Nova Notes

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

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Astrophotos

December 28, 2004: Here is an image of M33, (see www.davelane.ca/aro/ for a high-res colour version) the second nearest spiral galaxy, located in Triangulum. It was taken using the new ST8XME camera, borrowed from the Burke-Gaffney Observatory, and also using an Optec 0.5X telecompressor lens. The exposure time was 30 minutes with a luminance (white) filter and 18 minutes in each of red, green, and blue filters. The image shows many of the star-forming HII regions in the galaxy.

Also on Dave's website you will find this negative image of Comet C/2004 Q2 Machholz, taken the same night. It consists of twenty 30-second images median-combined after centering each image on the comets nucleus. This image was taken with the BGO's ST8 camera focal reduced to f/5.



As heard on hfxrasc@rasc.ca...

If you're a member with email, why not become part of the Centre's email list? The list is a great resource for people looking for other members to observe with, for reminders of upcoming astronomical events, or for sharing information. Members who observe at

St. Croix usually post a notice to say if they'll be out that night. Log on to our website (www.halifax.rasc.ca) to get signed up and you too could participate in lively intellectual discussions, or at least read them!

Jupiter Occultation!

It was good to be able to see it the disappearance, even if conditions were not the best. From the west end of Halifax, we had a skiff of clouds which thickened and thinned for the twenty minutes or so while I was viewing. Clearing patches to the west were obvious. At 150x through my 4" refractor, I could only make out Ganymede and Europa occasionally and I never glimpsed Callisto.

Just before Jupiter was to move in behind the moon, the clouds thinned a bit and allowed a bit more detail, although I could see clear sky moving closer. Moments after Jupiter's disappearance (2 minutes) the sky cleared perfectly...I expect Craig had that clear spot a few minutes before I did.

Conditions for the second half were near perfect (a bit chilly in the wind). I don't know if it was the contrast due to the dark limb, the clear sky or the anticipation, but I enjoyed the reappearance of Jupiter much more than the disappearance.

It was a real lesson in depth with Jupiter emerging from behind the moon and lo emerging from behind Jupiter moments later. What a great treat!

Gary (gweber@hfx.eastlink.ca)

Jupiter Occultation!

I was able to catch the disappearance of Jupiter behind the moon from Horton Bluff (Avonport) even though it was through thin cloud rolling across the crescent Moon. Jupiter certainly was in apparent contact with the Moon by 05:08:30 and should have been a bit before, but due to the cloud it was tough to catch the actual second. At 05:09:46 AST Jupiter had disappeared.

Used 90 X on my 254 (10") scope.

Conditions gradually improved. A very thin haze was still present as Ganymede and Callisto emerged, once or twice for a few seconds, they almost faded from view, miraculously, by



Here's a shot I took after the reappearance at around 6:24 a.m., the photo shows the moon, Jupiter, Ganymede and Europa. The shot was taken through my 8" scope and processed in photoshop, mainly to enhance the dark side of the Moon. — Michael G.

the time Jupiter began to emerge the haze was almost gone. I believe that it was moments just prior to 6:08:27 that the first light from Jupiter's curved surface began emerging above the Moon's dark limb (taking in the view at 90x in my 254 mm reflector, I quickly looked at my watch and noted the time but didn't write it down; my memory of some things can fade quickly these days when the occasion is being co-shared with



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PO Box 31011 Halifax, Nova Scotia B3K 5T9

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.

Contact the editor at the following:

Michael Gatto agatto@ns.sympatico.ca 453-5486 (Home) 482-1013 (Work)

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 Feb. 25

more interesting inputs). Jupiter's whole disk appeared to be visible by 06:09:50 AST. At that moment I took my eyes away from the eyepiece and had a look with the eye unaided. What a rare sight: seeing Jupiter gleaming in such tight proximity to the Moon! The view moments later in my 10X50s was magnificent!

