers are treated to one of the darkest sky locations in the world. It is well worth loading Pegasus into a van and using it at that wonderful CAC dark site. Whether I am down there or right here, placing my eye at the eyepiece of this beloved telescope warms my heart and pierces my soul.

David's treasured telescope Pegasus. Photo courtesy of the author.

Centre News and Updates

Stop the press! Got news to share? Send your centre news, updates, pics, sketches, notes, and links to the Regulus editor!

2024 RASC Calendars

We have received notice from National that we can place our calendar orders. The deadline is October 1, but if you are reading this later than that check to see if there are some extra left. Send a note to the chat list or kingston@rasc.ca or to Susan Gagnon personally if you need one or even 10! It's a great Christmas gift with an inflation beater price of $20, unchanged for ??years! At this price the Centre makes a couple of $, but it is still less expensive than buying your own and paying for the shipping & handling.

David Levy Donates Miranda to RASC

Canadian comet-hunter and RASC member David H. Levy visited the National Office on October 19th, 2023, to finalize the donation of his storied telescope *Miranda.* David was joined by his brother, Richard Levy, and London Centre RASC members Peter and Dianne Jedicke as well as Mark Tovey. The group toured the office, recounted stories from years past, and shared some astronomical poetry. It was a great visit, a gracious donation, and another example of thier great contributions to the Society.

2024 Total Solar Eclipse - Solar Filters

In anticipation of the Total Solar Eclipse (TSE) next spring, RASC-KC has ordered a large sheet of "Baader AstroSolar Safety Film" for production of objective solar filters (visual and photo).

We are selling it a little above our cost as you can order custom size squares, and from past experience there will be wastage and leftovers. $0.50 per square inch is the going price. We prefer in person exchange as shipping is incredibly expensive these days. Pickup opportunities (with enough advance notice) will be the Regular Monthly meetings in Sept, Oct, Nov. Otherwise other arrangements may be able to be made.

For eg., if you have a 4" objective, we recommend a 5"x5" piece.. the extra inch to allow for mounting, ie 1" larger than you actually need. We also recommend not going full large aperture unless you really really really know what you are doing :) i.e. a 12" objective means a 13"x13" piece of film = 169 in^2 = $84. Rather go for one, two or three subaperture filters at maybe 3" or 4". You certainly do not need the extra light gathering ability of a larger aperture and you will still get the higher resolution if you space the two apertures apart. Also, the larger span of the diameter means more stress and movement of the film in the wind, and it is harder to safely store etc. etc.

Sample sizes and prices:

3" objective = 4"x4" film = 16 in^2 0.5 = $8

4" objective = 5"x5" film = 25 in^2*0.5 = $12

6" objective = 7"x7" film = 49 in^ 2*0.5 = $25

Please send me an email (kevin@starlightcascade.ca) with your order stating the SIZE of FILM required, not your objective size. I will check your math, confirm the price and receipt of your email. Payment can be cash or etransfer to the RASCKC at kingston@rasc.ca

We have done this at least twice before in the past years, and in general it has gone very well. If you have any spare toilet paper cardboard tubes, please bring them along as that is what we use to protect the smaller pieces.

