

Nova Notes

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



PO Box 31011, Halifax, Nova Scotia, Canada B3K 5T9 www.halifax.rasc.ca halifax@rasc.ca

Volume 41 Number 1 February 2010

E mail: novanoteseditor@rasc.ca

In this issue:

Meeting Announcements	2
December Meeting Report	3
President's Report	4
One Earth, One Sky - 2010 Eclipse	5
Treasure's Report	6/7
Past President's Report	8
Auditor's Report	8
IYA Report / SCO	9
Imager's Corner	10
January Meeting Report	11
Planetarium / Cosmic Debris	12

Front Page Photo: The Moon
Greg Parsons Dec 28th 2009
Williams Optics 80mm scope on an EQ5
tracking mount, Canon XSi camera, ISO
400, 1/400sec exp.



From the editor

Quinn Smith

Welcome to 2010! This is my fourth year as Nova Notes editor and quite frankly the last three years have flown by!

As always it is my intention to give the members who are not able to attend meetings as comprehensive information of the meeting contents as possible. In this edition there are several reports, financial statements and general information from our December 2009 Annual General Meeting.

We also have a new Executives for 2010 (see page 2). Any member may be reached either by phone or E-mail and I encourage you to contact your Executive with any matter you deem important. We also have the Halifax Centre e-mail "list" which has become a major tool for communication within the Halifax membership. By the way, for those of you that are interested, our membership currently stands at 162.

As an editor I always encourage input from the membership in the form of photographs, articles, product reviews, discussions or anything that you feel would be of interest to other members. And I also encourage you to comment on anything to do with Nova Notes - good and bad. If you have suggestions on improving (your) newsletter please let me know via the e-mail at the top of the page. This is your newsletter - I am just the paper boy!

Clear skies in 2010!

St Croix Observatory

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. Observing nights (Fridays close to the New Moon) are open to members and guests.

If you are not a key holder, or need more information please contact the Observing Chairman, John Liddard (see below).

Upcoming Observing Nights:

February 12th, 2010
 March 12th, 2010
 April 9th, 2010

Meetings begin at 8:00 p.m. on the third Friday of the month at Saint Mary's University

Normal Meeting Room Sobey SB 260

February 19th, 2010 - Meeting night
 A series of short astronomical talks from members of the executive.

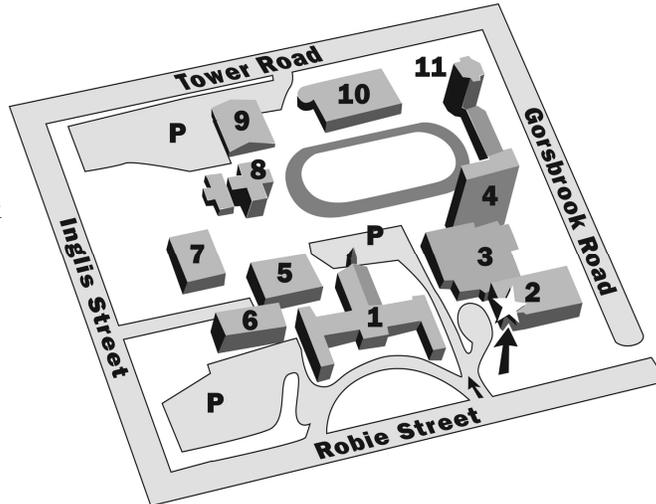
March 19th 2010 - Speakers night
 Meeting details to be announced

April 16th 2010 - Meeting night
 Meeting details to be announced

[The content of all meetings is subject to change]

Meeting Location: 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



Meetings are usually held on the third Friday of the month, except for the months of July and August, when there are no meetings.

Executive meetings begin at 7:00 p.m., (usually in room SB152), and all members are welcome to attend.

The NOVA program, hosted by Sean Dzafovic will begin in the meeting room at 7pm, prior to the regular meeting.

Halifax RASC Executive, 2010:

Honorary President	Dr. Roy Bishop	902 542 3992	roy@xcountry.tv
1st VP (acting President)	Richard Vanderberg	902 403 7553	
2nd Vice-President	Jim Dorey		jimdorey@gmail.com
Secretary	Chris Young	902 466-0489	cjy@hfx.eastlink.ca
Treasurer	Ian Anderson	902 542 0772	taursagroup@yahoo.ca
Nova Notes Editor	Quinn Smith	902 852 3894	quinnjem@yahoo.com
Librarian	Robert Bussieres	902 434 4821	robertbusieres@gmail.com
Observing Chair	John Liddard	902 865 7607	jliddard@gmail.com
National Rep.	Pat Kelly	902 472-2322	patrick.kelly@dal.ca
Councilor	Paul Heath	902 457 0610	pheath@eastlink.ca
Councilor	Sean Dzafovic	902 430 9062	sdzafovic@gmail.com

December Meeting Report

Quinn Smith

The December 2009 meeting was our Annual General Meeting and was hosted by our acting President Wes Howie. There were approximately 35 members present with another 6 guests.

The Annual General Meeting is the time of year when the Executive give a summary of the past year's activities and deliver an outline of the financial situation of the Centre. Wes opened the AGM with his President's report for the last half of 2009 (see page 4) followed by Andrea Misner who gave the past President's report for the first half of 2009 (see page 8).

