Vol. 19 Issue 3

Summer 2018

HORIZON

LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
New Brunswick Centre du Nouveau-Brunswick
THE ROYAL ASTRONOMICAL SOCIETY OF CANADA
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M16 The Eagle Nebula

Emile Cormier

The Eagle Nebula can be seen with binoculars or a small telescope, but not like this, along the Milky Way in the constellation Serpens the Serpent.

Emile imaged this emission nebula / open cluster using a 152 mm Maksutov-Newtonian telescope on a Skywatcher EQ6 mount, with an off-axis guider, a ZWO ASI 1600 mm Cooled Camera with a filter wheel containing filters for LRGB (luminance, red, green, blue), Hα (hydrogen alpha), OIII (doubly ionized oxygen) and SII (singly ionized sulphur).

This false colour image was assigned red for Hα, green for OIII, and blue for SII.

SRAC/RASC Centre du NB Centre

President/Président June MacDonald
president@nb.rasc.ca

1st Vice-President/-Président
Chris Curwin firstvicep@nb.rasc.ca

2nd Vice-President/-Président
Peter Jensen secondvicep@nb.rasc.ca

Secretary/Secrétaire
Curt Nason secretary@nb.rasc.ca

Treasurer/Trésorier
Emma MacPhee treasurer@nb.rasc.ca

National Council Representative
Peter Jensen

Councillors / Conseillers
James Ayles Gerry Allain
Marilyn Bregg Chris Weadick

LP Abatement: Curt Nason
Star Party-Events: Paul Owen
Education-Outreach: Curt Nason
Website: Laura Sponagle/Emile Cormier
Social Media: Gerry Allain
Equipment: Chris Weadick
Library: Ted Dunphy
Fundy Upgrade: Emma MacPhee
Newsletter Editor: Curt Nason

NB Astronomy Clubs
Réunion / Meetings

SRAC/RASC Centre du NB Centre
Sept 22 Rockwood Park, Saint John
Oct 20 Moncton High School
Nov 17 UNB Fredericton
http://www.nb.rasc.ca/

William Brydone Jack Astronomy Club (Fredericton)
When: Second Tuesday of the month
Where: Fredericton, UNB Campus
2 Bailey Drive, Room 203
www.fredericton astronomy.ca

Saint John Astronomy Club
When: First Saturday of the month
Where: Rockwood Park Interpretation Centre.
www.sjastronomy.ca

Astronomy - Astronomie Moncton

When: First Quarter Moon weekend observing
Where: Moncton HS Observatory
www.astronomymoncton.org

Find us on ...

FACEBOOK
https://www.facebook.com/RASC.NB

TWITTER
https://twitter.com/rascnb

Events 2018

Fundy Park Stargaze
August 31 - September 1

Kouchibouguac Fall Stargaze
September 14 - 15

Irving Nature Park: September 14
National Star Party: September 15

Fall Astronomy Day: October 13

RASC NB Annual Meeting at Moncton HS: October 20

International Observe the Moon Night: October 20

COW 2018

by Ted Dunphy

This year's Mactaquac COW (Camping Observing Weekend) Star Party was a great success with 22 attendees.

Friday night brought especially good observing as the Milky way buttered the skies above. Approximately 100 people viewed the planets and milked the telescopes for deep sky treats as a dozen Perseids skimmed the night. Saturday's evening skies were looking a little curdled. But, about an hour after sunset the curds condensed and gave way to creamy skies, keeping the scopes busy for a couple of hours as 50 more people drank in the heavens. Thanks to all who attended and for your magic at the scopes.

RASC • NB • COW

Setting up for Saturday observing

Submitted by Chris Weadick

←

Friday evening on Jupiter in twilight

→

The Saturday Centre Feast

Photos submitted by Ted Dunphy

Mont Carmel (Sainte-Marie-de-Kent) School Astronomy Presentation

by Gerry Allain

Back in May, after doing an astronomy presentation at a day care in Memramcook, I received a Facebook message from a teacher at the Mont Carmel School. She was friends with the day care and saw the day care post of my presentation. She wanted to know if I was interested in doing a presentation for the grade 3-4 class, how much I charged, and if I would travel that far to do one. I told her I would be willing to do one and it was free. We made arrangements to go on the final day of class, on Thursday June 21.

