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Summer 2024

# H O R I Z O N

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



*Above: July Full Moon over the Gondola Point Ferry  
Paul Owen photo*

*Left above: PacMan Nebula and  
Left: Propeller Nebula  
François Thériault photos*

**SRAC/RASC Centre du NB Centre  
Inc.**

<https://rascnb.ca>

<https://www.facebook.com/RASC.NB>

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*1st Vice-President/-Président  
June MacDonald*

*2nd Vice-President/-Président  
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François Thériault Chris Weadick*

*National Council Representative  
François Thériault*

*LP Abatement: Vacant*

*Star Parties: Yvon Hachey, Paul Owen*

*Outreach: Curt Nason*

*Website: Chris Weadick/Trevor Johnson*

*Social Media: Gerry Allain*

*Equipment: Chris Weadick*

*Library: Ted Dunphy*

*Newsletter Editor: Curt Nason*

## Centre News

### Business Meetings

September 21 and  
October 19 (Annual Meeting)

### Centre Meetings

September 17  
October 19

### Star Parties

Fundy: August 30-31  
Kouchibouguac: September 6-7

### Irving Nature Park

August 23 (24)  
September 6 (7)  
October 11 (12)  
November 8 (9)

## 24 Years of RASC NB Will there be 25?

In our first ten years of existence we had five Presidents: Francis LeBlanc, Adrien Bordage, Shawn McHatten, Paul Gray and Peter Jensen, all in two-year terms for the most part. The next two terms were held by Curt Nason and the past five by June MacDonald, with both serving in other positions when not as President. Our Treasurer Emma has held that position for half of the Centre's existence, and currently does double-duty as

Secretary. Others have served multiple terms on the Centre Council. In most or all cases the positions were filled by acclimation.

It is not that serving in Council positions takes up a lot of time—it doesn't—but at some point in life people tire of doing the same thing. That is the situation that we, as a RASC Centre, are in now. It is time, past the time, for other members to get involved in moving the Centre forward to ensure its continued existence.

You don't need to be knowledgeable in astronomy to help run the Centre, you just need the passion or desire to make it go. Others who have been in those positions are willing to help. Do you have ideas for improving the Centre, making it more dynamic or more accessible? The best way to fulfil those ideas is to be one of the decision makers. The Centre is now incorporated with charitable status. Do you have visions of what we could do to promote astronomy if only we had more money available? That is why we obtained charitable status.

Our Annual Meeting, when a new Council is formed, is on October 19. Please, find it within yourself to step forward and save our Centre from an uncertain future. You could very well find it invigorating and satisfying.

# WE NEED YOU

## Laser Pointer Certification Program

V1.4 July 2024

(adapted from the RASC website)  
by Dennis Lyons (Winnipeg Centre)

### What is the program?

Laser pointers are often used at star parties as an outreach tool. A laser pointer's beam will leave a dim trail of light through the sky at night, working well as a guidance tool and allowing an outreach volunteer to easily direct the audience's attention to a specific object in the night sky.

However, laser pointer usage is federally regulated. Misuse of lasers can lead to blindness, a particular concern when the laser pointer is aimed at an aircraft. For this reason, certain laws exist about laser pointer usage and users must be certified to use a laser pointer for astronomy purposes. The Royal Astronomical Society of Canada (RASC) provides this certification through the form of a one-hour class and an exam.

### Centre Responsibilities

Centres are responsible for:

- Providing training sessions to Centre members
- Tracking certified Centre members
- Issuing certification cards to Centre members
- Approving events at which laser pointers will be used

### Providing training sessions

Centres are responsible for providing training sessions to any members that may be interested in receiving their laser pointer certification. To provide these sessions, a member of the Centre must be identified by their Centre and then trained as a Centre Trainer for the program. All prospective trainers must already have their laser pointer certification.

### How to become a Laser Pointer Trainer for your Centre

Centres must reach out to Dennis Lyons ([dennis.lyons3@gmail.com](mailto:dennis.lyons3@gmail.com)) of the Winnipeg Centre and CC [admin@rasc.ca](mailto:admin@rasc.ca) identifying any members of their Centre interested in becoming a Centre Trainer. Dennis will reach out with some instructions, lesson slides, exam questions, the exam answer key, and the next scheduled Centre Training Course, provided by National-level laser pointer Instructors. Centre Trainers will be added to an internal list. In the event that new information surrounding the program arises, Centre Trainers will be contacted. Centre Trainers will also be added to a Google Drive folder with all documents to be used in user training and linked throughout the following paragraph.