Back at the eyepiece of the telescope, I could see Europa now clear of the Moon's dark edge, trailing behind Jupiter. And just as Starry Night had predicted, there was lo, barely noticeable, peeking around Jupiter's edge! What a timely arrangement of objects in three dimensional space.

Sherman (sherm@glinx.com)

Jupiter Occultation!

WHAT A MORNING!!

Four lunar occultations: Jupiter and three Galilean satellites.

Five bright planets: Jupiter, Venus, Mars, Saturn, and Earth.

Eleven satellites: Moon, Jupiter's four, plus Titan, Rhea, Iapetus, Dione, Tethys and Enceladus (in my 444 mm).

An Io "OcR" (I like Gary Weber's perceptive comment: "It was a real lesson in depth with Jupiter emerging from behind the moon and Io emerging from behind Jupiter moments later.") plus an Europa "Shl" shortly after the occultations ended, a solar eclipse thrown in as a bonus!

My timings (AST):

Jupiter 1st contact	05:08:24
Jupiter 2nd contact	05:09:54
Jupiter 3rd contact	06:08:25
Jupiter 4th contact	06:09:55
Callisto reappearance	05:57:16
Ganymede reappearance	06:05:46
(brightened over about 2s)	
Europa reappearance	06:10:13

The first two times are accurate to \pm -5 (the bright lunar limb plus thin cloud were a problem). The remaining five times are accurate to \pm -1. Note the remarkable coincidence (from my location): The Jupiter 1st and 3rd contacts, and 2nd and 4th contacts are exactly an hour apart, right to the second! (taking the possible errors into account).

The program Starry Night gives times consistently about 2s later than my times, impressive accuracy from any program!

Did anyone else do timings? (Sherman had two preliminary times). It would be interesting to see what effect the geographical location of the observer has on the times.

Roy (rg@ns.sympatico.ca)

Jupiter Occultation!

We had a great sky in Falmouth for the reappearance. I didn't get up for the disappearance (going to bed at 1:30 I wanted some sleep!) but was up at 5:45. There was a bit of long thin hazyedged clouds, but none near the Moon. I just used the old eyeballs to observe the event...it was interesting how Jupiter kept getting brighter for at least 15 seconds after it first appeared.

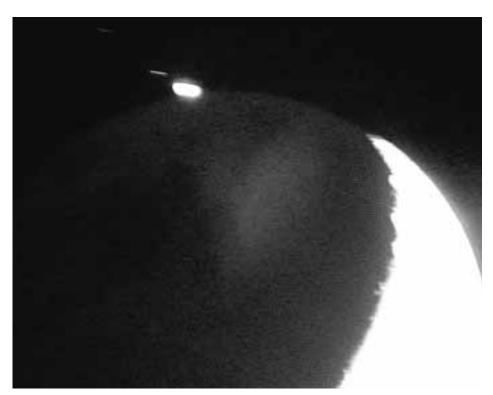
Pat (patrick.kelly@dal.ca)

Jupiter Occultation!

My experience was almost exactly what Gary described except that the clouds cleared about 5 minutes before the event

started, instead of 20. I too found that the reappearance was more interesting than disappearance and certainly this was the part that I was most looking forward to. Several seconds before Jupiter dripped off the limb of the moon a smile grew on my face as Ganymede *shot* out from behind the lunar disc. I was not expecting this to be so quick! Then, of course, there was this magnificent sight of lo gradually sliding into view from behind Jupiter only moments after the gas giant cleared the limb of the moon. What a wonderful coincidence! Furthermore, I was delighted to see that the seeing conditions were very nice for this event. Through my 80mm refractor at 120x the views of both Jupiter and the moon were fairly well defined and stable, a very nice touch for such an event! And finally, after things stopped disappearing and reappearing, I stepped back and enjoyed a truly unique view to start the day with: A crescent moon awash with earth-glow floating in a deep twilight sky with a brilliant pale yellow star right beside it - pretty neat :-)

Graeme (grhill44@hotmail.com)



Here's a shot Mike Boschat sent me taken with a 12 cm refractor and a 25 mm (40x) Plossl, using a Baader Contrast Booster filter with a Centrios digital camera at 1.3 and 1.6x zoom from his balcony in Halifax. The shot shows the lit portion of the moon, Earthshine, Jupiter, a moon and a star.

