

NOVA NOTES

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THE NEWSLETTER OF THE HALIFAX CENTRE OF THE RASC

PO BOX 31011, HALIFAX, NS, CANADA B3K 5T9

Website: <http://halifax.rasc.ca> E-mail: halifax@rasc.ca



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EDITOR'S REPORT: BY SHAWN MITCHELL

Summer is upon us and everyone is busy, but don't forget to check out the summer night skies. During the summer the milky way is high over head and numerous clusters, and nebulae are visible from dark sites. This summer also offers a week of astronomical extravaganzas. A partial solar eclipse on Aug 11, the Persied meteor shower on Aug 12, and Nova East on Aug 12 to 15.

While observing the splendor of the summer's sky, jot down your observations and send them in to be published in Nova Notes. Summer is a lean time for articles and the August issue has only meeting reports so far. Some observing reports, or sketches would be greatly appreciated. Ω



ASTROPHOTO OF THE MONTH

The first quarter Moon photographed on April 22, 1999 by Stephen Tancock using 200 ASA Kodak Gold film at 1/15 sec exposure camera set at F11 and eye piece projection.



NOVA NOTES, the newsletter of the *Halifax Centre of the Royal Astronomical Society of Canada*, is published bi-monthly in February, April, June, August, October, and December. The opinions expressed herein are not necessarily those of the *Halifax Centre*. Material for the next issue should reach the editor by **August 16th, 1999**. Articles on any aspect of astronomy will be considered for publication. "Letters to the Editor" or to our resident expert: GAZER are also most welcome. Contact the editor at:

Shawn Mitchell
94 Alder Crescent
Lower Sackville, NS
B4C 1A2

E-mail:
smitchell@ap.stmarys.ca
Phone: (902) 865-7026 (home)
(902) 420-5833 (work)

PRESIDENT'S CORNER:
BY CLINT SHANNON

Now that summer is around the corner the warmer weather should encourage

more observing, particularly at our St. Croix Observatory. We will be undertaking some planned projects at St. Croix which includes installing a proper gate, removing more obstructing trees, brush removal and some work in the "warm room". An e-mail will be sent requesting the assistance of volunteers when the work dates are finalized. An on-going study is presently taking place regarding the installation of a lavatory facility at St. Croix utilizing an old historic eleven foot metal dome which was originally used on the Kings College Observatory at Windsor, NS from 1862 until around 1940.

I am happy to report that the C-8 telescope is now installed on a pier and in operation at St. Croix. This should be an incentive for some members to take advantage of. The required parts to complete our 17.5" telescope have been ordered and will be received the middle of August. The telescope will then be completed and be available for use at St. Croix some time this fall.

Once again we will attempt to have public observing on the Halifax waterfront in July and August. An e-mail will be sent advising the particular dates when known.

On a closing note I would like to remind all that Nova East this year will take place once again at Fundy Park on August 12th through the 15th. We are starting one day earlier this year on Thursday, August 12th, for the Perseid meteors.

Have a great summer.
Clear skies! Ω

**FEBRUARY MEETING
REPORT: BY PAT KELLY**

The February meeting drew almost fifty people to the museum, a very good crowd. The meeting started promptly, led

off by Clint Shannon who never fails to amaze one and all with his list of the benefits of being an RASC member. He was followed by Michael Boschat who gave us the long-range astronomical forecast. Highlights included four planets, the Jupiter-Venus conjunction and the zodiacal light.

Clint introduced Dr. Bob Hawkes of Mount Allison University, the main speaker. Over his career, Bob's study of meteors has caused him to be involved in many organizations devoted to the study of meteors and has involved him in many meteor-related projects.

His most recent trip was an expedition to Mongolia in order to study last year's Leonid meteor shower. The possible effect of a meteor storm on the Earth's collection of satellites was one of the main reasons for the expedition. The funding for the expedition came from a number of sources, including the U.S. Space Command (they are responsible for U.S. military satellites), The Canadian and European Space Agencies, the U. S. Air Force and even the operators of various commercial satellites.