Quinn then gave his summary of the International Year of Astronomy (IYA) and the Centre's Outreach plans for 2010 (see IYA and Beyond, page 9).

Pat Kelly then gave the Treasurer's report for the fiscal year 2008/2009 (ending September 2009) (see pages 6/7). Ian Anderson followed Pat and gave the Auditor's report for the fiscal year 2007/2008 (see page 8).

Ian is our new Treasurer, and so we needed to select a new auditor for fiscal year 2008/2009. Dave Lane was nominated, accepted and was voted in as our new auditor.

The final AGM business was for Wes to introduce the new Executive to the members who immediately tried to hide their faces and run away.



Our speaker for the evening, Hugh Thompson, was running late and so the AGM was adjourned and the members fed their faces on the traditional munchies as Hugh set up his presentation.

Hugh Thompson is a past member of the Halifax Centre and his talk was about his adventures working on the design of the proposed Thirty Metre Telescope (TMT).

Hugh built his first telescope 23 years ago, grinding the 15 cm mirror for his first 6" dob. Now he is working on "his" latest telescope the TMT with a mirror 200 times as big as his first!

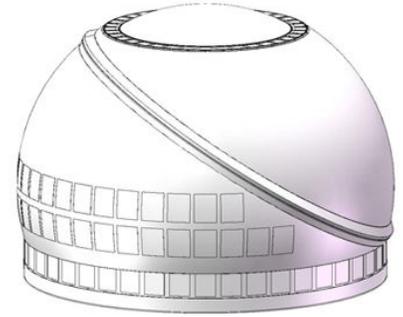
Hugh explained that this transition from 15 cm to 3,000 cm was not in one step. Between these two projects Hugh was involved in building a set of "Rapid Eye" orbiting telescopes. There were actually five of these 'scopes, so the TMT is actually Hugh's seventh 'scope.

Hugh told us during development of these five "Rapid Eye" telescopes he decided to actually test the optics (unlike Hubble!). He wheeled one of the 'scopes (before being installed into the satellite) into the parking lot to take a photo of the Moon. The test was successful, except for the fact that the optics became coated in dew - not a problem they would experience in space.

Huge then went on to explained the basic design of the proposed TMT. He explained that the mirror's diameter was greater than the height of the "Dingle" tower in Halifax, and that a mirror this large could only be made in segments due to the extreme weight involved with a single mirror segment.

Hugh also described the unique design of the dome that will be used on the TMT. The dome design is known as a Calotte enclosure, a new design for telescope domes (see drawing).

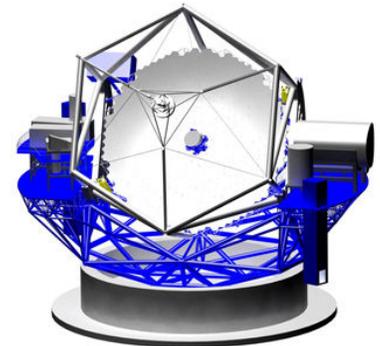
Hugh then went on to explain the reasons for building an Earth based tele-



Callote enclosure as used on the TMT

scope rather than an orbiting telescope. He mentioned that despite the limited view imposed by an Earth bound 'scope and the problems associated with poor 'seeing" (due to the atmosphere), lower cost and ease in maintenance more than make up for these problems.

Hugh then went on to describe the arrangement of the optics, mirror segments and cameras that would be used on the TMT. Hugh pointed out the features of the 'scope explain how 30 metres was the largest practical size of



mirror and why the focal ratio was to be $f/1$. He explained in detail how by mounting the telescope as high as possible, and the use of adaptive optics, the effect of turbulence in the atmosphere could almost completely eliminate .

Hugh ended his talk by answering the many questions put to him from the audience. Wes had to stop the questions due to the late hour, and everyone agreed that Hugh gave an excellent and very interesting presentation.

Thank you Hugh.

President's Report, Halifax Centre, 2009

Wes Howie

I took over the position of President of the Halifax Centre from Andrea in August of this year so this report covers only the past five months. I'd have to say that because of the groundwork laid down by Andrea before she headed off to the greener pastures of our western provinces there really wasn't much to do – secure a few guest speakers, chair a few meetings, but, by August, the real leg work for the fall session had already been done. Thank you Andrea.

Nova East:

Our Nova East Star Party was cut short this year by Hurricane Bill. The event would normally have run for three days, August 21, 22, and 23 but, because of the closure of Smiley's Park by the Province we had to abandon our best laid plans on Saturday afternoon (August 22). We were fortunate enough before that time however to have enjoyed a conversation with Dr. Robert Thirsk aboard the International Space Station. The event was made possible through the ARISS (Amateur Radio aboard the International Space Station) project and was spearheaded locally by Centre member Wayne Harasimovitch – thank you Wayne. And thank you to the Nova East Committee and all of the volunteers who made our truncated Star Party a success.

Nova Program:

This fall saw the beginnings of our NOVA (New Observers to Visual Astronomy) program. The NOVA Program is an educational program originally developed by the Prince George Centre. The initiative is led locally by Sean Dzafovic. In the hour before each meeting, Sean will be giving a series of lectures/presentations on various aspects of Astronomy – all designed for the beginning observer. Interested members are encouraged to contact Sean about attending these sessions.