The Sky This Month

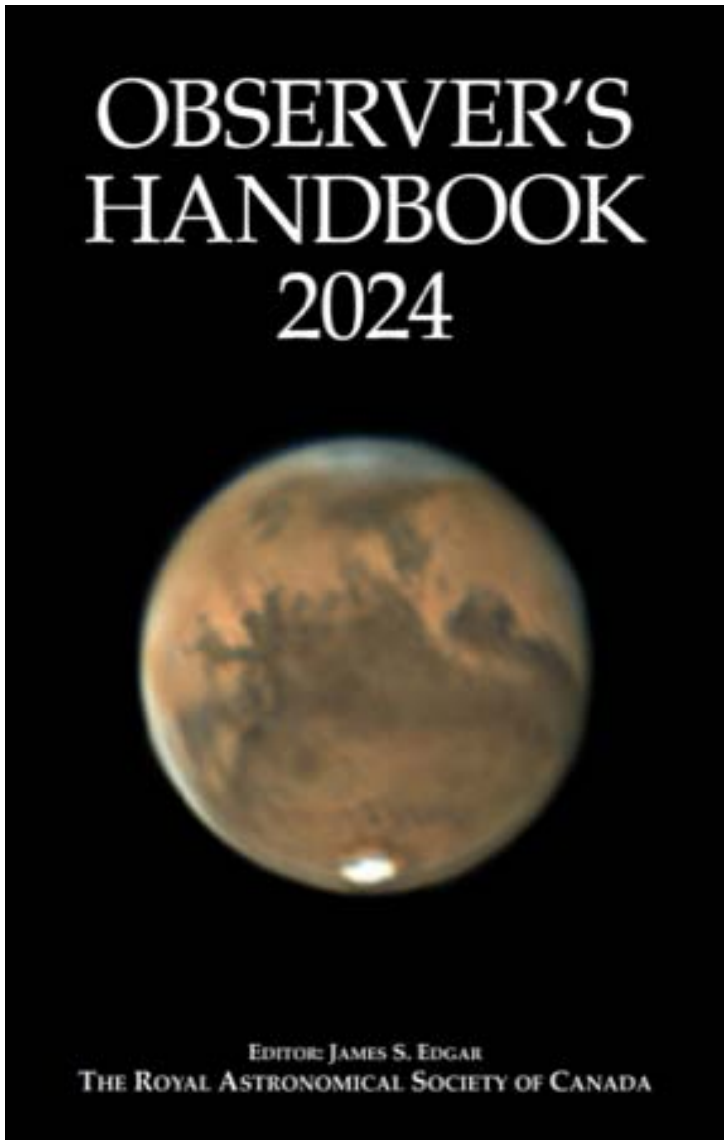
Rick Wagner

Any night of the week can offer up a broad range of viewing wonders. RASC KC Past President Rick Wagner keeps an eye on the sky for us each month, sharing some of the best viewing opprotunities as well as timings to catch your favourite night sky target at its best.

03 Nov - Jupiter at opposition – opposite the Sun and at its highest in the south around midnight
03 Nov – minor planet 21 Lutetia at opposition (mag 9.8)
05 Nov - Daylight Saving Time ends (0200EDT)
05 Nov – minor planet 18 Melpomene at opposition (mag 8.1)
05 Nov - Last Quarter Moon
05 Nov - South Taurid meteor shower peaks – minor shower, half dozen slow meteors per hour, best through the evening until moonrise late evening; broad maximum. Watch for fireballs.
06 Nov – Callisto (mag 5.5) visible just off Jupiter's north pole (03:00EST)
09 Nov - Moon rises ~22' from Venus (0251EST)
12 Nov – North Taurid meteor shower peaks – very minor shower, a few slow meteors per hour, no interference from new Moon. Watch for fireballs.
12 Nov – extremely thin crescent Moon (<24 hours before new) very low in the ESE shortly before sunrise.
13 Nov – New Moon (04:27EST)
13 Nov – Uranus at opposition (mag 5.6) try to see it naked eye
18 Nov – Leonid meteor shower peaks – moderate shower, about 15 very fast meteors per hour, best in the pre-dawn hours when the radiant is at its highest
20 Nov – First Quarter Moon
27 Nov – Full Moon (04:16EST)

Major Planets
Mercury (mag -0.4) will be visible low in the SW just after sunset late in the month.
Saturn (mag 0.7) transits low in the south in the early evening and sets about midnight.
Neptune (mag 7.8) transits mid-evening and sets a couple of hours after midnight
Jupiter (mag -2.9) is visible all night transiting high in the south about midnight
Uranus (mag 5.6) is visible all night transiting high in the south about midnight. See if you can pick it out naked eye.
Venus blazes in Leo at mag -4.3, rising in a dark sky and high in the ESE at the start of morning twilight.
Mars is too close to the Sun to be seen

In the News



In your mailbox! The RASC 2024 Observer's Handbook is on its way to members this month. For more info or to grab extra copies see: https://secure.rasc.ca/store/product/observer-s-handbook-2024

Meeting Minutes - 11 October 2023

Elena Zanetti

PThe club met at Ellis Hall, Room 226, Queen's University and online via Zoom.

