

Nova Notes

The Newsletter of the Halifax Centre
of the Royal Astronomical Society of Canada



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Astrophoto of the Month — *Beginners Astronomy Workshop*

On November 5th Tony McGrath held a beginners workshop at St. Mary's to help out beginner members, photo courtesy of Gary Weber.

Observing and Image Challenge: Find and Record the Lunar X

Dave Chapman

In August 2004, at Nova East, several observers saw an interesting illuminated X-shaped feature on the nearly first quarter Moon, on the dark side of the terminator

near Crater Werner. The X was brilliant, and completely surrounded by darkness. Tony Jones took a picture of the X and Dave Chapman wrote a letter to SkyNews to go with the picture. The X is now known to repeat strictly periodically every 29.53 days, but it is a fleeting effect and only lasts a few hours, so one has to be in the right place (longitude) to see the X at the right time. The X has been observed since on several occasions by observers in various locations, but was

next seen in the Halifax area only on November 8, 2005. The next local appearance is predicted to be January 6/7 2006, with the prime time between 7 p.m. and 8 p.m. AST. I would be interested in collecting any new observations of the Lunar X, including high-quality astrophotos or drawings. I am planning to write an article for publication in JRASC or elsewhere, and I am looking for a high-quality image to illustrate the article. Dave Chapman, dave.chapman@ns.sympatico.ca.

Las Cumbres Amateur Outreach Award

Mary Lou Whitehorne has been selected to receive the 2005 Las Cumbres Amateur Outreach Award, which honors outstanding educational outreach by amateur astronomers to K-12 children and the interested lay public. Whitehorne has a long history of public outreach and education. She volunteered for years at the former Halifax Planetarium, organizing, promoting, and producing regular weekly programs for the public and school audiences. She trained more than 200 teachers to use the StarLab planetarium—used to teach 8000 to 10000 school children each year—and continues to participate in teacher workshops. She made regular appearances on the Canadian

Broadcasting Corporation's morning show as the "science and space person." She has volunteered for many organizations, such as the Royal Astronomical Society of Canada, the Nova Scotia Museum of Natural History, the Nova Scotia Museum of Industry, Girl Guides of Canada, Discovery Center, and others.

Whitehorne has also served on the Advisory Board for the Canadian Astronomical Society Education and Outreach Initiative. But perhaps her most remarkable contribution is the book *SkyWays*, an astronomy handbook for teachers that was published last year by the Royal Astronomical Society of Canada. Astronomy programs in schools across Canada will benefit from this wonderful



accomplishment and from Whitehorne's continuing work in and enthusiasm for education and public outreach. ✨

Observing Passion

by Paul Heath

The sand was still warm as my father and I climbed up the back of the dune. We settled a short way down the dune facing out towards the lake. Laying back on our blanket the Milky Way stretched out overhead and stars filled the sky. My dad pointed out the Big Dipper then said to look up and watch. Shortly a meteor swept across the sky. "WOW". 'There are more, just lie back and watch', my father told me. As we settled back I began to feel a breeze up off the lake. I could smell the beach debris and hear the waves washing onto the beach. As we waited and watched more meteors shot across the sky. As the shower intensified, the

meteors began to shoot out over the lake. A loon called in the marsh behind the dunes and curlews piped from down the beach. Then the sky lit up as a double meteor shot down the sky diving deep into the lake. We watched for two or three hours until the breeze grew to a chilling wind. Climbing back up the dune I fell many times, trying to walk up that sandy hill and watch the sky at the same time.

What is it that keeps one observing the night sky?

A passion begins, often with a pivotal event that affects one's psyche, a moment of awe and amazement that drives one to explore further into the wonder that we have seen. And yet this event may not overcome the many changes in one's life. Often it is a series of 'awe events' that

helps to continue that passion to explore. Events that capture again that mix of sight, sound, smell, and touch that first amazed and filled our minds with wonder.

We continue to observe, with search programs or new toys, but perhaps our real hope is for that moment of awe and wonder which will refresh our first moment of amazement, the moment that our passion began. To become again that seven-year-old lying on warm sand, watching the stars fall into a summer lake.

