Regulus

Newsletter of the RASC Kingston Centre

Vol. 51 No. 1 January 2024

Simeis 147 - Spaghetti Nebula

On the Horizon ....

Regular Monthly Meetings (online)

14 February 2024

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

Queen's University Observatory Open House

20 January 2024
10 February 2024
9 March 2024

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

In this issue ...

President's Notebook

Malcolm Park

On New Years Eve 2023, I am reflecting not just on the year that was, but on the journey I have been on in Amateur Astronomy, and Astrophotography in particular. How on earth did I get here?

It's been pretty close to 20 years since I walked into Efston Science on Dufferin St in Toronto, across the street from Yorkdale Mall with it's giant telescope on the roof.
I was just looking to expand my horizons with a new hobby. Any hobby would do.

And after a discussion with Marc Fitkin and Bruce Engels, I walked out of the store that day with an 8" Meade dobsonian.

With them, I became a part of an observing group that would go out to Bolton Ontario on clear nights. It was just the beginning.

Three months later I "upgraded" to a 10" LX200 and the path forward was clear. This rig was built for astrophotography. Starfest opened my eyes even wider.
I was being assimilated into this community and resistance was futile.

I would like to express my gratitude to those that have influenced me on this Journey. There are so many.

Paul Mortfield gave a talk at a North York Astronomical Association meeting and described his imaging technique at the time. He showed his APOD winning photos and I was inspired to submit my own.

Another speaker at the NYAA came to talk about the 2006 solar eclipse in Egypt.
The next day I booked tickets for myself and my Daughter, Amy. Life changing experience!

As I became more involved with astrophotography I became aware of the people that were behind the beautiful imagery one sees on the APOD site which still inspire to this day, although not without the occasional controversy.

Robert Gendler is the first name that comes to mind whenever I think about astrophotography. When he spoke at Starfest the vibe was incredible. His images just keep inspiring to this day. I have a print of his which he signed for me at Starfest of M31 hanging on my wall.

I can't look back on this journey without mentioning Chile. And it was a trip put together by Stephen Barnes in 2009 that changed my life forever. And I wasn't the only victim. Les Nagy was smitten also. From that trip forward I have felt a deep connection to the Atacama Desert, and San Pedro de Atacama especially. From 2009 until 2019 I went to SPA annually (ANNUALLY!), sometimes twice in one year but the pandemic ended my run and I haven't returned since. But I will be back.

Another name I must mention that has been an influence along the way is Adam Block. When I looked at his images back in the day, I thought wow - I was amazed.

He probably doesn't remember this, but we met at the Advanced Imaging Conference in San Diego over 10 years ago. I bought a couple of his thumb drives which contained data to be processed, and tutorials on getting it done in photoshop. We even had a photo taken at his table by Bob Sandness. I was so pleased to meet him.

Sometime in the last 10 years a new image processing tool called Pixinsight started to gain popularity. I tried it and resisted. TOO COMPLICATED!!! But when did I see the

On the cover: This mesmerizing supernova remnant (Simeis 147 or Sharpless 2-240) was expertly captured by RASCKC member Shelley Jackson in December with about 8 hours of RGB Ha data under Bortle 4 skies near Athens Ontario.

light? It was when Adam Block started to use it. If it was good enough for him, then it was time for me to take it seriously. And I haven't looked back.

And of course the NYAA grand master himself must be mentioned, Andreas Gada. You have never seen an eclipse timelapse or occultation sequence until you have seen this man's work. And of course Andreas was and still is the creative force behind Starfest.

My involvement with Starfest affords me the opportunity to meet many of our speakers and presenters. And through this association, I was blessed to have become friends with Terence Dickinson. Terry was a very important Canadian Amateur Astronomer, author, public figure and science communicator. And I learned much from him and miss him. Which brings me to Alan Dyer, Terry's partner in authoring some books but who is a prolific author and communicator in his own right and who's tutorials and product reviews are mainstays of the community.

