

NOVA NOTES

VOLUME 30 — NUMBER 4 — AUGUST 1999

THE NEWSLETTER OF THE HALIFAX CENTRE OF THE RASC

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INSIDE THIS ISSUE...

President's corner	2
January Meeting Report	2
May Meeting Report	3
June Meeting Report	5
Summer Vacation	6
- Dave Chapman	
Apollo 11 & Public Observing	7
- Clint Shannon	
What's Up	7
- Shawn Mitchell	
Notice of Meetings and Other Stuff	

EDITOR'S REPORT: BY SHAWN MITCHELL

Summer is over and everyone is back to their old routines. The fall observing season is about to get under way at St. Croix. No bugs last chance to see the summer constellations and the winter constellations are starting to make an appearance late at night. Don't forget to jot down your observations and send them in to be published in Nova Notes. The August issue is late because it only has meeting reports, and one article that was received at the end of August. So, please submit



ASTROPHOTO OF THE MONTH TOTALITY!

August 11, 1999 Total Solar Eclipse, at an altitude of 9000 feet 240 km east of Halifax. This photo was taken using a 220mm telephoto lens at F5.6 using Fujichrome 1600 push processed colour slide film by Shawn Mitchell.

some observing reports, or sketches, photographs, etc, they would be greatly appreciated.

Ω



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 **October 15th, 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:

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PRESIDENT'S CORNER:
BY CLINT SHANNON

On July 20th we were able to conduct public observing on the Halifax waterfront behind the Maritime Museum. There were five

telescopes there operated by Mary Lou Whitehorne, Shawn Mitchell, Blair MacDonald, Steve Tancock and myself. Mike Boschat was also there with a pair of 20 X 60 binoculars on a tripod. We estimate there were approximately 500 people during the course of the evening who seemed to enjoy a look at the first quarter moon, Mars and a few other objects. The seeing was not very good but the public seemed particularly happy with the view of the moon. We, of course, mentioned that it was the thirtieth anniversary of the Apollo 11 moon landing.

Dave Lane and I attended Starfest 99, Canada's largest starparty. Approximately 800 people attended it. But there was only one night clear enough for some observing. I was lucky enough to come away with a door prize of a laminated Desk Edition of Wil Tirion's "Sky Atlas 2000".

The August 11th eclipse charter flight was a great success with totality enjoyed by Dave Lane, John Jarvo, Shawn Mitchell, Bill Thurlow, Ian Anderson and yours truly. Dave was able to take some good video images while the rest of us came away with "some" acceptable film exposures. Our expedition was reported on the CBC TV News,

Nova East was completely rained out this year except for some very good solar observing through an H-A filter on my 8" LX200 SCT on Friday. The prominence were spectacular.

The weather at Fundy during the past four Nova East Starparties has certainly left much to be desired. Perhaps the time has come to consider holding

Nova East at a location with a better weather probability. Daryl Dewolfe has had a look at Smiley's Provincial Park located just a few minutes drive from St. Croix. This location will be looked into for a future Nova East. It could result in larger turnouts from the Halifax Centre members.

The public observing that was planned to take place on the Halifax waterfront in August did not take place due to cloudy skies.

Don't forget to bring your slides to the September meeting for "Member's Night". Ω

JANUARY MEETING REPORT:
BY IAN ANDERSON

The first meeting of the new year started on time with about 25 assembled. The usual format was followed this evening where the benefits of membership are enumerated by our President Clint Shannon. Other meeting reporters have performed noble service by reminding us in earlier reports: Value, value, value. "How on earth do you Rascals do it?" the uninitiated might ask. It's part magic! Two cups of know-how, a slice of dedication, a lump of sacrifice. With this kind of bargain, it's a wonder we don't have standing room only crowds at every meeting.

Observing Chairman Mike Boschat spoke next, informing us of the close approach of the moon to Venus, a double shadow transit on Jupiter in the early hours of the 22nd, and on Feb 2nd, an occultation of Regulus. For those of you with hawk-eye vision,

naked eye observing of asteroid Vesta is possible in early February (Mag 6.2) - the one and only opportunity in 1999. Finally, sunspot activity continues to be heavy these days.

