NOVA NOTES

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THE NEWSLETTER OF THE HALIFAX CENTRE OF THE RASC
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INSIDE THIS ISSUE...

ASTROPHOTO OF THE MONTH – LEONID METEOR, TWO PLANETS, AND THE PLIEDIES

Image of a bright Leonid Meteor, Jupiter, Saturn, and the Pleidies taken recently by Michael Boschat with his 35mm camera.

EDITORS LAST REPORT: SHAWN MITCHELL

This is my final report as Editor of Nova Notes and my last issue, whoopee I'm free at last, free at last Oh please excuse the slight outburst. It has been an honor to keep Nova Notes running for the last few years, but I'm the first to admit I'm not an editor.

Nova Notes has grown to the point over the last several years where it takes far to much of one persons time to put it together and get it mailed to the membership. I am glad to see finally that an assistant editor has been added to the production of Nova Notes. The new Editor Mike Gatto, will undoubtedly make a great editor with his graphics background, and his assistant editor Mike Boschat will ensure that Nova Notes gets out on time and material for each issue is always coming in. I wish them well in the coming years and hope everyone will support them in the production of Nova Notes by providing them with articles and photos of astronomical significance.

With the completion of this issue I will be stepping down from the executive of the Halifax Centre and taking a years leave of absence from the Centre. Don't worry I'm not going far I just need a break, we still have a 1 meter telescope to design and build for the St. Croix Observatory. No Dave we're not building a 25", anyone could build a 25" we need something bigger ☺.

Seasons Greetings and have a Happy New Year.
Shawn Mitchell Ω

NOVANOTES,
THE NEWSLETTER OF THE ***HALIFAX CENTRE OF THE ROYAL ASTRONOMICAL SOCIETY OF CANADA***, IS PUBLISHED BI-MONTHLY IN FEBRUARY, APRIL, JUNE, AUGUST, OCTOBER, AND DECEMBER. THE OPINIONS EXPRESSED HEREIN ARE NOT NECESSARILY THOSE OF THE *HALIFAX CENTRE*. MATERIAL FOR THE NEXT ISSUE SHOULD REACH THE EDITOR BY **JAN 19TH, 2000**. ARTICLES ON ANY ASPECT OF ASTRONOMY WILL BE CONSIDERED FOR PUBLICATION. "LETTERS TO THE EDITOR" OR TO OUR RESIDENT EXPERT: GAZER ARE ALSO MOST WELCOME. CONTACT THE EDITOR AT:

MICHAEL GATTO

E-MAIL:

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SEPT MEETING REPORT: BY PAT KELLY

Thirty members showed up for our first meeting in our new digs at St.Mary's. The executive meeting was held in a very nice room with lots of space and we did not even have to set up the table and chairs and then put them back!

Steve Tancook has produced an absolutely wonderful cart to use to bring the library to the meeting room. It is able to hold the entire library and is built to last. It already had its first close encounter with an object on the way over from the Loyola Building, and it won the contest hands down. It was noted that the Centre executive did not have a formal vote to spend the money for this year's upgrades to the observatory, but there was a vote to decide the size of the wheels that should be put on the library cart. Go figure.

The 2001 Observers Calendar is out, and it is even better than the one from last year. You had better get one as soon as possible as they will not last long.

The meeting started off with the usual what's Up. The presentation used a ECU on a laptop computer, data projector, and laser pointer. Talk about a high-tech way to break in the new room. The main upcoming event was the return of Jupiter and Saturn to the evening sky. Their retrograde loops will put both planets between the Pleiades and Hyades, so there are some good photo opportunities coming up, especially when the are joined by the Moon.

We had a review of this year's Nova East, which featured two major changes. The biggest change was the moved from Fundy National Park in New Brunswick to Smileys Provincial Park in Nova Scotia. This allowed for another change, the organization and planning of the event by three groups. The three main people were John Jarvo (Nova Central Astronomy Club), Darryl DeWolfe (Minas Astronomy Group), and Paul Evans (Halifax Centre). They had the support of a lot of volunteers and they put on a great event. Due to the closer venue, all of the members of the Nova Central club and about two-thirds of the Minas Astronomy members made it. There were more than 65 registered groups and over 80 attendees, which may be a new record.