I also became friends with Lynn Hilborn in this period, and we did some fun things while learning the ropes such as imaging at Nirvana, and going to Kitt Peak. Lynn's deep sky astrophotgraphy graces the pages of magazines like Skynews and others and won contests and has always inspired.
And speaking of being inspired, another past Starfest imager that continues to inspire is Kerry-Ann Lecky Hepburn. Her work is second to none. She has a style of her own that makes her photos not just beautiful, but unique.

As Pixinsight began to infiltrate my image processing workflow, who else but Ron Brecher to turn to? Ron's images have always been inspiring to me, but his teaching and communication skills made Pixinsight truly accessible to the masses. Ron's workshops at Starfest were essential. More recently, astrophotography seems to have taken off, and things have really started to change quickly. New CMOS cameras, harmonic mounts, portable mounts like the Star Adventurers, the ASI Air, the Pegasus Power Box, holy cow the list goes on and on.

But one thing that I have to mention is the significance of what Wayne Parker has done to change and improve my experience in backyard astronomy.

I have had a SkyShed Pod for over 10 years now. Without it, or a SkyShed, I don't know what I would do. It has made it possible to leave my equipment up in a suitable shelter permanently.

This to me, is a game changer. And there are so many Youtubers now, Cuiv The Lazy Geek, Sascha Wyss, Paulyman, Shawn Nielsen, the list goes on and on... more recently I have found Craig Stocks work to be inspiring. And of course the Russell Croman processes. These processes have changed astrophotgraphy in a way that can only be described as revolutionary.

So at the end of 2023, as I reflect on 20 years in this hobby, clearly I've come a long way. The journey is far from over, and there is much yet to be done.

The April 8th total solar eclipse is just around the corner. My home is on the path of totality! But I am not naïve, and I will be ready to chase when the time is right.

Wishing you all a Happy New Year, with many more to come!

These Daguerreotypes taken by nineteenth century American astronomer Stephen Alexander show the annular eclipse of May 26, 1854, an event that was observed locally by many Kingston residents. See page 9 of this newsletter for more details in an excerpt from he March 1855 issue of The Canadian Journal of Science, Literature, and History.

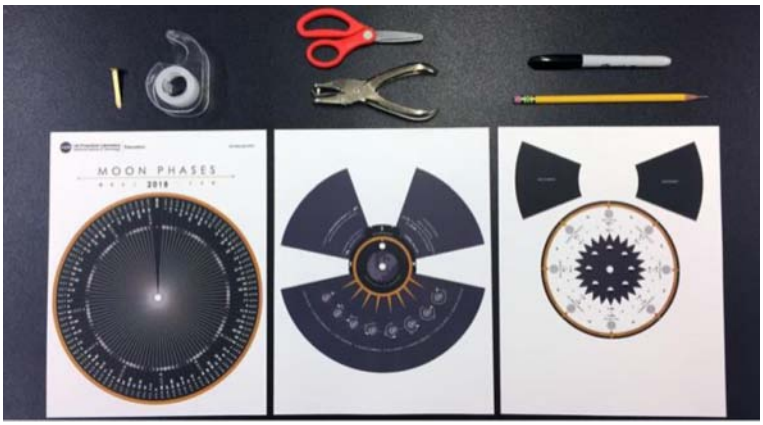
Editor's Eyepiece

Andrew B. Godefroy

Welcome to the January 2024 issue of Regulus - our club's 51st year of publication! I hope everyone had a safe and enjoyable holiday - winter finally arrived around New Year's and there's now a deccent snow covering on ground (and the roofs of our observatories….). One thing I have noted is that the colder temperatures tend to come with more clear night skies - this month especially offers some nice views of Jupiter chasing the Moon through the mid to late evening.

