

Vol. 23 Issue 4
Autumn 2022

H O R I Z O N

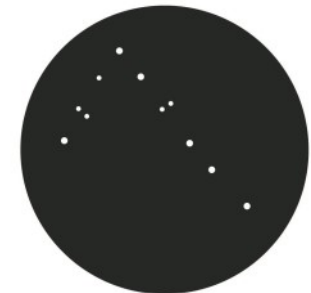
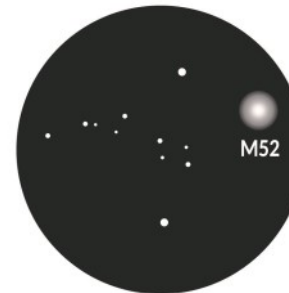
LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
New Brunswick Centre du Nouveau-Brunswick
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA



SNAS Crew Wins Highest Award

If you need to match faces to the names, think Johnny Cash:
The one on the left is labelled in the middle, and the one in the middle is on the right. The one on the right is labelled on the left, and the woman in the rear—ain't here.

GUESS THESE ASTERISMS?



Binocular object west of M52

Located in Cassiopeia

RA 23h 15m Dec 59.6°

Binocular object

Located in Cassiopeia

RA 23h 00m Dec 59.3°

Can you identify these asterisms sketched by

Master Puzzler Ted Dunphy?

The answers lie within.

*President/Président
June MacDonald (Acting)*

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

*2nd Vice-President/-Président
Vacant*

*Secretary/Secrétaire
Emma MacPhee*

*Treasurer/Trésorier
Emma MacPhee*

*Councillors / Conseillers
Mary King Alan Legere
François Thériault Chris Weadick*

*National Council Representative
François Thériault*

LP Abatement: Vacant

Star Party-Events: Paul Owen et al

Outreach: Curt Nason

Website: Chris Weadick/Trevor Johnson

Social Media: Emma MacPhee

Equipment: Chris Weadick

Library: Ted Dunphy

Newsletter Editor: Curt Nason

Centre News and Outlook

Meetings

In 2023 we will begin having meetings via Zoom on a weeknight, on a trial basis to see if attendance improves. Dates have not been set as yet.

Although online meetings lack a personal touch that some people prefer, they do allow for the same information to be presented and for interpersonal discussion. The bonus is that we can participate from home rather than face several hours of driving, especially in winter, saving time and money. In addition, they enable having guest speakers attend from anywhere in the world.

Having hybrid meetings, with both in-person and online attendance, is an ideal situation but not possible for all locations at this time.

Star Parties

Paul Owen is stepping down as Chair of the Star Party Committee due to other commitments. But, he has volunteered to organize the one at Fundy National Park on the Labour Day weekend if other members will volunteer to organize the star parties at Mount Carleton and Kouchibouguac. He is willing to assist volunteers with getting started, covering what needs to be done and when, and who the contact people are at the parks.

The RASC NB AstroVerse

Don Kelly

Twenty-twenty four will be fun.
There's a total eclipse of the Sun!
We'll need a clear day
So rain clouds "Stay away!!"
At least 'til it's over and done.

On our Moon we can see Rupes Recta.
It's in the Mare Nubium sector.
When the Sun is just right,
It's an impressive sight -
Not something that one would expecta.

Rosanna Armstrong

When the clouds parted ways, out of the blue
came rainbow 1 and then number 2
A third mauvish pink arc
underneath them did park
a supernumerary bow to you.

The thunder stopped and sunlight glistened.
Earthlings gazed skyward and also listened
For Alexander's dark band
made eye tunes for the land
while the Sun and rain transitioned.



Summer Reads

Yolanda Kippers

A Beginner's Guide to Constructing the Universe The Mathematical Archetypes of Nature, Art, & Science: A Voyage From 1 to 10