The meeting started at 7:00 p.m. with 15 people onsite and 11 on Zoom (19 pre-registered). Kim Hay, RASC KC President, welcomed Kingston Centre members and guests, beginning with our land acknowledgment 'Queen's University is situated on the territory of the Haudenosaunee and Anishinabek Nations and we respect that land we meet on.'

Announcements followed. First, we welcomed our newest member, Aadya Mishra. Our centre now has 72 members, and for those who would like to join the club's Wednesday Social Zoom (weekly at 7 pm) send an email to the Centre chat list to join. Next, Queen's Observatory Open House is October 14th and will host a partial Solar Eclipse event with a talk by Livia Comeau at 11am, then sidewalk and deck observing. Kim, Kevin, and Laurie will help with outreach.

John Hurley provided the National Council update. NC met in September with a discussion of the National Treasurer position. No suitable candidates as of yet and the Board along with Jenna Hinds, National President, will oversee finances for the remainder of the year. A smaller deficit than last year was projected. National office now as 3 full-time and 1 part-time employees. A new NOVA program from NC will soon become available online, with a multi-week course for beginner and intermediate visual observers, with proceeds split between National and the centres. Membership renewals at rasc.ca with secure member login.

"Passions and Projects" were presented next. Our guest speakers are two relatively new members.

Stefan Jackson, "Jackson Observatory Build": Stefan has built a 9' x 12' observatory and takes us through the concept, size considerations, and the actual successful build. Full talk at RASC Kingston Centre YouTube beginning at 6:20.

Andrew Godefroy, "Isabel Williamson Lunar Observing Program". Andrew has been working on this program and shares his progress, challenges, logbook examples and resources used. RASC Kingston Centre YouTube beginning at 44:00.

Rick Wagner then presented the Sky This Month for October 2023

14 Oct – partial solar eclipse outreach with Queen's

08 Nov – Kingston Centre next meeting

AAVSO Webinars

28 Oct – How-to DIY your own astronomy equipment

3-5 Nov – annual meeting; Astropy workshop

L&A DSVA (reserve in advance)

07 Oct – Astro photographers Assemble

13 & 14 Oct – Laser-guided Sky Tour

Sky Events – October

12 Oct – zodiacal light; gegenschein

13 Oct – very thin crescent Moon (31hr from new)

14 Oct – partial solar eclipse

14 Oct – New Moon (13:55EDT)

20 Oct – 2 moon shadows on Jupiter (01:57EDT)

22 Oct – Orionids peak

22 Oct – First Quarter Moon

23 Oct – Venus at greatest elongation west in the dawn sky

28 Oct – Full Moon (16:24EDT)

Sky Events – November

03 Nov – Jupiter at opposition

05 Nov -Last Quarter Moon

05 Nov – South Taurid meteor shower peaks

05 Nov – Daylight Saving Time ends (0200EDT)

09 Nov – Moon rises approx. 22° from Venus (0251EST); 4.6mag COSMO-SkyMed 1 satellite passes very near both?? (0412EST)

Major Planets

Mars (mag 1.6) too close to the Sun.

Saturn (mag 0.6) is well up in the SE by the end of twilight and transits mid-evening.

Neptune (mag 7.8) rises at mid-evening and transits before midnight.

Jupiter (mag -2.7) rises in the ENE just after dark and is 60° (!!) up when it transits about 02:00EDT.

Uranus (mag 5.6) follows Jupiter by just under 10° and transits about 02:45EDT, even higher inb the sky than Jupiter.