Slides were shown of the various events. There was everything from the launch of a Saturn V rocket (unfortunately, it was a model and not the real thing!) to Sherman William's nature walk, which was so popular it had to be done again by popular demand. Mary Lou Whitehorne set up scale model of the solar system measured out using a roll of toilet paper. (What is it with her and lavatory equipment?). Cutouts of the planets were placed along the unrolled toilet roll and all planets were represented except for Pluto, which would have had to be put into the woods. There was also a field trip to see the tidal bore on the nearby St. Croix River. All of the slides that we had seen up to this point were not really slides, they had been digitized and were being played back from a computer. We switch over to some real slides and saw some pictures taken of the talks, including one of Roy Bishop who was standing and squeezing a tube of toothpaste in his outstretched hand. He was not talking about dental hygiene, but was explaining how tidal forces work.

It was time to switch back to the computer and when the data projector was fired up it was amusing to see that Dave Lane, having already seen a lot of the Nova East, had been playing Solitaire on his computer. When my last issue of Mac Addict magazine said that Solitaire was the premiere application in the Windows world I thought that they were joking; now I'm not so sure. Dave quickly switched over to his presentation which was on some charge-coupled device (CCD) images he had taken over the last few months. There were some nice ones of Comet Linear

including one showing a split in the ion tail. I was particularly impressed with two images; a beautiful image of M101, and another of M8 & M17 that was overexposed, but showed lots of nebulosity that is normally never seen in pictures of these objects.

Blair MacDonald continued on the computer with an explanation of image processing and how it could be used to improve images taken with CCD cameras. He had some absolutely amazing before and after images. I wish I could use some of the techniques on the image I see first thing in the morning when I look in the bathroom mirror! He also showed an image that was made by taking multiple short-exposure images of an object. What made it unusual was that his telescope took all of the pictures while he was inside playing cards.

Dave Lane was back on with a review of his recent trip to the Hayden Planetarium. He had gone to Ontario to attend Starfest, and had decided to return via the United States. The facility has been rebuilt from the ground up. The building is now composed of a large glass cube. The star theatre is inside a black sphere which is held in the middle of the cube by a number of steel supports. The projector is the top-of-the-line model from Zeiss and displays 9,100 stars. The shows are advertised as being 40 minutes long, but that includes the time it takes to get lined up, go inside, etc. so that in fact the show is only 20 minutes long. Dave said that except for two minutes using the star projector, the show that he saw was uninspiring. Total cost: $US 19 for the show, plus $US 24 for parking.

The final presentation was by Dave Chapman who had been on vacation in the Magdalen Islands and Gaspe Peninsula. He reported that it is a great place for astronomy because the skies were very dark. His family had stopped in Bathurst on the way up, and he had decided to get up early in the morning to observe the Perseid meteor shower. He looked outside and thought that it was cloudy, as the sky was not dark. On closer inspection he realized that it was due to an auroral display. He was able to get some excellent pictures of it, including one that contained a nice shot of M31.

All things considered, I think that our new location will serve us well. Ω

OCT MEETING REPORT: BY LARRY BOGAN

Dave Tindall, the Centre's president opened the meeting at 8 pm. The first order of business was to consider the nomination of the new executive for next year. Although elections are at the next month's meeting the bylaws require the nominations be concluded this month. The nomination committee consisting of Clint Shannon, Shawn Mitchell and Dave Tindall presented the following slate.

President:
Dave Tindall
1st Vice President: Pat Kelly
2nd Vice President: none
Secretary: Steve Tancock
Treasurer: Dave Lane
Nova Notes Editor: Mike Gatto
National Representative: Dave Lane
Observing Chairmant: Paul Evans
Councillors: Clint Shannon, Dave Chapman, John Jarvo

There were no new nomination so the slate was declared elected except for 2nd VP.

Paul Evans (observing chairman) was pleased to present a certificate to Paul Heath for completing the Mini Messier List. Paul completed it with binoculars and described with enthusiasm at seeing these objects later in telescopes. If anyone else would like to try the Mini-Messier list they are available from the observing chairman.

Using the Earth Centred Universe and data projector available in the 176, Paul showed the lay out of constellations for the coming month. Mercury and Mars are visible in the morning sky while Venus in getting higher in the evening sky. Jupiter and Saturn are nicely place late in the evening in the eastern sky. The Leonid Meteor shower occurs the morning of the 18th of November but unfortunately the 3rd quarter Moon is in the sky. There are some predictions that the brightest part with be the morning of the 17th (see November's Sky News)

The member's night at St. Croix was a success last month and a repeated is planned for every month on the Friday nearest the new moon. The next night (Saturday) is the cloud date. Oct 27 was the next member's night while the one in November with be on the 24th or 25th..

Mike Falk (librarian) showed the new book card and explained that not all the books are in it and are available in the storage room.