No matter what your 'awe' moment was, may it keep you under the stars until you discover that next moment of wonder. Maybe you will be able to help spark that moment in someone else and pass that passion along. ✨



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Articles on any aspect of Astronomy will be considered for publication.

Nova Notes is published bi-monthly in February, April, June, August, October and December. The opinions expressed herein are not necessarily those of the Halifax Centre.

"Letters to the Editor" or letters to our resident expert "Gazer" are also most welcome.

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Nova Notes is also available as a PDF file on our Centre's website at www.halifax.rasc.ca

Material for the next issue should reach the editor by Dec 20/05

Simple Radio Meteor Observing

Mike Boshat

Ughhhh ... 5:30 a.m., I drag myself out of bed and log on to do some asteroid searching on the SpaceWatch web page. Waiting for the images is very tiresome so I set up my dipole antenna on the balcony and get the Icom R-10 receiver ready for a few hours of meteor listening. Boy, what a difference than using the old black and white TV method!

So, how does one go about "listening" for meteors? Well, there are 2 ways: the TV or radio method, the latter is better on the eyes.

We have all seen meteors, but what happens to allow us to hear them? As meteors burn up in the atmosphere they ionize the air around them, and this area acts like a "mirror" with the ability to reflect radio signals. So if you have an antenna set up, when a "below the horizon" meteor goes by, a transmitted signal will be reflected to you. Pretty straight forward.

Now how to detect the signal. The TV method requires that one use a black & white TV with NO cable attached. An antenna can be a wire strung across the room or you can make a simple dipole type. Now the main thing with either TV or radio is that you HAVE to use a channel not in use and a radio station that either you know exists but cannot hear or scan slowly, more later on that. Back to the TV method. You turn the TV on and go to channel 2 which is at 55.25 MHz. You will see "snow" (not the stuff we get in the winter) then turn the volume down or you'll go nuts listening to the "Shhhhhhh" for a few hours. Also reduce the brightness of the screen or you'll begin to see really weird patterns! Now set the antenna, and if a dipole is used turn it roughly towards to the southwest as most TV/radio stations are along the eastern seaboard. Now watch for either a bright white line or black line lasting from 1/4 to 1 second. This is a meteor. During meteor showers you'll see quite a few. Just count the number you see each hour. The TV method is a "starter" method, an inexpensive way but does have a few drawbacks. Notably it is hard on the eyes and when there is Sporadic E in the upper atmosphere it will reflect TV/radio signals and you'll see this enhanced on the TV thus making

meteor looking poor. Sporadic E usually occurs in the summer months.

Now we come to the radio method. Here we have 2 ways, one is with an ordinary FM radio (a digital one is preferred) and the other a HAM (amateur radio) receiver. Again a dipole antenna will suffice. A brief note on FM radio, it is said that some observers can hear meteors from the middle of a city with a car FM radio ... well, I would really doubt that as I'm using a special filter to eliminate as much background stations and noise as possible. I have yet to hear a meteor on an FM radio from Halifax. So, I would take most of this with a grain of salt.

OK, you get a digital FM radio and have an antenna. The basics of this method is that you tune in to either a known distant station frequency where you can either "just" hear the station or cannot hear it. When a meteor goes by it will enhance the station signal for a brief second or so. Or alternately, you do not know any distant station frequency and here will need to scan from 87 MHz up the dial, stopping and listening for enhanced signals. This is a little tougher to do, once you get past 88.00 MHz you start to run into local stations that saturate the radio. Have a list of known local FM stations to skip by. Once you do detect a signal mark the frequency down and you'll not be trying to remember it when a meteor shower occurs.

The HAM radio method use amateur receivers which are generally more expensive, but with better features and they are a tad more sensitive to meteor detection. Way back in 1998 bought an Icom R-10 receiver as it is small and portable. I hooked my antenna to it and turned it on but got an immense amount of strong static and saturation from other stations. I was trying to figure out how to eliminate it. I had some help from the American Meteor Society, they sent small filters for me to hook up between the radio and antenna, but they did not work as hoped. After quite awhile of this annoyance I contacted Saint Mary's University and we worked on the problem. I received a loan of a larger "cavity" filter which was placed between the radio and antenna to reduce as much unwanted interference as possible. I set the radio to the unused Channel 6 station at 83.25 MHz and pointed my antenna to the south west and began to hear meteors galore. I detected more meteors using the

CW (Continuous Mode) that the AM mode on the radio. I could also use the USB (Upper Side Band) and LSB bands (Lower Side Band) to hear meteors.