Venus (mag -4.6) is 25° above the eastern horizon when astronomical twilight begins at 05:45EDT.

Mercury (mag -0.5) too close to the Sun.

Small Bodies

03 Nov – 21 Lutetia opposition (mag 9.8)

05 Nov – 18 Melpomene opposition (mag 8.1)

Member Observing Reports were next.

Susan G. observatory and telescope functioning well and happily getting back to observing. John H. mostly clouded out but has gotten some solar observing in. Drawings and permits for observatory are done. Malcolm P. observing minor planets with the remote scope, has submitted observations to the Minor Planet Centre. Hopes to hear back to search and submit new objects for them. Bruce E. shared photos of the "Time" sculpture, at Kingston's waterfront, with the full moon and another with the conjunction of Venus and Jupiter. Rick W. has been imaging open clusters, NGC1342 in Perseus, NGC1893 in Auriga, NGC7063 in eastern Cepheus, and NGC7209 in Lacerta. Jeanette W. viewed the ISS down at the dock.

Andrew G. observing the moon and also following the double star program. Keith N. has been solar observing and imaging. Bruce M. (new member) enjoys astrophotography and has been imaging Caldwell 5 and the double cluster. Roger P. awed by the Starlink train at Fall'N'Stars and recently brought his family out to see it. Will be hunting for asteroids. Stefan J. has been imaging with his LX200 and will be solar observing. Shelley has been posting images to the RASC Facebook page. John G. enjoyed Fall'N'Stars where he observed sunspots, M13 and various planets. At home, caught sight of a meteor one night. Laurie G., at Fall'N'Stars, observed Jupiter's GRS, 30 Messier objects, Starlink trains, ISS, and meteors.

Stephen C. has imaged 12 new galaxies, as well as Venus, Jupiter, and Saturn. Mike H. took grandkids out to view the Moon and Saturn. Has imaged the Helix Nebula then worked on drift aligning the telescope. Mark D. hope to remotely use telescope in the next month. Kevin K. has had dead ash trees removed from his property for better viewing with his all-sky camera. Kim H. has been solar observing. Also, wondering if 8" Dob can be safely covered and left in the backyard without building an observatory.

Final announcements by Kim Hay

Our next hybrid meeting, Zoom and onsite at Ellis Hall Room 226, will be Wed Nov 8th at 7 p.m. Our annual meeting and elections. Every Wednesday (except 2nd Wed meeting night) we have the members Social Zoom Time – to join, let us know at kingston@rasc.ca On social media we are www.kingston.rasc.ca. Facebook at RASC Kingston Centre Group. YouTube at RASC Kingston Centre, tonight's and past meetings located here. Kim thanked all for attending and the meeting ended at 9:05 p.m.

Target for Tonight

Susan Gagnon

This is a resurrection of a column I did for *Regulus* many years ago with new objects added each month. It may be of interest to new observers and also those working on completing various RASC observing programs.

When new to observing, learning the constellations did not inspire me. I did however enjoy staking out one constellation at a time and exploring it to the fullest my equipment would allow.

The lists you will find here, and I will attempt to produce one per issue, will provide all the targets within a single constellation that satisfy the current RASC observing programs. This obviously will not include targets needed for lunar, planetary, or transient phenomena like aurora etc. It will cover stars and deep sky objects (DSO) only.