The program was coordinated by CRESTech (Centre for Research in Earth and Space Technology) with the University of Western Ontario (UWO) leading the radar and mathematical modeling for the event. That was probably due to them having, on staff, Peter Brown, the world's expert on the Leonids. Mount Allison designed and assembled the electro-optical instruments that would be used on the expedition, and planned the electro-optical observing strategy.

The hazards to satellites from meteors has caused a lot of money to be spent recently on meteor research, as the risks of meteor collisions with satellites are not well understood. The current value of all operation satellites is in the range of \$100 to \$200 billion dollars. With an impact

speed of 71 km/s, even a small meteor can disable a satellite by producing plasma that will trigger an electrostatic discharge (between previously charged spacecraft components) and potentially damage the electronic components of the satellite. The resulting static discharge can destroy electronic components. While it is possible to safeguard against that type of damage, it requires shutting down the satellite, which has an economic cost. During the 1993 peak of the Perseids, an Olympus communications satellite, which cost \$300,000,000 was knocked out of commission.

Part of the preparations for the trip involved determining when the peak would occur, and thus, which location would be best to observe the maximum. Bob showed a table of various predictions for the peak time. The “simplest” forecast gave a time of 19h43 UT on November 17th, while the UWO prediction (which allowed for the modeling of particles emitted by the comet) was for 17h00.

The prep work also involved some travel to ensure that various pieces of equipment worked together. We saw some interesting slides that he took in 1997 while at Edwards Air Force Base in the California desert. One of the interesting tales that he told was of a building that they had been told they could not go into. At one point, they needed to plug in a piece of equipment and that building was the only place where a power outlet could be found. At some later point, they found that the doors of the building had been welded shut. I thought that sort of thing only happened on *The X-Files*.

The next slides were ones that were taken during the Mongolian expedition. There were two teams, one was stationed at what passed for the national observatory, Bob and his group were positioned in the Gobi

Desert. The daytime highs were -10°C with the nights dropping to -35°C. Their accommodations consisted of three traditional tents, each made from a wooden frame with large pieces of “carpet” lashed to the frame to keep out the cold and wind. Their location was somewhat isolated, as the only sign of human habitation that was visible at all was the distant tent of a family that was staying in the area. On the night of the Leonids peak, the Mongolian president was supposed to visit them, but his entourage got lost trying to find them!

Their plan was to do “real time” detection of the meteor shower and phone in the results every fifteen minutes. The data would be used to determine the strength of the bombardment and passed on to satellite owners who could then decide whether they should take their satellite offline. The plan was to have the output from an automated meteor detection computer sent every fifteen minutes by satellite phone to a command post in London, Ontario, and on to Boulder, Colorado from there. The parts to do this were shipped from several different places and had not been tested together. These problems eventually resulted in a public appeal on Mongolian TV to see if they could borrow a PowerMac 9600, with the expected result that one was not forthcoming.

To make matters worse, just before night fell, their only phone died! To get another one required using one of the trucks, but since they don’t have antifreeze, the radiators are drained at night to keep the radiators from freezing and rupturing. To reverse the process at night involves the use of heat, applied with a blowtorch. While it appears to be a relatively common practice, it didn’t look exactly safe and the net result was that one tent (and two Mongolians) was set on fire, but fortunately with a minimum

of damage. In desperation, an attempt was made to fix the phone (value before attempted repair: \$8500) by sawing it in two (value after attempted repair: much less than \$8500).

So, what were the actual results for the peak night? As it turned out, the peak on the main night was considerable smaller than it had been on the night before. To add insult to injury, the time of the peak was off by fifteen hours, which meant that it could have been observed from the Maritimes! Ω

EYE WITNESS ACCOUNT OF
STS-96 LAUNCH:
BY TONY MATTHEWS

May 27th 1999, myself and 16 other crew members from 405 (MP) Squadron based in Greenwood, NS were very fortunate to witness the launch of the space shuttle Discovery with Canadian astronaut Julie Payette. We were there as invited guests of the Canadian Space Agency and Julie Payette due to a friendship between Julie and one of our pilots.

