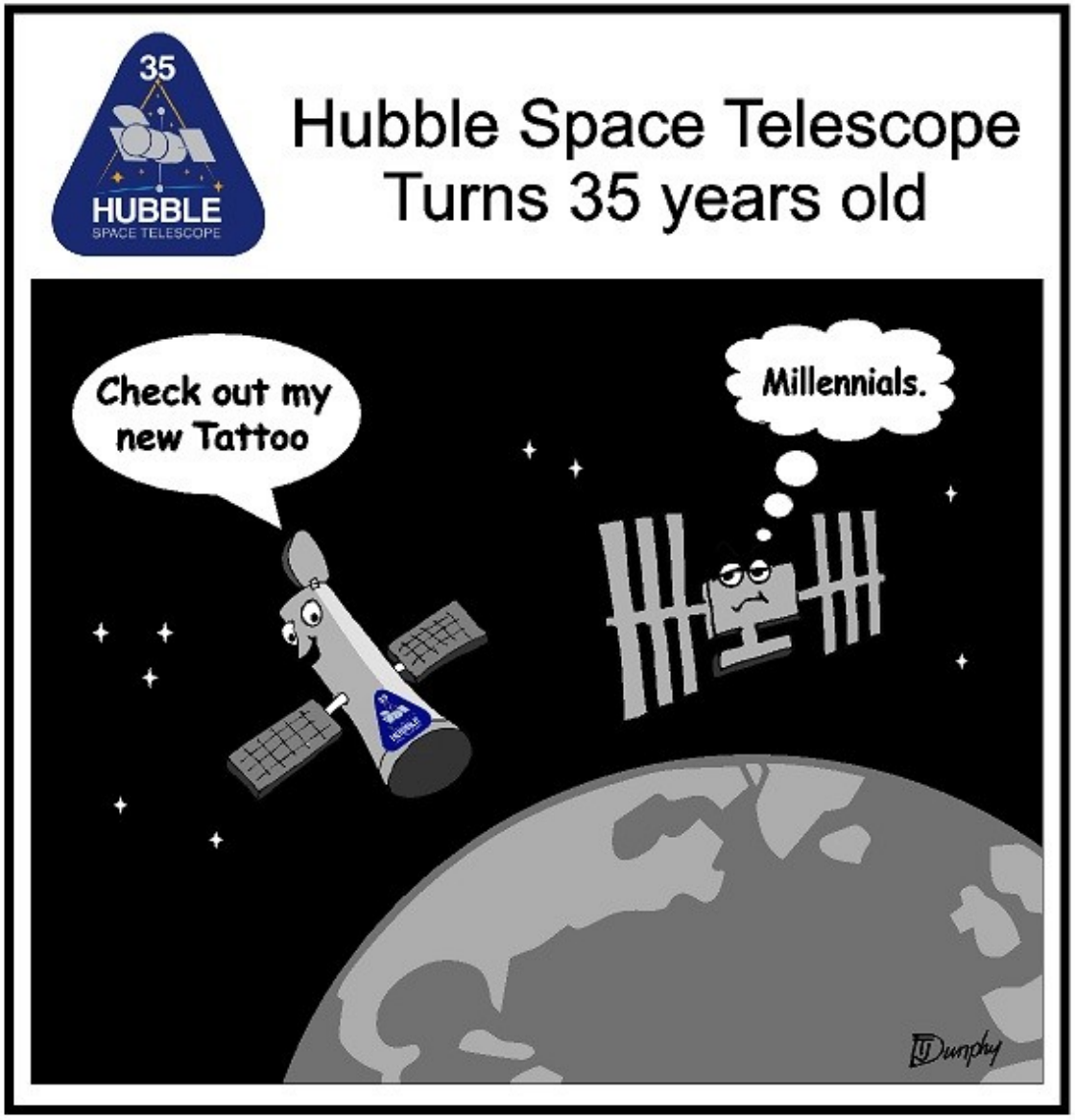
Vol. 26 Issue 2

Spring 2025

HORIZON

LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
New Brunswick Centre du Nouveau-Brunswick
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA



Ted's Toon

Ted Dunphy has been a New Brunswick RASC member for 22 years, and a driving force for astronomy outreach in the Fredericton area. He was an initiator of the Mactaquac star party 20 years ago and it looks like that event will be re-established this year after a covid recess. Ted and Karen, who is also a Centre member, kindly looked after the Saturday feast and supplied much-needed morning coffee.