So I began to monitor meteors each day, usually in the morning from 6 a.m. till noon depending upon what shower was active. Of course there are sporadic meteors and showers that produce small to high rates that can occur. One interesting observation was the Leonid meteor shower in 1998 and 2002, I could go to another frequency not tuned by the filter and still hear them continuously.

A brief note on frequency and meteors, the higher up you go in frequency the less meteors you will hear, so lower frequencies from about 50 MHz to 90 MHz would be best to monitor. Also, awhile back Radio Shack put out a scanner called Pro-60 which was able to monitor the TV channels I monitor, and I did hear meteors with that scanner.

What do I do with the data each month? I send it off various astronomy groups and they use data from around the world to determine how the meteor showers are behaving.

Below are listed meteor radio sites that one can get more information and plans on radio meteor work, meteor showers, and a few notes, references, and periodicals with radio meteor information.

Radio Meteor Sites

- 1) American Meteor Society - Radio Meteor Project
www.amsmeteors.org/radmet.html
- 2) Dutch Meteor Society
www.dmsweb.org/
- 3) International Meteor Organization
www.imo.net/
- 4) Meteor Scatter Site
www.meteorscatter.net/
- 5) Radio Meteor Observing Bulletin — send your data to them
visualmob.free.fr/index.php
- 6) Listen to Meteors on the web
www.roswellastronomyclub.com/radio_meteors.htm
- 7) Meteor Shower, Aurora and Sporadic-E Detection
www.tvcomm.co.uk/radio/

Some Notes

What is meteor scatter (MS) ?

Meteor scatter is a form of electromagnetic wave propagation. The ionized trail of meteors (typically appearing between 100 km and 80 km high) acts temporarily as a reflector for radio waves. A meteor does NOT generate detectable radio emission itself!

In the case of forward scatter, the transmitter and receiver are at different locations. Backscatter can be seen as a special case, whereby the sender and receiver coincide (typically the case of radar).

Meteor scatter can be used day and night, allowing daylight meteor streams to be studied. Meteor scatter can also be used for secure communication.

Is it always possible to observe ?

Unfortunately, other forms of propagation interfere with MS. The worst one is sporadic-E or Es, consisting of conduction clouds in the high atmosphere that make permanent reception of remote stations possible for either minutes or tens of minutes. The sporadic-E season is from May to July in large parts of the northern hemisphere. In some regions however, sporadic-E is unknown!

There are also tropospheric influences. A temperature inversion can also cause reception over wider ranges than normal.

Thunderstorms cause very sharp peaks. On FM, most of these (amplitude-modulated) spikes are suppressed. However, DO NOT connect your antenna to your receiver during thunderstorms or when you are absent for longer time. Lightning strikes have ruined several radio shack receivers.

Happy Listening! ☆

References

The reference is still "Meteor Science and Engineering" by D.W.R. McKinley, McGrawHill 1961. A fantastic book, giving the theory and practical results of the heydays of the radio meteor science.

A very concise, but technical, introduction to the subject is: Schanker, Jacob Z., "Meteor Burst Communications", Artech House, Norwood, MA, 1990 ISBN 0-89006-444-X

Another classical work is "Meteor Astronomy", Lovell, A.C.B., University Press, Oxford, New York, 1954."

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A Beginner's Reading

by John Vandermeulen

I very much regret having missed the 2005 Nova East gathering. As a new member, I had wanted to meet others, and put faces to names, plus the advantage of seeing different telescopes, and hear the talks and workshops by John Dobson. From all accounts, this was not the one to miss. Instead, I spent 12 days and nights in the Dartmouth Hospital, dressed in one of those flimsy 'nighties' that tie at the back. I did have a very large window, 4th floor, but it overlooked a brilliantly lighted parking lot so that even binoculars were useless. So—plenty of reading time.