The night before the launch we were invited to a reception hosted by the CSA for all guest and contest winners from across Canada, even one from Iqualuit. Some of the invited dignitaries included; Mrs. Chretien, Canadian singer Loreena McKennith, Canadian Astronauts Chris Hadfield, Marc Garneau and Dave Williams, along with NASA’s administrator Daniel Goldin. Needless to say during the meet and greet portion of the evening my time was spent with the astronauts and Daniel Goldin, with mandatory hero shots taken.

Wakeup for us on the morning of the launch was at 1:30 A.M., which

gave us enough time for the necessary pot of coffee and to catch a ride from our hotel to the area where the NASA buses were waiting to take us to the launch site. It was about a 45-minute drive to Banana Creek, the area where we were to view the launch, which is about 3 1/2 miles from launch pad 39A. For those of you who have been to the Kennedy Space Center, it is located next to the building which contains the Saturn V rocket. Although we were there almost two hours before the scheduled launch, there were plenty of things to see and do, plus it gave us a chance to take all those tacky tourist pictures. Looking across the lake at launch pad 39A with the sun rising to the right only added to the magical moment that was about to happen, not to mention a gator just on the other side of the wire fence.

At T-9:00 there was a built in 40 minute hold where we were informed that the launch may have to be scrubbed due to a sailboat that was in the area where the solid rocket boosters once ejected would fall, fortunately the Coast Guard got them out of there in time. Once the count down resumed there was an ear deafening roar from the crowd, at T-0:30 the veterans from previous launches got everybody on their feet, at T-0:02 you could see the smoke & steam and at exactly 6:49 AM eastern standard time the shuttle lifted off to the cheers of everyone present.

Of all the launches that I watched either on television or the Internet, nothing prepared me for what I was about to experience, I made a mental note not to take any pictures but to just watch and enjoy the experience. When I saw the first flicker of flames I forgot the promise I made and commence to burn off a roll of film. I was in awe, but was expecting something more to happen. then all of a sudden it did, we were hit with the biggest sound blast that I have ever experienced, it literally made your body tremble. I have never

heard or felt a rumble quite like that before in my life.

About 15 seconds after the launch when the shuttle reached a layer of thin low lying clouds, the smoke trail cast a shadow on the clouds creating the illusion that the clouds parted just for the shuttle, it's the closest that I ever came to having a religious experience.

After a couple of minutes it was all over, the hours of waiting, the 1:30 am rise, the terrible coffee, the cold seats, the 1000 ft. drop that our aircraft took. Would I do it again? In a heartbeat! Ω

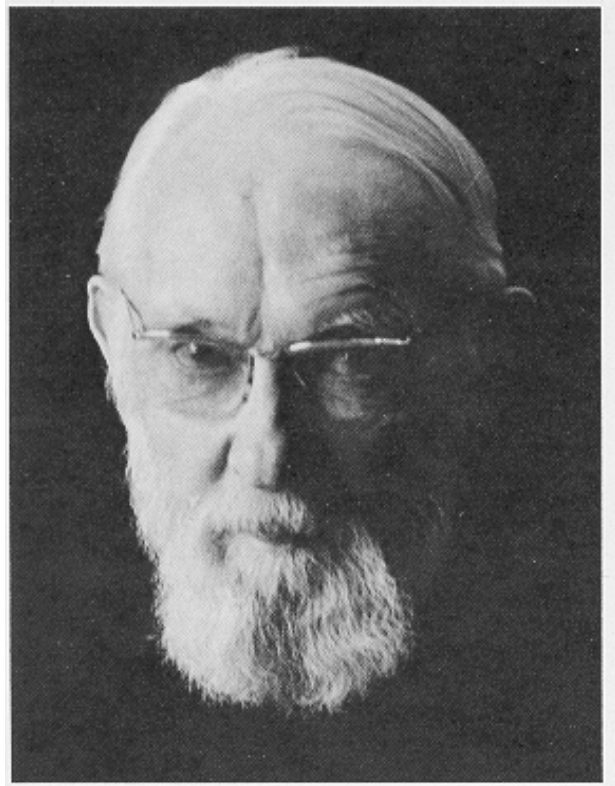
REV. DR. M. W. BURKE-GAFFNEY S.J.
BY F. GRAHAM MILLER

The Rev. Dr. M. W. Burke-Gaffney, S.J., was the founder of the Department of astronomy at St. Mary's University, where the observatory atop the Loyola Building is named for him. In his honor, the Halifax Chapter of the Royal Astronomical Society of Canada has established the annual Burke-Gaffney Award for the best paper of the year in Nova Notes.