As a self-employed graphic artist Ted has volunteered his talents toward creating our Centre logo, which has been described as the best of the Society, Mactaquac star party shirts, stand-up posters, banners for the RASC General Assembly in Fredericton in 2010, the beautiful logo for the 2024 total eclipse and, of course, many clever cartoons for our newsletter and the RASC Journal.

Thank you, Ted. I will buy you a glass schooner if we ever find a restaurant that still has them on the menu.

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https://rascnb.ca
https://www.facebook.com/RASC.NB

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Social Media: Gerry Allain
Equipment: Chris Weadick
Library: Ted Dunphy
Newsletter Editor: Curt Nason

Centre News

Business Meetings

Third Saturday in some months

Centre Presentation Meetings

Third Tuesday evening of most months
June 17
Summer TBD (usually none)
September 16

Star Parties 2025

Kouchibouguac May 30-31
Mount Carleton August 1-2
Fundy August 22-23
Kouchibouguac September 13-14

RASC NB membership remains stable at approximately 75 members. Welcome to our new members this year: Bastian AJ Thompson and Robert R Reis.

Chris Weadick has been approved as a Trainer for certification to use a green laser pointer (GLP) at our observing events. Certification has an expiry and it is valid only for members in good standing of the RASC. Approval of Centre Executive is required at least one day prior to using a GLP at an event.

Have a great summer and plan to attend at least one of our star parties or observing events.

Curt Nason

Astroverse

"I am Like a Slip of Comet…"
Gerald Manley Hopkins (1844 — 1889)

— I am like a slip of comet,
Scarce worth discovery, in some corner seen
Bridging the slender difference of two stars,
Come out of space, or suddenly engender'd
By heady elements, for no man knows;
But when she sights the sun she grows and sizes
And spins her skirts out, while her central star
Shakes its cocooning mists; and so she comes
To fields of light; millions of travelling rays
Pierce her,; she hangs upon the flame-cased sun,
And sucks the light as full as Gideon's fleece:
And then her tether calls her; she falls off,
And as she dwindles shreds her smock of gold
Between the blistering planets, till she comes
To single Saturn, last and solitary;
And then she goes out into the cavernous dark.
So I go out: my little sweet is done:
I have drawn heat from this contagious sun:
To not ungentle death now forth I run.

C/2020 F3 NEOWISE photo by Robert Gaudet

See Robert's Seestar S50 gallery on page 5

The Tale of Two Eclipses (inspired by Charles Dickens)

by Yolanda Kippers

It was not the best of conditions, it was not the worst of conditions, there is an ascending node in the spring, there is a descending node in the fall, there was a period when we stood in the way of the Sun, there was a period when the Moon stood in the way of ourselves, it was the season of Spring, it was the season of eclipses, there was reason to hope, there was reason to despair, we could have clouds before us, we could have clear skies before us, we could sing praises to heaven, we could send curses the other way – in short, the alignments were so far to present interesting phenomena, but that some of the noisiest meteorological predictions, for good or for evil, were in the superlative degree, well, unpredictable.

There was an eclipse with the Earth directly in front of the Sun in the middle of the night; there was an eclipse with the Moon partially in front of the Sun, at daybreak. In both cases it was clearer than crystal to the astronomers of the land that the date and the hour were settled forever.

It was March, two thousand and twenty-five. The bodies of the solar system favoured the lunar eclipse – it was total, it occurred in the middle of the night and could be observed, start to finish, from almost any location with an open view of the sky. The night sky of the eclipse began clear; it was mild with little wind so one could shelter and snuggle in place. The full Moon was well placed, high in the sky. There was nothing to justify much nocturnal boasting: daring circus acts by dancing bears and mythological skylarking by the royals took place, as every night, in the circumpolar arena. The glare of the Moon had despoiled the maiden and all of her retinue, including the lion. This all came to pass, as the Moon gradually travelled into the shadow cast by the Earth. Thus environed, the two constellations, Virgo and Leo, once again carried their divine patterns high above, and miscellaneous stars atypically surrounded the full Moon. The night became darker; and quieter. But just as the Moon was totally engulfed by the shadow, the entire scene was engulfed by clouds.