For that I was prepared. Last winter I spent a fair amount of time reading exchanges

on the Internet, in particular the Cloudy Nights website, and that of Astromart for recommended books to read or buy. I also queried individual amateurs and a number of RASC members as to their choices. Putting together all responses and recommendations on books I eventually drew up a list of reading that scanned the field, both astronomical and cosmological. Not surprisingly, high up on the list were the trio of Nightwatch, The Backyard Astronomer's Guide and Turn Left at Orion. More surprisingly—as the folks I contacted were primarily amateur astronomers—several respondents named The Whole Shebang by Timothy Ferris, Brian Greene's twin books The Elegant Universe and The Fabric of the Cosmos, the First Three Minutes by Stephen Weinberg, anything by Michio Kaku, and Stephen Hawking's A Brief History of

Time - all cosmological treatments. Support in the background are two text books - Astronomy: The Cosmic Journey, and Astronomy: The Structure of the Universe - loaned by Clint Shannon.

I decided to go the cosmos-route, with Brian Greene's The Elegant Universe, as it is easy to hold up while lying in bed, whereas Turn Left at Orion and other's really are "coffee-table" sized. The Elegant Universe is a thick paperback (445pp), with lots of hype from reviewers and readers, especially as Greene himself has considerable reputation as a founder of string theory. The first half of the book is wide-ranging and easily read, a clearly written introduction to those familiar topics, relativity and quantum mechanics. Things can get a bit thick in the second half of the book, as there he focusses on string theory. Several

newspaper reviews, and those promotional printed claims on the back cover, all praise Greene's style, and how he simplifies string theory. Which obviously means that the folks writing that praise are all a whole lot wiser than I am. Greene's writing probably is the clearest there is on the subject, but it can still go over one's head. (Would you believe that Stephen Hawking's *A Brief History of Time* is far lighter in content and tone?)

Any library on Astronomy/Cosmology that I have looked through is split more or less according to those terms. The astronomy section concerns locations, descriptions and discoveries of stars, planets, galaxies, black holes, and how it is all put together—the hunting grounds for the telescope observers. The cosmology section holds the more theoretically inclined literature, the playing ground for them that like math, high energy physics, and speculation about the early universe. If this is your choice, it is probably a good idea not to fear quantum mechanics, relativity of both kinds, and the latest how-to theory on the block; string theory.

Don't get me wrong—those astronomical cerebral activities such as detecting moons from the orbit of others, supernovae, star-lensing, dark halos in galaxies, and "apsidal waves in the Kuiper Belt" is not for sissies. And astronomical-leaning papers can be equally chuck-full of equations and maths. Take your pick. One thing I have learned is that astronomy is not some single focus, telescope oriented activity. I found sections, and sub-sections, and sub-sub-sections - and then begin over again when trying to encompass cosmology (cosmogony?).

Anyway, for me the basic library begins with what must be the ultimate three bibles of amateur astronomy—*Backyard Astronomy's Guide*, *Nightwatch*, and *Turn Left at Orion*—at least in north America. Every website on amateur astronomy, or books, or introduction to telescopes mentions at least one, if not all three as essential to one's library. They are all large size, and gorgeously produced, but not cheap. All are aimed at the beginner, and from my own perspective, successfully. Any one of these would be an excellent Christmas or birthday gift. And although they share either material, content or an author, they do not overlap.

The *Backyard Astronomy's Guide* has given me a very good overview; very thorough.

It is a dandy beginners book. But go slowly, as there is a lot, a whole lot of material and information in it. The next one, *Nightwatch*, is just what it is subtitled, "A Practical Guide to Viewing the Universe" with emphasis on our solar system and Milky Way galaxy. This book almost dovetails with the *Backyard Astronomy's Guide*. Not too surprising as Terence Dickenson is co-author of the latter, and main author of *Nightwatch*. *Nightwatch* is a useful field-guide, with the very handy coil-bound spine so that it can lie flat, instead of laying rocks on it to keep it from curling closed on itself. I personally liked his very clean, uncluttered chapters. The book is very "telescope oriented".