As the day approached I was at my parents' house talking about my presentation. My mother said. "I never saw your presentation, I'd like to see it." Well I wondered if it would be okay to bring Mom and Dad to the school that day. I fired off a message to the teacher asking if it would be okay. She replied no problem at all, she would have two chairs setup in the back of the class for them. Perfect!

On the day of the presentation, I picked up Mom and Dad and we headed off to Sainte-Marie. After arriving at the school at 13:00, I stopped at the admin office to announce my arrival, and they called the teacher to tell her I had arrived. She led us to her class down the hall. Her class was ready, the other kids next door would be there in a few minutes. Mom and Dad settled in the back and the teacher and I set up my PowerPoint presentation.

A few minutes passed and the grade 4's came and we got started. The teacher introduced me and as I started I told the kids to pay attention as I had a test at the end. I heard a couple of moans, but I told them it was just for fun and they laughed.

As usual the kids were very interested and asking a lot of questions. I was asking some as well, and this grade 3 boy knew all the answers. After a while I would ask him to whisper the answer in my ear so as to give the other kids a chance to answer. I praised his knowledge and told the teacher the next time I'm here, he is doing the presentation for me. With a big smile he looked at me and said "OK."

With all the questions, the presentation last about 1.5 hours. The kids also were able to answer my quiz at the end. After finishing, the teachers (there were 3 in class), and the kids thanked me. I told them I would try doing a stargazing session later in the fall with them, which got a lot of woo-hoos. I thanked the kids and teachers for the invitation, told the kids I was impressed with what they knew, and thanked them for being attentive and respectful. A nice way to spend my afternoon.

As we left and were walking down the corridor, my mom said she really enjoyed my presentation. I turned to ask Dad how he enjoyed it...no dad. WTH? I walked back to class, and he's still sitting in the back of the class talking to the kids. An 82 year-old kid at heart, that guy. "HELLO Dad, we need to go, I'm working this afternoon." What a guy. We walked outside, I looked for Dad again...no Dad. I go back inside and he's now talking to the bus driver. "Say bye, Dad." I love him.

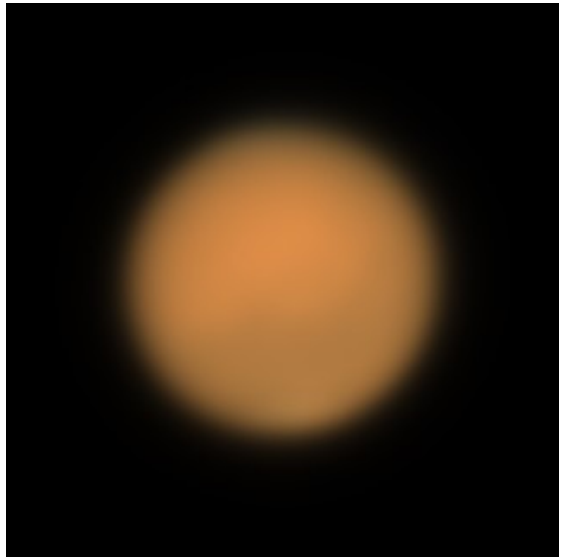
Well, Mom and Dad did enjoy it, as did the school kids and I. The teacher asked me to do it again next year; I said no problem. That is why I enjoy doing this, the kids fire me up, Mom and Dad too. Can't wait for the school year to start again.