Lunar Observing

Speaking of the Moon, as I continue to plug away at the RASC Isabel Williams Lunar Observing Program (IWLOP), I am constantly on the hunt for new and interesting resources that will aid me in my research. Two interesting items that recently came across my desktop were NASA's Daily Moon Guide: https://moon.nasa.gov/moon-observation/daily-moon-guide/, and the Jet Propulsion Laboratory's (JPL) Moon Phases Calendar and Calculator: https://www.jpl.nasa.gov/edu/learn/project/make-a-moon-phases-calendar-and-calculator/.



This simple project takes just a few minutes to print, cut out, and assemble, and offers a handy little hardcopy tool that will tuck easily into the side pocket of any atronomy field log. I have a couple of Apps on my phone that offer similar data, but this is an easy way to save bettery power while having the same information and one's fingertips.

Skywatcher Guide

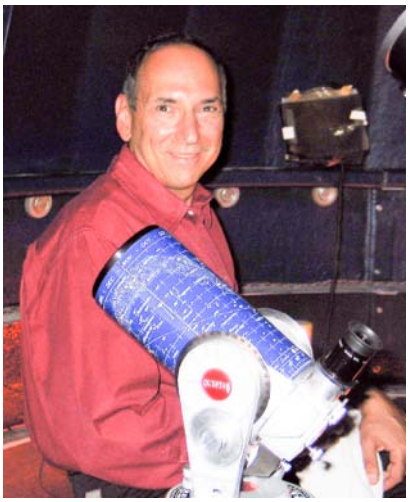
Another handy website is the NASA Skywatching pagre at: https://science.nasa.gov/skywatching/. Here one will finds loads of basic information on amateur astronomy as well as a number of links to videos, tools, projects, and more. Each month is covered in detail on the 'What's Up' page (https://science.nasa.gov/skywatching/whats-up/) making this an easy go-to with simple information for those new to the hobby as well as family and friends who might be considering take the leap into this favourite pastime of ours.

Fly Your Name to the Moon!

NASA is at it again with the offer of adding your name to the message chip that will be attached to its upcoming robotic lunar vehicle known as the Volatiles Investigating Polar Exploration Rover (VIPER). Planned for delivery to the lunar surface in late 2024 under NASA's Commercial Lunar Payload Services Initiative, its 100-day mission will have VIPER travel several kilometers over crater rims and occasionally into permanently shadowed craters – which are one of the coldest places in our solar system – to sample different kinds of lunar soils and environments. VIPER represents the first resource mapping mission on another celestial body, and will deepen our understanding of how frozen water and other volatiles are distributed on the Moon, their cosmic origin, and what has kept them preserved in the lunar soil for billions of years. More details on the mission and how to add your name to VIPER's chip may be found at: https://science.nasa.gov/mission/viper/

Getting Ready for TSE 2024

Under the tree this year, Santa left me a brand new pair of 20x50 Porro Solar Binoculars! Being my first piece of dedicated solar observing equipment, I'm admittedly a bit nervous about trying them out for the first time. However, I'm even more excited about the prospect ofhaving many opportunities going forward to observe our nearst star. A full product review will follow in a later issue once I've had the chance to put them through their paces. Wish me luck, and keep looking up!



The Sculptor Galaxy

This month let us explore one of the seminal galaxies in the night sky, NGC 253, Caroline Herschel's galaxy. It shines deep in the southern portion of the sky, south of the bright star Beta Ceti and southeast of the even brighter star Fomalhaut. This is one of my favorite galaxies, largely because of the beautiful story that is associated with its discovery.

This galaxy, which I call Caroline Herschel's Galaxy, is a starburst galaxy. It is so named because it is undergoing a burst of formation of new stars. This process was set off relatively recently, at least in cosmic timekeeping. About two hundred million years ago, a smaller dwarf galaxy probably collided with this larger one, and it set off this cacophony of new stars being formed. That other galaxy was probably rich in gas, which provided the raw material for the births of the new stars. There is one thing that this galaxy does not share with other starburst galaxies, however; usually these galaxies exhibit frequent exploding stars or supernovae. This one, however, has only one recorded supernova, in 1940.