by Michael S. Schneider

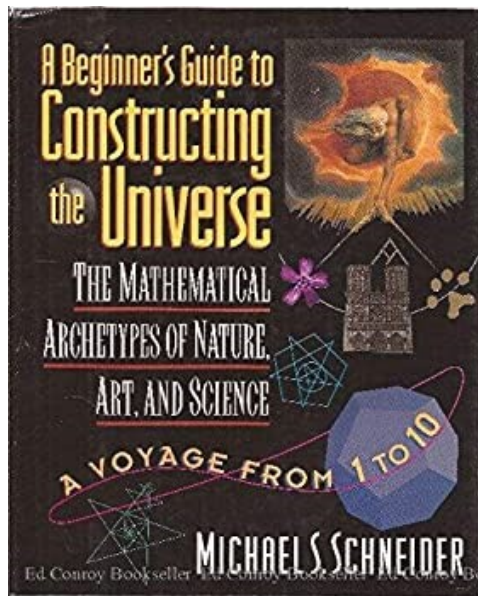
Published by Harper Perennial – 1995

ISBN # 978-0-06-092671-7

In high school I enjoyed physics and math and received fairly good grades. In university I was distracted by other things and did not do so well. During my working career most of my reading revolved around professional journals and textbooks. Then, in 2008 I heard an interview with Michael Schneider on the radio; they were discussing his book. My interest was piqued so much that I borrowed the book from the library. I enjoyed the book so much that I bought my own copy. It revitalized my curiosity in science and math, just as my career was winding down.

This is a book about numbers – not about the tallying up of things, but the symbolic mathematics that is seen in the numbers 1 to 10 that result in patterns which can be seen everywhere. These patterns are seen in nature and science, from the very small to the very large. They are found in life forms; in art and architecture; in myths, fairy-tales, folklore and popular culture; in icons and logos; in music and in language. These patterns recur over and over, again and again. The pat-

tern in ancient Islamic tiling reveal identical shapes to the structure of boric acid. The ancients of Greece and other cultures saw and understood this patterning. We intuitively know this too, even if we are not consciously aware of it. Reading this book makes you more aware.



The primary text and diagrams occupy the inner part of the page; the outer margins contain other diagrams, photos, and quotes from notables such as Aristotle, Einstein, Bob Dylan and Carl Sagan, to Dagwood and Calvin and Hobbes. You are encouraged to use a geometer's compass, a straight edge and a pencil as you read along. Ten numbers, ten chapters.

The ten chapters are named using the Greek word for the number principle described in each chapter: the Monad, Dyad, Triad, and on to the Decad. In each chapter you can

use your geometer's tools to create the representative shapes: the point or circle, the line, the triangle, and on again to the decagon and decagram star.

In each chapter, Schneider explains the importance and meaning of each shape. The circle denotes wholeness. It is also the most efficient shape, maximizing space while using the least amount of resources. The line (2), separates and unites. The triangle is strong – think of your tripod. You see these ten shapes everywhere in nature and science: in animal and plant forms, crystals, the solar system. The shape of “5” is regenerative, forming the basis of fractal mathematics and chaos theory. The shapes fit together and work together. A soccer ball has 12 pentagonal and 20 hexagonal faces.

Schneider does not write only about the physical properties of these shapes. Each chapter also describes how the different shapes affect our psyche, and where we can find them in our cultures, languages, myths and fairy tales, beliefs, and art and architecture. Mathematics is not newly discovered. The ancient seers in many parts of the world observed and used math to explain the world and the happenings around them. With great thought these were personified by the gods, goddesses and spirits in their mythologies and stories. We may laugh today at their naive ideas but they were truly enlightened by their understanding of mathematics.

We have emotional responses to these shapes, especially to balance and proportion – the Golden Mean Ratio. That is the reason

we respond to art and architecture, and to music, which is also based on mathematics. The five-pointed star symbolizes excellence: we have five-star hotels and restaurants, superstars, and star-of-the-show. Remember star cards in grade school? A triangle often denotes caution; and a circle, a cycle. Examples are provided for each number.

Language is so full of examples that we rarely notice. Remember the symbolic line that simultaneously separates and connects? Already, a dichotomy. Our language reflects this duality: everything has its opposite. Newton had it right, even matter has its anti-matter. Then, the letters “tw” imply a joining (two, twin, twine, twilight (the time between day and night)). Many things and expressions come in three’s: “Ready...Set...Go”, 1-2-3, the “ABC’s, 3 strikes and 3 wishes, the 3 Stooges and the 3 Little Pigs. Things have a beginning, middle and end. We have the “Lucky 7” and “Behind the 8 Ball”. These expressions came about by more than mere chance.