What Does RASC National do for You? ... Or ... October 30, 2004 National Council Report

Mary Lou Whitehorne and Patrick Kelly, Halifax Centre National Reps

The Budget

The society's budget deficit is a hot topic these days around the national council table, and with good reason. If we do not fix the problem the results will be unpleasant for everyone.

Accordingly, a good portion of this report will be devoted to our national financial situation. So pay attention and do not nod off – this concerns you! Are you ready? I will begin with a question:

Question: What has at least six legs but cannot get anywhere?

Answer: A committee.

One of the most "interesting" things to take place during the recent National Council meeting was the formation of Task Force 21. Task Force 21 is a committee — a large committee with many legs. Will it get anywhere? How fast will it move? Who can tell? Not me!

Task Force 21 Term: one year, extended by National Council as necessary.

Task Force 21 Composition: the President (Chair), Chairs (or committee member designated by the Chair of each Committee) of Constitution, Education, Finance, Information Technology, Membership and Promotion, Observing, and Publications Committees, members of Executive Committee, three others appointed by Council and two others appointed by the committee.

Task Force 21 Purpose: to study, to develop, and to propose options for Council's consideration to help to ensure the long-term financial security of the Society given the reality of the current annual deficit. In other words, fix what ails the RASC. Huh? Read on...

Task Force 21 Background: The Society presently finds itself in a significant deficit situation. There is no simple solution to this problem that will both restore long-term financial health, and

also allow the Society to undertake worthwhile initiatives that support its mandate. This committee will not take over the duties of other society committees, but will consult with them.

This committee has four valuable tools to help in its work:

- 1. Lots of useful input and guidance from the recent members' survey
- 2. A competent and communicative finance committee and treasurer
- 3. A fully-engaged national council
- 4. A good communications infrastructure to keep RASC members informed

There is a fundamental imbalance in the RASC's books. It is the root of our present difficulty. It costs more to service each member than the dollar amount received by National Office from each membership fee.

U.S. sales of publications have subsidized membership fees for years. Now, with the greenback sliding and George W. in the White House for another four years, we can expect more of the same. Insurance rates will not go down. Postage rates are going up again in January. Meeting rooms, travel costs, and teleconferencing will not get cheaper.

I am sure we can find ways to improve efficiencies and trim costs here and there. If those members who expressed interest in supporting the RASC through a sustaining membership make good on their word, it will go a long way toward fixing the deficit. In the long run (insert soap box here), membership fees will have to cover the true costs of membership services. We can no longer depend on a low Canadian dollar and U.S. sales of the *Observer's Handbook* and *Observer's Calendar* to keep membership dues artificially low.

As our national treasurer says, "We have lots of options. It's just that all of them are painful."

Beyond the Budget: Centre By-laws

In other news, National Council approved the sample Centre by-laws as presented by the Constitution Committee. Our Centre executive will now review our own Centre by-laws and make sure that they are in line with the amended national by-laws.

Beyond the Budget: Visual Identity

The RASC has a new society seal and logo. These have been developed further into a series of Centre crests that have been endorsed by national council. This means that each Centre may, if it chooses, use these new crests. The new crests incorporate the name of the Centre into the RASC logo. Also endorsed were new society word marks. Taken together, the new society seal, logo, centre crests and word marks give us a strong and unified visual identity.

Centres are free to continue using existing Centre graphics, or the new ones, or both, as they choose. National Council has also put in place a process where Centres can create new and unique Centre crests that incorporate elements from both old and new designs. The choice is ours.