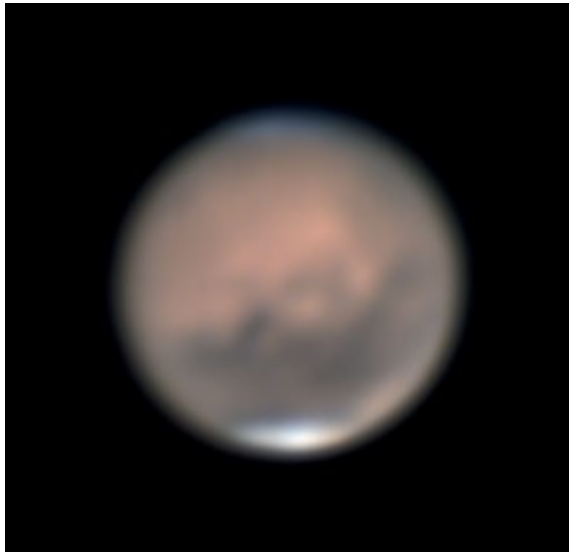
When the Martian Dust Settles

by Curt Nason / Emile Cormier

This year's much-anticipated opposition of Mars, the closest since 2003, has been a dud for observers due to a global dust storm that kicked up in May. Martian oppositions near perihelion occur with its southern hemisphere tilted our way and therefore approaching summer. The increased solar heating can create winds, particularly in low-lying terrain such as the Hellas Basin, which are strong enough to make dust airborne despite the thin atmosphere. It is thought that the airborne dust absorbs sunlight an re-emits it as heat, which increases wind strength and uplifts more dust. Regional, and at times global, dust storms can result, obscuring the features that observers have been longing to explore. Fortunately, we were spared a dust storm in 2003 but there was a global storm in 2001 and a regional one in 2005.

A Mars image by Emile Cormier shows how it has looked through a telescope until recently, and another after processing shows what we might see on an evening of excellent seeing when the dust has settled. Recent observations indicate that time is now, at least as far as the dust storm goes.





This image was taken by Emile on the morning of 2018 August 1, when Mars was closest to Earth, using a 254 mm Schmidt-Cassegrain telescope with a 2x focal extender. The camera was a ZWO ASI 224MC with a ZWO atmospheric dispersion corrector.

Through the dust on the image at left you can barely see the south polar ice cap at bottom and the large albedo feature above it. You would probably need to have experience with observing Mars to see even those. The processed image at right shows these features clearly. The dark areas are the basaltic ground of Mars, the light orange is rusty dust. The blue cap at top is the north polar hood. Ice particles forming in clouds in the northern atmosphere scatter the blue portion of sunlight.

Look for these features when you are observing Mars over the next month while it is still large enough. If the seeing is very good you can increase the magnification to reveal more detail. Using a neutral density or planetary contrast (neodymium) filter seems to steady the seeing somewhat. For tips on observing, sketching and imaging Mars this summer, visit the RASC website under Observing → Special Projects → Mars 2018 Opposition.

Book Review of *The Spinning Magnet*

by Phil Webb

The Spinning Magnet by Alanna Mitchell
Penguin Random House LLC, 336 pp
ISBN 9781101985168 (hard cover)

This book was a feature item on Bob MacDonald's *Quirks and Quarks* several months ago. I ordered it and Ms. Mitchell certainly can write as well as she talks. Our magnetic field is one of the pillars of life on Earth, for if it didn't exist there is considerable evidence that we would not be here. The book is a virtual text of electromagnetic theory, easily digestible, and done in a historical manner going from the Greeks to the 21st century. The following is a brief summary of the first part of the book which goes to the 20th century. It cannot be praised enough and for RASC members I would think an easy read. I recommend buying this book and reading its second part which describes our modern conception of the field, and its future which includes an overdue magnetic field reversal.

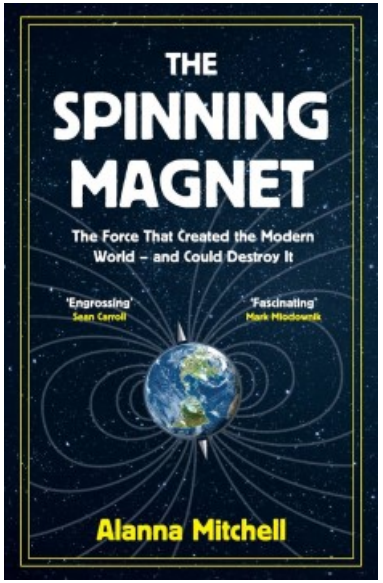
The first historical recognition of magnetic materials, often called lodestone, was in central Greece. The term comes from Magnesia in central Greece where magnetite, a natural occurring magnetic material, is found. The Greeks first made note of the phenomenon of static electricity and described it.

Peter Peregrinus, a 13th century knight \engineer showed that magnets had two poles (no matter how small it was or even if it was cut in two) that repelled one another and used this to create an early round compass. By the 16th century scholars were fully aware that the Earth had a force that shaped the movement of a compass needle and that the magnetic north pole (really the south) did not exactly correspond to the North Pole. William Gilbert, personal physician to Queen Elizabeth, developed the terms of magnetic declination and inclination, named "electricity" and was the first to conceive that the Earth itself was a giant magnet.