Although the book is written on non-glossed paper, I did not find it a dull book. I enjoy science and nature. I like solving puzzles and seeing how things work. I also like language and notice word roots. I thank Michael Schneider for writing this book and putting me back on this path. Indirectly, this led me to the local astronomy group, and to the writing of this report. I was glad for the opportunity to pick up this book again. (Notice how we use 3 dots to leave a space?)...

New Astronomy Club Taking Birth in Miramichi

Yves St-Germain

The Miramichi Sky Explorers is taking birth in Miramichi. Yves St-Germain, a local astronomy enthusiast and RASC NB member, had been looking to start a club. Always having an interest about astronomy, Yves has seen the Apollo program and the Space Shuttle Programs, to name a couple. He has binoculars and an 8-inch Dobsonian telescope, and is currently working on the Explore the Universe certificate.

Teaming with Mary King, local astronomy enthusiast and RASC NB Councillor, they were attending various local activities such as the Irish Festival, Acadian Day and the Mayor’s Multiculturalism Picnic to promote astronomy and the 2024 total solar eclipse, where the city will be near the centre of the path of totality.

Miramichi is also home of Mathew Despres, our astrophotographer. Also nearby is a well-known amateur astronomer from Collette, Roger Pitre, with extensive knowledge.

The Miramichi Sky Explorers have a Facebook page, keeping and providing the information about upcoming astronomy events.

The biggest challenge is to identify potential observing sites within the city limits. So far two have been identified: Miramichi Cross

Country Ski Club and Strawberry Marsh. We are fortunate to be about 30 minutes from Kouchibouguac National Park, which is one of the Dark Sky Preserves in New Brunswick.

The club hopes to have some meetings in the future, yet taking one step at a time. We are looking forward to having our first public outreach event in the future.

Anyone interested to join our group, you may message us on our Facebook page or contact me via email at yvesg179@gmail.com or Mary King at mary.king214@gmail.com



The answer is one astronomical word formed by rearranging the letters of the other word.

Clue: **Crane Toupees**



Answer to previous Astro Anagram created by Ted Dunphy:

DWARF ROVER

= SEDNA SEDAN

The Incredible New Age of Astronomy

David Hunter

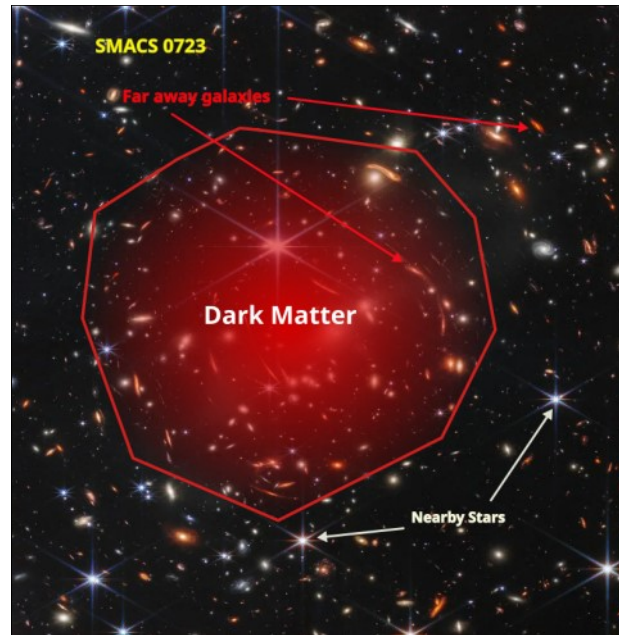
The successful launch (Christmas Day, 2021) and subsequent deployment of the James Webb Space Telescope (JWST) over the past half year has been much in the news, and rightly so. The JWST is a stunning technological achievement almost beyond comprehension. It is also a triumph of the remaining free world (USA, Canada, European Union, Britain). But its success has in some sense been trivialised in the popular press by the showing of pretty pictures with not a lot of explanation behind what the new images really mean.

Before opening a few insights of the JWST, let it be stated that the trail-blazing Hubble Space Telescope (HST) has not been totally eclipsed by the JWST. Because the speed of light is finite, it can rightly be said that telescopes are time machines. Looking at objects that are far away, such as distant galaxies, we are seeing them as they “were.” But astronomy has discovered (Edwin Hubble) that the universe is expanding. Briefly put, space is expanding everywhere; but note that there is no special centre or special place of expansion as is commonly depicted. There is no centre of the universe.