This galaxy is aligned at almost right angles to our Milky Way. When you look at it, it appears as a thick pencil-like structure.

While searching for comets during the year 1783, Caroline stumbled across this long, slender galaxy hanging above the southern horizon. Duly recorded in her log "the Bills and Rec.ds of my comets," she also began and maintained a list or catalogue of the many objects she and her brother William had discovered, including beautiful drawings of most of them. As a young girl Caroline was close to her father, who brought her outdoors on a cold evening some winter constellations like Orion. It is possible that this was one of the special moments during which she began her love of the night sky.

As much as Caroline enjoyed working with her brother William, there were some issues. On one night Caroline fell upon one of the large iron hooks that helped support the telescope on its mount. The accident left a large gush in her thigh. Her brother, not seeing his telescope moving, yelled out "Make haste!" to which Caroline cried out, "I am hooked!" William immediately rushed over to help his sister, and she eventually recovered, with lots of rest and ointment.

When William married Mary Pitt in 1788, there was an obvious increase in tension among the Herschels. She continued working with her brother, although the increased "family dynamics" did cause a problem. William very much wanted his sister to continue helping with his observing, and he was successful in arranging a royal stipend for her.
In 1802 the Royal Society published the catalogue that Caroline had kept over many years. However, the publication in Philosophical Transactions of the Royal Society was credited to William, even though it was her catalogue. Over a long period of time, thanks to the work of later astronomers like John Louis Emil Dreyer, the almost 8000 objects now comprise the New General Catalogue.

The woman who discovered the wonderful galaxy in Sculptor certainly enjoyed a remarkable life and career, living until she was almost 98 years old. In the 1980s Caroline's eight comet discoveries were surpassed by Carolyn Shoemaker, in what was seen at the time as the highlight of Carolyn's career. However exciting that achievement might have been, it was completely eclipsed by her discovery of Comet Shoemaker-Levy 9 in March of 1993. That comet gave humanity its first lesson in what happens when a comet strikes a planet, and by inference, how comet collisions can lead to the origin of life on a world. As I gaze upon Caroline Herschel's galaxy on these winter nights, I imagine life forms there looking back, trying as we do, to share our cosmic heritage.

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!

Winter Online Meetings

Just a reminder to all that the January and February 2024 meetings of the RASC-KC will be online only, as the weather and winter road conditions often preclude many folks from gathering in person at Ellis Hall. Therefore, be sure to grab the Zoom links hosted on the Centre's website. Also, why not join other members every Wednesday on the club's Zoom social? Share your projects, latest observations, or plans for the future!

RASC Handbook Donations

At this time of year I'd like to remind those of you who do not use the Observers Handbook and have no interest in keeping a perfect collection, that you can donate it to the Centre. The Centre will issue a tax receipt for a gift in kind donation worth $30, a value based on the price from National Office. These books are great additions to outreach events and when available, have been added to class sets of materials awarded to schools of students who win the Centre's Leo Enright Prize in Astronomy.

Total Solar Eclipse 2024

The club's Total Solar Eclipse (TSE) 2024 web pages are now active. Be sure to check it out, and check back regularly for news and updates. For all the details go to: https://kingston.rasc.ca/tse2024

Regulus Wants You!

The Regulus newsletter always welcomes submissions from the Centre members - whether it is an article, a book review, equipment review, a project you might be working on, tips and tricks to share, astronomy hacks, or even your latest astrophoto! Don't hesitate to reach out, and even if you need a hand getting your idea to print, the editor is ready to assist.