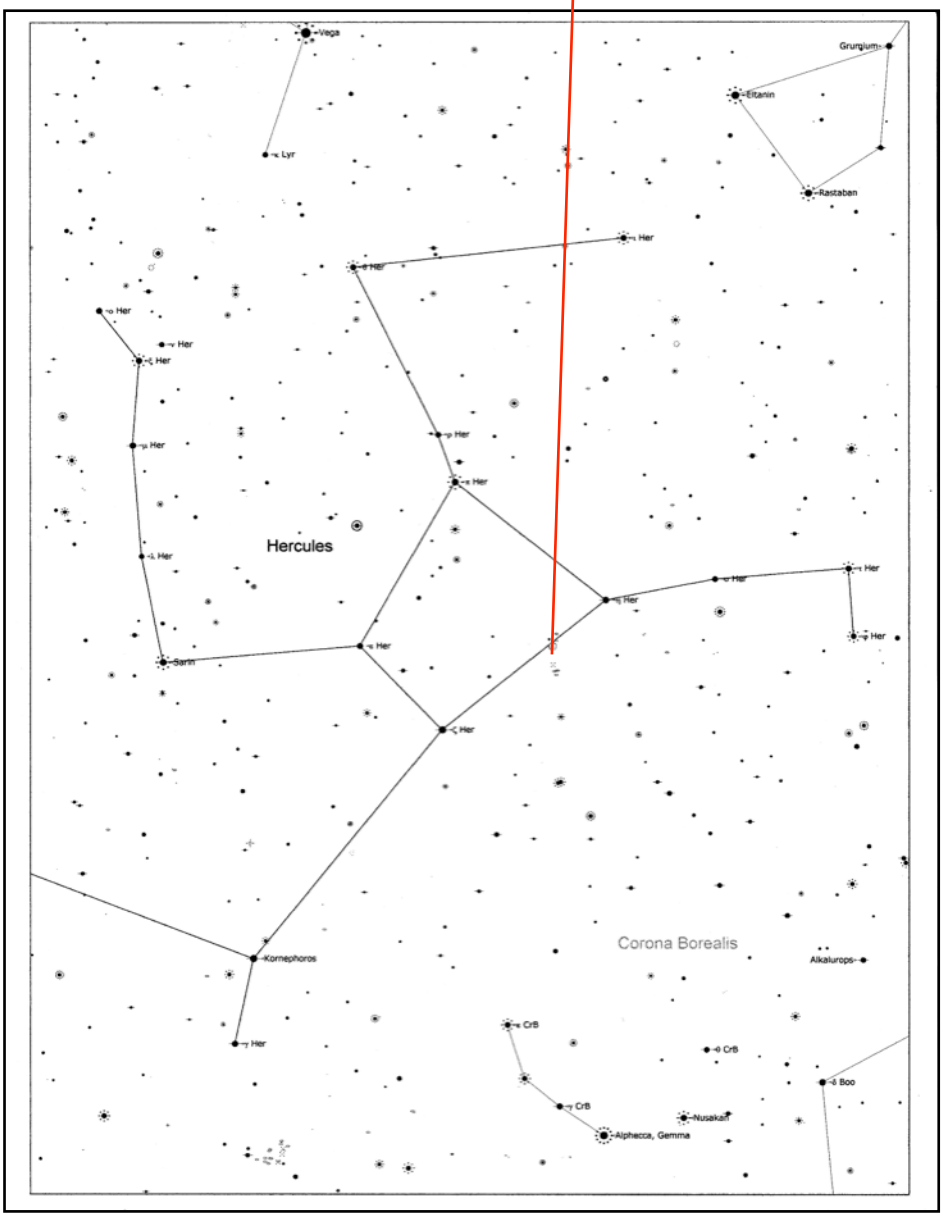
The RASC observing lists that provide certificates are: ETU, Messier, Finest NGC, Deep Sky Gems, Deep Sky Challenge and Double Stars. Check out the requirements for certification at rasc.ca under the tab Observing, and Observing Programs. In addition to a certificate some provide pins to commemorate completion and these are: ETU, Messier, and Finest NGC.

Starting to observe can be daunting in that a look up at a starry sky can seem overwhelming, where to begin! A list of any kind can be a great help in breaking into observing, the fun of the starhop and just general enjoyment of the night sky. And so on to this month's list!

Hercules

Messier: M13, M92
Finest NGC: 6210
Deep Sky Challenge: None
Deep Sky Gems: NGC: 6106, 6181, 6229, 6207, 6364.
ETU: Rasalgethi, M13
Double Stars: Rasalgethi, 100 Her.