This means objects far away from us appear to be speeding away from us and are red shifted, similar to a Doppler shift. They are not really speeding away from us, it just ap-

pears that way due to the expansion of space everywhere. The farther away galaxies are, the more red shifted from the visible to the infrared they appear. Thus, if we want to see the farthest things away we need to look in the infrared, not the visible. That is what the JWST does that the HST does not.

To see objects far away one also needs a huge light-collecting mirror. Other space telescopes have observed in the infrared, but the JWST surpasses them all with its huge mirror (s). Another point: The earth’s atmosphere absorbs infrared light and distorts images. That’s why the JWST needs to be in space. Remember that the JWST infrared images are colourised. Humans can’t see in the infrared, so the redder or far infrared light is shown as red, with the near infrared light shown as blue.



In this woefully short article the extent of things can not be fully explained, only glanced at. But look at the JWST SMACS 0723 image, which I have graphically annotated. Realise that the bright whitish stars, with the six spokes, are near to us, while the distorted reddish galaxies are far away, about five billion light years away. What is amazing is the warped shapes of the galaxies caused by the Einsteinian gravitational bending of space. I have put in a depiction of dark matter as a red blob which is causing the distortion.

I must close soon, but note that modern astronomy, as the JWST is confirming, shows that the matter we are made of is only 5% of the universe! The rest is dark matter (25%) and dark energy (70%). We have no idea what either dark matter or dark energy is! For that matter, we do not know what space is.

This proves the essential scientific, philosophical, and religious importance of astronomy. Keep looking up!

RASC NB member David Hunter writes astronomy articles for the River Valley Sun in Northwestern NB.

G.T.A. ANSWERS



Devils Darn Needle
Magnitude 7th-10th
Size 70'



Lucky Seven
Magnitude 5th-7th
Size 200'

I'm a Stranger Here Myself: Impressions of my First HAL-CON Experience

Mary King

Reporting from HAL – CON “Atlantic Canada’s premiere sci-fi and gaming convention,” Oct. 28 – 30, 2022, Halifax, Nova Scotia.

It was a two hour wait on a cold but sunny day to gain entrance to the Halifax Convention Centre where HAL-CON was being held. My inner child was awakened and my curiosity peaked at the crowds of people of all ages; many in plain dress, and many in costumes from characters in movies, television series and video games.

My travel companion gleefully abandoned me for board games, video games and his selected author discussions. I was left to my own devices to negotiate a path through people dressed as manga characters, woodland elves, the DC and Marvel universes, and various iterations of Doctor Who, Star Trek and Star Wars cosplay. I definitely would not want to have to walk around all day and have to carry a heavy lance, sword or shield, or negotiate doorways with wide wing spans or high horns, or even subject my aging skin to heavy make-up. But I did appreciate the Men in Black costumes, and one woman was wearing a gray jumpsuit with the simple name patch RIPLEY.

I found my element in the lecture series downstairs. The topics were intriguing. The

frustrating thing was that three topics would be offered in the same time slot, and not repeated, so I had to make choices. *Scottish Gaelic in Pop Culture* by Emily McEwan: Apparently, in the movie *Gl Joe*, a fighter pilot has to take over a plane previously owned by a Scot, and has to give orders in Gaelic. His word for FIRE was the noun, not the verb, so it's a wonder the controls worked. Likewise, his command EJECT was the word for "vomit" or "throw up," but he was ejected and the day was saved. This said, apparently the use of Gaelic in movies is getting more authentic, as in *Rob Roy* (1995) and *Brave* (2022). I had to miss the companion session on Gaelic usage in *The Outlander* series.



There were other streams too: an exploration of the songs and poems in *The Lord of the Rings* series by Dr. K.S. Whetter from Acadia University. The message is do not skip these, as they provide important background to Tolkien's Middle Earth. *How to become a LEGO Master*: I did not know a person could leave their lucrative career as a New York lawyer (like Nathan Sawaya) and become a millionaire as a LEGO Master. Who can resist a talk entitled *Infinite Crises on a Single Earth: Science Fiction, Hope and the End of the World*, where four Dalhousie University professors delved into Mad Max, King Kong, Dracula, Kaiju and the Kraken.