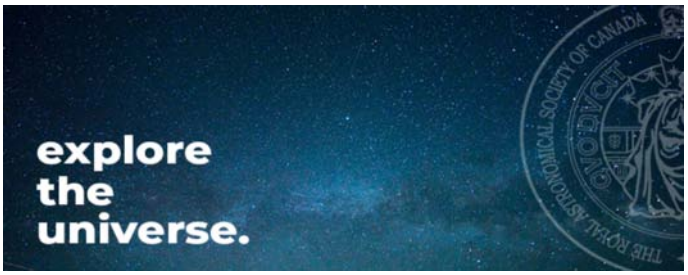
Are You Working on an RASC Observing Program?

If you're working on any of the RASC oberving certificates, we'd love to hear about your progress. These programs are easy to begin, fun to work through, and rewarding once complete. For those who have completed any of the programs, please ensure your name is included in the RASC lists by using the search engine in the left side bar of the observing program web page in question. The Centre keeps track of recipients and is continuing its work to recognize those who have completed various programs over time.

What's On This Month

Astronomy by the Bay

If you haven't had a chance yet to check out these three gentleman and their Youtube show, you're missing a real treat! The family friendly 'Sunday Night Astronomy Show' has a little something for everyone and is well worth the time. Shows broadcast every Sunday at 8pm. For more info on the show itself or on New Brunswick based astronomy writ large, visit the links at: https://sjastronomy.ca or on Facebook at:https://www.facebook.com/astrobythebay



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.

All month

watch Comet 62P/Tsuchinshan drift by south of Denebola the Lion's tail and into northern Bootes. As it possibly reaches about 7th mag it should be accessible to 50mm binoculars.

This month

02 Jan – Earth at perihelion – closest approach to the Sun this year at 147.100632Gm
03 Jan – Last Quarter Moon
04 Jan – Quadrantid meteor shower peaks from midnight to dawn; just-past-third quarter Moon will interfere somewhat with seeing the fainter meteors. Still one of the best showers of the year.
06 Jan – double moon shadow transit on Jupiter
08 Jan – daylight occultation of Antares by the Moon. Disappearance about 09:35EST at the bright limb, reappearance on the dark limb about 10:45EST. Very challenging observation, try high speed imaging with a planetary camera and a red or IR pass filter.
09 Jan – thin crescent Moon, Mercury and Venus form attractive triangle above the SE horizon before sunrise
11 Jan – New Moon 06:57EST
12 Jan – Mercury (mag -0.28) at Greatest Elongation West – low in the SE during morning twilight
18 Jan – First Quarter Moon
25 Jan – Full Moon 12:54EST
27 Jan – Mars (mag 1.34) and Mercury (mag -0.24) are 1/4° apart low in the SE before sunrise; binoculars will help to pull dimmer Mars out of the twilight. Best first easiest chance to see Mars starting its new apparition!

Major Planets at Mid-month

Saturn (mag 1.0) is already getting low in the SW by the end of evening twilight and sets in the early evening.
Neptune (mag 7.9) is high in the SSW at the end of twilight and sets mid-evening.
Jupiter (mag -2.5) crosses the meridian very high in the south soon after the end of evening twilight and sets about 01:30EST
Uranus (mag 5.7) is even higher in the south, culminates in early evening and sets well after midnight.
Venus (mag -4) rises in the SE shortly before the start of morning twilight.
Mercury (mag -0.3) is near greatest elongation west, rises during astronomical twilight and is well up in the SE before sunrise.

In the News

Journal of the British Astronomical Association

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On the cover
Solargraph 2022 — Alexandra Hart
Six months of the Sun's daily path across the sky over Cheshire is captured in this one image, exposed on photographic paper in a simple pinhole 'Solarcan' camera between June and December of 2022. Alexandra uploaded this solargraph to the BAA Image Gallery, where many other spectacular observations by members can be found. See britastro.org/observations/.

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Library subscription (UK and surface mail overseas): £79.00. To purchase single copies of specific issues please see britastro.org/shop.