You can see samples of the new logos and word marks on the members-only section of the RASC web page www.rasc.ca. Scroll down the page to "National Council Meeting – Saturday 2004-10-30," and click on the links to the Membership and Promotion Committee reports.

Beyond the Budget: A New Membership Category

The recent membership survey polled RASCals about a possible new membership category. The proposed sustaining memberships would allow members to contribute to the society's works through a larger annual fee. A significant percentage of members indicated they would support this initiative. National Council endorsed the establishment of a sustaining membership program. Once procedures are in place, Council expects the program to be voted on at the 2005 General Assembly.

Beyond the Budget: Our Annual Report

This year, as a cost-savings measure, the print version of the Annual Report will be shrunk to the legal minimum. All of the content you normally expect to see in the Annual Report will be posted on the society web page. This will save the society about \$2,500 in printing costs this year.

Beyond the Budget: Joining Forces

Another special committee has been formed to investigate potential co-oper-

ation between the RASC and the Astronomical Society of the Pacific. One possible area of cooperation between the two societies is a remote observing project. The committee members are David Levy (Chair), Rajiv Gupta, Mary Lou Whitehorne, and Bob Garrison. Not much has happened yet, except some initial e-mail contacts and agreements-in-principle around council tables. Both the RASC and the ASP are eager to work together, to learn from each other, and to build upon our individual strengths through joint projects.

Beyond the Budget: Publications

There has been concern expressed by many members about the recent lateness of *SkyNews* and the *Journal*. There are a number of factors that have contributed to the lateness of recent issues, including "one-time" delays to *SkyNews* (due

to illness) and the *Journal* (corrupt data files). It is obvious from the membership survey that most RASC members find *SkyNews* to be a valuable publication, but it often arrives well into its active period. Even under perfect circumstances the mailing will arrive after the start of its active period. There are a number of reasons:

- Terry Dickinson aims to have each issue ready so that when it is sent out as first class mail to his subscribers, in the middle of the month. Copies to his subscribers are sent so that they will receive it a few days before its active period. As Terry has not shown any willingness to have each edition out earlier, we cannot receive them any sooner.
- Copies for RASC members need to be shipped to where the *Journal* is printed,

and then the two publications have to be put together. Each of these steps causes a delay of several days.

• Lastly, the combined mailing is sent using Canada Post's publication mailing rate (at about one-third the cost of first class mail), which means that it can take up to 15 business days to reach all areas of the country.

The publications committee is looking at ways to speed up delivery and will be using member arrival times of the next two mailings to see how long delivery takes to get to various parts of the country, and to develop a cost-effective method to deal with the problem.

Now you know what National does for you.★

New Official Halifax Centre Seal and Wordmark

Mary Lou Whitehorne

Halifax Centre, and all the other RASC Centres, now have new Centre Seals and wordmarks that are derived from the national society seal. They were developed through much hard work by the Membership and Promotion Committee, and Rajiv Gupta and Mark Bratton. Below is part of a report from Denis Grey, Chair of the committee. It is in the form of FAQs and it will answer whatever questions you might have about our new visual identity.

Enjoy!

At the recent National Council meeting in October, a proposal of the Membership & Promotion Committee was adopted by Council. Specifically, this proposal was to endorse the use of Centre-specific versions of the RASC Seal and new Centre Wordmarks by Centres of the Society. Here are some brief Q&A's for you:

Q. What is a "Centre Seal"

A. Your "Centre Seal" looks just like the National Seal except that it is unilingual and has your Centre's name on the bottom. For an example check out www.rasc.ca/toronto.

Q. Why would I use a Centre Seal?

A. A Centre Seal is helpful when you are referring to your Centre's unique activities and/or corporate entity. Examples of appropriate use are Centre letterhead, websites, business cards, etc. The sky is the limit! (pun intended).

Q. What versions does it come in?

A. Two versions are available - full colour and monochrome. The monochrome version can be reversed or recoloured using appropriate graphics software. The full colour version should be used where possible and appropriate.