### Tracking certified Centre members

Centres must keep track of any members they certify through their own Centre-run training sessions. After each training session, update this spreadsheet with each attendee's V1.4 July 2024 information. Detailed instructions on how to use the spreadsheet are included in the first sheet of the document.

### Issuing certification cards

Centres must issue certification cards for newly certified or recertified users. Cards can be printed at your Centre or on a member's printer, using Avery 5371 Business Card paper and this template. Once printed, the cards can be filled out by hand and given to the members at the next Centre meeting. If your printer cannot print double-sided, you can simply print the first page of the template instead.

### Approving events with laser pointer activity

Certified laser pointer users are required to inform their Centre executive at least 8 hours before an event at which a laser pointer will be used. This is typically done through email. It is the Centre's responsibility to develop a protocol for approving these events. An example of some protocols could be:

- The first member of the Executive who sees the email from a user regarding an event replies to all recipients showing that they have approved the event
- A single member is responsible for responding to event emails in a timely manner
- An event request is assumed approved if no member of the Executive responds to the email within 8 hours.

### **Spotter/User Responsibilities**

Once certified, laser pointer users/spotters are responsible for:

- Safely using the laser pointer at an event, or spotting for aircraft to assist a user
- Carrying required documentation

- Filling out the usage reporting form within 30 days of their event

Transport Canada requires us to track all uses of laser pointers for astronomy by our certified users. By filling out this form, the RASC will have a record of all events at which laser pointers have been used.

For more information about what is required of a laser pointer user, please visit

<https://rasc.ca/laser-pointer-usage>

and view the slides included at the bottom of the page.

#### Carrying required documentation

Users must have on their person at all times during an event where they are using a laser pointer:

- Membership card (available by clicking “print temporary card” under My Account—Profile on the RASC Member Area)
- Certification card (issued by Centre)
- RASC Certificate of Insurance (available from the RASC website)
- Transport Canada authorisation (available through this document on the RASC website)

Printing these documents and keeping them with your observing equipment or with your laser will help you remember to bring them to your event.

#### **Becoming a National Instructor**

After becoming a trainer for your Centre, where do you go next? Once a Centre

Trainer has conducted two User training sessions at their Centre, they are eligible to become a National Laser Pointer Instructor. National Instructors provide training to Centre members interested in becoming Centre Laser Pointer Trainers. If your Centre has a National Instructor, you can:

- Schedule your own User/Spotter Training sessions, allowing more of your Centre members to safely use laser pointers at outreach events, and
- Schedule your own Centre Trainer sessions, allowing certified users to learn how to teach the course themselves. Eligible Centre Trainers interested in becoming National Instructors must be identified by their Centre executive to Dennis Lyons, CC'ing [admin@rasc.ca](mailto:admin@rasc.ca).

### **Editorial Comment**

As you can see, the training and usage requirements for pointing a laser into the sky (airspace) are stringent, and with good reason. A strike on the cockpit of an aircraft scatters throughout the cockpit, causing a significant distraction and temporary loss of acuity. The beam travels much farther than what we see reflected back to us.

In Canada it is illegal to possess a hand-held laser pointer greater than **one milliwatt** (mW) within the greater Montreal, Toronto or Vancouver regions, or within a 10 km radius of an airport or a certified heliport. In New Brunswick these include the airports in Saint John, Moncton, Fredericton, Miramichi, Bathurst, and Charlo; and the helipads at the re-

gional hospitals in Saint John and Edmundston. The observing field within the Urban Star Park at the Irving Nature Park in Saint John lies just within the 10 km radius of the helipad.

A police enforcement agency can fine you on the spot for violating the above. Fines under the Contravention Regulations are \$1000, and under the Canadian Aviation Regulations they are up to \$5000 for an individual and up to \$25,000 for a corporation. RASC NB Inc. is a corporation. Intentionally interfering with the performance of flight crew to perform their duties is also a criminal offence, with penalties under the Aeronautics Act of fines up to \$100,000 and imprisonment for up to five years.