In parallel with magnetic theories Mitchell sketches the history of electricity—the flip side of magnetism—starting with the first recognition of static electricity, the construction of the first batteries, Galvani experiments with animal electricity, and the finding by Ørsted that electrons flowing in a wire generate a magnetic field.

Mitchell charts the electrical field revolution of Michael Faraday that, by using magnets and conduction wire, electricity could be generated and electric motors made. Maxwell capped this off with his equations and electromagnetic theory.

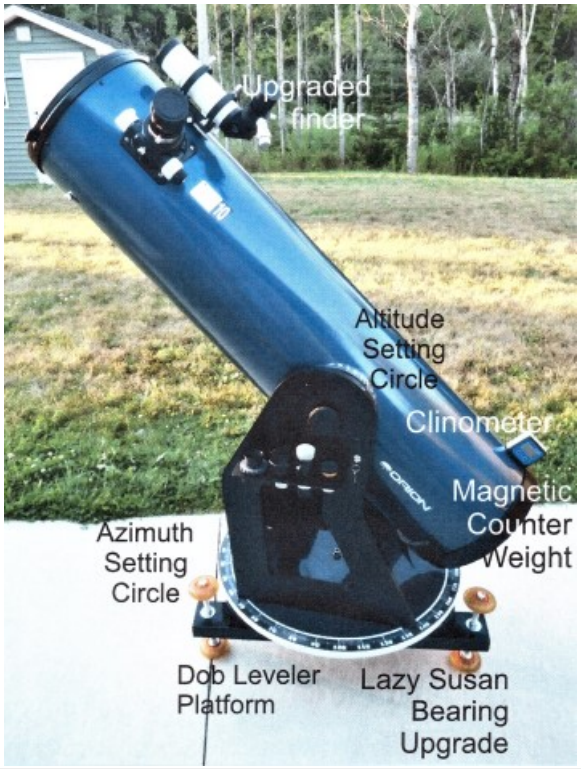
By the middle of the 19th century there was a "Magnetic Crusade" of discovery. By the 20th century, studies revealed that Earth possessed a mantle sitting over a core and that a magnetic gyre dynamo was generating huge currents and a magnetic field that surrounded the Earth. Bernard Brunhes, a French geophysicist, realized that he might be able to find records of the Earth's magnetic field in the past through iron-rich terracotta rock heated by the lava from ancient volcanoes. He discovered a five-million year old example in 1905 and found that the magnetic field was slightly different then, and that its poles were reversed. The last reversal was 780,000 years ago.



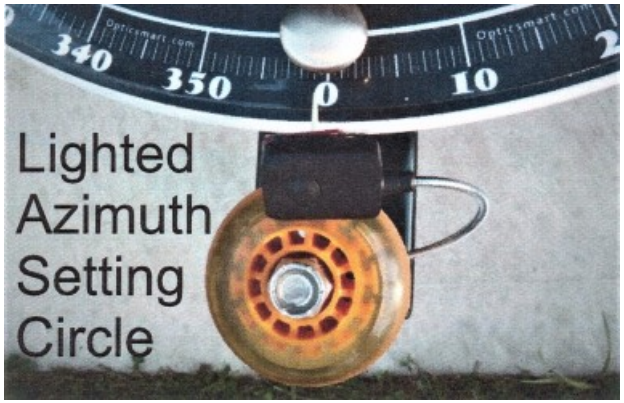
Street Legal Orion XT10+ Dob

by Don Williams

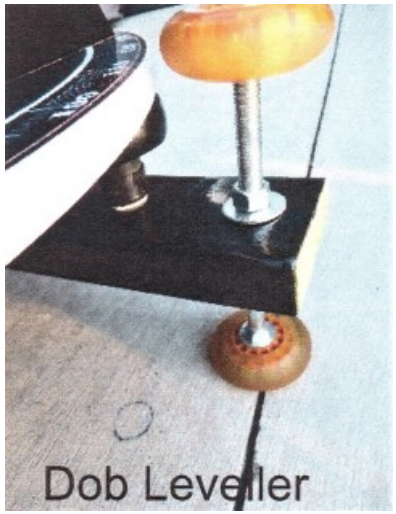
From the moment when my new Dob arrived I knew there were modifications I would need to make. The red dot finder was unusable over 45 degrees as the body position required is impossible for anyone who is over the age of 16. I tried a small 6x30 finder so as to not affect the Dob's balance. This was replaced with a 9x50 Right Angle Correct Image (RACI) finder and compensated for by adding a felt-backed magnetic counterweight.

