Nova Notes

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

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Astrophoto of the Month

Roy Bishop, Comet Machholz near the Pleiades

Data: January 7, 2005, colour print negative, ISO 800, 20 minute exposure, 200 mm, f/4, manually tracked (i.e. no CCD or motor), from my observatory.

Finder map for B 33, the Horsehead Nebula. See "as heard…" on the next page for a great discussion on seeing this difficult deep sky object.

Base image from Starry Night Pro.

Nova East 2005

See Page 07

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!

Liscomb Observing Report

Graeme and I headed out to Liscomb late this afternoon despite a deteriorated forecast which put the Messier Marathon off. We detoured through Kemptown on the way as I wanted to check out the Gully Lake Nature Preserve as a potential site but the access road wasn't plowed.

We arrived at Liscomb only to find the usual site only partially plowed and we couldn't get in far enough to have clear horizons. Last summer one of the DNR rangers gave me directions to a good site at the south entrance so we went there and had very clear and transparent skies although the zodiacal light was bothersome until 9 p.m. casting a noticeable shadow and obscuring many western sky objects.

I began my session by scanning to the north of Bellatrix checking out an area I was looking at on Barnard's Plates this week. There are some nice stringy dark nebula up there.

Once dark adapted I decided to tackle the B33 area in my 80mm again. In a mag. 7.1 LVM (Graeme using OH), detail was visible in the flame and it looked much like photographs, NGC 2023 stuck out so I realized my orientation was off at SCO and likely what I had observed was the difference between IC434 and the dark background which B33 extends out of. I slipped in the UHC-S filter and I could make out a small chunk below the star in IC434. Increasing the power to 40X allowed Graeme to hold the Horsehead while I found it easier to hold at 18X. With the filter NGC2023 became a whole new object of interest. I couldn't pull out the nebula at SCO on Saturday but tonight it was a fascinating "electric white" cotton swab in the sky from Liscomb.

I panned up to M78 and then began sweeping for Barnard's loop. I found a yet to be identified cluster or nebula a couple degrees to the northeast and what appeared to be dark strands of the loop just to the north arcing around to the east of M78. Graeme was able to pick up a 4-degree section of the loop in his 8X40 binos, after a brief discussion we agreed the same object was viewed.

Scanning back down to Rigel I tried for the Witchhead again without luck. Perhaps larger gear is required for this nebula as I had no luck with and without the filter.

The Rosette nebula, NGC2244, stood out very well to the naked eye with the entire nebula visible in UHC on my 80mm. This is the best view I've had to date of the Rosette and it very much resembled the brightness of the Helix as seen through binoculars.

M42 began to show hints of pink and red, I've observed this object hundreds if not thousands of times so I'm not really sure why I saw color in it tonight perhaps a recent change to a healthier diet and vitamins, who knows. Of particular interest were the red tints in the sword.

M31 showed its cigar form and stretched 5 degrees despite being in the zodiacal light triangle. M45 barely showed the nebulosity due to this light.

The double cluster was spectacular with one of Barnard's large dark nebula to the east set against a starry background.

To finish off I panned around east of Canis Major and observed several faint NGC clusters.

Chris Beckett
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Screw Messier! Zodiacal light...

Well, OK. It wasn't, as I implied, the Zodiacal light that ruined our Messier hunt, it was the weather forecast for tomorrow morning. Instead we just went to Liscomb to do some good old fashion dark sky observing ... I set up my 80mm f/7.5 refractor to observe the beautiful Moon-Mercury conjunction (it was beautiful!). … after getting situated in our new spot (the only other snow-free location), by about 7:30 p.m., we both commented on how BRIGHT the Zodiacal light was! In fact, after you looked at it for a few minutes, and got over the intellectual fascination of what it was, it became rather distracting! The next thing we noticed right away was a fuzzy 'star' in Monocerous which, after a quick glance through binoculars, turned out to be the Rosette Nebula – It was actually very bright to the unaided eye. Our next round of comments, of course, was centered on how vivid and detailed the Milky Way was from horizon to horizon. I've never seen the 'winter' Milky Way like this before and tonight proved that if you can out to a dark enough sky this portion of the galaxy certainly compares well to its summer counterpart.

The first real deep sky target for the night was the Horsehead Nebula through Chris's 80mm f/5.6 refractor. At just 19x power there was definitely a faint nebula in the correct location and at 40x with a nebula filter in the diagonal the HH nebula was unquestionably there! I could hold it easily for several seconds at a time with averted vision. I then went to my 80mm telescope at 35x with my nebula filter in place and could also see it, but it wasn't as well defined as it was through Chris's William Optics apo. With my equipment it stood out better at 22x. Inspired by this sighting we decided to go after Barnard's Loop on the eastern side of Orion. At the moment of writing this I can't remember if Chris saw any of it or not through his scope (I think he did) but I know I saw some kind of a large, 4°, faint blob a little north and to the east of M78 with my 8x40 binoculars. I don't know if this was nebulosity from BL or just a faint, featureless star cloud. After this, we tried for the Witch Head nebula, but no luck there, and then we split off and observed our own respective list of targets. I myself spent a lot of time just gawking at the Milky Way with my eyes and binos.

This turned out to be a very good night. At twilight we watched a very healthy looking 'Belt of Venus' rise in the east and come dark fall I could catch glimpses of a magnitude 7.1 star near Polaris. Using my 80mm refractor at 85x I was able to call the seeing as a 6/10 on the Pickering scale, and it was obvious from the various sights of the evening that the sky was very transparent. The temperature was also very pleasant and there was no wind at all. Nevertheless, the cold frosty ground got the best of our feet after a little more than 2 hrs of observing so we called it a night and made it back to the city by midnight.