Thank you. Sean, for leading this project.

Guest Speakers:

During the fall sessions we hosted a number of guest speakers each of whom gave interesting and informative talks in their areas of expertise. In September we heard from Blair MacDonald on his always interesting and informative "Adventures in Astrophotography" presentation; October was fun and games with Pat Kelly's "Who wants to be a Gazer" game show; in November we heard from Roy Bishop with "Optics of the Galilean Telescope" and tonight we heard from Hugh Thompson on the Thirty Meter Telescope. Thanks to all presenters.

IYA:

This year, of course, is the International Year of Astronomy. Late last year (2008) the Executive Council approved the formation of an IYA Committee whose mandate was to lead the Centre in its IYA initiatives through 2009. The IYA committee will be giving their own presentation this evening so I won't dwell on their many accomplishments and successes (there have been many). Instead I'd just like to thank Quinn, Dave, Stephen, Karl and all others who gave tirelessly and unselfishly throughout the year to make our IYA projects a resounding success. At the November meeting of the Executive Council we decided to rename the IYA committee and it will, henceforth, be known as the Public Outreach and Education Committee. We hope the excellent work of the committee, the drive and dedication of its members and the support of the Centre membership for its projects and initiatives will continue into 2010 and beyond.

Unfinished Business:

Some of the things that I was unable to accomplish or, as yet, have not been completed or finalized:-

Nomination of a new Centre President - I was just not successful in recruiting someone to fill this position for 2010.

Guest speakers - For the most part we should be good for guest speakers through March 2010 but there are some minor hiccups that need to be finalized. For e.g. although I've had some preliminary contact with our January guest speaker we've not yet confirmed his appearance. I do have a backup plan though so we won't be without something in January.

Nova East 2010 - We, as of yet, do not have a Chair for our Nova East Committee. Nova East is an important event for the Centre so I hope someone will step forward very soon to fill this position. Outgoing Chair, Roy Bishop has committed to showing the new Chair the ropes and I'm sure under Roy's expert tutelage that the new Chair will have no problem undertaking the role.

In closing...

In closing, I'd like to thank all members of the Executive Council for their dedication and hard work in 2009. I wish you all the best of luck in 2010. It is because of your leadership and the dedication of the members of the Halifax Centre that we have such a vibrant and fun organization. You make the President's job doable and I thank you, personally, for your support and encouragement over the past 5 months and, on behalf of Andrea, for your support and encouragement in the preceding 7 months.

Thank you Wes for stepping in to lead us through the last part of 2009.

Since Wes gave his report at the December ASGM, Ron Mills has taken on the role of Nova East 2010 committee chair.

We are still without an official President, but Richard Vanderberg (1st VP) is acting President, so we are definitely not without a leader.

Editor



A combination photo shows the moon passing between the sun and the earth during an annular solar eclipse over the skies of the southern Indian town of Rameswaram January 15, 2010. REUTERS/Rupak De Chowdhur (India)



Above:
A woman watches a solar eclipse in Amman Jordan. REUTERS/Ali Jarekji (Jordan)

Upper left:
A student uses a piece of smoked glass to watch the solar eclipse in Bangkok REUTERS/Chaiwat Subprasom (Thailand)

Lower left:
The annular eclipse of the sun is observed in Manila. REUTERS/Romeo Ranoco (Philippines)



Pat Kelly

The centre did well this year, despite an apparent loss. The ongoing issue of inventory has been addressed and I have written off all remaining inventory to zero. We do still have some left over items, but I expect they will be reported as miscellaneous income in the future, due to the small amounts involved. This also means that the position of second vice-president is relatively simple now, as we now only do "one-time" orders of things like calendars, so that they come in and go out in

one fiscal year rather than keeping a stock of inventory.

This report is also slightly different from the one that was presented at the annual meeting. I realised later, upon reading some notes from Ian Anderson, that expenditures for equipment should actually go as an increase in the assets section. Thus the "loss" I reported at the meeting is reduced by \$656, as the cost of data projector, purchased for IYA events, etc. was taken out of educational activities and now shows up as an increase in assets, where it is now included in observatory equipment.

Counting the observatory, we are now worth (at least on paper) just over

\$50,000 with no significant liabilities.

Below are some explanatory details pertaining to the Income Statement and Balance Sheet.

My five-year term as Treasurer ends with this report. I would like to thank Ian Anderson for stepping forward as my replacement, as well for all of his help as our auditor for the past few years. Unlike myself, he has an actual background in financial and accounting matters, and I know that the centre's finances will be in good hands with him at the helm.

Respectfully submitted,
Patrick Kelly, Treasurer

Details of the 2008/2009 Income Statement

REVENUE:

Membership Fees \$3,266.43: This includes 13 monthly payments compared to 11 in the previous year. No significant change.

Sales of Merchandise (net) \$1,768.65: This is a combination of two things. One is the reoccurrence of a past problem, which is forgetting to subtract unsold inventory from previous years. (When subtracting the cost of good "sold", I keep forgetting that at the end of the year you have to also subtract the cost of all the ones you didn't sell.) We had a particularly bad year with calendars selling barely any. For the 2009/2010 year we accidentally got a triple order and ended up selling almost all of them. Go figure.