Tonight's main speaker Sherman Williams was up next. His talk: "The Night Sky from a Disk and a Desk Top," or Mixing Pixels with Photons, was a demonstration of current Mac compatible astronomy software. Specifically, Starry Night, Voyageur, and graphic images through "JPEG View" and MPEG viewing software were shown. To accomplish this presentation Sherman brought in a digital projector and his 6100 Power Mac which he apologised is old and dated. (We know of no one who is proud of a computer he's had for more than six months, Sherman).

Starry Night Deluxe program versa. 2.1.3 has optimistic daytime graphics. Trees in late June colouring are shown with a deep blue sky as we set up for this day (Jan 15th) in Halifax at 5pm, where the sun is just setting. See the sky move and darken at one-minute intervals. Watch the stars and planets come out before your very eyes. Click on Jupiter, and a page of data appears beside a clear telescopic view of the planet. At the push of a button, ghostly outlines of the constellations appear in the sky. And at 6:17pm synth time, the International Space Station (ISS) passes through our sky view, as it did in reality two hours ago.

A program called OrbiTrack (vers 2.1.5) calculates and shows exact paths of a satellite on a world map showing sunlit, dark,

and twilight zones. After entering all arguments of an orbit, one can immediately access a table of visible passes of a satellite for any geographic location. JPEG then shows us good resolution graphics of the ISS.

We are back in Starry Night and it's off now to the winter sky: Orion's sword, magnified then, the Sword Nebula in full colour. Zoom in here, Zoom out again. Impressive graphics throughout. We back up to full sky view. A spark of light darts across the screen. A meteor!

The same sky is then brought up on the Voyageur software. Now it's November. Turn on the Leonids. Zip, there's one! Zap, missed that one. Adjust the viewing parameters, change the ZHR. Now we have a storm. Zip, zap, whoosh - that definitely was not a Leonid.

We compare graphics of the April 23rd 1998 moonrise event, see the Aurora Borealis turned on. Curtains of light everywhere. To wrap up, Sherman shows us MPEG images - moving picture software to see time-lapse filtered photos of the sun, and its solar prominence activity over 30 days in just seconds. Finally, we go to this coming August to see the sunrise solar eclipse a distance off Shelburne NS.

For armchair astronomy enthusiasts, Sherman's presentation reminds us how close they are to overtaking the backyard buffs and Exit 4 aficionados in terms of comfort, convenience, weather, cost of travel, lack of dew and blood sucking devils, and proximity to a well stocked refrigerator. For many of us, the "Been there. Seen

that" of experiencing astronomy is blurring between the visual, the enhanced and the synthesized.

If true field astronomers had their wish, they might grab these clever programmers by the collar and ask them if they are trying to put us all out of business. But as the advancing state of the computer arts both aids and imitates, we can only marvel at how good it is getting, how fun it is, and how we can have the best of both worlds if we are smart about it.

End of meeting. Charge to the cookies. Ω

MAY MEETING REPORT: BY PAT KELLY

It was a dark and stormy night. Well, not really dark, and not really stormy — more of a dull, gloomy night with the threat of a shower. The body count for the May meeting was 35, a bit on the low side, but not entirely unexpected as it was the Friday before the Victoria Day long weekend. The executive meeting actually finished early, resulting in Clint Shannon kicking off the May meeting at eight on the dot.

After the usual introduction and roster of membership benefits (who wouldn't join after a pitch like that). Clint reminded all the members of the upcoming General Assembly and encouraged those members who wanted to use their proxy votes to make sure that they gave them to someone who was attending the GA. Dave Lane, our centre's national rep, gave a brief

overview of the proposed changes to the national by-laws.

After his brief assignment as national council rep, Dave continued by showing us some aurora pictures that he had recently taken. They were the best that he had seen since 1989 and he had almost missed them as he had been inside watching “Cheers” and none of his “so-called friends” called him to say that the display had started. Fortunately for us, he noticed them himself, and we had some gorgeous shots to oooh and aaaah over, including a really nice one showing the aurora reflected in the lake.

Dave had also been out to St. Croix recently and had been getting CCD images on five nights in one week. That is what they get in Arizona! He had a image of Comet Lee, as well as one of an unidentified edge-on galaxy near NGC 4565. There is supposed to be a free cup of Tim Horton’s coffee for whoever identifies it correctly.