Graeme Hill – grhill44@hotmail.com

Screw Messier! Zodiacal light...

Hi Graeme and Chris,

Thanks for your very interesting observing reports from last evening.

The purpose of this note (a follow-up on my brief comments of March 7) concerns your observation of the Horsehead with an aperture of only 80 mm.

The Horsehead is a notoriously difficult visual target. The problem in seeing the Horsehead is two-fold:

(1) The background nebula which frames the Horsehead (IC 434) is very faint and tends to be washed out by the natural sky glow;

(2) The Horsehead is a small object.

Concerning item (2), the eye cannot see very dim things that are small in angular extent. This is because there are simply not enough photon-activated events taking place in the retina within the integration time of vision to delineate small detail. For the same reason, even a CCD cannot reveal small details unless it is allowed to accumulate light for many seconds or minutes (Have a look at the two papers by Dave Lane and I in the April 2004 RASC Journal. The images in our second paper show what I am talking about.) That is why you cannot read a newspaper on a moonless night: you can easily see the page because it is big, but you cannot read the print because it is small.

An aperture of 80 mm will provide as much surface brightness (luminance) from a nebula as will a larger aperture, since surface brightness is a function only of the size of the exit pupil (As Paul Gray said, a 5 mm exit pupil is the optimum for seeing very dim detail, such as the Horsehead.) However, the only way to maintain a 5 mm exit pupil and provide sufficient magnification to make a small dim object large enough to see is to increase the aperture. That is why, for example, the Whirlpool Galaxy M51 appears as no more than two blobs of light in an 80 mm refractor, but shows spiral arms in the 444 mm telescope at SCO.

The Liscomb sky is likely marginally better than at SCO, but like all places in Nova Scotia Liscomb is essentially at sea level, so you are still looking through a full atmosphere of natural sky glow, even on the most transparent night.

The usual route to a successful observation of the Horsehead is an H-beta filter and at least 300 mm (12-inches) of aperture. Your reports of detecting it with only 80 mm aperture are remarkable (thus my remarks), so much so that I find myself torn between two states:

(a) believing the reports of two good observers, and

(b) wondering if this is a case of either looking at something else (Chris did say: "I realized my orientation was off at SCO"), or so-called averted imagination (knowing precisely where something is located and convincing oneself that you see it).

(I'm ready to duck!)

Roy Bishop – rg@ns.sympatico.ca

Screw Messier! Zodiacal light...

The Horsehead is a very difficult observation in 80 mm, but there are references to observers making observations in small aperatures without nebula filters. Two examples are Walter Scott Houston in his Deep Sky Wonders and Leslie Peltier from p. 1342 of Burnham's Celestial Handbook. Houston observed the nebula from Wisconsin through a 5-inch Apogee Moonwatch telescope he describes in Deep Sky Wonders as half of a binocular with 20X fixed power, this telescope is also on the cover of that book. Peltier observed B33 through his 6-inch refractor with a low powered ocular. A 5-inch scope should see about one Mag. fainter then a 3.1-inch, but is it a stretch to observe B33 with a modern 80mm Apochromat with multi-broadband coatings and a UHC filter?

I understand what you are saying about the size of an object but the Horsehead doesn't appear to be any smaller than the central dark lane of NGC2024, and B33 appears to have better definition against IC434 then the central lane of NGC2024 which blends into the nebula.

Liscomb is at about the same altitude at SCO, ~200 meters, but the sky is darker. At SCO on the best nights I can have trouble seeing the mag. 6.4 star near Polaris but when seeing has been average at Liscomb I can see the mag. 6.7 star without trouble and Graeme could see to ~6.5 at SCO and 7.1 at Liscomb.

I believe from SCO I was able to detect IC434 and the dark sky background, but once I could make out NGC2023 from Liscomb the B33 "gap" was visible with averted vision.

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Screw Messier! Zodiacal light...

The dark lane in NGC2024 is much easier to see than B33 because NGC2024 has a considerably higher visual surface brightness than does IC434. Indeed, no filter is needed to see the dark lane, and it is visible despite being very near the bright star zeta Orionis. In photographs IC434 appears as bright as NGC2024, but that is because most of the light from IC434 is hydrogen-alpha light which film records but which the dark-adapted eye cannot see (See the diagram on page 59 of your Handbook).

One of the variables in being able to detect a difficult visual target is the balance the observer strikes between reliability and sensitivity. The balance various observers will strike ranges from definitely seeing the target for at least a few seconds at a time, through glimpsing the target occasionally, to thinking they saw the target when imagination is playing a bigger role than is action in the retina. I am somewhat of a skeptic, and demand of my vision an obvious, definite sighting before I am satisfied that I have actually seen a target.

Another variable is the age of the observer. From the teenage years onward the sensitivity of the eye progressively declines. The lens of the eye grows ever thicker and less transparent, especially toward the blue end of the spectrum. Moreover, neural changes in the retina gradually make it less sensitive to light. Ten years ago I could glimpse mag 6.4 stars; today 6.0 is my limit. Light pollution is not the only thing that gets worse as the years go by!

Have you used an H-beta filter on the large telescope at SCO to see B33 (on a good night)? If not, I suggest you do so because you will DEFINITELY see B33 and you will know for sure where it is and what it looks like. Then use your 80 mm to repeat the observation, preferably without a star diagonal so the field has the same layout as in the big SCO telescope. I would be very interested in your comments after trying this.

Thanks again to you and Graeme for your reports on visual sightings at the limit of dark-adapted rod vision. It is a fascinating topic, involving physics, physiology, and psychology.