Contributions
Papers should be sent by e-mail (preferred) or by post (three copies) to the Papers Secretary at the address shown inside the back cover of each issue. They will be refereed, and, if approved by Council, published as soon as reasonably possible. Those wishing to speak at a meeting should contact the Meetings Secretary.
All other contributions should be sent to the Editor, at pjennings@britastro.org As well as Letters to the Editor, he will be pleased to receive contributions to Observers' Forum, particularly interesting astronomical images, drawings and photographs. Colour images are especially welcomed. Photos and media will be returned only if a suitable stamped addressed envelope is enclosed.

Advertisements
Small advertisements should be sent to the Office, accompanied by the appropriate remittance. Members' small advertisements are FREE and may be sent directly to the Editor by e-mail.
Display advertisements and loose inserts: For a rate card and further information, please contact the Journal Advertising Manager, Ms Marie-Louise Archer, at: advertising@britastro.org

Deadlines
Please send material for possible publication to the Editor by the following dates:

Issue	Date
2024 February	2023 Dec 18
2024 April	2024 Feb 12

Later dates apply, by arrangement, to electronic advertising copy for which space has been reserved.

Membership of the BAA
The annual subscription for Ordinary standard membership of the Association for the 2023–2024 session is £53.50. For details of concessionary rates, digital-only membership and other information, see page 382 of this issue. Members who pay UK income tax are requested to complete a Gift Aid certificate in order to benefit the Association, which is a registered educational charity. [To claim Gift Aid you must pay an amount of UK income tax and/or Capital Gains tax at least equal to the tax which we reclaim on your donations in the relevant tax year (currently 25p for each £1 you give us).]

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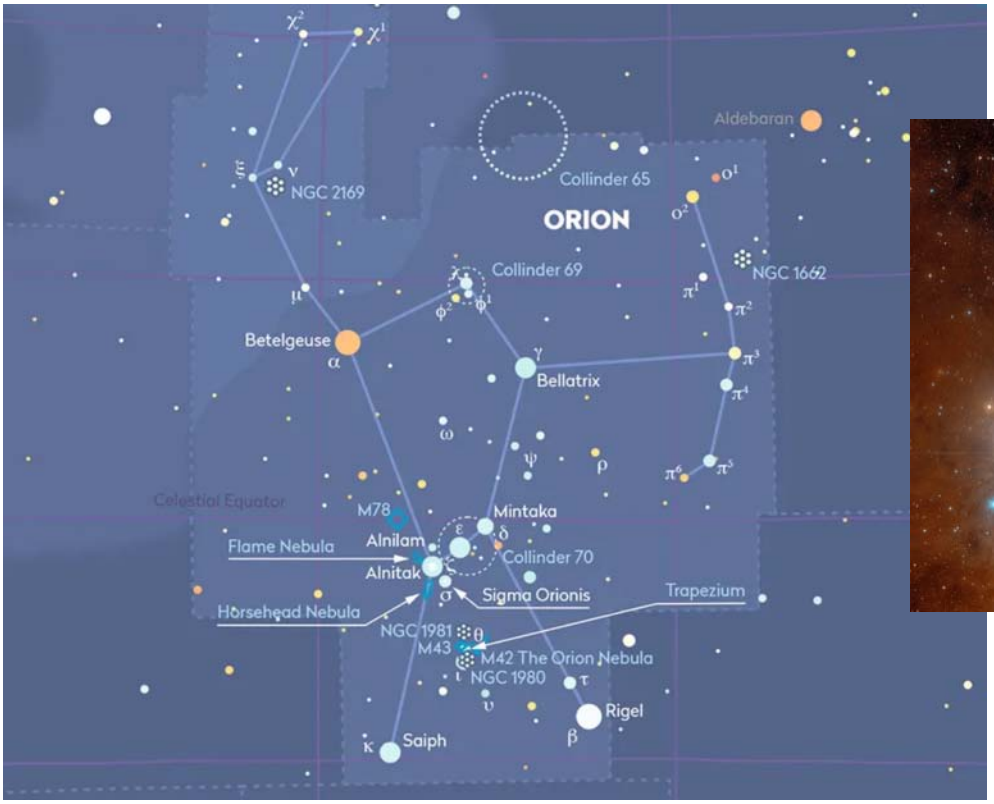
Taurus, Orion, and Auriga - This trio of constellations is sure to satisfy your observing plans for winter nights. They form a lovely array of stars covering a great range of naked eye and binocular magnitudes that ensure successful star hopping. While these lists are meant to add a degree of efficiency to your observing, for best results review them in the context of the lists as presented in the Observing section of the National RASC site under www.rasc.ca/certificate-programs, and your Observer's Handbook. This is especially true in the case of the Deep Sky Challenge objects which can be difficult to find in commonly used charts and they can require more aperature or above average observing conditions. You will also find a few of the Deep Sky Gems go by no other name and are not on any charts you may have. In the case of all of these more elusive objects it is good to take a paper chart of the region in question and using the RA and Dec provided, plot the location of the new object. The RASC site also contains sample recording sheets that you may like to use for your log. Star hopping skills once developed will serve you well for a lifetime. Avoid frustration! If you are looking at something and cannot see it, there may be a reason...as suggested, check the description. Good luck!