It was not all lectures. I checked out the battle demonstrations by the SCA (Society for Creative Anachronism). The gear weighs at least 60 pounds. I stayed in the same area for the Baby Races: Yes, it was as silly and entertaining as it sounds. Finally, I scouted out the top floor, where people were playing board games and video games, some in family groupings. In other rooms people were just sitting and painting miniatures. I did connect with my travelling companion to do two separate Escape Room scenarios of ten minutes each. Great fun.

As I was leaving in the late afternoon of the last day, the enthusiasm from the participants had not seemed to wane. I would love to go back again next year. In the meantime, I am going to look at the cost of black suits and sunglasses. Or, gray jumpsuits with the patch RIPLEY. After all, Sigourney Weaver and I look sooo much alike.

Sci-Fi and Space: From Tatooine to the JWST

Mary King

Chief Science Communications Officer for the James Webb Space Telescope mission, Bethany Downer, is a native of Newfoundland. She hopes to become the first Atlantic Canadian in space. With degrees in science from Memorial University and a graduate degree from the International Space University, Bethany is well equipped to handle the many tasks she has taken on.



*Mary King and Bethany Downer
at HAL-CON 2022*

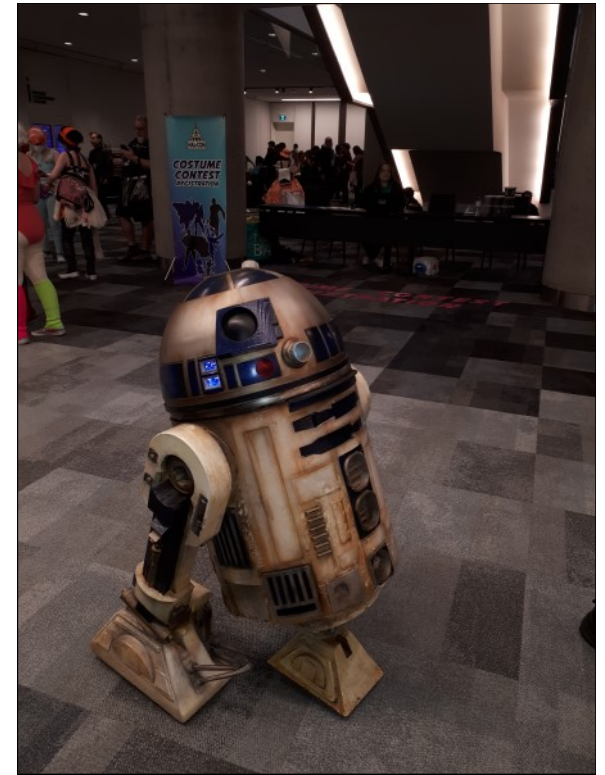
On the huge Main Stage at the Halifax Convention Centre, Bethany was a bright star. She paid tribute to the great tradition of science fiction writers who inspired the possibility of life in space. Images from filmmaker Stanley Kubrick's 1968 film *2001: A Space Odyssey* were designed with consultation

from science fiction writers; there was nothing previous to base it on. The famous scene from *Star Wars IV - A New Hope*, with Luke looking off into the distance at Tatooine's two setting suns, was based on science: most stars in galaxies are (at least) binary stars.

Her enthusiasm was genuine as she shared new images coming from the James Webb Telescope (yes, the Pillars of Creation), and encouraged the audience to look at those incoming images themselves and make their own discoveries.

Half of Bethany's time on stage was dedicated to Q & A. The questions were varied, but all were answered. What is being done about space debris? (The European Space Agency is trying different things.) When will we get to Mars? (There is a lot to figure out first, but we will get there.) What are the most problematic aspects of living in space? (Radiation, habitat, communication and personality issues.) What is the most exciting news in space now? (After the images from JWST, the upcoming lunar missions.) How do you get a career in the space industry? (Find out what you love to do on earth – medicine, geology, botany – get your basics down, and then apply that to careers in space.)

The hour passed too quickly. The audience was left with energy and excitement regarding the potential of the aerospace industry. Bethany Downer: a local gal who has proven the sky is not the limit.



*How can you tell when the board game
has gone on too long?*



What's Up for Winter

Curt Nason

The highlight for the months of December to February will be lunar occultations of Mars and Uranus.