Roy Bishop – rg@ns.sympatico.ca

December 2004 Meeting Report

By Ian Anderson

Halifax Centre RASC's December 17th meeting was the last for Steve Tancock as outgoing President. Craig Levine will replace him as the Centre's President for the new year, as Craig leaves the Observing Chairman post vacant!

The executive line-up for 2005 includes a couple of new faces:

Marc Bourque will be our VP marketing and Alex LeCreux is serving as our librarian, a position we have waited to fill for some time. Pat Kelly and Paul Evans trade 1st VP and Treasury positions. The Executive Board is always listed on the last page of Nova Notes.

Opening comments from Steve touched upon the vacancy of the Observing Chairman and the duties it entails. The OC keeps track of who's loaned telescopes, organizes and "hosts" public observing sessions and Members' Nights at St Croix, and usually gives brief reports at our monthly meetings. [note: Daryl Dewolfe has since stepped forward to occupy the position of Observing Chair.]

Our Christmas season meetings are often light hearted, partly because it is hard to find speakers on the lecture circuit a week before Christmas to present meaty presentations that take several days to fully digest.

Pat Kelly has played moderator and host in "So You Want to be a Gazer" (or similar astro-quizzes) in the past and came well prepared again tonight. The format mimicked the TV wannabe program quite well, except there was no money to be won. There were the three lifelines. There was the ascending difficulty of questions.

There was plenty of visual presentation.

Although the room was about 3/4 full, very few brave souls ventured their names in the hat to play. Of about five volunteers, four were pulled. Contestants' names drawn were David Parsons, Dave Lane, Johnny MacPherson and Quinn Smith.

David Parsons, up first, knew that Cassini, not a pizza, is now orbiting Saturn. He recognized the logo of the Royal Astronomical Society of Daves (RASD – you have to see this one if you haven't). He knew Sputnik was the Earth's first artificial satellite and that absorption lines are black on the spectrum. But on his question 5, "Where will the 2005 GA be held?" David had to "phone a friend". Mary Lou, sure she could help him, said Okanagan – which he accepted. On to question 6, which would be his downfall. "Which space probe is currently furthest from Earth?" Pioneer II was his answer, not the correct response which was Voyager I. He sat down with five correct answers, and a Halifax Centre Pin.

Dave Lane up second, arose to a comment from the gallery: "Who has never served as 2nd VP?" PK had prepared a special set of questions for Dave, figuring DL would be in the chair at some point. The first question, one Pat would not have asked any other contestant, concerned which computer operating software was the best. The four answers were all the same: PK's favourite. It had nothing to do with Astronomy, but those who have been around a while know the ongoing feud between these two.

Dave knew the ISS was the common name of the ISS, he recognized a photo as the "Screech In" at the recent St John's GA.

The Soviet spacecrafts to explore Venus were the Venera, and that "Met Dr Thip" was the mnemonic device used to remember Saturn's larger moons. He knew how many Centres are in the RASC, but had to ask Steve if Uranus had been re-named "Urectum" in the T.V. show "Futurama" in order to "put a stop to all the jokes."

He asked for audience help on his 8th question, that Trientalis Borealis is more commonly known in Nova Scotia as Starflower. In question 9 he used his last lifeline, the 50/50 and correctly guessed that DeepSpace I (not Stardust) was the first space probe to use ion propulsion.

But by question 10, the ultimate, Dave had run out of lifelines. (I didn't note what the prize was for answering all ten questions, but it was more than a Centre pin.) He was on his own to identify an early 20th century photo of Ejnar Hertzsprung and Henry N. Russell of HR diagram fame. After much sweating, he answered Curtis and Shapley. The crowd winced as HR was the popular choice. Dave sat down with a lousy pin. 9 correct.

John MacPherson was third. He knew Stonehenge when he saw it. He correctly guessed that Machholz was the name of the comet currently in Orion. Some of the choices in these questions were quite hilarious. John knew that Halifax Centre had 2 National Council representatives, and that Subaru was Japanese for the Pleiades … but on his question 5 he crashed: Canopus is the brightest star in the constellation Carina. John got his miserable pin.

Last: Quinn Smith. Quinn had a giveaway with question 1 "A lynx is a lynx". He knew the National Society's finances

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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 May. 15

are falling because of the declining US dollar, and recognized the solar system forming when shown a short movie of it. Quinn asked a friend to reply that Sherman Williams was the only known Nova Scotian to observe the June 7th transit of Venus. (Is this true for Cape Breton as well?) He asked for a 50/50 when shown Van Gogh's "Starry Night". Who painted it? He got laughs from all when he said it couldn't be Monet because there were no hats in it! The audience helped him identify the Sun as a G2v star, but as for Hilda, Thalia, Veritas and Argentina? They were asteroids and not hills on Venus as Quinn had guessed. 6 correct and a measly pin.

So we gave away 4 pins tonight. We'll throw the Lexus and ten thousand dollars back into the pot and see if someone can win it next year. But it really was a lot of fun.

After the break at 9:10, we resumed with a discussion lead by Mary Lou Whitehorne and Dave Lane about the Society's financial crunch at the National level from rising costs and the loss in revenue due to the declining value of the US dollar. Although the Society is by no means in serious trouble, some disturbing trends are developing. The Society faces some tough choices over the coming years. Issues surrounding the National Reps' October meeting have been dealt with more extensively in December's Nova Notes and in other National publications.

Mary Lou Whitehorne took the opportunity to thank Steve for the two years he has served as our Centre's President. She praised him for his quiet measured style of management and many on the executive agreed it was a pleasure to work with him.

Craig Levine, wearing his Observing Chairman's hat, gave us a presentation on "What's Up". He showed that in terms of planets, the evening sky is currently void of everything except for Saturn which is the first to rise.