The delightful Fr. Burke-Gaffney spoke in the silky intonations of the Irish gentleman. He was of slight and lithe build. Fr. William Lonc has retold this little story Burke-Gaffney told on himself: On his arrival in Canada, the immigration officer, filling out a form, asked him what he thought was a physical feature of himself, too which he replied, "I'm puny!" - at which the officer exclaimed, "You're right!"

Michael Walter Burke-Gaffney was born in Dublin in 1896. He studied at Belvedere and University College, Dublin. After graduating in 1917 as B. Eng. from Dublin National University, he worked in London at the War Office, and then for the Air Ministry. In 1920 he came to Canada and worked in Manitoba as a bridge engineer. Having earlier studied theology in Ireland and France, he joined the Society of Jesus, and in 1930 was ordained a priest. Continuing his studies at Georgetown University in Washington, he earned a Master's degree and in 1935 a Doctorate in Astronomy. He then lectured in astronomy at St. Regis College, Toronto, and also taught in Regina and Winnipeg.

Fr. Burke-Gaffney was appointed to the then Jesuit-run St. Mary's University in Halifax, where he was Dean of Engineering 1940-1948 (including Dean of Science for four



years), and Professor of Applied Science 1948-1955. He continued to lecture in astronomy until 1955. He

then became Professor Emeritus and special lecturer. Being a popular speaker, he was invited to address diverse groups on a variety of subjects. He died in 1979.

Fr. Burke-Gaffney belonged to many scientific associations, authored many journal articles, gave many lectures, and received many awards and diplomas. Lists of these associations, accomplishments and honours, plus his personal notes, are available in the archives of St. Mary's University. His side interests, so to speak, were wide ranging. He wrote several books, including Kepler and the Jesuits (1944), Daniel Seghers (1961), and Celestial Mechanics in the Sixteenth Century. He investigated UFOs, superstitions, demonology, and more. He wrote poetry and collected flowers.

I would like to thank Ms. Wendy Bullerwell, of the St. Mary's University Archives, for material on Rev. Burke-Gaffney including the accompanying picture. Ω

**LETTER FROM A MEMBER:
BY MARILYN J. KENDALL,
BSc., HEc.**

Dear Members, I love being a member of the Astronomical Society. I so enjoy the lectures, especially those by Dr. Roy Bishop. How smart he is! The man has an asteroid named after him for heaven's sakes. And yet his lectures are prepared in such a way that even a person with limited knowledge can understand what he says. He also manages to make everything so interesting. I also look forward to receiving the Journal, Sky News, with those breath-taking pictures, and my Nova Notes.

A friend of mine gave me a pair of binoculars that looked very old and battered. He said they were of no use to anyone. I thanked him, took them home and proceeded to clean

them up. I cleaned off all the dust and grime and polished the lenses. To my surprise they were actually quite nice. They turned out to be German, 16 power, with 50 mm objectives. They are wonderful for observing the Moon and any comets which happen by.

As a beginner, I find the whole sky thing a bit overwhelming and the binoculars provide a great start. My brother and I always talked about joining the Society but he died before we got to do it. After my friend gave me the binoculars I thought this would be a good opportunity to fulfil out little dream and joined the society.

In the Observer's Handbook it says, before you buy a telescope, you should be able to answer "yes" to eight things. I can't even answer "yes" to one of them so I know I'm not ready for a telescope yet. Maybe someday when I learn more. Right now I'm happy to observe with my binoculars and think about my brother and wish that he could be here to share the experience.