Number three in the trio, "Turn Left At Orion", is my favourite, both for its catchy title, and its surprisingly detailed content of the so-named Messier bodies. Although a coffee-table size, this is nonetheless a 'working book', and really belongs in one's field case, in a plastic bag so that it won't get dirty. No chit-chat, just charts. One should also have some prior knowledge of the layout of the constellations, as that is how most of these tiny objects are denoted. It is a fine guide map to the Messier objects, those visible "smudges" that are sometimes a challenge to find, view, and record. A particularly nice feature is that each 'local map' of a cluster or deep sky galaxy is marked with symbols for observing—practical stuff such as refractor scope size, necessary sky conditions, size of eyepiece, when best seen, possible with binoculars, and with reflector on dobsonian mount.

While on the subject of information-laden books, my first acquisitions were two "must-haves"—the "Observer's Handbook 2005" and "The Beginner's Observing Guide"—both published by the Royal Astronomical Society of Canada, and best of all they're cheap. I don't know what amateurs in other countries have for books of this ilk, but these two (paperbacks) are hard to beat for all manner of astronomical information, both necessary, esoteric, and even the picayune. Do note: these two paperbacks are information-fact laden, not for casual reading.

This brings me back to my small scope out on my sundeck. By now being more comfortable with it (I bought it last fall), I went for the constellations—Orion with his three-star belt (very obvious) is my particular favourite, possibly because it

was the first constellation I identified. But if it is not available then there are the two dippers, each part of larger constellations, that between them occupy a large part of the firmament. Although I haven't quite lost my frustration, or helplessness over the myriad of stars, just simply too numerous to even think about.

Where I met the near impossible was when surfing through the sheer infinite number of stars "further back" in the sky. This feeling actually began, for myself, when opening the box that my little scope was mailed in. Astronomy, telescope, and all those other descriptive words conjure up something invisible, very far off, the magic of life. To a total beginner, the telescope is a very strange apparatus, with very specialized pieces of highly prized glass parts, and seems imposing. I remember very well my own awe, when I opened the box holding my small 4.5" scope and looked at bits and parts that until then I had only seen in stores and books. And then, when you throw into the mix the discovery that the little white spot on the black background is a real body that may be 100,000 or even 100,000,000 kilometers away, the word delirium comes to mind.

Then came my first view, tentatively of the moon, several times over several evenings. The next step, one evening, came when I let the scope sort of drift over star fields, stars so numerous that they seemed thicker than the grass on my lawn. At first I just scanned around a bit, and then wanted to go further, but this sheer number of stars defeated me, as I am sure have many others, as just what to do with all these spots on the black background. Actually, Guy Consolmagno, co-author of *Turn Left...* from Easton Pennsylvania (and a Jesuit at the Vatican Observatory) asked himself the same question. To quote: "eventually it occurred to me that all the books in the world weren't as good as having a friend next to you to point out to you what to look for ... it's not that people aren't interested, but on any given night there may be 2,000 stars visible to the naked eye, and 1,900 of them are pretty boring to look at in a small telescope."

I must underline here the bit about the friend sitting next to you, a mentor who can brush away the strangeness of your new telescope. The operative word here is "friend", someone who can guide you

through the heavens, who knows where to look, or what to look for. The standard published guides can say it all, and probably do, but also can be just unhelpful.

Of these three books, I really cannot rank them 1-2-3. Perhaps “Backyard...” comes first, but then “Turn Left...” and “Nightwatch” should come together. Depends on what one wants to do—read or do. They are all good stuff. ★

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Society “Inside Info” for New Members

Mary Lou Whitehorne

Recent discussion on the Halifax centre list leads me to believe that there may be some newer members who haven't yet discovered all the resources available to them through the RASC. President Craig lists many of the benefits of membership at the start of our meetings, but the list is long and not everything can get the “air time” it properly deserves. Accordingly, here are a few notes that may be of interest to you that you may not have been aware of:

Did you know that the Centre's executive meetings are open to all members? If not, you know now. These meetings occur one hour before the regular monthly meeting, in a classroom near our regular meeting space. Please feel free to join the exec as they meet and discuss centre issues and make the decisions that guide the future of our club. If you think the regular meetings are fun (which they are), wait until you try an exec meeting! Think about it this way: some of our exec members have been there for many years. Would they continue to do this if they weren't having fun? Of course not! Why not be part of the party?