There were a few accounts from members of the December 7th occultation of Jupiter by the pre-dawn Moon. A few casual observers were lucky to glance at the Moon at the moment Jupiter emerged shortly after 6 a.m.

Comet Machholz will be the obvious viewing highlight this winter. It is moving north in the southern sky (at late evening) about 15º west of Rigel through Omicron Eridani on Sunday December 19th. The comet should peak somewhere around fourth magnitude, and will pass very near the Pleiades in January, and continue to be visible into early March 2005.

Craig mentioned Mercury as visible in the morning sky near Venus in early January and he finished with a reminder of what a rich field of viewing Orion gives us every winter.

Thanks to Pat for providing us with such an entertaining evening. Meeting adjourned at 10:16 p.m. ✯

REAL Winter Observing

by Daryl Dewolfe

Stars wink behind palm trees while lounging in a beach chair as a light tropical breeze keeps the dew off the binoculars and telescopes while you drink in the sight of Constellations foreign to the view from Nova Scotia. Earlier during the day, your neighbors back home were busily using their snow throwers, while you, in shorts and T-shirt; lifted Margaritas, or took a nap.

It's not Nirvana, but it is a great way to pass a week in February enjoying astronomy at the Winter Star Party in the Florida Keys. One could consider it a pilgrimage of sorts; good for the soul, a feast for the eyes, and very enjoyable when done with a group of astro-buddies.

The four of us (Dave Lane, John Jarvo, and Clint Shannon) – along with our Maine interpretive guide (Greg Palman) – ran the U.S. Customs gauntlet through New York and Miami to spend a sun-filled week at the annual Winter Star Party in the Middle Florida Keys. Over 600 other astronomers joined in, bringing a myriad of telescopes and astro-equipment. We bunked comfortably, and inexpensively, in a 6 person thatched hut on site. Food was available nearly 24 hrs day from an on-site canteen. (The smell of fresh baked brownies at 4 a.m. is enough to momentarily distract the most hardened observer.) Of course there's stuff/gear to buy from vendors. (I saw Rubbermaid bins full of eyepieces for sale) Mostly two things take place here: the opportunity to meet, and to informally talk with, prominent people in astronomy that we often only read about; and the chance to sit on a tropical beach and gaze unobstructed toward the horizon as the Dove, the Centaur, the Keel, the Air Pump, and the Southern Cross rise out of the warm waters of the Gulf Stream.

In February 2006, it happens once again. The ticket line forms here. ✯

Clint Shannon, John Jarvo, Daryl Dewolfe, Dave Lane, Greg Palman

February 2005 Meeting Report

*By Jim Dorey, NMTB**

**New Member-to-Be, as a birthday present to himself*

The monthly Centre meeting was relocated to the SMU Sobey Building's room 255 at the last moment to accommodate the extra attendees that would be present for the following controversial speaker and topic:

Dr. Bill Stoegre – "The Laws of Nature and Divine Action"

Dr. Stoegre has been with the Vatican Observatory in Tucson, Arizona since 1979 and has a M.Sc. in Physics from UCLA and a Ph.D. in Astrophysics from Cambridge, UK.

The topic of this evening's meeting brings about a very interesting mix of representatives in the audience from local religious groups to our very own RASC members. There were 115 listeners present, and some took up sitting on the floor due to lack of seating. Dr. Stoegre's self-imposed mission was to present both the scientific approach to nature and that of 'Divine Action' of God – not a trivial task in today's world.

Without me going too much into detail, Dr. Stoegre delved into his astrophysics expertise. He highlighted various aspects of the laws of nature as we know them, and as they are bound to change, he restated this concept several times. Of course he is bound to be accurate in this prediction! There is no doubt that his knowledge of astrophysics, and in particular the Big Bang theory, is deep. He discussed the small chance of the very early universe, just after the singularity, having the precise set of initial conditions that would later allow life (let alone intelligent life) to arise. This is in tune with other noted astrophysicists' views and it underscored the credibility of his opinions.

He then switched gears into Divine Action where he spoke of a transcendent power that he surmises initially started the Big Bang, and in some cases interferes with human beings through 'special action'. For myself, being a Christian who rarely gets to Church anymore, this was very helpful indeed, as I have always held that my definition of God is that of the 'Set of Unknown Things'. To hear the views of someone who has the credentials to investigate both sides, and indeed has spent a large part of his life doing so, reinforced many of my thoughts. I suspect that many individuals struggle with today's science knowledge and the sheer history of the human religious condition. The religious element cannot be ignored because much of the world believes in a God. It has significant impact and will continue to do so.

In summary of the session, Dr. Stoegre effectively bridged what could be described as one of the most challenging paradoxes today into a concurrent condition that can be lived with by both sides. Evolution AND prayer is intact in his world and it made for interesting listening indeed. Some may not agree with his views, but I for one was very happy with the time spent. There was a 15-minute Q&A session afterward.

Craig Levine ended the break at 10:10 p.m. Craig said that the Centre has speakers lined up for the meetings from now until June of this year.

Pat Kelly stood up for a moment to discuss the possibility of a changing dues structure that may shift the 60/40% fee split between RASC National and the Centres of the Society. Dave Lane gave some clarification on the term 'de-coupling'. Paul Heath and David Tindall both touched on the notion of having the National's interests separate from the Centres. In essence it boils down to ensuring that there is not too much complexity in the division of dues (Pat referred to an analogy of tax returns), but still maintaining some flexibility for both components of the Society.

Pat also discussed the possibility that the Journal may be going to a Quarterly publication schedule rather than its current bi-monthly frequency, citing the recent survey results showing possible room to move here.