The next event on the schedule was a presentation of the Burke-Gaffney Award, which is presented to the author of the best article printed in the previous year’s volume of *NOVA NOTES*. This year’ the award was presented to Graham Millar. He gave a very nice acceptance speech as well as giving an informative biography of Father Burke-Gaffney, for whom the award is named.

It was then Michael Boschat’s turn to do the “What’s Up” report on astronomical happenings for the coming month. We were told that if it cleared up later that night (which seemed unlikely) we

would be able to see the Moon occult Regulus. That item was followed by a quick rundown of the planets (including reports that dusky markings have been reported on Venus) and the Sun’s recent activity.

From here it was on to the feature presentation, Mary Lou Whitehorne’s talk on the *MOST* (Microscopic Oscillation of stars) satellite. As part of her introduction, Clint listed Mary Lou’s astronomical accomplishments, and an impressive list it is. I am sure that if it were reproduced in full, it would fill an entire page of *NOVA NOTES*. (Shawn, if you need some extra material to complete this issue, I am sure that Clint still has his notes!) After her introduction, Mary Lou was greeted with a request from Blair MacDonald to turn down the brightness of her blouse. To say that it was colorful, was like saying that surface of the Sun is above room temperature.

The *MOST* satellite is Canada’s first space telescope. It isn’t nearly as big as the *Hubble Space Telescope*, though, having a mass of only 50-kg, and being about the size of a good-sized suitcase. It is a bit more expensive, though (than a suitcase, not *Hubble*!) with the total cost being about \$12,000,000, with one-third of that coming from the Canadian Space Agency. Physically, it can best be described as a transistor radio on steroids. Due to its small size, it is hoped that it will be launched in less than two years, for “free”, with the *Radarsat 2* spacecraft.

Its purpose is to use a 15-cm mirror and look for rapid oscillations in the magnitude of relatively bright stars, with the information being used to help determine accurate ages of the stars. It is also hoped that the data will reveal information about the chemical composition of the areas below the photosphere’s of the stars. Members wishing to get more technical information on the satellite can find it at www.astro.ubc.ca.

Jamie Matthews of the University of British Columbia is the principal investigator. David Gunther of Saint Mary’s University is also involved in the project. The observations needed require long, uninterrupted observing runs and precise measurements of stellar magnitudes (to an accuracy of several micromagnitudes!) Those requirements can only be met by using an instrument that is in orbit. Dynacor, a Canadian company, has developed a new series of gyroscopes, which will keep the satellite stable over the long, continuous periods of time needed. The proposed orbit for *MOST* will be a circular, polar orbit with an altitude of 785 km. That orbit will allow it to monitor individual targets continuously for up to 54 days. The main types of stars that will be examined are:

- Solar-type stars (so that they can be compared with the Sun)
- Metal-poor stars (to try and accurately determine their ages)
- Rapidly oscillation Ap stars
- Wolf-Rayet stars

Since the main mirror is only 15 cm in diameter, most of the stars

that will be examined will be brighter than sixth magnitude, but there will be some stars that will be as faint as tenth or eleventh magnitude. Some of the observing time will be set aside for proposals from members of the public. That aspect of the satellite's operations is being run in conjunction with the RASC!

There are several similar projects around the world, in various stages of development. The *SOHO* satellite, already in orbit, was designed just to look at the Sun, the French *COBOT* satellite, has already been approved for funding, the American satellite, named *Kepler*, has been proposed, and the Danish *Mons* satellite has reached Phase A (MLW had no idea what that meant!) In all, it was a very interesting presentation, and gave a lot of background on the process by which a satellite goes from conception to completion.

After her talk Mary Lou had a "surprise" presentation for us. To make the point that the St. Croix Observatory needed a proper bathroom facility, she brought in an advertising video from one of the companies that makes composting toilets. While it was an interesting idea, most people soon learned more than they knew (or wanted to know) about composting toilets. Hopefully, the next time we are subjected to an infomercial it will be a whole lot shorter! Ω

JUNE MEETING REPORT: BY
IAN ANDERSON

The June meeting of the Halifax RASC was fairly well attended despite the wet weather. Everyone was settled by a few minutes past eight, and President Clint announced to those assembled that the Beginner's Observing Guides, 3rd edition, are now \$6.00, half price.