Mary Lou Whitehorne, as council member at the 2000 AGM in Winnipeg gave a report of the meeting. There are new RASC Centres in Charlottetown and Moncton. New annual fees of $40 start this year. Bob Garrison is new RASC president while 1st VP is Rajiv Gupta and 2nd VP is Peter Jediki. The RASC has been greatly expanded (See www.rasc.ca). The next GA will be in London, Ont on the July 1st weekend. More details of the meeting will be available in the report being sent out to members.

Dave Lane reported on the October RASC council meeting which he attended. The next RASC journal is a combination of two

issues. The RASC is running a deficit and will be making economy cuts including a simpler annual report to save 1/2. The fee increase will only be in the 2001 budget. There are now 4500 members which is an increase of 1500 in the last four years. Income from the Handbook and Calendar provide the majority of the operating funds. Online store and book reports will be added to the expanded RASC website. Dave reported on a bizarre incident in which all but a few of the books "Looking Up" by Peter Broughton have been disposed of by the publisher. To preserve it, a version will be put online.

Title of this Evening's Talk: ***(Quantitative) Observational Astronomy Without a Telescope***

The speaker for the Evening was Dr. David Turner, member of Halifax Centre, former RASC Journal Editor and faculty member of the department of Physics and Astronomy at St. Mary's University.

Background: The classic cepheid variable star, delta cepheii, was discovered over 200 years ago to have a sawtooth shaped light curve. Variable stars of this class have period of 2 to 45 days and show a unique linear period-luminosity relation. It is this relationship that makes them valuable distance guages for nearby galaxies. Cepheids are massive red giant stars with 3 to 20 solar masses in the latter stages of stellar evolution in which they have unstable atmospheres. As these stars evolve, their periods of variability change. An expanding star will show a decreasing period while a contracting one will have a decreasing period.

Observing Problem: A student observation program at St. Mary's to measure the changing periods was having trouble getting precision data for delta cepheii using their CCD. Dr. Turner felt that since this was a 3-4th magnitude star, he could do a better job visually. On first try he got horrible precision.

New Observing Technique : As the human eye adjusts to the darkness it is able to see fainter and fainter stars. Dave found that if he used this changing sensitivity, he could accurately judge when two stars were the same brightness. He would quickly look at the Constellation Cepheus and wait until delta cepheii became visible and note what other star became visible at the same time. The magnitude of the comparison star then would peg the current magnitude of delta. Dave found that he had to make his own variable star charts because his visual magnitudes did not match those of the AAVSO (American Association of Vaiable Star Observers). After a systematic observing program using this technique, he found that he got light curves that agreed to within 0.1 magnitude of professional light curves.

He used this technique to obtain light curves and period for delta Cepheii, eta Aquilae and zeta Geminorum. In all three cases the experimental data provided useful and accurate points to determine whether these stars are expanding or contracting as they evolve through the instability gap for red giant stars.

Conclusion: The eye's ability to detect slight differences in brightness improves near the limit of delectability.

The meeting concluded with brief presentations from Dave Chapman, Dave Lane, Blair MacDonald and Roy Bishop.

Dave C. demonstrated a paper dial made from a printout of an Excel spreadsheet program. Steve Lelievre who has created wrote the program a WebPages called the Nova Scotia Sundial Trail that describes the sundial and how to use it. See http://www3.ns.sympatico/steve.lelievre/

Dave L. hawked the RASC publications:

2001 Observer's Handbook $22
Beginning Observer's Guide $14
2001 RASC Calendar $15
Astronomical Place Mat $10

Blair showed his latest CCD images of the Galaxies M-33 and M-31. Both were mosaics of many exposures. The detail and color balance was excellent which made for fabulous images of these neighboring spiral galaxies.

Roy presented the painting by Ruth Norcott that now belongs to the Halifax Centre. This was given to past honorary president, Murray Cunningham by Helen Hogg in 1980. The painting is now to be rotated among the members of the Halifax RASC to hang on their wall for a month or two. Ω

NOV MEETING REPORT: BY DAVID CHAPMAN, AND MARY LOU WHITEHORNE

This time I am the Substitute Meeting Reporter, for reasons which will become clear very soon. The Appointed Meeting Reporter, Past President Dave Chapman, met with a mishap; thus his participation in the events of the evening were certainly memorable, although completely unplanned.

His meeting report, circulated on the Centre's e-mail list the day after the meeting, goes like this:

"I must have given you all a fright last night, when I left the meeting room for an "urgent" bathroom break and was subsequently discovered having a nap" in the hallway. The truth is, I almost fainted. I ended up at

the infirmary, but I was already feeling better when I arrived. I was home by 0100.