Craig gave the "What's Up" talk at 10:15 p.m. because we still don't have an Observing Chair. Anyone who has a solid grasp of observing and has some free time for the observatory is urged to come forward for the Centre. [note: Daryl Dewolfe has since stepped forward to occupy the position of Observing Chair.] Speaking of the sky:

Leo is rising in the east (= spring is coming!)

Saturn has given some great viewing. So has Orion.

Reminder of the March 11-13 Messier Marathon: apparently the last people to complete the marathon were Larry Bogan, Paul Gray and Bill Thurlow. There was some talk about traveling to Liscombe to observe under the dark skies there.

Craig gave a slide presentation and talk about his brother's new observatory being built by the Wabush County Astronomical Society in Indiana. The building, domes and telescopes will be huge and very inviting. Craig hinted at a possible future partnership/collaboration with the folks in Indiana – perhaps some scope time via the Internet?

Dave Lane spoke about a call to amateurs that has been made regarding an asteroid occultation taking place soon. More details to follow, but essentially the more astronomers to view the event, the better the asteroid can be measured for diameter, etc.

Dave then gave a nice report about the recent Winter Star Party in the Florida Keys. There were 5 Halifax Centre members attending and a good time was had with mainly clear skies. Special attention was paid to observing Orion directly overhead without the need for a parka. Dave came back with an absolutely stunning mosaic photo of the Orion nebula and some nice shots of Omega Centauri. He said that for under $1,000 Canadian, you could go down for one week to the event. He mentioned that Daryl DeWolfe won a Coronado Solar Scope ($500 US) while down at the Star Party. Also, Dave gave some insight into air travel into the US with telescopes and how it presents a challenge at customs inspection booths.

Craig then presented images of a Web program that will show all the air flight trajectories of flights destined to or from US and Canadian airspace. He explained that it is delayed by 5 minutes from real time. The images he showed had over 5000 flights in the air at the same time.

Craig then closed this meeting of the Halifax Centre. ✯

By The Nova East Committee

The 19th annual Nova East Star Party will take place at Smiley's Campground on the Canada Labour Day weekend, September 2, 3 and 4th, 2005. Each year we have a main guest speaker give us a talk on an astronomy related topic. This year's main speaker will be the inventor of the revolutionary Dobsonian telescope, John Dobson. Mr. Dobson's dedication to the development and education of people in the area of astronomy is still going strong even at the age of 89! It will be John's 90th birthday ten days after Nova East, so please come and help us wish him a happy 90th birthday.

Nova East is being held a little later in the summer this year. Because of the phase of the Moon and due to ever changing weather conditions here in Nova Scotia, we're hoping that September will be nicer to us and give us some clear, dark skies to observe under. Because this is the "last long weekend of summer" and because it's the last weekend that our campground hosts, Smiley's Campground are open, you will want to register early to guarantee you, or your family and your telescope a place to camp. We are expecting (and hoping!) for higher than normal registration this year. The last two Nova East events have broken attendance records, so why not keep with that trend?

If you would like to get involved with Nova East 2005, whether by helping out with the organization, or if you have an astronomy related workshop you would like to do, then please contact Nova East program coordinators Gary Weber (gweber@hfx.eastlink.ca) or Darren Talbot (darren.talbot@ns.sympatico.ca)

If you have any more questions about Nova East 2005 please visit our webpage at http://halifax.rasc.ca/ne/. It will be updated soon with a list of events, talks and workshops. If you have further questions please contact the Nova East committee at novaeast@rasc.ca ✯

National Council Report

By Patrick Kelly

I attended the February meeting by telephone. Dave Lane and Mary Lou Whitehorne were both there in person, as second vice-president and education committee chair respectively.

Budget: The budget was one of the main items of discussion. The initial budget predicted a deficit of $52,000 for a myriad of reasons. On the revenue side, anticipated funds from the recent fee increase did not show up due to a 4.5% membership drop. (The membership and promotion committee did a follow-up survey and found that the largest reason was personal finances, but there was no feedback that the fees were too high. Income and unit sales for both the Observer's Handbook and Observing Calendar are down. Interest revenue is down as older GICs expire and are renewed at lower rates. The high Canadian dollar has also had a significant impact as many of our publications sales are in U.S. dollars. On the flip side, insurance, and other costs have continued to rise.

The Council made a number of cuts. Printing costs for the Journal have been reduced. The hours for a part-time employee at the National Office have been cut. The speaker assistance program has been cancelled for this year. Several planned expenses have been deferred including upgrades to the National Office computer system, all non-safety related repairs to the National Office, printing of a lunar observing program booklet, and new Society brochures. Starting in the fall, the travel subsidy has been reduced. For the three meetings per year it was 100%–75%–50%, now it will be 75%–50%–25%. That will cause hardships for representatives if they have no Centre policy to make up the difference. It may reduce costs or not, depending on the cost of increased teleconferencing. There are tentative plans to hold the October meeting entirely by teleconference and limit it to a four-hour meeting. Even with these cost-saving measures, it looks as if the Society will still have a deficit of $10,000.

Publications: SkyNews has moved its publication date up by a week, which should result in earlier arrival of publications. The publications committee has been instructed to find ways to cut Journal costs by $4,000 and is looking at a more efficient layout, lighter paper, direct-to-print processing, etc. Other options being investigated for cost savings include a quarterly printed Journal, and a proposal to make the Journal an electronic journal with a paper "print-on-demand" version available as an extra-cost option.