Donations and Observatory Donations \$0.00: Due to the inability to issue tax receipts, donations will likely stay low in the future.

Interest \$27.96: This was earned mainly in our money market mutual fund. As everyone knows, interest rates are extremely low at the moment.

At least the number is still positive!

Nova East (net) \$1,906.40: Nova East had a made a substantial profit this year, despite the poor weather. Actually, it was because of the poor weather. The park waived about \$1,000 in camping fees for the night that the park was closed due to the hurricane. If this had been a "normal" year, our profit would have been about \$900.

EXPENSES:

Meetings and Newsletter \$1,700.13: This expense is down compared to last year. \$226.18 was spent on our meeting treats. Nova Notes cost us \$604.54 to print, \$625.29 to mail to our members, and \$244.12 for labels and envelopes.

Equipment and Supplies \$25.74: This is mostly binders for archiving material.

Office Administration \$201.47: This includes the cost of postage for routine correspondence, office supplies, and the rental of our post office box.

Legal Expenses \$27.21: This is the annual fee paid to the Provincial Government to maintain our registration

under the Society's Act.

Educational Activities \$2590.17: The increase is due to printing, poster material, and other activities related to IYA events. Our annual membership in the International Dark-Sky Association is included here as well. The amount includes \$1,000 in printing for light-pollution abatement brochures which was reimbursed by the Physics Department at Dalhousie University. These funds arrived just after the end of this fiscal year.

Insurance \$1,087.00: This is entirely the insurance for the observatory. Up slightly from the previous year.

Awards and Donations \$100.00: This was for the prize that we offered as part of a student IYA competition..

Observatory — Operating \$28.96: This figure is much lower than last year which included repairs/upgrades to the electrical system and repairs to the door and windows due to an incident of vandalism.

Miscellaneous Expenses \$31.51: This is almost entirely the repayment of donations made the previous year that had to be returned due to the new Canada Revenue Agency regulations.

Details of the 2008/2009 Balance Sheet

Cash \$3,840.34: This represents the cash balance at the TD Bank in Halifax on September 30, 2009 (but not including the profits from Nova East, see below).

Cash – Nova East Profits \$5,087.52: This is the fund upon which the Nova East committee can draw to cover losses in a given year. These funds are currently held in our regular TD bank account but recorded separately within our accounting system.

Undeposited Funds \$296.97: This is a cheque from the national office for memberships.

Handbook Inventory \$0.00: We no longer stock handbooks.

Merchandise Inventory \$0.00 We no longer stock items for sale over long term.

Investments \$2000.00: The Halifax Centre holds a money market account with the TD Bank.

Accrued Interest \$1077.66: Accrued interest on our money market account as reported on four quarterly statements from the TD Bank.

Estimated Library \$3,758.97: This value represents an estimate of all the money invested in the library.

Observatory Equipment \$12,787.71: The value of our observatory equipment. The increase includes the purchase

this year of a data projector for use at IYA events, and which can now be used for other public outreach activities.

Estimated Miscellaneous \$452.54: These other holdings of the Centre were unchanged this year. Historically, \$250 has included a slide projector, a mirror grinding apparatus, and some slides and material available for use at the planetarium.

Observatory Investment to Date \$21,869.64: This amount represents the total amount of money that the Centre has spent on the St. Croix Observatory for capital expenses (*i.e.* concrete slabs, landscaping, the main observatory buildings) that are deemed to be fixed and that could not be moved if we were to leave the St. Croix site.

Comparative Income Statement for the 2007/2008 and 2008/2009 Fiscal Years

	YEAR	YEAR	Increase
	Oct-08	Oct-07	2007
	Sep-09	Sep-08	2008
REVENUE			
Membership Fees	\$3,266.43	\$2,788.07	\$478.36
Donations	\$0.00	\$83.00	-\$83.00
Interest	\$27.96	\$125.60	-\$97.64
Nova East (Net)	\$1,906.40	\$3,373.74	-\$1,467.34
Miscellaneous	\$10.00	\$0.00	\$10.00
Total Income	\$5,210.79	\$6,370.41	-\$1,159.62
EXPENSES			
Meetings & Newsletter	\$1,700.13	\$2,163.50	-\$463.37
Sales of Merchandise	\$1,768.65	-\$133.95	\$1,902.60
Equipment & Supplies	\$25.74	\$26.21	-\$0.47
Office Administration	\$201.47	\$136.73	\$64.74
Legal Expenses	\$27.21	\$26.70	\$0.51
Educational Activities	\$2,590.17	\$884.15	\$1,706.02
Insurance	\$1,087.00	\$1,064.00	\$23.00
Awards & Donations	\$100.00	\$50.00	\$50.00
Observatory - Operating	\$28.96	\$1,702.74	-\$1,673.78
Misc. Expenses	\$31.51	\$472.97	-\$441.46
Total Expenses	\$7,560.84	\$6,393.05	\$1,167.79
NET INCOME	-\$2,350.05	-\$22.64	-\$2,327.41