*Approx. 145ly across, **M13** is one of the northern sky's finest globular clusters and is conservatively estimated to contain between 300,000 and 500,000 stars.*



Member's Photos

*Right: Centre member **Joe Gilker** reprocessed earlier data captured in 2020 to produce this stunning image of*
***IC 5070** - the **Pelican Nebula**. Located in the constellation Cygnus about 1400 LY from Earth, it gets its name due to the resemblance it bears to a pelican's head.*

This photo was shot in Ha and OIII bandwidths using a duo-narrowband filter from STC and processed in an HOO palette.

-Equipment-

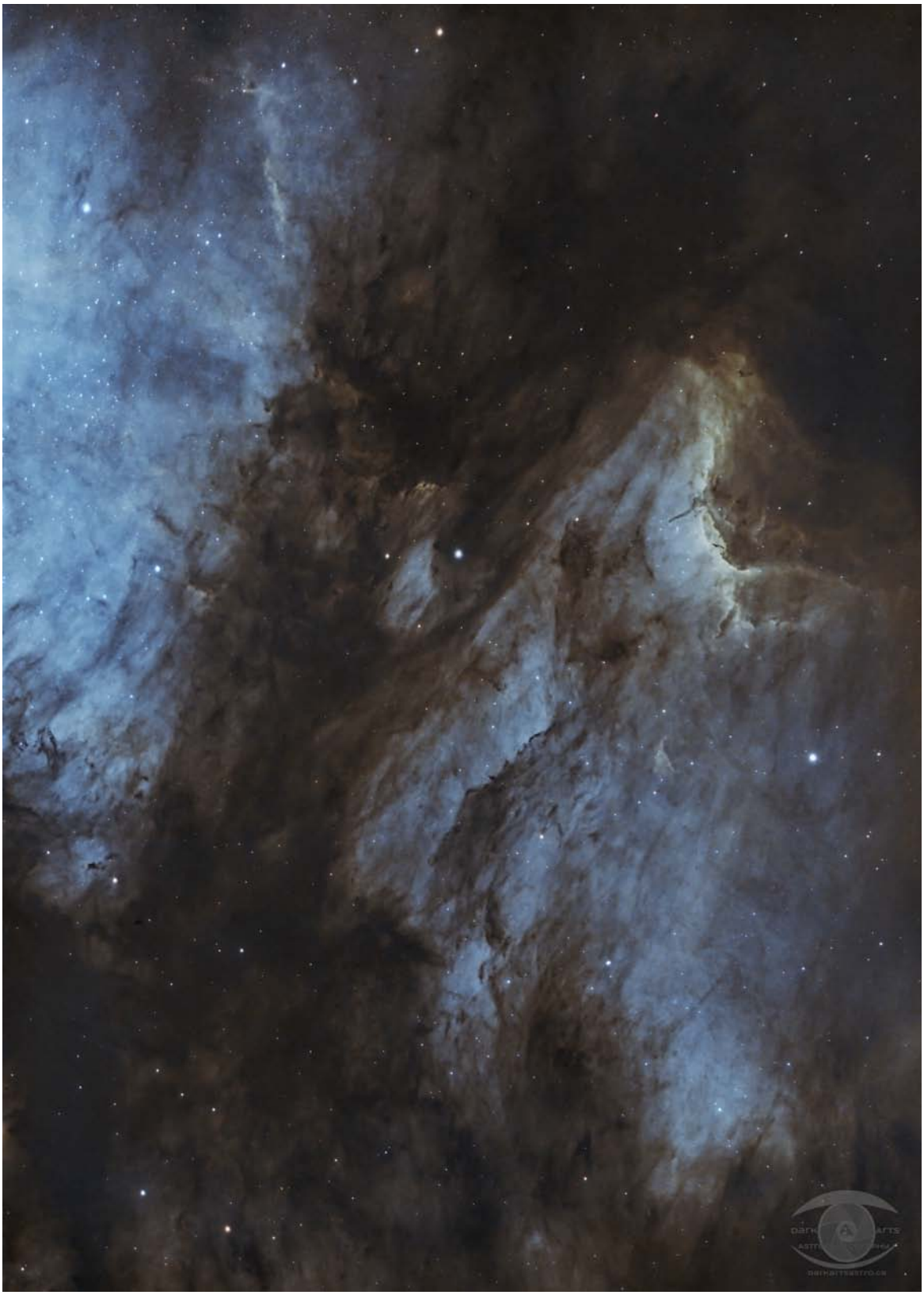
Imaging Scope: Explore Scientific ED80
Mount: Celestron CGX
Imaging Camera: ZWO ASI 1600MC-Pro
Filter: SCT Duo Narrowband (Hα and OIII)
Guide Camera: ZWO ASI120 Mini
Guide Scope: Starfield 60mm guide scope
Dew Control: Kendrick
Power: Pegasus Astro Pocket Power Box