The Centre has a brand new Web page that details the many benefits of membership. These include our lending library, loaner scopes, our observatory near St. Croix, our annual Star Party (Nova East), local and national publications, and more. For more details, point your browser to: <http://halifax.rasc.ca/>

If you haven't done so already, visit the RASC's national Web page at: <http://halifax.rasc.ca/>

There is a wealth of information for our members on the national Web site. Are you wondering where to start with your own observing? The national observing

committee's page is found here: <http://www.rasc.ca/observing/home.html>

There are hints, tips, lists and downloadable observing forms for the Messier list, the finest NGC list, the Explore the Universe program, and the Isabel Williamson Lunar observing program. The Messier list and the Finest NGC list are in your 2005 Observer's Handbook on pages 271 and 275 respectively. Other observing options include variable stars, asteroids, comets and special projects. Look them up and start having some serious fun.

Other sections of the Web site that may interest you are the pages for society activities, FAQs, publications, education, and light pollution abatement. Click on the bright red “members” button for the members-only section (user ID: rasc, password: newcomb2005) where you will find the society's governing by-laws, reports and other information from national committees, and reports on the activities of our national council. If you want to know more about the members of the RASC and what they think, the results of the 2004 membership survey are also posted on the members' page. There is a lot more going on in the RASC than appears at first glance!

Admittedly, not all of our members have Internet access and so these resources are a little harder to come by for those members. Like everybody else, the RASC is subject to the realities of limited cash. We cannot afford to keep printed version of so many documents on hand. Nor do we have the space to store such a large volume of printed material. By putting it on the Web we are doing the best we can for most of our membership. If there is something in particular that you need, for example, the forms for an observing program, contact one of the centre exec members, and they will try to get a copy for you. Contact information for our executive members is on the back page of every issue of Nova Notes.

Come to our meetings. Talk to the people around you. Ask questions. Attend the exec meetings and the members' nights at St. Croix. Read the publications you receive – and don't forget to include the Annual Report and other mailings from national office in your reading list. Participate in our public events and Nova East. Attend the annual General Assembly and meet members from across Canada (the 2006 GA will be held in Ottawa). Before you know it, you'll be nominated for president. (Just kidding.) Like any other volunteer organization, the more you put into it, the more you will get out of it.

The RASC is much more than just a monthly meeting with a main speaker, a few announcements and cookies and juice. It's an active and energetic organization on both the local and national levels. It is an organization with a long, strong history, a bright future, an international reputation for excellence, and you are a part of it. Enjoy it! ★

Web-only version of Nova Notes?

Michael Gatto

If you are the type of person who downloads the latest issue of Nova Notes off of the web to print it at home, then you may be interested in taking your name off of the mailing list for the printed version. If so, please email me at agatto@ns.sympatico.ca with the subject line “Remove from mailing list” and I will do just that. If enough people opt out then I will consider sending out the issue to members in a large group email. But for now, **you will be responsible for downloading the issue yourself each month**, and will not be added to the list again unless you email me again to re-include yourself. Thanks, Michael



Part of your membership in the Halifax RASC includes access to our observatory, located in the community of St. Croix, NS. The site has grown over the last few years to include a roll-off roof observatory with electrical outlets, a warm-room and washroom facilities. Enjoy dark pristine skies far away from city lights, and the company of like minded observers searching out those faint fuzzies in the night.

Members' Night

Every weekend closest to the new Moon there is a Members' Night at St. Croix. The purpose of members' night is to attract members from the Centre to share an evening of observing with other members. It's also a great night for beginners to try out different scopes and see the sky under dark conditions. For more information or transportation arrangements, please contact the Observing Chairman Daryl Dewolfe at 902-542-2357. *Dates for Members' Nights for the following few months are:*

Dec, no "official" night due to holidays Friday, Jan. 04 (alt. Sat., Nov. 05th)

Directions from Halifax

(from Bayers Road Shopping Centre)

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 1.5 km until you cross the St. Croix River Bridge. You'll see a power dam on your left.
5. Drive about 0.2 km past the bridge and take the first left (Salmon Hole Dam Road).
6. Drive about 1 km until the pavement ends.
7. Drive another 1 km on the dirt road to the site.
8. You will recognize the site by the 3 small white buildings on the left.