Comparative Balance Sheet for the 2007/2008 and 2008/2009 Fiscal Years

	YEAR	YEAR	Increase
	Oct '08	Oct '07	over
	Sept '09	Sept '08	'07/'08
ASSETS			
Cash	\$3,840.34	\$2,597.19	\$1,243.15
Nova East Profits	\$5,087.52	\$5,087.52	\$0.00
Undeposited Funds	\$296.97	\$3,116.37	-\$2,819.40
Accounts Receivable	\$0.00	\$0.00	\$0.00
Handbook Inventory	\$0.00	\$753.20	-\$753.20
Merchandise Inventory	\$0.00	\$701.76	-\$701.76
Investments	\$2,000.00	\$2,000.00	\$0.00
Accrued Interest	\$1,077.66	\$1,052.86	\$24.80
Estimated Library	\$3,758.97	\$3,758.97	\$0.00
Observatory Equip.	\$12,787.71	\$12,131.35	\$656.36
Estimated Misc.	\$452.54	\$452.54	\$0.00
Total Assets	\$29,301.71	\$31,651.76	-\$2,350.05
LIABILITIES			
Accounts Payable	\$0.00	\$0.00	\$0.00
Fees owed to National	\$0.00	\$0.00	\$0.00
Other Liabilities	\$0.00	\$0.00	\$0.00
Total Liabilities	\$0.00	\$0.00	\$0.00
EQUITY	\$29,301.71	\$31,651.76	-\$2,350.05
Observatory Invest.	\$21,869.64	\$21,869.64	\$0.00

Past President's Report, Halifax Centre, 2009

Andrea Misner

This report contains a summary of the Halifax RASC activities from January 2009 until August 2009. My role as president was shortened due to the unexpected move to Winnipeg, Manitoba. Wes Howie has generously stepped in as President from 1st VP.

Even though my role as president was short it was a challenging, fun and rewarding experience! Thank-you to the membership and the council for their support.

As this year was a special year, being the International Year of Astronomy (IYA), I would like to thank the IYA committee and the volunteers who gave their time to bringing the universe down to others. I would like to single out Quinn Smith, our IYA Chair and Dave Chapman, our IYA Communication Officer for their hard work and dedication.

I would like to acknowledge the following the organizations for their support during IYA, SMU faculty, Dalhousie, David Tindall and Stephen Payne for all their work on the Planetarium and the shows. The Discovery Centre, Halifax Public Libraries, the Minas Astronomy Group, Bruce Christmas and the folks at Dresden Row Market and the folks from Kejri National Park.

I would also like to acknowledge SMU for their continued sponsorship in hosting us each month.

This year the Halifax RASC embraced many successes in IYA as well as personal losses. Our long term member and friend, Clint Shannon, passed away in 2009. Clint received the RASC Service Award in recognition of outstanding service, while having a major impact on the Halifax RASC centre over the 17 years he had been a member. I would also like to bring attention the passing of Scott Clarke. Even though Scott was not a member but he was a long term friend of Clint Shannon and attended many meetings

at Nova East. Scott Clarke was lost in a fishing accident off of Halifax Harbour.

Brief highlights thought out the months of January 2009 to August 2009:

- A great Nova East this year, but was once again rained out only this time by a tropical storm! Thank-you to the Nova East committee for their hard work in planning and organizing Nova East.
- Recognize Dave Lane, Mary Lou and Pat Kelly for their ongoing National contributions.
- Recognize Sean D. for organizing and hosting the Nova Program.
- Recognize Pat Kelly for this work being Treasure as he retains his position of National Rep. for 2010

Thank-you!

Andrea

Auditor's Report for Fiscal Year Ending September 30th 2008

Ian Anderson

Halifax RASC Centre Auditor's statement for Fiscal Year Ending September 30, 2008

Having carefully examined the financial records for 2008, I believe the balance sheet presented for the year exaggerated our overall wealth or equity because of accounting errors. My best guess is that an offsetting liability of about \$1,500 should have been shown on the balance sheet giving us a net worth of about \$30,100 for year end 2008.

I also believe unofficially the year-end balance sheet for fiscal 2009 gives a fairer representation of our position on that date.

But as I have not been appointed auditor for 2009, and will not be, my opinion only serves to clarify my position for the 2008 financial situation.

I am disappointed with the need to retract my opinion expressed of the 2007 fiscal year in that I believed we were showing a considerable profit at the time. Subsequent material gave a balanced picture for both years, 2007 and 2008 expressed as a single 24 month period, only to be revised in 2009 showing a break-even (or less) for the three year period as a whole.

While I see no evidence of misdirected or missing funds, the performance of the Centre's finances may be a discussion point for the Executive to review. Although I hasten to add that as a Society representing a specific interest and as we are not a profit seeking organization, breaking even can be expected if it is not outright desirable.

I trust that the Auditor appointed for 2009 will concur with my findings, as much of my opinion has been based on information revealed in the 2009 fiscal period.

Respectfully submitted December 18th, 2009.

Ian R. Anderson
Auditor (2007-2008) Halifax Centre

IYA report

Quinn Smith

It is 2010 and the International Year of Astronomy has ended. It has been a tremendous success not just in Nova Scotia and Canada, but throughout the world. If you want numbers, The RASC has monitored over 1.5 million Galileo Moments in 2009, with our Nova Scotia count at over 12,000! For a small Province with only one major population center, that represents a fantastic effort and success.