Fees & By-law Changes: To meet by-law requirements, a proposal to increase fees by $5 was made in order to be on the agenda at annual meeting. There are also major by-law changes that were approved at the National Council meeting and which will be up for approval at the annual meeting. These changes will do a number of things, some being a significant departure from past practice. It is proposed to replace the current 60/40 split of membership fees between the Society and the Centres with separate Society and Centre fees. This will make the actual fees more transparent and will allow for any increase in fees to cover Society costs to be made without requiring an extra increase to Centres. Safeguards have been built in, so that the Centre fee can only be reduced by a two-thirds majority of the National Council. Another proposed change will mean that membership fees can only be set by the National Council, and will no longer be voted on by members. It is the National Council that is responsible for dealing with the Society's business, and it is felt that the power to set membership fees should be held by that body. (I belong to many organizations, and none of them allow the membership to set the fees.)

As the Annual General Meeting is being held early this year (Victoria Day, rather than Canada Day), you will shortly be getting the annual meeting package including proxy forms. We are hoping for your support to implement these changes so that the Society has the stability and flexibility it needs to meet its fiscal challenges. We will be collecting proxy forms at the April meeting, or they can be forwarded to myself, or Dave Lane. If you have any questions or concerns about these by-law changes, or any other National Council matter, please feel free to contact me. ✯

RASC, Halifax Centre 2003/ 2004 Treasurer's Report

2003/2004 has been a solid financial year for the Halifax Centre. Financially, as in all aspects of our Centre we continue to run smoothly.

At our September 30th year-end, we had a surplus of $3,544.60. Membership levels have increased over last year to 211 from 209. Counting the observatory, we are now worth (at least on paper) $50,915.70 and have no significant liabilities. Below are some explanatory details pertaining to the Income Statement and Balance Sheet.

Respectfully submitted,
Paul Evans, Treasurer

Details of the 2003/2004 Income Statement

REVENUES:

Membership Fees $3,429.23: Membership fees are similar to last year.

Life Members Grant $457.60: This amount represents the life member grant we receive from National Office each year. Currently we have 26 life members.

Donations and Observatory Donations $4,738.09: The Halifax Centre has received significant donations this year. The first area of donations was the SCO fund raising campaign carried over from last year adding an additional $1,583.00 to the $2,480.00 raised last year. We also received generous donation in memory of Dr. William Thurlow, a long time and beloved member of the Halifax Centre who passed away in February 2004. Donations in memory of Bill totalled $3,155.09.

Interest $50.96: This was earned mainly in our money market mutual fund, which included the final quarter of the previous fiscal year but not the interest received during the final quarter of this fiscal year. Interest earned was slightly lower than last year due to lower interest rates. Our bank account earns very little interest.

Handbook Sales (net) $70.64: Handbook sales are down significantly from last year – however this is primarily due to payments that will be made after the end of the fiscal year.

Sales of Merchandise (net) $786.30: Merchandise net sales were higher than last year. This improvement was due to reduced cost of goods sold compared to the last year because of overstocking of calendar inventory in 2002/2003 and receipt of a travel assistance funds from National Office.

Nova East (Net) $876.18: Nova East made a strong profit this year. Following a motion of the executive at its September 1999 meeting, two-thirds of this profit is to be recorded as profit earned by the other two astronomy clubs that co-hosted Nova East. Ordinarily, the RASC would have paid this profit to these clubs, however neither the Minas Astronomy Club nor the Nova Central Astronomy Club have bank accounts. See Assets – Cash below.

EXPENSES:

Meetings and Newsletter $1,399.52: This expense is significantly lower than last year primarily due to reduced speaker expense and timing of expense submission for Nova Notes printing and postage costs. $256.37 was spent on our meeting treats. Nova Notes cost us $471.03 to print and $588.92 to send to our members.

Office Administration $149.27: This includes the cost of postage for routine correspondence, office supplies, and the rental of our post office box.

Legal Expenses $25.00: This is the annual fee paid to the Provincial Government to maintain our registration under the Society's Act.

Educational Activities $0.00: No expenditures were classified under educational activities this year.

Insurance $1,208.00: This is entirely the insurance for the observatory. Our insurance costs increased by 20% over last year (and last year we had to endure an increase of 31% over the previous year). Unfortunately, we are in the same scenario as many others purchasing insurance.

Observatory – Operating $3,639.27: This figure includes the $1.15 annual land lease with the balance being for operating expenses such as batteries, cutting keys, propane for the furnace, and other operating expenses for the observatory buildings and surrounding property. The large majority of this higher than normal operating total are for non-capitalized expenses to work on the observatory property including significant landscaping materials and services. Capital spending that has been expensed on the observatory has totalled $21,869.64 since the project was started in the spring of 1996.

Miscellaneous Expenses $147.31: This item is down from last year due to no travel expenses for National Council meetings.

Details of the 2002/2003 Balance Sheet

ASSETS:

Cash $8,768.27: This represents the cash balance at the TD Bank in Halifax on September 30, 2001 (but not including the profits from Nova East attributed to the Minas Astronomy Group and the Nova Central Astronomy Club, see below). We currently have more cash in the bank than usual primary due to the donations we received this year.

Cash – Nova East Profits $2,086.03: This represents two-thirds of the profits from the Nova East star parties (year 2000 to present) which are attributed to the Minas Astronomy Group and the Nova Central Astronomy Club (see Expenses – Nova East above). This profit is currently held in our regular TD bank account but recorded separately within our accounting system.

Undeposited Funds $324.97: This represents cash and cheques that were on hand but not deposited at year-end.

Merchandise Inventory $2,789.22: This consists of our inventory of 37 2004 Handbooks, 49 2004 Handbooks, 13 BOGS, 2 Skyways, 14 T-Shirts, 33 2004 Calendars, 50 2005 Calendars, 19 Centre Pins, 1 bumper sticker, 27 RASC stickers, 14 RASC embroidered crests, 4 RASC mugs, and 11 RASC key chains.