Marilyn J. Kendall, BSc. HEc.
Halifax Centre, RASC Ω

**WHAT'S UP:
BY SHAWN MITCHELL**

July

Wed 14 - Venus at Greatest brilliancy .

Thur 15 – Venus 3 degrees south of moon.

Tue 20-22 – Sidewalk observing behind the Maritime Museum of the Atlantic at 9:00pm.

Thur 20 – Delta Aquarid meteor shower.

August

Wed 4 - Jupiter 4 degrees north of the moon.

Wed 11 - New moon, Total Solar eclipse visible 230 nauticle miles east of Halifax, partial eclipse at sunrise for the Maritimes.

Thur 12 – Perseid meteor shower.

Fri 13 - Nova East 99.

Planet Roundup

MERCURY is hidden in the glow of sunset.

VENUS is the bright "Evening Star" low in the west at dusk.

MARS (magnitude -0.3) shines orange in the southwest during evening.

JUPITER (magnitude -2.3) rises around 1 a.m. local daylight saving time and shines high in the east-southeast by dawn.

SATURN (magnitude +0.1) is the dimmer "star" 13 degrees to the lower left of Jupiter .

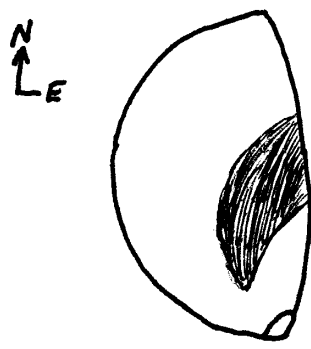

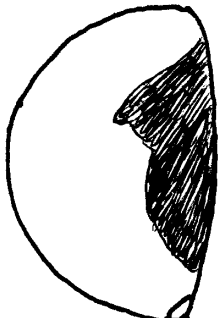
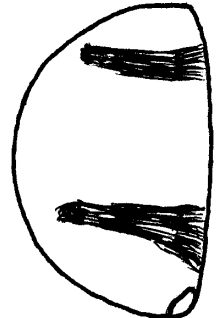
URANUS and **NEPTUNE**, dim at magnitudes 6 and 8, respectively, are well up in the southeast by midnight

PLUTO, extremely dim at magnitude 14, is in Ophiuchus in the south right after dark. Ω



OBSERVATIONS OF VENUS:
BY MIKE BOSCHAT

NEW COMET 1999 N2

	<p>MAY 11/12, 1999 2340-2355 UT 80mm F/10 REFRACTOR 171x</p> <p>← BRIGHT CUSP CAP</p>
	<p>MAY 15/16, 1999 2332-2349 UT 20 cm SCT 333x - 416x #47 VIOLET FILTER</p>
	<p>MAY 16, 1999 1900-1920 UT 20 cm SCT 333x #47 VIOLET FILTER</p>
	<p>MAY 16/17, 1999 2300-2330 UT 20 cm SCT 333x #47 VIOLET FILTER</p>

n July 13th, Australian amateur Daniel W. Lynn of Kinglake West, Victoria, discovered an 8th-magnitude comet moving rapidly northeast through the constellation Hydra. He was using 10 x 50 binoculars. The comet is very low in the western evening sky and most readily visible from the Southern Hemisphere, but it seems likely that it will become better placed for Northern Hemisphere observers during the next week or so. The discovery was confirmed by V. F. de Assis Neto in Brazil and also by F. B. Zoltowski in Australia.

Zoltowski detected a short tail on CCD images obtained with his 30-cm Schmidt-Cassegrain telescope. His measurements give the comet's position and direction of motion as follows:

Date: 1999 July 14 at 9h UT
R.A. 9h 52.1m
Dec. -14d 29'
Motion: 3.68 deg/day toward p.a.
53 deg (northeast)

Orbital Elements For:
C/1999 N2 (Lynn)

T 1999 July 23.099 TT
q 0.76096 (2000.0)
Peri. 357.816
Node 254.322
e 1.0
Incl. 112.443 Ω