The IYA “branding” has brought such recognition of astronomy to the general public, it only makes sense to continue the promotion of astronomy in 2010 using the recognition that IYA has received. Welcome to 2010 and “Beyond International Year of Astronomy”.

That has been our cue to disband the IYA committee and reform as the Outreach and Education Committee. I would like to thank Dave Chapman, Karl Penney, and John Higgins for continuing their excellent IYA work with the new committee.

This will be my last IYA report and I want not only to thank all the members who have given so much time, effort and skill to bring astronomy awareness to the public, but want to outline our plans for the future.

What a great year! I have been overwhelmed by the response and support from the membership. We have had over a dozen library talks, four major displays, dozens of sidewalk astron-

omy outreach programs, many “astronomers in classroom” events, and two astronomy “cafes”.

We have greatly increased the visibility of astronomy and got the message out about responsible lighting by taking advantage of the media.

What has been particularly satisfying has been the way that Saint Mary’s University, Dalhousie, the Discovery Centre and the RASC have worked together to promote astronomy in Nova Scotia during IYA. A great partnership that will, I’m sure, continue into the future.

We have achieved all of the above, and we have helped Dalhousie University get the Planetarium back in “full production”, sponsored Keji in moving towards becoming a DSP, and we have raised the awareness of Astronomy and Light Pollution throughout Nova Scotia.

Not bad for a bunch of amateurs (astronomers that is). The trick is to continue this momentum into 2010.

I think the library talk series will be fairly easy to maintain (Dave Chapman has been in contact with them already). We have several presenters, and lots of presentations ready to go.

We need to continue to support the ASN web site – Dave Chapman has agreed to do that as long as he is relieved of the Halifax Centre website duties.

We must continue to support the Planetarium with RASC presenters. I think we currently have four members who are doing semi regular shows. Give it a try - it’s great fun and very rewarding!

As for public outreach through the use of mall type displays, we have been offered another (free) both at the Outdoor Sports & RV Show (March 19 – 21) and we have Centre Court booked at the Halifax Shopping Centre for Astronomy Day (April 24th).

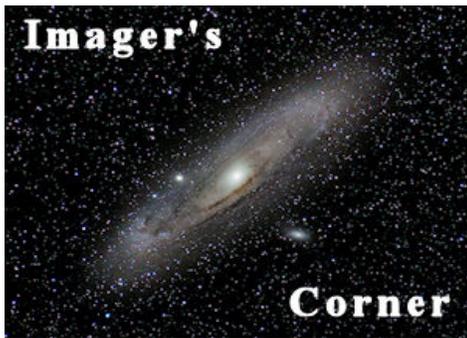
We will continue with various sidewalk astronomy events, with support from Karl Penney, who has really worked hard on these events during IYA.

Keji will require a lot of support throughout 2010. Initially helping with the DSP application and then through the summer with outreach programs. Dave Chapman and myself have been working with the Park, and We plan to continue working with them throughout 2010.

Cape Breton Highlands Park has approached us about becoming a DSP. We have given them information, but as of now have not had any meetings. Tim Donovan from CB has offered to help out with this project. I think it will not get up to speed until Keji is declared a DSP (hopefully in the late Spring).

Finally I would like to enclose a list of members who I have recorded at various IYA events. If I have forgotten anyone (and I’m sure I have) please let me know. I would like that everyone be recognised for their support.

Chris Young, John Liddard, Pat Kelly, Dave Lane, Quinn Smith, Jayme Derrah, David Tindall, Stephen Payne, Walter Zukauskas, Dave Chapman, Andrea Misner, Paul Heath, Robin Clayton, Scott Clarke (deceased), Ron Mills, Paul Bowman, John Nangreaves, Blair MacDonald, Roy Bishop, Larry Bogan, Sherman Williams, Wes Howie, Richard Vanderberg, Dave Turner, Mary Lou Whitehorne, Rob Thacker, Karl Penny, Tim Donovan, Jerry Deveau, Wayne Mansfield, Tony Schellinck, John McPhee, Mary Lou Whitehorne, Marcin Sawicki, Mark Dryden, Gilles Arsenaault, Stan Williams, Ken Donovan, Galen Thurber, Jeff Donaldson, John Higgins, Aviva Donaldson, Calum Ewing, Mike Gatto, Bruce Christmas, Alex LeCreux, John Walker, Wally Moore, Robert Bussieres, Sean Dzafovic, Kathy Brain.



This edition's question was sent in as an anonymous email. "How can I reduce background noise in my images using Photoshop? When I reduce the background noise enough, the main image loses detail. Help."

By far the best way to deal with noise is not to have it in the first place. Be sure to fully calibrate your images and ensure that you have plenty of exposure time. For most deep sky objects (DSO's) this means at least an hour and longer is better.

Having got that motherhood statement out of my system, sometimes you simply can't expose long enough. Weather, work and family commitments intrude upon imaging time and sooner or later you do have to sleep. This is where your favourite image processor comes in handy. I can't address Photoshop exactly as I use Paint Shop Pro, but the general procedure is the same; use multiple layers and masks to target the noise reduction where it is needed.