The RASC has received written authorization from Transport Canada for certified members to use lasers that:

- do not exceed Class 3R or Class IIIa
- do not exceed a maximum output power of 5 mW
- are used only in airspace outside of the restricted areas, and only for the purpose of identifying stars, constellations, and celestial objects across the night sky for the purpose of public education.

The conditions of authorization are covered in the certification training.

A focusable Maglite works well for touring people around the night sky. The beam is broader but it is less obtrusive for other observers, and the public is more likely to be looking at the stars than at the pretty light.

## What's Up for Autumn by Curt Nason

The highlights for the months of September through November will be a partial lunar eclipse, Saturn and Jupiter at opposition, and possibly a fine binocular comet.

**The Sun** reaches the Autumnal Equinox at 00:44 on September 22. For much of this year the level of solar activity has exceeded predictions and produced aurorae in NB on several occasions. Aurorae tend to occur more frequently around the two equinoxes due to the Russell-MacPherron effect.

**Moon** New Moon dates are September 2, October 2, and November 1. There is a shallow partial lunar eclipse on the evening of September 17/18, from 23:13 to 00:16, with less than 10% of the Moon's diameter in Earth's umbra above Mare Frigoris. The Moon is also near perigee but the full Moon on October 17 will be 112 km closer.



*Paul Owen photo of the Moon Illusion*

**Lunar Occultations** The lower limb of the crescent Moon occults Spica in daylight from around 12:38 to 13:45. An extreme challenge would be to catch the full Moon occult Neptune around 05:10 on the morning of September 18, about 20° above the WSW horizon. The waxing gibbous also occults Neptune around 22:29 on November 11. The slim waning crescent occults Spica again around 06:55 on November 27.

**Mercury** has its best morning apparition in early September, reaching greatest W elongation on September 3 and magnitude  $-1$  on the 15<sup>th</sup>. It is in superior conjunction September 30 and at greatest E elongation November 16, after which it fades from mag  $-0.3$ .

**Venus** spends this period moving eastward from the Sun but also southward from the ecliptic, thereby remaining fairly low in the southwest. The Moon passes nearby on September 5, October 5 and November 4.

**Mars** rises at 00:47 on September 1 and at 20:47 on November 30. During this span it speeds from Taurus into Cancer and brightens from mag 0.7 to  $-0.5$ , growing to a diameter of 11.6". It is near M35 on September 9 and the Moon on November 2.

**Jupiter** rises at 00:14 between the horns of Taurus on September 1. It begins retrograde motion on October 10. Reaching opposition in early December, it will be in prime observing position high in the sky on winter evenings.

**Saturn** is at opposition on September 8 with the rings open only 3.3°, allowing for possible occultations and eclipses of its moon Titan. Saturn resumes prograde motion on November 17, and the Moon makes close passes on September 17, October 14 and November 10.

**Uranus** begins retrograde motion early in September among the stars of Taurus. It reaches opposition at magnitude 5.6 on November 17.

**Neptune** is at opposition in Pisces on September 21 with a disc diameter of 2.3".

**Comet C/2023 A3 Tsuchinshan-ATLAS** returns to our sky low in the east in late September mornings between Leo and Hydra. In October it moves to being low in the west in the evening, running through Virgo and Ophiuchus. It could reach magnitude 3 or 2 and possibly mag 1 if it sports a long tail.

**Meteor Showers** The Orionids peak on the morning of October 21, and the South and North Taurids peak over the first two weeks of November. The Leonids peak on November 17.

**Zodiacal Light** might be seen in a dark eastern sky 90 - 60 minutes before sunrise during the first two weeks of September and October.

## A Blazing Gem in the Northern Crown

Five centuries ago, the politically-correct-police of the day in Christian lands held the heavens to be immutable, as per the ancient teachings of Aristotle. The invention of the telescope circa 1608 resulted in more people looking upwards, and before long came the realization that some stars are not so constant in the night sky.