Become a St. Croix 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 St. Croix facility. For more information on becoming a key holder, contact the Observing Chairman Daryl Dewolfe at 542-2357.

RULES FOR THE 17.5" SCOPE (OR ANY RASC SCOPE AT SCO)

On Members' Nights the 17.5" scope must be shared by all members. The 17.5" scope can be used by anyone, but all views have to be shared with anyone interested in taking a look.

On non Members' Nights the scope can be used by individuals wishing to work on personal observing projects. Members should try to limit their use to under 45 minutes when other members are waiting to use it. Preference will be given to members who send an email to the hfxrasc list, or call the observing chair on the night they want to go out. If no one else wants to use the scope then feel free to use it all night, but it would be considerate every so often to ask members there if anyone has been quietly waiting to use it.

Please contact the Observing Chairman Daryl Dewolfe for more information or to book the scope at 902-542-2357.

Meeting Announcements

Halifax Centre of the Royal Astronomical Society of Canada



December 16

Astronomy Education has its Awards... Errr...Rewards

By Mary Lou Whitehorne, Halifax Centre

Mary Lou's astronomy starts in the classroom. From there it has taken her to all kinds of interesting places. Come with Mary Lou on one of her astronomy-themed junkets. First she takes the Big Dipper to school. From there she goes to Arizona for a conference all about astronomy education and public outreach. She will also visit David Levy's Jarnac Observatory, the University of Arizona's Steward Observatory Mirror Lab, Meteor Crater, Arizona's deserts, Monument Valley, the Grand Canyon and more.

January 20

Watch the RASC email list or check the Halifax Centre's website for further details on January's meeting as the date approaches.

CALL FOR MARS IMAGES

Now that the current Mars opposition is winding down I would like to include a page of sketches, photos, observations, or impressions of Mars from members for a future issue of Nova Notes. Don't be shy, send me any Mars related items to agatto@ns.sympatico.ca. Or if you do not have access to a scanner, make arrangements to hand me items at a RASC monthly meeting. -MG

Meetings begin at **8:00 P.M.**

Members of the general public are welcome.

All members—but especially new ones—are invited to come to the meetings 20 - 30 minutes early to participate in our new informal "Meet and Greet". It's a chance to ask questions about astronomy, the RASC, memberships, or to just say hello.

Room 176 Loyola Building
Saint Mary's University (*See Map Below*)

The Halifax RASC

Executive meetings

begin at 7:00 P.M.,

and members are

welcome to attend.



Halifax RASC Executive 2005

<i>Honorary President</i>	<i>Dr. Roy Bishop</i>	
<i>President</i>	Craig Levine	852-1245
<i>1st vice-president</i>	Paul Evans	423-4746
<i>2nd vice-president</i>	Marc Bourque	835-2589
<i>Secretary</i>	Andrea Misner	425-5074
<i>Treasurer</i>	Pat Kelly	798-3329
<i>Nova Notes Editor</i>	Michael Gatto	453-5486
<i>National Rep.</i>	Pat Kelly	798-3329
<i>2nd National Rep.</i>	Mary Lou Whitehorne	865-0235
<i>Librarian</i>	Alex LeCreux	404-5480
<i>Observing Chairman</i>	Daryl Dewolfe	542-2357
<i>Councilor</i>	Shawna Mitchell	865-7026
<i>Councilor</i>	Gary Weber	454-8264
<i>Councilor</i>	Steve Tancock	465-4092

Meeting Location

Meetings are held every third Friday of the month, except for the months of July and August. Meetings take place in room 176, Loyola Building (#3 on map) at Saint Mary's University.

1. McNally
 2. Sobeys Building
 3. Loyola Academic Complex
 4. Loyola Residence
 5. Patrick Power Library
 6. Science Building
 7. Burke Building
 8. Bookstore
 9. Alumni Arena
 10. The Tower
 11. Rice Residence
- P = Parking