Q. Does this replace my custom Centre logo (e.g. Ottawa, Kingston)?

A. No. The use of the Centre Seals is entirely optional. You may wish to "update" your own graphical identity using some elements of the National Seal. Membership and Promotion can assist you with this if requested.

Q. What is a "Wordmark" when it is at home?

A. A wordmark is "marketing-speak" for a customized font and colour applied to text to indicate a corporate identity.

Q. What does my Centre wordmark look like?

A. To see your Centre's workmark just check your 2003 Annual Report. Each

Centre's report is headlined by its wordmark.

Q. Where would I use the wordmark?

A. The wordmark is probably the most compact form of your Centre's graphical identity. It can be easily embroidered and shrinks to a very small size for specific applications. It can also be used in combination with either the Society's Seal or Logo to uniquely identify your Centre.

Q. These things are brilliant - who came up with them?

A. Special thanks go to Rajiv Gupta (54 Centre-specific Seals) and Mark Bratton (27 Centre Wordmarks). Say thanks to them the next time you see them!





Secretary's Report, 2004

Andrea Misner

Membership:

Yet another year has passed with our president, Steve Tancock at the helm. Membership has settled around 211 members this year, from the 214 members from last years count. This slight drop could be blamed on the procrastination of some not renewing their membership.

In RASC awards, Mary Lou Whitehorne was presented the Simon Newcomb Award for her devotion and energy to education in Astronomy. Her new book, Skyways, peaked the motivation behind this award.

St. Croix Observatory (SCO)

Whether is was through contractor work, or the yearly SCO "work" party, some additional improvements were done to the Centre's observatory. New patio stones, new carpet, painting, and additional insect control measures were just a few upgrades completed in 2004.

This year the "dark nebula" ascended over Nova Scotia bringing in a record breaking ZERO Members' Nights at SCO.

Burke Gaffney Award

This year's Burke-Gaffney Award for best-written article appearing in the 2004 year of Nova Notes is still in the works.

The Murray Cunningham Astrophotography Award

The Murray Cunningham Astrophotography Award was established by the Halifax Centre in 2003 to promote interest among centre members in astrophotography including digital imaging, named after Dr. Murray Cunningham. This year the award went to Calum Ewing for his beautiful Aurora photo.

Center Meetings for 2004

January 16th, Dave Lane "Abbey Ridge Observatory"

March 19th, Paul Gray: "Dark Nebulae Pioneer, Edward Emerson Barnard"

April 16th, John Jarvo "Transit of Venus" May 14th, Steve Tancock "Extra-solar Planets"

June 8th, Mary Lou Whitehorne "Astronomy Aoteatoa: Land of the Long White Cloud"

September 17th, Roy Bishop "Light Pollution Success Stories"

October 15th, David Turner "Will The North Star Stop Pulsating?"

November 19th, Annual General Meeting, and David Tindall's Handbook Talk

December 17th, Pat Kelly "Who Wants to be a Gazer?"

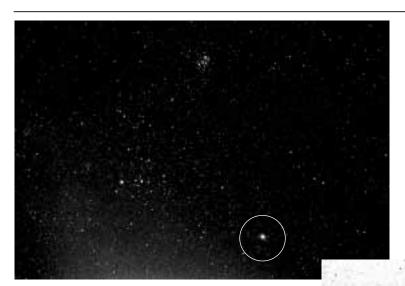
Nova East 2004

Once again the Nova East Star Party was a hit! Attendance was up from last year, reaching record breaking numbers. The clouds dominated the sky only about half the time. Some dedicated sky gazers stayed an extra night to cram in the last bit of clear skies. The main speaker was Peter Boyer, with his talk, "Juan Dark and Stormy Night... and Other Bedtime Weather Stories." Saturday nights featured speaker was Mike Proebstle with his "ARGUS" observatory talk. Other workshop speakers included, Gary Weber, Sherman Williams, Blair MacDonald, Darren Talbot, Craig

Levine, John Jarvo, and Roy Bishop. Dave Lane and Paul Gray entertained the crowd with rocket launches. Congratulations to the 2004 organizing committee for all their efforts towards this Astro event!