The solar eclipse, less favoured on the whole, was partial, started below the horizon, and could be observed only from specific locations. Under the guidance of seasoned leaders, enthusiasts sought and scouted out elevated locations with low, unobscured horizons that would face the rising Sun. And, likely enough, prayed for clear skies to boot. The anticipated morning was overcast. Intrepidly, a group of enthusiasts made it to their chosen cliff site rising over the bay on that cold and blustery morning, being mindful of not stepping over or being blown over the edge of that precipice while using protective eyewear. To sit or to shelter was to lose sight of that narrow band of clear sky that hung teasingly above the horizon of that greatly anticipated eclipsed sunrise. Precisely as the ephemeris foretold, the left tip of the visible Sun emerged from the cold waters like a threatening shark; without haste it was joined by a second tip on the right, the two tips then being soon connected in the middle to form a devilish smile that reflected eerily in the shuddering waters below. The scene may have been reflected on the grimaces of the shivering onlookers fearing not the shark or the devil but perishing on that cold and windy cliff. It was telling that just as quickly as the heliocentric smile leapt out of the frigid waters into the hovering dark cloudbank, the human countenances showed relief as they bundled up their gear and leapt into their cars for home.

All these things, like thousands that happened before, came to pass in the close of the dear old spring ecliptic season of two thousand and twenty-five. Relentless, these bodies and their orbits continue on unheeded: the Sun giving off its light, and the Earth and the Moon in their ability to occasionally block it, persisting in their divine intersections, despite meteorological obscuration. Thus, the fall of two thousand and twenty-five will host another display of seasonal eclipses, and myriads of other events – events to be chronicled among the rest – along the roads that lay before them.

Paul Owen photo

All-Sky Camera, Part 2

by Trevor Johnson

So back in the Winter 2024 issue I had started an All-Sky Camera build. At the time I was able to get it working but I was having some trouble as it would not stay connected to my home Wi-Fi, making it difficult to see what it was doing. As a result it went back into the garage until I figured out what was causing the issues.

I had originally used an old security camera housing because it gave me a watertight enclosure and had a great dome.

Unfortunately it was metal and caused problems with the Wi-Fi signal. I replaced it with a plastic box with a weatherproof lid. That seemed to have solved the signal problem.

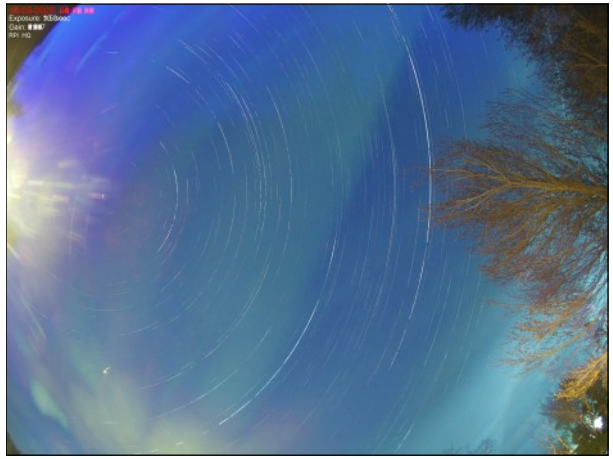
I was able to reuse the dome, I just needed a way to mount it to the new box. Four bolts and liberal amounts of plumber's putty solved that. At least it did on my second attempt. The four bolts worked great until the first time it rained. While the dome kept the camera dry, I think water seeped around the threads

of the bolts and got into the box. When I noticed some condensation on the inside of the dome I opened the box to find an inch of water! Lucky for me I had the computer mounted on the underside of the cover.