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

Accrued Interest $726.82: Accrued interest on our money market account as reported on four quarterly statements from the TD Bank. This includes income from the last quarter of the previous fiscal year but does not include income

COMPARATIVE INCOME STATEMENT FOR 2002/2003 AND 2003/2004 MEMBERSHIP YEARS

Comparative Income Statement for 2002/2003 and 2003/2004 Membership Years

	Year Oct 2003 to Sept. 2004	Year Oct 2002 to Sept. 2003	Increase over 2002/2003
REVENUE			
Membership Fees	$ 3,429.23	$ 3,488.15	$ –58.92
Life Members Grant	457.60	492.80	–35.20
Donations and Obs. Donations	4,738.09	2,480.00	2,258.09
Interest	50.96	55.95	–4.99
Handbook Sales (Net)	70.64	269.74	–199.10
Sales of Merchandise (Net)	786.30	592.16	194.14
Nova East (Net)	876.18	818.98	57.20
Miscellaneous	$ 0.00	$ 0.00	$ 0.00
Total Income	$ 10,409.00	$ 8,197.78	$ 2,211.22
EXPENSES			
Meetings & Newsletter	$ 1,399.52	$ 2,203.90	$ –804.38
Equipment & Supplies	296.03	42.15	253.88
Office Administration	149.27	82.80	66.47
Legal Expenses	25.00	25.00	0.00
Educational Activities	0.00	0.00	0.00
Insurance	1,208.00	1,007.00	201.00
Awards & Donations	0.00	249.63	–249.63
Observatory - Operating	3,639.27	422.18	3,217.09
Miscellaneous Expenses	$ 147.31	$ 754.97	$ –607.66
Total Expenses	$ 6,864.40	$ 4,787.63	$ 2,076.77
NET INCOME	$ 3,544.60	$ 3,410.15	$ 134.45

Approved by: Paul Evans, Treasurer Steve Tancock, President

COMPARATIVE BALANCE SHEET FOR 2002/2003 AND 2003/2004 MEMBERSHIP YEARS

Comparative Balance Sheet for 2002/2003 and 2003/2004 Membership Years

	Year Oct 2003 to Sep 2004	Year Oct 2002 to Sep 2003	Increase over 2002/2003
ASSETS			
Cash	$ 8,768.27	$ 4,364.98	$ 4,403.29
Nova East Profits (MAG/NCAC)	2,086.03	1,501.91	584.12
Undeposited Funds	324.97	2,625.00	–2,300.03
Accounts Receivable	0.00	0.00	0.00
Handbook Inventory	796.00	566.57	229.43
Merchandise Inventory	2,789.22	2,245.15	544.07
Investments	2,000.00	2,000.00	0.00
Accrued Interest	726.82	678.68	48.14
Estimated Library	3,417.50	3,395.01	22.49
Observatory Equipment	9,542.77	9,538.77	4.00
Estimated Miscellaneous	$ 452.54	$ 452.54	$ 0.00
Total Assets	$ 30,904.12	$ 27,368.61	$ 3,535.51
LIABILITIES			
Accounts Payable	$ 1,858.06	$ 1,867.15	$ –9.09
Fees owed to National Office	0.00	0.00	0.00
Other Liabilities	$ 0.00	$ 0.00	$ 0.00
Total Liabilities	$ 1,858.06	$ 1,867.15	$ –9.09
EQUITY	$ 29,046.06	$ 25,501.46	$ 3,544.60
Observatory Investment to Date	$ 21,869.64	$ 19,584.01	$ 2,285.63

Approved by: Paul Evans, Treasurer Steve Tancock, President

MEMBERSHIP	1998	1999	2000	2001	2002	2003	2004
	164	157	164	180	192	209	211

from the last quarter of this year since it was not known at the time that the statements were prepared.

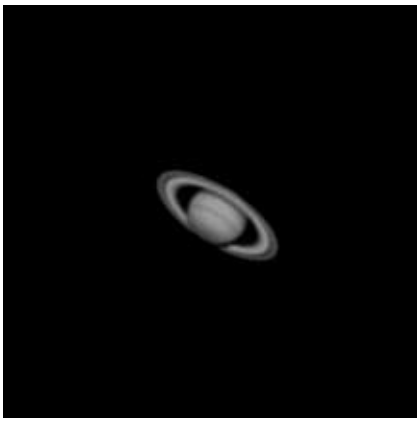
Estimated Library $3,417.50: This value represents an estimate of all the money invested in the library. $22.49 was spent on books for the library this year.

Observatory Equipment $9,542.77: The value of our observatory equipment is increased $4 from last year representing the four categories of equipment left to the Halifax Centre by the estate of Dr. William Thurlow. It is the accounting practice of the Halifax Centre to represent this type of asset at cost with donated equipment assigned a value of $1.

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.

LIABILITIES:

Accounts Payable $1,858.06: At year-end, the Centre owed the National Office for orders of year 2005 Calendars and Handbooks that were received during September 2004. ✯



Saturn Images – *Alan Sheppard*

These were taken with an 11" Celestron (CAT) with a 2800 mm focal length. The camera is a Celestron CCD video camera The photos were taken from my backyard in Bedford.

The software for the CCD camera is AMCAP and the stacking program is Registax 3.0. 30 fps@40s on 14.2.05 (left) and 30 fps@40s on 20.2.05 (right)

Supernova Scotia (and New Brunswick) 2005B

By Dave Lane

As many of you know, Paul Gray (now of the Moncton Centre) and I have been interested in searching for extragalactic supernovae for many years. We began searching in 1994, with help from a few other Centre members, and discovered SN1995F in February of 1995. Some information on this discovery, the first in Canada, can be found here: www.ap.smu.ca/bgo/sn.html. Soon afterwards, we stopped searching.