Passing(s)

This past February the Centre's members were saddened with the unexpected death of Dr. Bill Thurlow. Bill retired from medicine about two years ago, then pursued his life long dream of studying astronomy at Saint Mary's University. Bill was one of the most dedicated life members of the RASC, even attending meetings while living in PEI. Over three thousands dollars in donations were collected in Bill's memory, along with his various donations of books and telescopes to the Center. Bill practiced surgery in Newfoundland, PEI, and Nova Scotia, and was a member of the Athena Astronomy Club in Summer Side. Along with having a great passion for astronomy and medicine, he was also an avid marathon runner, and vocal environmentalist, and pacifist. Bill always told wonderful stories, packed with enthusiasm, rich in knowledge, and soft in humor. He was a honest and thoughtful friend to many, with such an excitement for life that shows some spirits cannot be stilled. Bill shall be missed.



Darren Talbot's Comet Machholz Images

Comet C/2004 Q2 Machholz, Dec. 30 from SCO, wide-field with Pleiades and Hyades, and a close-up negative image. Camera used was a Pentax ME Super with Fuji 800 film. 50mm lens at f/2.8 and a 135mm lens at f/3.5. Exposures were 10 mins.





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 Craig Levine at 852-1245. Dates for Members' Nights for the following few months are:

Feb 5 (or 11/12) ★ **March 11** (12 rain date) ★ **April 8** (9 rain date)

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 Craig Levine at 852-1245.

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 Craig Levine for more information or to book the scope at 852-1245.

Meeting Announcements

Halifax Centre of the Royal Astronomical Society of Canada



January 21st

Your telescope secrets revealed! — Roy Bishop

Did you know that your telescope has a focal length and an f-number, light grasp and a limiting visual magnitude, an aperture stop and a field stop, an entrance pupil and an exit pupil, an entrance window and an exit window? Also, your telescope might have a focal length or it might not, it can give a linear image scale or an angular magnification, it can show you the real universe or a fake universe, and it provides either illuminance or luminance, all depending upon how you use it. And did you know that your eye can alter the optics of your telescope? It all has to do with the magic of lenses and mirrors!

February 18th, March 18th

Feb. and Mar. speakers have yet to be confirmed, but watch the Halifax Centre's website for up to date information.

Important! We need someone who is willing to step forward and act as Observing Chairman.

What's involved? Being the Chairman of the St. Croix Observatory Management Committee; Loaning out our loaner telescopes; organizing public observing sessions; and taking charge of our monthly new-moon "Members' Nights" at St. Croix. If 2005 is anything like 2004 weatherwise, we'll have no Members' Nights to worry about! You'll also have the other SCO Committee members to back you up. This is an important position for the Centre, and if you are a frequent SCO user, frequent observer, and/or someone who truly cares about the Halifax Centre, you'll step up to the task. It's not an awful lot of work, and it benefits so many.

If you are interested in taking a leadership role in a group that has given you so many benefits, drop me an email to clevine@ns.sympatico.ca.

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

Honorary President	Dr. Roy Bishop	
President	Craig Levine	852-1245
1st vice-president	Paul Evans	423-4746
2nd vice-president	Marc Bourque	835-2589
Secretary	Andrea Misner	425-5074
Treasurer	Pat Kelly	798-3329
Nova Notes Editor	Michael Gatto	453-5486
National Rep.	Pat Kelly	798-3329
2nd National Rep	Mary Lou Whitehorne	865-0235
Librarian	Alex LeCreux	404-5480
Observing Chairm	nan ??? ???	???
Councilor	Shawna Mitchell	865-7026
Councilor	Gary Weber	454-8264
Councilor	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. Sobey 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