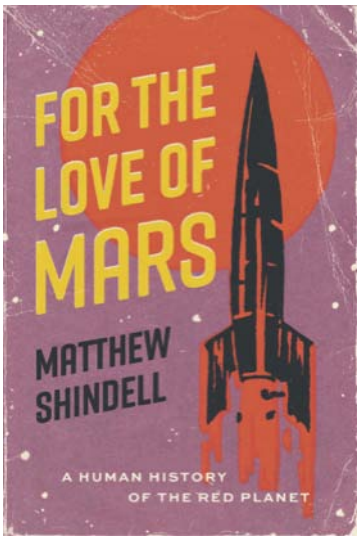
- Acquisition -

Narrowband:
·57 x 5 min exposures (4H 45M total)

- Software -

Acquisition / Rig Control: Sequence Generator Pro
Stacking: Astro Pixel Processor
Processing: PixInsight
Post Processing: Photoshop CC





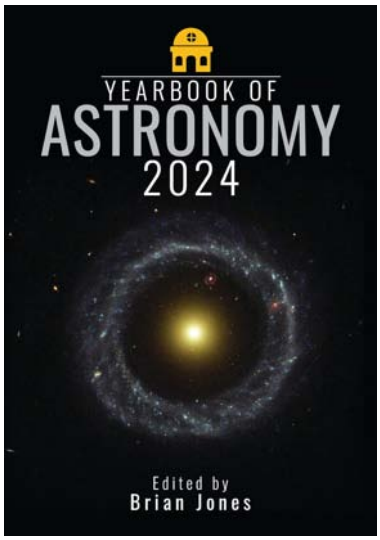
yMatthew Shindell. For the Love of Mars: A Human History of the Red Planet. Chicago: University of Chicago Press, 2023. ISBN: 978-0-226-82189-4. 226pp. illus.

Author and National Air and Space Museum curator Matthew Shindell offers up this accessible survey of the history of Mars in the human imagination, from anicent skywatchers to modern robotics. For those interested in planetary astronomy and the evolution of recorded observations of the red planet, this book is an enjoyable introduction to the subject.

Shindell's examination of the topic spans the many interesting and important historical figures who focused their eyes and imaginations on Mars - from ancient Babylonian astrologers who divined bad omens from the planet's position in the sky to Vicorian era astronomers who sought signs of intellgent life dervied from their speculations of the presence of complex canals and other features. With each passing century, however, Mars' mysteries are unlocked one by one and the planet gets closer and closer to us - perhaps cluminating for the time being when in the late 20th century Earth sent its first robotic epxlorers to the Red Planet.

Organized into just six chapters, Chapter 5 titled 'Cold War Red Planet' is notable for its examination and emphasis on how much of the early space space program was focused on getting to Mars and satisfying once and for all the question of whether life existed or had at one time existed on the planet. It is a question that still drives much of the agenda on where humanity explores Mars today. The desitination chosen for the 2020 Perseverence Rover mission to Mars was selected due to it being the basin of an ancient estuary, and the hope was the one might discover fossilized signs of life there.