After the completion of my backyard Abbey Ridge Observatory in mid-2003 Paul suggested we start up the search again. I was game to do this because at the time I had not yet designed, built, or programmed the observatory automation system and this provided me with some goals to meet in order to do the search in an automated way. While I worked on the automation work, Paul developed the program. To do this he had to start by selecting the galaxies that we were going to search based on galaxy type, brightness, and position in the sky. The working list contains about 2700 galaxies in the northern part of the sky divided into 38 groups – each group is an RA and Dec bounded "box" on the sky.

By late summer 2003 the search was on in a semi-automated way – that is, the telescope could be programmed to move to a list of objects, take images of these objects and save them to the computer's hard disk. It could not yet move the dome to follow the telescope. This required that the search program only be run when I was home and it had to end before I went to bed, limiting us to usually a few hours of observing/night. At the end of each night, the images were uploaded to a web site for Paul to examine. He would compare them to images that we had taken previously and hopefully would see a new star appear where one was not previously present. This is the way we operated until the telescope and dome were fully automated in late August 2004.

Our efficiency increased considerably after the dome automation was complete and after the automation software became more intelligent. Now we could take images of up to 350 galaxies per (long winter) night and upload them for Paul's inspection nearly in real-time. During the summer and fall of 2004 we had several close calls, missed discoveries, etc. This convinced us that eventually our luck would pay off. I would say: "It's only a matter of time." Paul would say: "It's only a matter of timing!"

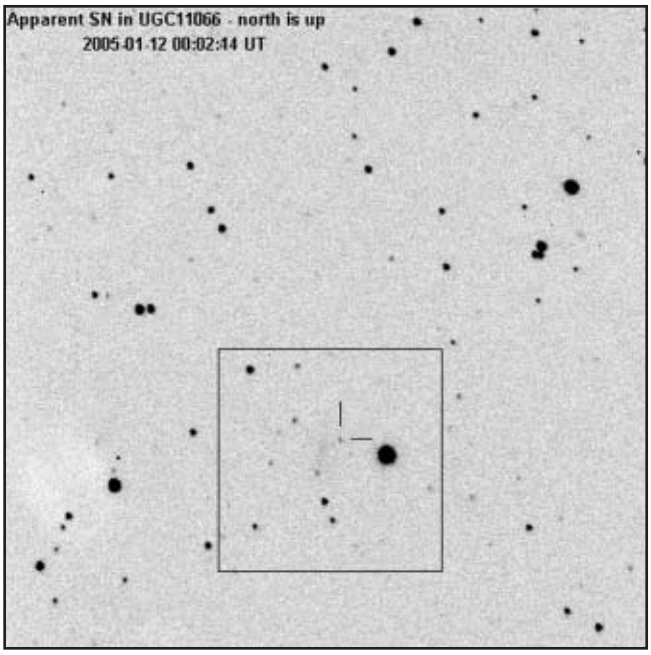
The evening of Tuesday, January 11, 2005 would be our time – almost 10 years after our first discovery – to discover a supernova. It was detected late in the evening by Paul (located in Fredericton, NB) while he was studying images taken earlier that evening. I was not even home when the image was taken, my wife and I were at the big Tsunami Benefit Concert at the Halifax Metro Centre.

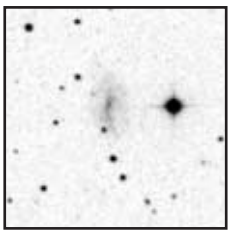
When I got home at about 11:30 p.m. there was an e-mail from Paul: "Call me!" I called him and he walked me through new and old images of UGC 11066, the galaxy in Draco where the suspected supernova was located. I was convinced that we might have something this time, but I am usually skeptical at first because we have been through this before! I aborted the supernova run that was still chugging away in the backyard and then took several images of the target galaxy. The suspected object was still present in the same location and therefore was not noise or a minor planet.

The next two hours involved carefully measuring the position and brightness of the suspected object, finding the dates and times of all of the images taken previously, and composing the discovery e-mail message to be sent to the IAU's Central Bureau of Astronomical Telegrams. It is also interesting that it was also detected on an image that we took on December 17th, but at the time it was assumed to be noise and was not reported.

Now we not-so-patiently waited. In our efforts to get a confirmation image on a second night (nothing but clouds at home of course!), we tried every known contact in North America but it seems everyone was clouded out including Arizona! We were eventually successful on Friday in getting a confirmation by Spanish amateur astronomer Ramon Naves. Soon afterwards, it was announced as Supernova 2005B on IAU Circular 8462. A well-known supernova searcher Tom Boles reported an independent discovery on an image taken early Friday morning and is credited as a co-discover. A few days later the mighty Palomar 200" telescope was used to take a spectrum of it which was used to determine its type as "Type II".

For more information, see www.dave-lane/aro/sn. Paul and I will also be providing more details about this discovery and our search program at this year's Nova East Star Party during an illustrated talk that we've been invited to give. ✯





At left is Dave's discovery image, the inset square shows the field from the Digitized Sky Survey plate (above) that shows the galaxy without the supernova.

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.

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:*

Friday, April 8 (cloud date Sat. 9) Friday, May 6; (cloud date Sat. 7)
Friday June 3, (cloud date Sat. 4)

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

April 15

Peter Jedicke, our National RASC President will be our main speaker.

May 13 *(Note – 1 week earlier)*

Halifax member Andrea Misner will be our main speaker.

June 17

Phil Bennett will be the main speaker.

Watch the Centre website for more details.

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 Chairman	Daryl Dewolfe	542-2357
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