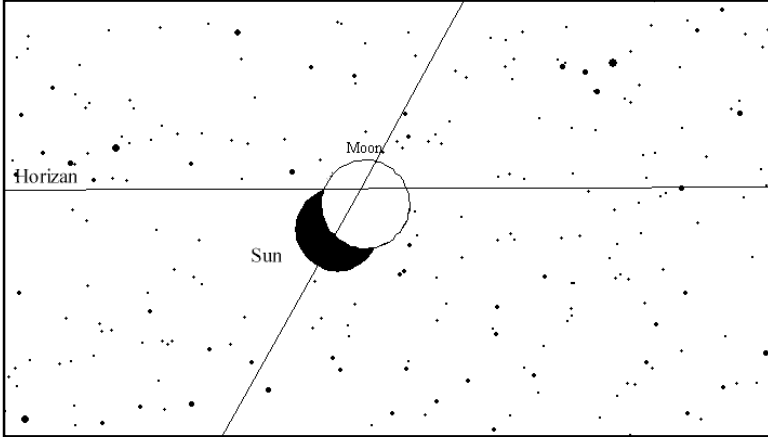
**SOLAR ECLIPSE 99:
BY SHAWN MITCHELL**

On August 11, 1999 if the weather is fair, we will be blessed with the opportunity to see the last eclipse

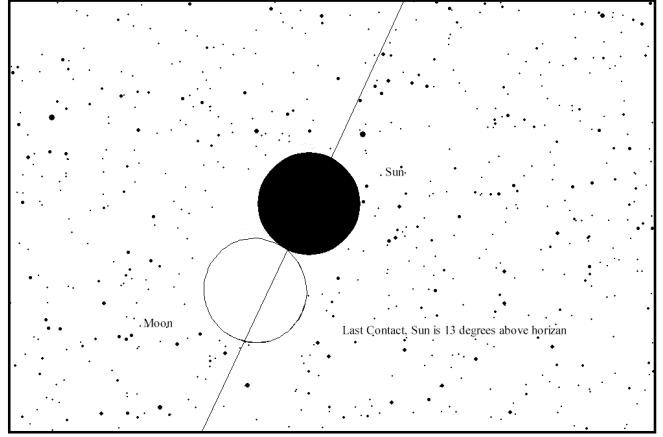
along the shore where the eastern horizon is unobscured. Or on a high hill top where your horizon is not obscured by trees, building etc.

It is best to plan where you want to set up to observe the

obstruct your view. For people in Halifax Chebucto Head will be the best location to view the eclipse, but I suspect many people may head out that way on the morning of the eclipse. Other possible sites in the Metro Halifax



The Eclipse as seen from Halifax at 6:12 am



Final Contact as seen from Halifax at 7:33 am, the sun is 13 degrees above the

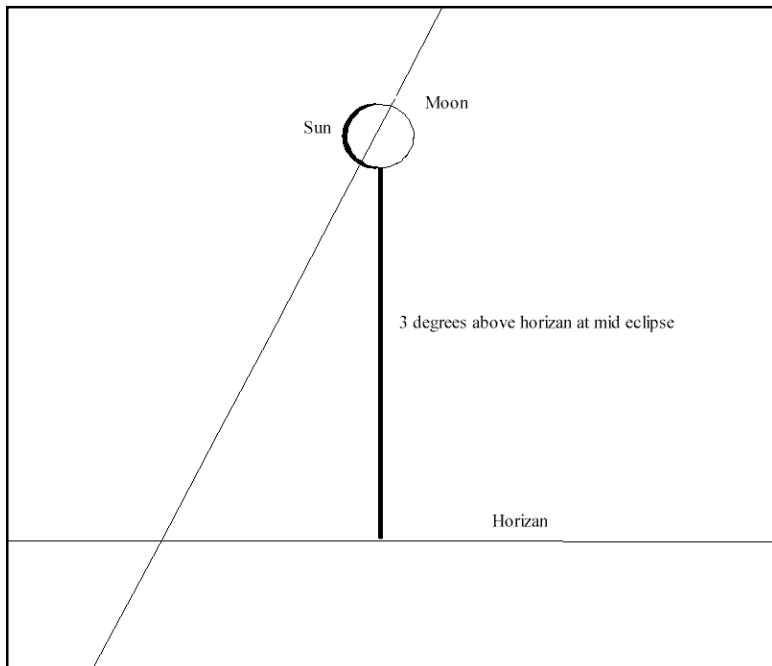
of this century that is visible from North America. The moon will have already started to eclipse the sun when the sun rises at 6:12 am in Halifax (figure 1.). The best place to observe the eclipse will be