The Belt of Orion

Constellation	EtU Bright stars	EtU Deep Sky	EtU Doubles	Messier	Finest NGC	Deep Sky Gems	Double stars	Deep Sky Challenge
Taurus	Aldebaran	M45	Tau 78	M1	1514	Collinder 57	HIP16386	1432/35
		Hyades	Tau 77	M45			HIP20250	
Orion	Betelgeuse	M42		M78	1788	NGC 1999	HIP 24331	HH1(Herbig-Haro)
	Rigel			M43	1973	NGC 2023	HIP 25930	IC 434
				M42	2022	NGC 2169	HIP 26199	Sh 2-276
					2024	NGC 2174	HIP 26220	Abell 12
					2194			
Auriga	Capella	M37		M38	1931			IC 405
				M36				
				M37				

History - Looking Back at the Solar Eclipse of 1854

The Canadian Journal.

TORONTO, MARCH, 1855.

The Solar Eclipse of May 26th, 1854.

Extract from the Minutes of the Council of the Canadian Institute.

"*Resolved*, That Professors Cherriman and Irving be appointed a Committee to draw up instructions for general distribution relative to the approaching Solar Eclipse."

Supplementary Report of the above Committee.

Read before the Institute, January 13th, 1855.

The Committee, appointed by the Council of the Canadian Institute to draw up suggestions for observers of the Solar Eclipse of May 26, 1854, having received from several stations in Canada accounts of observations made with reference to the instructions published by order of the Institute, have thought it advisable to lay them before the Institute in a connected form, and at the same time, as several of the phenomena mentioned in their former report have escaped observation, it appeared desirable to enter at some length into the grounds on which these phenomena were expected to occur and to examine the probable cause of their not having been observed. Many of the points thus involved are of considerable general interest, and the explanation of them is in some cases not easy and even doubtful; neither is information regarding them very accessible: your Committee, therefore, will claim the indulgence of the Institute while discussing these points with a minuteness, which might be tedious and superfluous were they addressing professed astronomers, but which may not be deemed improper in offering to amateur-observers the received or probable explanations of the points in question.

Notices of observations have been received from the following stations:—

1. Kingston, by Lieut. Col. Baron de Rottenburg and Fred. J. Rowan, Esq., from a position contiguous to Murney's tower. Mr. Rowan used a small telescope, by Troughton & Sims, attached to a transit theodolite; Baron de Rottenburg a telescope by Dolland, three and a quarter feet focal length, with an object glass two and a quarter inches. The mean time was obtained from several double altitudes of the sun taken on the days preceding the eclipse and continued up to the day itself by Mr. Rowan. The watches used were of a description to be depended upon, with a probable error of three or four seconds only. The register of the thermometers was carefully attended to by the Messrs. Williams, of Kingston; one thermometer was placed in sunshine, the other kept in the shade; the one placed in sunshine had its bulb blackened. The day throughout was most serene and cloudless, and highly favourable in all respects.