This summer's public observing sessions along the Halifax waterfront have been scheduled for July 20-22 and August 17-19. Volunteers among RASC membership are asked to help out. Just being there to help answer questions would be appreciated. If you're interested for such events in the future, please contact any executive member of the board.

Nova East meets again this year at Fundy National Park in New Brunswick from August 12th to 15th. We start on a Thursday this year to view the Perseid meteor shower. Park officials have told us that the Chignecto South Camp grounds are no longer reserved as the overflow site due to the growing popularity of camping at Fundy. We are no longer guaranteed an area for our exclusive use, which heightens security concerns for our equipment. With this in mind, participants should gauge their own risks and requirements before they leave. Please be sure to register for this event if you haven't already.

Next, Dr. Dave Turner announced that SMU is hosting the annual meeting of CASAC, the Canadian Astronomical Society. We were invited to attend the public lecture on June 28th by Dr. Paul Chodas, who in association with NASA, tracks and calculates

the orbits of close passes of asteroids with Earth.

The business of the St. Croix Lavatory was discussed at length. While it was agreed that a toilet of some form was a priority for 2000, our observatory engineers said there was too much to do in 1999 to tackle it. Members urged that a temporary privy be installed this fall. We also learned that we seem to have committed ourselves to acquiring the remains of the 150 year-old dome roof of the old Windsor observatory. How this corroding old structure can be of any use to us has been on the minds of a few, but many in the audience wondered about the costs and advisability of bothering with it at all.

Shawn Mitchell gave us his last "What's Up" report before the summer break. Of note were the Solstice, Mercury visible at sunset the following week, a three way conjunction between Venus, Regulus and the Moon in July, Uranus half a degree south of the Moon, a partial lunar eclipse, and the Solar Eclipse on August 11th. Shawn finished with a reminder to register for Nova East.

The Main Event followed: Pat Kelly's Astronomy quiz wrapped up the evening. This year Pat devised a new formula to determine beginner, intermediate and expert ranks. Over the next hour we were given a battery of 57 questions, a third falling into each of the three categories. To score well, one had to know a little about Greek and Roman mythology, Lunar and Martian topography, discoverers and inventors of things astronomical, and that the current volume of the Society's Journal is number 93. Constellation

recognition, some history, and of course a little Star Trek trivia thrown in. I.e. Starships: Constellation class, Galaxy class... Pat touched on a lot of areas in his quiz. One had to have a well-rounded background. Each type of question had an "Easy", moderate and hard question for the three ranks. How it was marked and who qualified, Pat only knows. I was as busy trying to do well on the quiz as the next person, so I didn't take complete notes. But don't worry. Studying this year's quiz won't help you ace it next time.

The winners? They know who they were and I don't because I hadn't resumed reporter mode yet. The important thing is we all had fun and we appreciate Pat for the work he put into devising the quiz.

Enjoy the Summer. See you in September! Ω

**SUMMER VACATION:
BY DAVE CHAPMAN**

As luck would have it, our annual family vacation took place in August in California, so I missed the partial-eclipse sunrise and Nova East '99. However, I did pack my Tele Vue Ranger with me for some observing, as we were planning to spend 8 days in the Sierra Nevada Mountains during the dark of the Moon, including the Perseid meteor shower.

We were in Sequoia National Park for the Perseids, at an altitude of 7000 feet with a dark sky. I thought I had it made, being away from city lights in a cloud-free sky; however, I discovered

further obstacles to observing: tall trees, bears, and smoke from controlled forest burns! I found an area without trees, and the bears were pretty timid, but the smoke from the burns turned the post-midnight dark sky gray and grayer on both nights.

This might explain why I saw so few meteors. On both nights I saw a few spectacular (earth-grazing?) Perseids early in the evening, and not much else. I was not carefully observing, just casually sky-gazing with my Ranger and trying to capture a few streaks on the Fujichrome slide film in camera. (Once again, I did not capture any meteors, but I have some nice star trail pictures!)