In general all noise reduction algorithms work by blurring the image somewhat to reduce the effect of the noise. In cases where the background noise is high this can lead to the loss of detail mentioned in the reader's question. The secret is to target the noise reduction to the dark areas of the

image. In most images the brighter parts are sufficiently exposed and the dimmer parts may lack the required exposure to provide a good signal to noise ratio (SNR).

This targeting can be done with feathered selections, but it is a REAL PAIN to do this and still maintain decent stars. A better approach is to use two layers and a mask to target the noise reduction automatically.

First duplicate the image on another layer, call this layer A. Name the bottom, original layer B. Hide layer A and select layer B. Use your favourite noise reduction command to reduce the noise in the background of this layer. Overdo it a bit to ensure a smooth, noise free background. This will leave the main subject of the photo a little blurry and lacking in detail as the reader has noted. Now is where the layer magic happens, make layer A visible and place a mask made from it on top.

Masks allow the layer immediately below to show through where the mask is white. Where the mask is black, layer B will be visible and when the mask is grey a combination of the two is visible. This allows the mask to blend the two layers automatically.

You can vary the brightness and contrast of the mask to let more or less detail from layer A show through. In areas of greatest detail you can even paint the mask white. This gives the final image a noise reduced background, where there is little detail and the most noise, and the original sharp detail where the image is bright.

The two images below show a before and after comparison of the technique,

I've increased the brightness and contrast by the same amount in each image to make the noise more noticeable.



Original Noisy Image



Noise Reduced Image

The technique maintains detail in the brighter areas of the nebula and maintains tight stars while significantly reducing the background noise to produce a more pleasing image for display or printing.

Remember, this column will be based on your questions so keep them coming. You can send them to the list at hfxrasc@lists.rasc.ca or you can send them directly to me at b.macdonald@ns.sympatico.ca. Please put "IC" as the first two letters in the topic so my email filters will sort the questions.



Nova Notes: The Newsletter of the Halifax Centre of the RASC

PO Box 31011, Halifax, Nova Scotia, B3K 5T9

E mail: novanoteseditor@rasc.ca Newsletter editor: Quinn Smith

Nova Notes is published 5 times a year, in February, April, July, October and December.

The opinions expressed herein are not necessarily those of the Halifax Centre.

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

January Meeting Report

Chris Young

Richard Vanderberg, 1st VP, opened his first meeting as Acting President and greeted the 57 people in attendance, including 12 guests who received the Halifax RASC introduction package and a brief outline of the benefits of membership.

Richard advised that the Executive positions are filled with the exception of President, which is open and members are asked to consider taking on this position or proposing someone for the executive to invite. The President is assisted by the executive and anyone interested can contact any member of the Executive for more information.

The position of Chair of the Nova East Committee is also open and volunteers for this committee are welcome. The former chair, Roy Bishop notes that there is a very experienced Committee in place to assist the new Chair and that he is preparing a guide for organizing the event.

Dave Chapman gave an update for the new Public Outreach & Education Committee.

Our librarian, Robert Bussieres, updated the members on recent acquisitions - for DVDs we have "The Universe - Seasons 1 & 2. There is also a DVD instructional course "Understanding the Universe" which Robert recommended. Stephen Hawking's "Brief history of Time" & "The Universe in a Nutshell" are also very good says Robert who advised he has now learned to eradicate a black hole. Robert also asked the members if they had any requests for future presentations and workshops such as how to make dew heaters. If members have any requests, or ideas, please contact Robert by email (robertbussieres@gmail.com).

Richard then introduced the speaker for the evening - Peter Giles. Peter lives here in HRM and made it into the top 16 of 5000 applicants applying for

the Canadian Astronaut Program. Peter and his brother are also former Olympians who competed in the 1996 Olympics.

"Who Wants To be an Astronaut?"

Peter began his story with a graphic time line from his first attempt at applying to be an astronaut in 1992, when he was 22, through to the present. In his first attempt he was screened out along with 5000 others. In 2008 /2009 there was another Canadian Astronaut Recruitment Campaign starting with an online application.

Over 5000 people put in their names and then filled out a more detailed questionnaire. At this point in his life Peter had a degree in physics from Dalhousie and a Masters and Ph.D in applied physics from Stanford. A third questionnaire followed inquiring about his medical history. Later Peter received an invitation for a video conference interview (at NRC on Oxford St) which went well as he was then selected for medical tests at CFB Shearwater.

By now the applicants had been thinned down to 44. In 2009 Peter was invited to go to Montreal for aptitude testing and was told to bring swim goggles, shorts, and running shoes. He had no idea of what was to occur. The group had thinned to 39 in the Montreal where they took a battery of tests: IQ, memory, reasoning, stress, spatial reference and psych. Physical fitness tests followed - now they were down to 31.

Back to Halifax where they went to the Navy Damage Control Centre. Here they can simulate fire, flood or chemical spills in a closed compartment. One day of training was followed by tests of fighting fire, floods and dealing with chemical spills. The next day was spent at Survival Systems in Dartmouth in a water tank where they would endure waves, storms, and having to escape from an immersed aircraft frame in which they were strapped in. This day was topped

off with an 8 metre jump into the water tank.