2. At St. Martin, Isle Jesus, Montreal, by Dr. Chas. Smallwood, who contributes a series of physical observations made at intervals of fifteen minutes. It is to be regretted that the day was unfavourable, and thus diminished the importance which the excellence of the instruments and Dr. Smallwood's well known experience and skill would have given to such a series. He observes, "Clouds (Cum. Strat.) had been somewhat heavy for some hours previous, but a few minutes before four o'clock they cleared away and left the first contact visible, and remained so with light clouds occasionally passing over the sun's disc until after the greatest obscuration. The final contact was obscured by dense (Stratus) clouds which continued until 6h.-45m., when the sun re-appeared under its usual aspect."

3. Toronto, the Observatory, by Sergeant Jas. Walker, Corporal A. Stewart, and Gunner James Lily, R.A. Physical observations were taken every five minutes with the Observatory instruments, under the usual precautions. The small portable Azimuth-transit telescope was used for noting the times of contact, which were given by the Observatory Chronometer (2393), whose error and rate were known. The day was in every respect favourable.

4. Prescott, C.W., by the members of the sub-committee, Sergeant Thos. Menzies, R.A., Mr. Ed. Fitzgerald, B.A., and Mr. William Cooper. The telescopes employed were a two-feet Gregorian reflector, by Watkins & Hill, four inches diameter, and a three and a half feet refractor, by Dunn, with two and three quarter inches aperture. The magnifying power employed in each was forty. The time was given by an excellent portable chronometer by Arnold, whose error and rate for Toronto were known, an approximate allowance of 15*m*. 20*s*. being made for the difference of longitude between Prescott and Toronto. The observations were made on the West Bastion of the Fort which is situated on a gentle rising ground to the east of Prescott. The day was very favourable, the sky being perfectly cloudless, though a boisterous wind interfered with the steadiness of the telescopes.

5. Observations were also attempted at Montreal, by Lieut. A. Noble, R.A., but were prevented by clouds.

The following table gives the times of occurrence of the various phases at the stations named.

	Kingston. Lat. 44°-8′ N.† Long. 76°-46′ W.†	Toronto. Lat. 43°-39′ 4 N. Long. 79°-21′ W.	Prescott.* Lat. 44°-42′ N.† Long. 75°-31′-56″ W.†
Local times of.....	Eclipse annular but not central.	Partial, eleven digits obscured	Annular and nearly central.
Commencement of Eclipse	h. m. s. 3 57 18	h. m. s. 3. 44 42·5	h. m. s. (1) 4 03 17 } † (2) 4 03 19·5 }
Com. of Annularity.....	5 12 38		(1) 5 17 09·2 } (2) 5 17 09·0 }
End of Annularity	5 15 42		(1) 5 21 02·5 } (2) Missed. }
End of Eclipse.....	6 22 25	6 14 07·7	(1) 6 27 05·5 } (2) 6 27 05·8 }

The astronomical application of these *times* is to furnish, by comparison of numerous other stations, corrections to the tables of the sun and moon, and also to give approximately the differences of longitude of the stations themselves; but to enter into these particulars does not fall within the scope of the present paper.

The following tables embrace the Meteorological Observations forwarded from the different stations:—

* No. (1), Refracting telescope, J. B. C.; No. (2) Reflector, G. C. I.

† This observation is too late, a violent gust of wind at that time shaking the telescopes so as to render distinct vision impossible.

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.

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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.

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Benefits of Membership to the RASC Kingston Centre

RASC Central based benefits:

* Annual edition of the Observers Handbook
* Bi-monthly RASC Journal (digital)
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* Monthly Centre Newsletter – Regulus
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* Monthly videoconference meetings (open to the public)
* Equipment loan program