On the first night, I had to scare a Mama bear and two cubs away from a food lock-up, just before I retired at 2:00 A.M. A flashlight was all that was necessary, and the two German girls in a the nearest tent slept through it all! On the second night, a family from L.A. pulled into a neighboring campsite and the Dad (named Mike) pulled out his 10-inch Dob (that one's for Dave Turner). We spent a great evening exploring the night sky with his telescope. He belongs to the Sidewalk Astronomers, and he built the 'scope himself, but had not yet used it in dark skies. I started my new project: observe The Finest NGC Objects entirely in OP scopes (OP = Other People's).

My Ranger and I had a fantastic night of observing in Yosemite National Park, from the edge of a forest meadow away from car lights and streetlights. My viewing was restricted to the NorthEast, but I had a swell time.

I was a little puzzled at some stars I had not noticed before in Pegasus: these turned out to be flashlights from rock-climbers who were halfway up the Half-Dome, a familiar landmark in the park! I took a couple of star-trail pictures, but boy! Are there a lot of airplanes flying over that park! I held a mini-star-party, showing a few curious campers the night sky.

As I mentioned, I did not see the eclipse; in fact I went the opposite direction, going from Halifax to San Francisco! However, I took with me four eclipse shades for my brother-in-law and his family, who were going to England for THEIR vacation. I traded them for use of his Ford Cherokee. When they returned, they were ecstatic about seeing the nearly-totally-eclipsed Sun from the centre of London. Apparently Cornwall was mostly clouded out. They experienced the darkening, the chilling, and the roosting of pigeons. Apparently, the entire city came to a standstill. They were also appreciative of the eclipse viewers: scalpers were selling them for 50 pounds or more at the height of the partial eclipse! So these are a few astro-vacation stories from this year.

I would like to close with a mini-test-report: I have been pretty happy with the Tele Vue Up-Swing mount for my Ranger, which attaches to a standard tripod and head, but I found the arrangement a bit rickety at high powers. Tele Vue came out with the TelePod, which is an Up-Swing type mount with its own azimuth bearing mounted directly onto a tripod. The TelePod head and tripod can be bought

separately, but I already had an Up-Swing and a tripod, and I did not want to duplicate either of those. It turns out that there is an "upgrade" to the Up-Swing available, which is a replacement bottom plate with the azimuth bearing. This cost US \$60 plus shipping. With this arrangement I eliminated the tripod head and now have a stable alt-az mount with smooth motions in both axes. I am happy with the result. That's all for now! Ω

APOLLO 11 & PUBLIC OBSERVING:
BY CLINT SHANNON

On July 20th we were able to conduct public observing on the Halifax waterfront behind the Maritime Museum. There were five telescopes there operated by Mary Lou Whitehorne, Shawn Mitchell, Blair MacDonald, Steve Tancock and yours truly. Mike Boschat was also there with a pair of 20 X 60 binoculars on a tripod. We estimate there were approximately 500 people during the course of the evening who seemed to enjoy a look at the first quarter moon, Mars and a few other objects. The seeing was not very good but the public seemed particularly happy with the view of the moon.



We, of course, mentioned that it was the thirtieth anniversary of the Apollo 11 moon landing. Ω

WHAT'S UP:
BY SHAWN MITCHELL

September

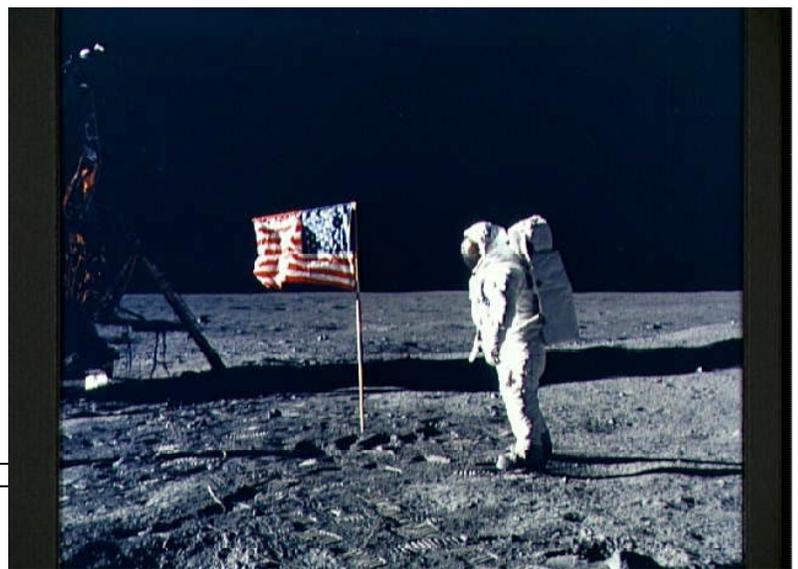
- Fri 17** – Mars 3 degrees north of Antares.
- Mon 20** – Neptune 0.7 degrees south of the moon and occulted at 22 UT for eastern North America.
- Thur 23** – Autumnal Equinox 11: 31 UT.
- Sat 25** – Harvest Moon
- Sun 26** – Venus at greatest brilliancy.
- Thur 30** – Aldebaran occulted by the moon, last occultation this year for eastern Canada.