Sun Solar Cycle 25 continues to delight observers with its activity. At 17:48 on December 21 the Sun reaches its most southerly point, beginning our astronomical winter.

Moon New Moon dates are December 23, January 21 and February 20. The New Moon in January occurs almost simultaneously with perigee, resulting in more extreme tides for a few days. The Lunar X will be visible around 22:00 on January 28.

Mercury is in the evening sky in December, reaching greatest elongation on December 21 and it is less than 2° from Venus on December 28-29. It reaches inferior conjunction January 7 and is at greatest western elongation on January 30.

Venus appears low in the southwestern evening sky in December. In addition to its scenic monthly meet-ups with the Moon, it has close conjunctions with Mercury on December 29, Saturn on January 22 with the Moon nearby, and Neptune on February 15. Venus and Neptune are about 40" apart when they rise (after sunrise) that morning almost touching but out of sight.

Mars is at its closest for this apparition as December begins, at magnitude -1.8 and

showing a 17" disc; large enough to easily show ice caps and dark markings of basalt. The seasonal highlight occurs on the night of December 7/8 when it and the Moon reach opposition two hours apart. The Full Moon occults the Red Planet for about 28 minutes beginning 7 minutes past midnight. The Maritimes are just within the eastern limit of the occultation path, hence the short time span. If you miss it, you can try again on January 30 from the southern quarter of the United States.

Mars reaches its second stationary point on January 12, forming a triangle with the Hyades and Pleiades, and then remains well-placed for evening observing as it progresses eastward through the horns of Taurus. By mid-February it will have faded to magnitude 0 and shrunk to less than 10".

Jupiter begins December to the east of the Circlet of Pisces, transiting around 19:30 at magnitude -2.6 and showing a 44" disc. Despite fading to magnitude -2.2 and shrinking to 34" in late February, Jupiter will still draw attention as Venus approaches for a close conjunction in early March.

Saturn begins December in eastern Capricornus at magnitude 0.8 and setting around 22:00. Its close conjunction with Venus on January 22 will be a challenge to see, with the pair being 7° high in the southwest at the end of nautical twilight, and Venus being 4.7 magnitudes brighter. Saturn is in conjunction with the Sun on February 16.

Uranus is in Aries at magnitude 5.6 when December rolls around, transiting around 22:30. It has been lunar occulted somewhere

monthly for much of the year, and we get our challenging opportunity to observe one on New Year's Day. The occultation by the waxing gibbous Moon begins about ten minutes before sunset, but the reappearance occurs on the bright limb, unfortunately, around 17:48 near the end of nautical twilight.

Neptune is near the Aquarius-Pisces border on December 1, at magnitude 7.9 and transiting around 19:15. It reaches its second stationary point three days later. Mid-December would be a good time to try for an all-planet evening.

Comet C/2022 E3 ZTF is within reach of an 8-inch telescope and it should be a binocular object in January, brightening to magnitude 5 or 6. It will be near Mars on February 10 and the Hyades a few days later.

C/2020 V2 ZTF could get to magnitude 9 in late January. It passes near Polaris on December 22 and M103 on January 25-26.

Meteor Showers: The reliable Geminids peak on December 14 with a waning gibbous Moon. The Ursids peak near the New Moon phase on December 22, and the Quadrantids peak on the evening of January 3, diminished by a waxing gibbous Moon.

Zodiacal light appears in the west for two weeks beginning February 7 when there is no Moon in the early evening sky. You will need a clear, dark sky with little or no light pollution. Look for a subtle wedge of light angling from the horizon up toward the Pleiades.

Outreach Corner

Coordinator

Although many of us were doing astronomy outreach from the time we became a RASC Centre in 2000, it became a focus during the International Year of Astronomy (IYA) in 2009. IYA was designated by UNESCO to celebrate the 400th anniversary of Galileo and others using the telescope to study the night sky. The RASC and other astronomy organizations in Canada set a goal of giving at least one million Canadians their first look through a telescope, called a Galileo Moment. This expanded to include other events that would be “an engaging astronomy experience.” Our Centre set a goal 23,000 Galileo Moments based on the population of the province relative to that of the country. Our events were reported to the RASC database which was developed for IYA.