The group was now cut from 31 to 16. Their 3rd medical history was taken, 18 pages where the only safe answer was "no". The 16 then went to Toronto where they found that having a body size "of not too big, and not too small" was important as there are only a few of the Soyuz capsules EVA suits available - in limited sizes.

Back to Montreal with only 12 candidates left for a series of interviews and role playing in public relation exercises with friendly and hostile interviewers. Peter was amongst those cut at this point, leaving only 4 to take further medical tests. Shortly thereafter David Saint-Jacques and Jeremy Hansen were announced as the 2 chosen for the astronaut program. Peter said these two were highly qualified and really deserved to win.

What exactly they were looking for was never clear all through this selection process - Peter believes they wanted individuals who had risen to the top of their field, who could lead or follow, and could learn anything. Whether they had skills of being a fighter pilot or doctor was not that important as they would not likely be using them in the space program.

Peter felt he had gotten something positive from going through all of this. What did he learn?

1. Everything is observable, everything we do is seen and has impact on those around us.
2. Embrace discomfort - it's good to get out of your comfort zone
3. Plan well - but even when your plans are doomed, it is important to be positive and flexible.
4. You have to be lucky!

Peter did get to watch a space shuttle launch in Florida and has stayed friends with a number of the other candidates. He has experienced an exceptional set of experiences with other remarkable people and we were all delighted that he shared his adventures with us.

Planetarium Report

Stephen Payne

As part of our IYA program the RASC offered to help Stephen Payne and David Tindall get the Halifax Planetarium back in full time operation.

RASC members gave several presentations. Thanks to everyone who has helped with the Planetarium in the last year.

Planetarium 'partners'

- Dalhousie Dept. of Physics & Atmospheric Science.
- NS Museum of Natural History.
- RASC, Halifax Centre
- SuperNova, Dalhousie Univ.
- Saint Marys Univ.

Planetarium attendance for 2009:

- 150 shows (total)
- 3133 total attendees
- 1783 children (57%)
- 1350 adults (43%)

RASC /Dal contribution:

- 21 shows (16%)
- 532 people (17%)
- 59 children (3%)
- 473 adults (35%)

Presenters:

- Quinn Smith, (8 shows)
- Walter Zukauskas, (3 shows)
- John Liddard, (3 shows)
- Jayme Derrah (3 shows)
- Chris Young (2 shows)
- Pat Kelly / Dave Lane (1 show)

Perspective:

- Average attendance 2002 – 2007 = 1140
- Public shows were last presented in 1998 (8 shows)

Shows presented (all categories):

- Dalhousie 80
- SuperNova 35
- RASC/Dal 21
- MNH 13
- SMU 1

Cosmic Debris

Odds and Sods from the World of Astronomy and Cosmology

From "Sky and Telescope" News
Blog by Robert Naeye Feb. 1st 2010

NASA officials today unveiled a new budget for the upcoming fiscal year, a plan that would significantly alter the future of human spaceflight. The Obama administration plan, if enacted by Congress, would cancel the Constellation program for returning astronauts to the Moon, but would greatly increase funding to develop new technologies that could enable future human missions to the Moon, near-Earth asteroids, and Mars. The plan would place greater reliance on private industry for ferrying humans to low-Earth orbit, and it would extend U.S. participation in the International Space Station to 2020.

Despite cancelling a program in which \$9 billion has already been spent, the plan increases NASA's overall funding by \$6 billion over the next five years to about \$100 billion total. By developing new propulsion technologies, developing capabilities such as on-orbit fuel depots, and new robotic precursor missions to study the environments for future astronauts, the administration and NASA seem to be betting that they can lower costs for deep-space exploration over the long haul. The plan also calls for more international cooperation.

"We will pursue a more sustainable, affordable approach to manned exploration, and facilitate the growth of a new commercial industry," said NASA administrator Charles Bolden during a Monday press Conference.

The budget follows closely on the heels of a report issued last year by an independ-

ent, non-partisan committee chaired by former aerospace executive Norman Augustine. The committee, which included former astronauts, engineers, and experts from the aerospace industry, spelled out in clear language what many have been saying for years: the Constellation Moon program has been given woefully inadequate funding to achieve its lofty goals, and it was putting NASA on an unsustainable trajectory towards failure.

Sally Ride, a member of the Augustine committee and America's first woman in space, strongly endorsed the proposal during the press briefing. Apollo 11 astronaut Buzz Aldrin issued the following statement:

"Today I wish to endorse strongly the President's new direction for NASA. As an Apollo astronaut, I know the importance of always pushing new frontiers as we explore space. The truth is, that we have already been to the Moon — some 40 years ago. A near-term focus on lowering the cost of access to space and on developing key, cutting-edge technologies to take us further, faster, is just what our Nation needs to maintain its position as the leader in space exploration for the rest of this century. We need to be in this for the long haul, and this program will allow us to again be pushing the boundaries to achieve new and challenging things beyond Earth. I hope NASA will embrace this new direction as much as I do, and help us all continue to use space exploration to drive prosperity and innovation right here on Earth."



Artist view of the scrapped Orion space vehicle