October

- Tue 5** - Venus 5 degrees south of the moon.
- Fri 8** - Zodiacal Light visible in the east before the start of morning twilight for the next two weeks.
- Sat 9** – Draconid meteor shower.
- Fri 22** - Orionid meteor shower.
- Sat 23** – Jupiter at opposition.
- Thur 28** – Double shadow transit on Jupiter.

Planet Roundup

- MERCURY** is hidden in the glow of sunset.
- VENUS** reaches greatest western elongation on Oct 31 and is the bright "Morning Star" that rises 4 hours before sunrise in the east.
- MARS** (magnitude -0.3) shines orange in the southwest during evening and will start the month off in Libra and travels through Scorpius and is in Ophiuchus at the end of the month.
- JUPITER** in Aries, (magnitude -2.8) rises as evening twilight ends, and is visible for the rest of the night.
- SATURN** (magnitude -0.2) is also in Aries and rises shortly after and can be seen to the lower left of Jupiter.
- URANUS** and **NEPTUNE**, dim at magnitudes 5.7 and 7.9, respectively, are well up in the south during the evening
- PLUTO**, extremely dim at magnitude 14, is in Ophiuchus.



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:** Mary Lou Whitehorne
"Time"

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

Place: Room S255 Sobey's Building, Saint Mary's University. Access is available from the Robie Street driveway, then follow the signs.

Topic: **Main Speaker:**
Technical Aspects of Image Processing

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**
Microvariability and Oscillations of Stars

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

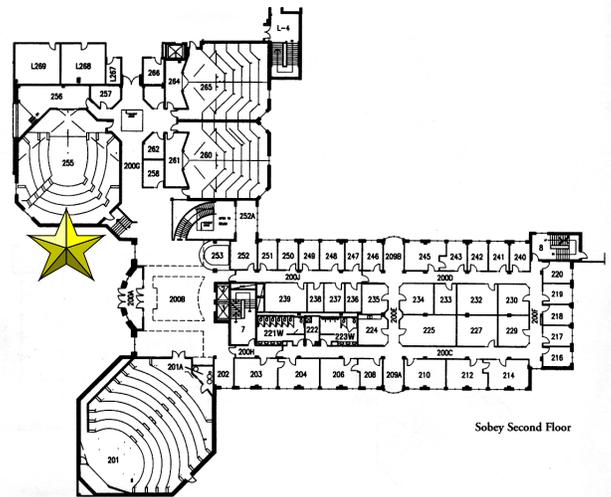
Place: Lower Theater, Nova Scotia Museum of Natural History, Summer Street, Halifax. Access is from the parking lot.

Topic: **Main Speaker:** Mary Lou Whitehorne
Microvariability and Oscillations of Stars

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.

LOCATION OF THE OCTOBER MEETING



The Oct 15th meeting will be held in Room S255 in the New Sobey's building at St. Mary's University. S255 is marked with the star, and is to the left of the main building entrance that faces the Robie St. parking lot.

1999 HALIFAX CENTRE EXECUTIVE

Honorary President	Dr. Roy Bishop	
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1st vice-president	Pat Kelly	798-3329
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Librarian	Dr. Michael Falk	422-5173
Observing Chairman	Shawn Mitchell	865-7026
Councilors	Tony Jones	435-0535
	Dave Chapman	463-9103
	John Jarvo	897-0529

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.

JUST WHERE IS THE ST. CROIX OBSERVATORY?