How did we do? RASC NB’s total of 7300 Galileo Moments was matched by Science East’s planetarium shows. Mount Allison University contributed about 800 through observing sessions at the twin domes of their Gemini Observatory, and Moncton’s ten-day Stars n’ Stuff Festival based around a meteorite display at the museum attracted 13,000 people. Our total of 28,000 exceeded the goal, but we were 1.4% of the national total of nearly two million.

In 2010 the Beyond IYA program was developed to continue recording RASC outreach events, and our Centre members have been diligent in reporting ever since. My Centre

data go back to 2012 but previous data are probably in files on a dead computer or a corrupted USB stick. Perhaps they’ll turn up.

Astronomy outreach events include allowing people to look through your equipment at the Sun or night sky objects, sky tours, giving presentations to school classes, youth and other groups, exhibits at malls or other places, and tours of observatories and planetariums. We take note of the number of participants, and as a subset the number of youth participants (under age 21). During IYA RASC started supplying Star Finders and Moon Gazer Guides to Centres for only the cost of shipping, and we report how many of these are used at events.

There is a procedure in our Policy Manual that guides you through the process of reporting outreach events.

https://rascnb.ca/wp-content/uploads/rascnb-policy_manual-rev1_3.pdf

You will need to log in to the Society website and select Education/Outreach under Programs on the menu bar, then click on the Outreach Event Reporting button. However, this method of reporting is about to change because many Centres have not been reporting events for various reasons. RASC outreach Coordinator Samantha Jewett is taking steps to improve that as outreach data are very important fodder when it comes to applying for grants and for verifying that requirements are being met as a charitable organization. This applies to our Centre, too, as RASC NB Inc. has charitable status.

Beginning in December, tentatively, each Centre will have a monthly spreadsheet page on which outreach events are reported. The information required or requested is similar to the current form but it does not include space for colourful descriptions or impressions of the event (sorry Emma). I say tentatively because some of the event types are confusing, inadequate or redundant. I have made suggestions for improvements. When the new reporting system is rolled out I will update the Policy Manual.

Another initiative of Samantha’s is a series of monthly Zoom meetings with the Centre outreach coordinators and others to share outreach ideas and issues. The first is on November 24 and we are one of the Centres reporting on our outreach activities.

One event I like to do annually, when the Moon or a planet is in the early evening sky, is set up a telescope for trick-or-treaters and (especially) their parents. This year the ghost of Einstein haunted a town elsewhere in New Brunswick and treated goblins and their parents alike.



*Photo by
B. Kelly-Einstein*

Astro Carols

Yolanda Kippers

Stars in the Manger

Away out in Cancer, with glories to see,
Praesepe lays glowing - for all folks to see.
The stars in the cluster create an array -
Use your binos with joy to enhance the display.

The Asses are feeding, to north and to south;
This story of old has been told mouth-to-mouth.
We love the arrangement as we look up to the sky,
From late in the evening until morning is nigh.



Eclipse Carol

It came upon a night quite clear, in November not so cold;
When luck would have, that the Earth, would block that Ball of Gold.
To watch from Earth, a-top a hill, our heaven's most gracious thing.
The Moon in predicted darkness lay; no need a scope to bring.

Reflecting lunar-brightened skies, the river below me swirled.
But as it darkened over time, the stars themselves unfurled.
Hung high to start, but sure to depart, the Moon on hovering wing -
Gave way to the Sun, morning begun; but, Oh, what a wonderful thing.

And now the days are hastening on, just like the days of old.
Occultations will recur, in Handbooks all foretold.
Next spring and fall, the Earth and Sun, again will do their thing
To delight us all, and we'll recall, the sights that make us sing.

Oh Come All Ye Faithful

Oh, come all ye faithful, Taurus and Orion,
Oh, come ye, Oh, come ye, to our night skies.
Let us observe you, Kings of constellations;
Oh, we will all adore you, Oh, we will all adore you,
Oh, we will all adore you ... every night.

Bring on the Canines, Twins and all the others,
Bring on Auriga - to carry us away.
Let us observe you, in your splendid glory;
Oh, we will all adore you, Oh, we will adore you;
Oh, we will all adore you ... every night.

When comes the morning, with the Sun to greet us,
Oh, come ye, Oh, come ye, to light up our day.
Let us observe you, with your prominence;
Oh, we will all adore you, Oh, we will all adore you,
Oh we will all adore you ... every day.