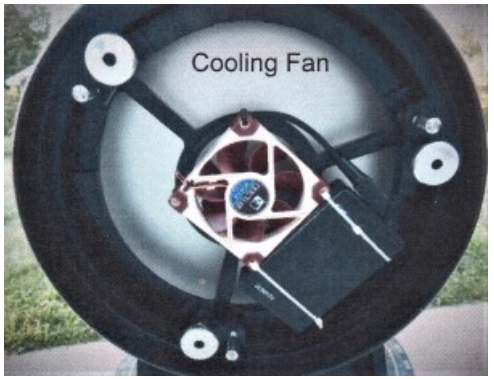


I wanted manual push-to ability. This can be done by selecting an object in SkySafari and reading the ALT/AZ from the info screen, then pushing the scope to it on setting circles. (Align the circles first on Polaris.) So, I added lighted setting circles. The scope must be level for this to work accurately.



I designed and added a Dob Leveler Platform using three in-line skate wheels for knobs and used three more as anti-vibration pads. Next I added a low noise cooling fan with a rechargeable 12 V lithium battery, and finally I added switched red LED lights for seeing the setting circles in the dark. The setting circles will place the object within my 1.2 degree eyepiece. The first night I located three galaxies, four globular clusters and two double stars.





RASC NB Outreach Events and Handouts

Year	# of Events	People (Live Feed *)	Star Finders English	Star Finders French	Moon Guides English	Moon Guides French	Getting Started In Astronomy	Volunteer Hours
2012	75	4658	2188	229	1852	137		
2013	102	4119	1602	8	1513	120		
2014	104	4843	1716	241	1378	199		
2015	114	7262	2106	244	2568	156	819	
2016	219	9498	1984	115	2290	87	514	988
2017	248	18,453 (7533)	2276	162	2262	131	340	1944
2018	104	25,605 (21,900)	1072	95	1022	34	81	693

* Number of people viewing Chris Curwin's telescope live feed on Facebook (included in totals).

Types of Outreach Events

Year	Presenta-tion	Night Observing	Day Ob-serving	Youth Group	School Talks	Exhibi-tion	Observ./ Planet'm
2012	12	24	2	12	17	8	0
2013	24	24	3	12	32	7	0
2014	23	21	20	17	12	8	3
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	27	43	11	12	8	3	0

CAN YOU SOLVE THIS PUZZLE

CREATED BY TED DUNPHY?

Answer to the previous puzzle:

Something found in Superman's drawers:

SPACE CAPES

2018 Annual Meeting

Our Centre Annual Meeting is on October 20 this year at Moncton High School. Since this coincides with International Observe the Moon Night, most or all of the presentations will be lunar related. Although the program has not been finalized, we expect presentations on the Mi'kmaq moons by Cathy LeBlanc and Dave Chapman (Halifax Centre), imaging the Moon by Paul Owen, and demystifying the Moon by Curt Nason. The day could be concluded appropriately with public lunar observing in the evening.

This is our biennial election year. All positions on Council are open for grabs, which include President, First and Second Vice-Presidents, Treasurer, Secretary and four Councillors. These are the voting positions on our Centre Council. Lately we have held mainly Centre business meetings where all attending members can vote, provided we have a quorum of at least 12 members. In addition, positions are open for National Council Representative (elected) and Committee Chairs (see page 2). If you are interested in serving on a Council position and / or Rep or Committee position, email the current Secretary at the address on page 2 of this newsletter.

Paul Owen imaged NGC 7000 the North America Nebula in Cygnus with his Tele Vue 85 refractor. Stacked images with darks.

Emile Cormier imaged Saturn using a 254 mm Dob and the camera equipment used for Mars on page 5.

Below is his capture of the West Veil Nebula supernova remnant in Cygnus. This was a single four-minute exposure in H-alpha using an 80 mm triplet refractor and the camera equipment used for M16 on page 1.