The first hints that Aristotle was wrong occurred before the telescope, with brilliant stars appearing in 1572 and 1604 as recorded by Tycho and Kepler, respectively. We now know these were supernovae, final flashes of massive stars collapsing as their fuel was exhausted. In 1596 a less brilliant change was noticed in a star, and 42 years later another astronomer determined this star varied in brightness regularly over a period of eleven months. It was later named Mira, meaning “wonderful,” and its brightness varies by a factor of more than a thousand, dimming beyond the range of most binoculars. Some stars brighten and dim as they expand and contract due to variations in their core temperature. Others vary when two binary stars, which we see as one, are in a close mutual orbit and block part of each other’s light.

If we look high in the west after darkness settles we see the bright star Arcturus, and near the zenith is equally bright Vega. One third of the way from Arcturus to Vega is the charming semicircle of seven stars that form 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 used by amateur astronomers. However, amateur and professional astronomers will be keeping an eye on this constellation over the next several months. In 1866 and again in 1946, a star just outside the eastern edge of the semicircle, and too faint to be seen normally, brightened to rival Alphecca. Over approximately a week it dimmed to its normal brightness, near or beyond the range of binoculars. In 1945 it dimmed briefly by a factor of two and a year ago astronomers noticed a similar dip, leading to expectation of a sudden brightening this year.

This star, called T Coronae Borealis but commonly referred to as T Cor Bor 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. A white dwarf is the remnant of a red giant that collapsed to the size of the earth after its nuclear fuel was depleted. (In a billion years our sun will become a red giant

and eventually a white dwarf.) As the red giant expands it engulfs the white dwarf in hydrogen gas, which eventually gets hot enough to undergo a nuclear fusion reaction and briefly gets more than 500 times brighter.

I will be looking in the area of the second star on the left of Ariadne’s golden crown in hopes of seeing my second once-in-a-lifetime astronomical event this year. If successful, I will be paying homage to Dionysus.



*T Corona Borealis star hop from Epsilon (ε)*

**Other Names / Designations**  
Blaze Star, T Cor Bor  
HD 143454  
HIP 78322

## Blazing Stars Poetry by Yolanda Kipper

### The Blaze Star

We sit, and we watch, and we gaze –  
At a binary star, us to amaze.  
Maybe by chance, just getting a glance,  
When TCrB throws out its bright rays.

T Cor Bor, nicknamed the Blaze Star;  
Though shining dimly and seen from afar.  
Its signature show, for those in the know,  
Is an explosion of sorts – worthy an Oscar.

A red giant and white dwarf partake in a dance;  
With accretions and transfers, each other enhance.  
A norm of mag ten, increases and then...  
Astronomers, in glee, go out and they prance.

What's next for the star known as Blaze?  
Current dimming will lead its next phase.  
So ANYTIME NOW; it surely will WOW!  
But...please, please, please – don't let there be haze!!!



### Blaze Starr

They sat, and they watched, and they gazed,  
At a burlesque Starr, them to craze.  
Maybe by chance, just getting a glance,  
When FBF loosened her tight stays.

Fannie Belle, stage-named as Blaze Starr,  
Shone brightly at the Two O'Clock Bar.  
Her signature show, for those in the know,  
On an exploding couch - while men smoked cigars.

The hot dame without shame did the fan dance,  
With costumes and props each act to enhance.  
A rating of ten, increased and then...  
Governor Long, wooed her, and took chances.

What happen'd to the Starr known as Blaze?  
Now stardust, her brightness has dimmed into haze.  
No longer now, can she anyone wow.  
And please, please, please – don't repeat that craze.



*Blaze Starr (1932-2015)*  
AP photo (1959)



*Left: Clamshell  
Nebula in Cygnus*

*Right: North  
America & Pelican  
Nebulae in Cygnus*

*François Thériault  
photos*



**Centre Memories  
from Emma MacPhee**



**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
2015	114	7262			2106	244	2568	156	
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	112	9795	7654	5799	252	0	406	0	1080

**Types of Outreach Events**

Year	Presenta-tion	Night Observing	Day Ob-serving	Youth Group	School Talks	Exhibi-tion	Observ./ Planet'm
2015	22	33	23	7	15	13	1
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	66	4	5	13	20	4	0