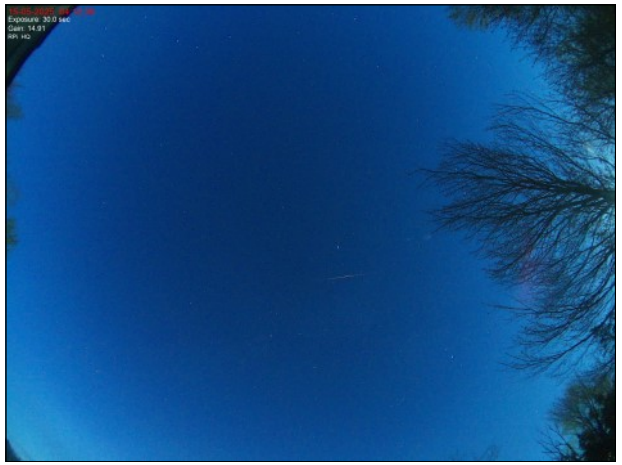
Once I got everything dried out I tried again, this time with the putty around the dome AND the bolts. That sort of fixed that problem. In the picture you see water in the bottom of the box. I have no idea how it is getting in there. It's not much, maybe an ounce. It won't hurt the computer but it causes condensation to form on the dome.

I have had the camera installed and working for the past month and except for that little bit of water it has been working well. I have had many nights of pictures of clouds! In the past week though I have had a couple of good nights and was able to get some decent pictures, even with the full Moon.

Here is an example of star trails.



The system also creates a nice video from all the individual frames. That won't work here but I can include a frame. This one captured a meteor; on that night I caught seven images with meteors!



You can tell it is a meteor and not an airplane as the streak brightens towards the middle whereas an airplane would have multiple parallel lines and would not dim.

Overall it has been interesting project and I still have a few things to sort out — starting with the water. I also have to find a better place for the camera as there is a light that causes some flare in the dome until it goes off at midnight. Moving the camera then creates the next problem of how to power it. I suspect that this will lead me to another project to build a battery bank, with a solar charger, that can run the camera during the night and charge during the day. Now where on my project list do I add THAT one?

Robert Gaudet's Seestar S50 Gallery

IC 434:1h, 17m of 10s exposures using Seestar S50 and dual band filter. Processed in Siril, GraXpert for noise reduction, PS for finishing up. Picture taken at Saint George, NB.

The Moon: Best 16% of 730 frames captured, stacked using Autostakkert 4, further processed with IMPPG and PS. Video/Image was captured using the Seestar S50 and UV/IR cut filter. Picture taken at Pennfield, NB. Moon phase 64% waxing gibbous.

M33: 1h, 30m of 10s exposures using the Seestar S50 and UV/IR cut filter, processed in Siril using the Hubble pallet, GraXpert for noise reduction, PS for finishing up. Picture taken at Deadman's Harbour, NB.

← ←

NGC 2244: 1h, 5m of 10s exposures using the Seestar S50 and dual band filter, processed in Siril using the Hubble pallet, GraXpert for noise reduction, PS for finishing up. Picture taken at Pennfield, NB.

M42: A 1h, 10s exposure using the Seestar S50 and dual band filter, processed in Siril using the Hubble pallet, GraXpert for noise reduction, PS for finishing up.

Note the core is not over blown. Picture taken at Pennfield, NB.

NGC 869: 6m of 10 s exposures using the Seestar S50 and UV/IR cut filter, processed in Siril, PS for finishing up. Picture at Pennfield, NB.

→ →

What's Up for Summer

by Curt Nason

The highlights for the months of June through August will be the star parties at Mount Carleton and Fundy in August, with Saturn rising late evening and early morning views of Venus and Jupiter rising with Orion.

The **Sun** reaches the solstice at 23:42 on June 20, and Earth is at aphelion on July 3. We could still be at maximum activity. Last year the Sun's southern hemisphere had the most sunspots and this year they are more in the north. Double peaks are fairly common.

New **Moon** dates are June 25, July 24 and August 23. The Moon makes monthly close passes with Spica, Antares and Mars but we are not treated to any occultations.

Mercury is two days past superior conjunction as June begins, and on June 6 it is 2.5˚ right of Jupiter, setting nearly an hour after sunset. It is at greatest elongation and fading on July 5, reaching inferior conjunction at the end of the month. It begins a favourable morning apparition soon after, reaching greatest elongation near M44 on August 19.

Venus, as Lucifer the Roman Morning Star, is at greatest elongation as this trimester begins, about half lit with a 24" disc. It sits just above the Hyades with the Pleiades <10˚ above on July 9. Moving into Gemini, Venus does a low-five with Jupiter on August 11-12 as they cross paths about 1˚ apart.