eclipse several days before the actual eclipse. Do this by checking out your intended site a day or two before the eclipse at sunrise to be sure that nothing will

area include:

Osborn Head (Cow Bay), Lands End (Eastern Passage), and the top floors of some of the office towers in Halifax that face east.

The weather in August is usually sunny, but we are prone to early morning coastal fog which may obscure the sunrise portion of the eclipse. Mid eclipse, or the time when the moon will cover the maximum amount of the sun (91.6% covered for Halifax) will occur at 6:34 am in Halifax. At this time the sun will be 3 degrees above the horizon and should be visible even if there is some light fog around (figure 2). The farther west you are from Halifax, less of the sun will be covered by the moon. In Charlottetown 87.4% of the sun will be covered. In Fredericton NB 85.2 % of the sun will be eclipsed. Ω



Mid Eclipse as seen from Halifax at 6:34 am.

NOTICE OF MEETINGS AND EVENTS

REGULAR MEETINGS

Date: **Regular Meeting — Friday, Sept 17 at 8pm;** 7pm for the council meeting.

Place: Lower Theater, Nova Scotia Museum of Natural History, Summer Street, Halifax. Access is from the parking lot.

Topic: **Main Speaker: Members Night**

Date: **Regular Meeting — Friday, Oct 15 at 8pm;** 7pm for the council meeting.

Place: Room 255 Sobeys Building, Saint Mary's University. Access is available from the Robie Street driveway, then follow the signs.

Topic: **Main Speaker:** Mary Lou Whitehorne, Steven Tancock, Mike Falk
Mini Talks

Date: **Regular Meeting — Friday, Nov 19 at 8pm;** 7pm for the council meeting.

Place: Lower Theater, Nova Scotia Museum of Natural History, Summer Street, Halifax. Access is from the parking lot.

Topic: **Main Speaker:** Randy Attwood (National President RASC)

Date: **Regular Meeting — Friday, Dec 17 at 8pm;** 7pm for the council meeting.

Place: Lower Theater, Nova Scotia Museum of Natural History, Summer Street, Halifax. Access is from the parking lot.

Topic: **Main Speaker:** Dr. Roy Bishop

BECOME A ST. CROIX OBSERVATORY KEY HOLDER

For a modest key fee, members in good standing for more than a year who have been briefed on observatory can gain access to the centre's new Observatory, which is nearing completion. To become a key holder, contact Observatory Committee Chair, Shawn Mitchell.

ASTRO NOTICE

Joe Yurchesyn requests that the member who borrowed his 2" threaded diagonal for a Meade Schmidt Cassegrain Telescope please contact him. His telescope is unusable without the diagonal and he wishes to have it returned ASAP.

JUST WHERE IS THE ST. CROIX OBSERVATORY?

The Centre's Observatory is located in the community of St. Croix, Nova Scotia. To get there from Halifax (Bayers Road Shopping Centre), follow these simple instructions.

1. *Take Hwy 102 (the Bi-Hi) to Exit 4 (Sackville).*
2. *Take Hwy 101 to Exit 4 (St. Croix).*
3. *At the end of the off ramp, turn left.*
4. *Drive about 1.5km until you cross the St. Croix River Bridge. You will see a power dam on your left.*
5. *Drive about 0.2km past the bridge and take the first left (Salmon Hole Dam Road).*
6. *Drive about 1km until the pavement ends.*
7. *Drive another 1km on the dirt road to the site.*
8. *You will recognize the site by the two small white buildings on the left.*
- 9.

1999 HALIFAX CENTRE EXECUTIVE

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