Overall, Shindell's book is an interesting and engaging light read, yet detailed where it needs to be. Well illustrated throughout, it serves as a decent launchpad for delving into related topics, and thus I would recommned it for anyone interested in planetary astronomy, the history of astronomy, and the evolution of the human exploration of Mars.



Brian Jones (Ed.). Yearbook of Astronomy 2024. Yorkshire - Philadelphia: White Owl, 2023. ISBN: 978-1-399-044011. 354pp. illus.

The latest edition of *Yearbook of Astronomy* is now available, and as with previous years it continues to provide a considerable and varied amount of astronomical detail packed into a concise tome very near in size to the *RASC Observer's Handbook*. Series editor Brian Jones has done his usual stellar work (see what I did there?) in offering readers both essential tools as well as interesting insights to the field.

One of the strengths of the series its is very common sense layout. The preface and essential data and charts are included up front, followed by chapters containing monthly sky notes. Each of these sections also include a general interest article, encouraging readers to revisit the book each month throughout the year rather than consuming it in just a couple of sittings and consigning it to the shelf or electronic archive.

Just some of the articles in the 2024 edition include:

- Recent Advances in Astronomy by Rod Hine
- Recent Advances in Solar System Exploration by Peter Rea
- Anniversaries in 2024 by Neil Haggath
- Astronomy in Antarctica by Michael Burton
- Things Fall Apart: Chaos in the Solar System by David Harper
- Male Mentors for Women in Astronomy by Mary McIntyre
- Communicating from the Edge of the Solar System by Peter Rea
- Skies over Ancient America by P. Clay Sherrod
- Tracking Older Artificial Satellites by Steve Harvey
- Inner Lives of Dead Stars by Matt Caplan
- Riccardo Giacconi: X-ray Astronomy Pioneer by David M. Harland
- Howard Grubb and Alvan Clark by John McCue and John Nichol

The *Yearbook of Astronomy* has been in publication since 1962 and continues to prove itself a valuable contrinution to any astronomer's bookshelf. Highly recommended for all.

About Us

The Royal Astronomical Society of Canada

RASC is a national, non-profit, charitable organization devoted to the advancement of astronomy and related sciences. Founded in 1868, The Royal Astronomical Society of Canada is Canada's leading astronomy organization, bringing together over 5000 enthusiastic amateurs, educators, and professionals. In addition to many national services, our 30 Centres offer local programs across Canada.

The Royal Astronomical Society of Canada Kingston Centre (aka Kingston's Astronomy Club)

We are Kingston's Astronomy Club, a local centre of The Royal Astronomical Society of Canada, founded on June 2nd, 1961. We hold monthly meetings, on the 2nd Wednesday of each month (September-June), via zoom videoconferencing and in person, from 7:00-9:00pm Eastern Time.

* We do public outreach programs in the form of helping the Cubs and Guides, teachers, Science Fairs and many public Education and Public Outreach events.

* We help out our members with questions in astronomy and equipment use, and hold private observing sessions, and also with Queen's University Observatory Open House, on the third Saturday of each month, at Ellis Hall, Queen's University. https://www.queensu.ca/observatory/

* We support the local Frontenac, Lennox & Addington County Science Fair (FLASF) with a prize in astronomy.

* We are here to answer your questions on astronomy.

JOIN US!
https://kingston.rasc.ca/join

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The Royal Astronomical Society of Canada Kingston Centre provincially incorporated as a Not-For-Profit Corporation in September 2005 and has been a registered Charity with the Canada Revenue Agency since September 2006.

CRA Registration #827905720RR0001

Benefits of Membership to the RASC Kingston Centre

RASC Central based benefits:

* Annual edition of the Observers Handbook
* Bi-monthly RASC Journal (digital)
* Monthly Bulletin of the RASC (digital)

Centre provided benefits:

* Monthly Centre Newsletter – Regulus
* Weekly social videoconference chat (members and guests only)
* Monthly videoconference meetings (open to the public)
* Equipment loan program