Mars makes a colourful close pairing with equally bright Regulus on June 16, and it sits atop the crescent Moon in twilight on June 29. Mars speeds through Leo and into Virgo, like a toon on a buzz saw conveyor belt, in a biennial attempt to avoid the encroaching Sun. Spoiler Alert: It will lose early next year.

Jupiter slips into conjunction on June 24, making its presence known in the morning sky by mid-July. Its rendezvous with Venus in August is a bonus for meteor watchers, easing some of the disappointment caused by the bright Moon. Being in Gemini bodes another great winter of Jupiter observing.

Saturn rises around 03:00 on June 1, offering early risers views of the southern side of its rings for the first time since 2009, although they are only open <4˚ throughout this period. By summer star party time in early August it rises around 23:00. Saturn reaches its first stationary point on July 14, beginning four and a half months of retrograde motion as it heads toward opposition around the autumnal equinox.

Saturn ring plane crossings occur every 15 years and provide the observing challenge of Titan shadow transits, which are often lost in twilight. On August 3 one occurs well north of the rings, beginning at 03:25, half an hour before astronomical twilight begins and with the planet 40˚ high. Another begins a little further north on August 19 at 02:52 and reaching mid-transit around 04:00, again half an hour before astronomical twilight and with Saturn due south.

Uranus is in Taurus and two weeks into the morning sky on June 1. By the end of August it will be a within a binocular field south of the Pleiades.

Neptune piggybacks within a few degrees above Saturn throughout the summer, making it an easier than usual target for outreach. A triple conjunction of the pair begins on June 29 with them just over a degree apart. It reaches its first stationary point on July 5, and has its second close conjunction with Saturn on August 6. The third conjunction occurs in 2026.

Comets Well, we can hope for a surprise visitor.

Meteor Showers The South Delta Aquariids peak on July 29 with a waxing crescent Moon. The Perseids peak on August 12, a few days past the full Moon.

←
Mars and Regulus on June 16

Mars and the Moon on June 29
↓

Gleanings from the Newspaper: Recent Night Sky Columns

by Curt Nason

A Blazing Gem in the Northern Crown

Astronomers are able to predict eclipses far into the future with increasing precision thanks to records being kept for thousands of years. Other predictions, based on sparse data, are often scientific wild-ass guessing (SWAG method) and they can result in a non-event for those watching the night sky.

If we look high in the east in late evening we see the bright star Arcturus, with equally bright Vega low in the northeast. One third of the way from Arcturus to Vega is the charming semicircle of seven stars that forms the constellation Corona Borealis, the Northern Crown. Its brightest star Alphecca is similar in brightness to those of the Big Dipper, but some of the other six might not be visible in light polluted areas.

In Greek mythology this constellation represented the golden crown presented by Dionysus, the god of wine, to Ariadne, daughter of King Minos, to entice her to be his eternal wife. Indigenous people of New Brunswick saw it as a bear's den with the bear being the bowl of the Big Dipper.

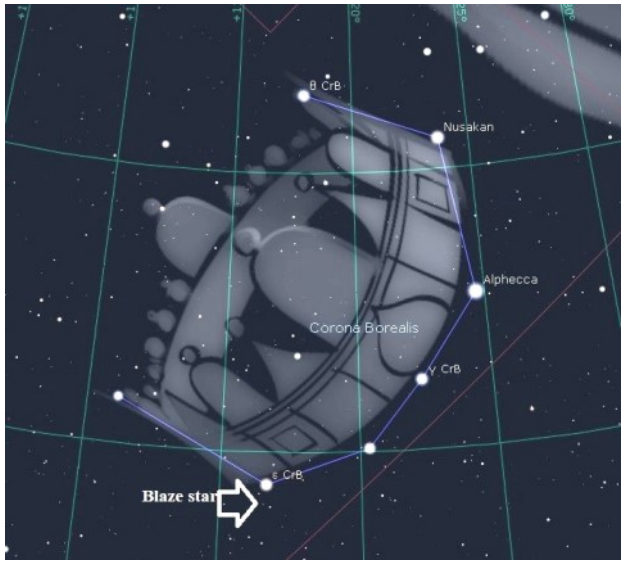
Corona Borealis is not rich in deep sky objects such as galaxies that are within the reach of backyard telescopes. However, last year amateur and professional astronomers kept an eye on this constellation over several months through spring and summer. In 1866 and 1946 a star just outside the eastern edge of the semicircle, one too faint to be seen normally, brightened to rival Alphecca. Over approximately a week it subsequently dimmed to its normal brightness, near or beyond the range of binoculars. In 1945 it dimmed briefly by a factor of two, and in 2023 astronomers noticed a similar dip, leading to expectation of a sudden brightening last year. It didn't happen.

This star, called T Coronae Borealis but commonly referred to as T CorBor or the Blaze star, is classified as a recurrent nova. This two-star system consists of a red giant, which varies somewhat in brightness as it expands and contracts, and a white dwarf in mutual orbit about 80 million kilometres apart. (In our solar system this distance from the sun would be midway between Mercury and Venus).

A white dwarf is the remnant of a red giant that collapsed to the size of the earth after its nuclear fuel was depleted. As the red giant expands it engulfs the white dwarf in hydrogen, which eventually gets hot enough to undergo a nuclear fusion reaction and the star briefly gets more than 500 times brighter.

Last autumn an astronomer at the Paris Observatory published a paper that possibly refines predicted dates for when T CorBor blazes next. Analyzing data from four recorded sightings going back to 1217, Jean Schneider determined that the eruptions appear to recur during the same phase of the binary's 228-day orbit, give or take a week or two. He states that he offers no explanation for why, but reference is made to the possibility of a third star in the system which makes its closest approach to the binary pair approximately every 80 years, adding "fuel to the fire." We are currently beyond a predicted blaze date of March 27, with the next being centred on November 10.

Science progresses by building on hypotheses through experiment, observation, and referring to previous records until someone gets the correct answer and earns the right to swagger. Over the next several months I will be looking in the area of the second star on the left of Ariadne's golden crown in hopes of seeing the Blaze star, a once-in-my-lifetime event. If successful, I will be paying homage to Dionysus.



Where to look for the Blaze star in Corona Borealis (Stellarium)

A Distressing Tale of Love in the Sky

Of all the ancient tales related to the constellations, only one was based on a real person. The underlying story involved a queen who adored her warrior husband, and a quick-thinking astronomer who saved the necks of several priests through his knowledge of the night sky.

In 246 BCE, Ptolemy Euergetes succeeded his father as pharaoh of Egypt, the third in the Ptolemaic dynasty. He married Berenices II, the queen of Cyrenaica, acquiring her land which is now eastern Libya. She feared for his life when he went off to battle the Assyrians, so she visited the temple of Aphrodite and pledged to honour the goddess by sacrificing her golden tresses if her husband returned safely.

He did return and Berenice went to the temple to honour her pledge. When the shorn locks went missing Ptolemy III threatened to slay the temple priests if the thief was not found. Conon, the court astronomer, told the royal couple that Aphrodite was pleased by the offering and had placed it in the sky for all to see. That night he showed them a glowing cluster of stars as proof.

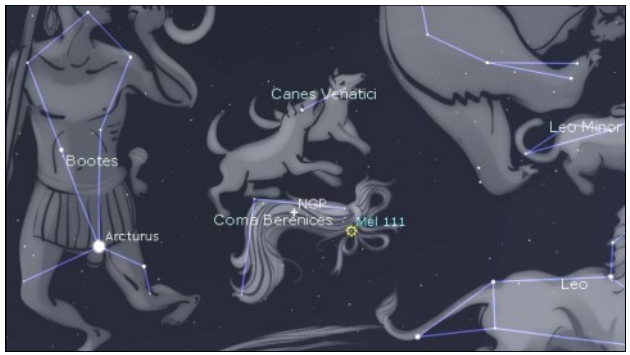
That cluster of stars is now known as Melotte 111 or the Coma star cluster, in the relatively new constellation of Coma Berenices, Berenice's Hair. Although the cluster was known as Berenice's Hair two millennia ago it was considered to be part of the constellation Leo, as the tuft of the lion's tail. It didn't appear in star maps as a separate constellation until the sixteenth century, and it became more established early the following century with inclusion in star atlases by Tycho Brahe and Johannes Bayer. Official constellations and their boundaries were set by the International Astronomical Union a century ago.

Coma Berenices can be seen this month from a rural area in late evening, high in the southern sky between the bright star Arcturus and the triangle of stars that forms the hind end and tail of Leo. The Coma star cluster should be visible as a hazy patch to the eye, and its approximately 40 stars take up most of the view in binoculars. However, the constellation is known to amateur astronomers for more than just the star cluster.

When we see the bright stretch of the Milky Way from summer campgrounds we are looking toward an inner spiral arm of our galaxy, which hides the many billions of stars beyond that make up most of the galaxy. Perpendicular to that direction we are peering above the Milky Way toward the north galactic pole in Coma Berenices; deep space where backyard telescopes and even binoculars reveal smudges of tens to hundreds of other galaxies. This region is called the Realm of Galaxies.

In eighteenth-century France, astronomer Charles Messier published a catalogue of 103 star clusters and unknown nebulous objects that resembled possible comets when seen through a telescope. Seven more were updated last century based on his notes, and more than 40 of those previously unknown nebulous objects are galaxies within Coma Berenices and the handful of constellations surrounding it. It is a rite of passage for amateur astronomers to locate all of the objects in Messier's catalogue, and I have been through the list a few times including once using only 15x63 binoculars. A more recent observing list of 110 mostly fainter objects (The Finest NGCs in the RASC Observer's Handbook) also includes more than 40 galaxies in the immediate area of Coma Berenices.

It is not often an astronomer comes to the rescue, as Conon did when the priests were within a hair's breadth of death. They all were fortunate that Ptolemy and Berenice were not avid stargazers.



Coma Berenices and neighbouring constellations

I started writing the Night Sky column for the Telegraph-Journal in 2000 and for the past couple of years it has often appeared in the Times & Transcript and the Daily Gleaner. It is usually published on the first Saturday of the month. These two appear in this newsletter to fill in space, just like a Hevelius constellation.

Outreach Reporting

Curt Nason

We appear to be maintaining our average rate of outreach events, although the school visits are down. There is a significant drop in the number of people, and especially youth, attending events when compared with the past few years. The reason for all three is that there was no Science Week in the schools this spring, It consisted of online presentations seen in multiple classrooms simultaneously, as well as recorded viewings.

The biggest event to date in 2025 was the live feed of the partial solar eclipse on March 29 by the Sunday Night Astronomy Show crew with 51,668 viewers on Facebook and YouTube. This was also part of a feed coordinated by *timeanddate*, which had 238,000 plus viewers on YouTube.

Events coming up for summer and into September are the four or five star parties, and library events to supplement their Space-themed Summer Reading Clubs. Contacts have been made with libraries in the southwestern library district (Sussex to McAdam), Moncton and Oromocto. Please contact your local library if you want to supplement their program with an astronomy/space theme presentation or activity.

When you do perform outreach, please record the event in our monthly spreadsheet. Contact me if you need assistance. French and English Star Finders and Moon Guides are available for handouts.

RASC NB Outreach Events and Handouts

Year	# of Events	People At Events	Live Feed	Youth	Star Finders English	Star Finders French	Moon Guides English	Moon Guides French	Volunteer Hours
2016	219	9498			1984	115	2290	87	988
2017	248	9951	8441		2276	162	2262	131	1937
2018	187	7289	37,922	>1300	1788	170	1635	79	1355
2019	240	7036	46,675	2997	1320	216	1520	213	1950
2020	171	1859	161,688	954	817	22	636	125	1079
2021	131	731	60,240	565	108	0	46	0	1160
2022	173	12,952	63,122	10,192	586	60	472	106	1809
2023	168	23,419	9787	20,612	556	223	452	110	1789
2024	186	12,362	12,304	6805	352	92	506	87	2331
2025	65	1122	55,986	622	206	77	173	0	766

Types of Outreach Events

Year	Presentation	Night Observing	Day Observing	Youth Group	School Talks	Exhibition	Observ./ Planet'm
2016	31	55	39	19	54	11	10
2017	61	89	22	19	50	6	1
2018	50	80	13	18	20	5	1
2019	73	94	10	22	36	5	0
2020	86	43	5	8	29	0	0
2021	65	48	6	1	11	0	0
2022	72	52	6	4	34	4	0
2023	60	13	8	14	69	4	0
2024	101	23	8	15	33	6	0
2025	38	8	5	9	5	0	0