I am not sure what came over me, but it seems to have passed and I a much better now. Very many thanks to those who assisted me, especially to the young man (name?) who discovered me and raised the alarm. What great friends!

I regret that my meeting report for last night will be somewhat abbreviated. Here it is: Tindall started the meeting at 2000; we had an AGM; Mary Lou presented a somewhat pessimistic "What's Up" (considering the weather); then we saw a great astronomy video from the AAVSO. Most of the group saw it to the end."So endeth Dave's meeting report.

David Chapman.

That's pretty much what happened. I agree that my "What's Up" presentation was a bit pessimistic about the weather, but how is a person supposed to react to three straight weeks of solid overcast skies and daily rain and drizzle?!? We did talk about what might be seen, if only it were clear. Neat stuff like the Leonids, Jupiter and Saturn slow-waltzing in Taurus, Venus in the western evening sky and Mercury and Mars. I also mentioned that, from the Apollo 14 landing site, the beautiful and bright blue crescent Earth was 47 degrees up in the southern Lunar sky.

As for the annual meeting, it was held. What else can I say? The new 2001 executive was announced and the Centre Secretary should have a report with the new Executive Members list somewhere else in this issue. We have a new 2nd VP, Dave Croston, and a new Nova Notes Editor, Mike Gatto. Welcome to both of you! It's always energizing to have new ideas at the executive table.

The Treasurer's report is always an eagerly anticipated part of the Annual Meeting and this year was no exception. Treasurer Lane gave a splendid account (groan! bad pun!) of his financial wizardry on the Centre's behalf. There was not one single question that he couldn't successfully dodge! We have spent more money on the St. Croix Observatory but we are still well in the black and have no debts. His report, complete with lists of confounding numbers and pie charts, should be included in Nova Notes somewhere.

Walter Zukauskas was the evening's main speaker and he tried to persuade everyone to go out and indulge in the art of observing variable stars. Interestingly enough, his view graphs indicated that it is actually possible to acquire data on some variable stars when they are up in the daytime sky! (Just kidding - there were some funny data points in some of the light curves.) Variable stars are an area of astronomical research where amateurs can, and do, make valuable contributions to the science. Variable stars are also very useful teaching tools for science in general, and Walter presented a video produced by the American Association of Variable Star Observers (AAVSO) on observing these stars and using them to learn how science works, as well as to collect useful data. Unfortunately, this reporter missed a good portion of this part of the meeting because I was involved in the other meeting reporter's (mis) adventures.

Following the meeting's main presentation, President Tindall adjourned the formal meeting. The informal meeting continued on for a while in the hallway, then proceeded into the parking lot, and on to the Birmingham Street Bar & Grill. We finally adjourned for the night when the lights went up and the management kicked us out on our collective ear.

Mary Lou Whitehorne
Substitute Meeting Reporter Ω

THE LACERTA STELLION
BY MARY LOU WHITEHORNE

When was the last time you went observing among the stars of Lacerta? Assuming that Editor Mitchell places this article in the June issue of Nova Notes, you should have this in hand well in time to go out and see Lacerta high in the evening sky. I logged time in Lacerta in October of 1994, during the only autumn Nova East held at Fundy National Park. For some reason this little constellation is often overlooked, and at the time, people laughed when I said I was going to explore Lacerta. "Why bother?" they said, " There's nothing there!" While it is true that the lizard doesn't contain any first or second magnitude stars, that doesn't mean that there's nothing there to see. In fact, there are several objects within easy reach of the typical sort of amateur astronomer's telescope.

Lacerta climbs high overhead in the late summer and early fall evenings, and can be seen squirming its way across the rich star fields of the Milky Way between Casseopeia, Cepheus, Cygnus, Pegasus and Andromeda. There are no named stars in this small constellation and its lucida, alpha, is only of magnitude 3.9. Beta Lac, at 4.5, marks the radiant point of the minor Lacertid meteor stream that is active through August and September.

Lacerta is called Lézard in French, Lucertola in Italian, and Eidechse is German. The formation of the constellation is credited to the Polish astronomer Johannes Hevelius (A. D. 1611 - 1687) who constructed it from the leftover stars of the much grander surrounding constellations. He chose the shape of a lizard because there was no space available in the sky for anything of a different shape! His

initial rendition of the star figure (see figure 1) was of a "strange weasel-built creature with a curly tail," which was later modified into the form of a lizard. Hevelius offered an alternate title to the constellation (which I happen to prefer) - that of Stellion, the Stellion; which in real life is a newt with star-like dorsal spots that is found along the Mediterranean coastline. Lacerta has had other designations in the past but the Lizard seems to have held its place of honour among the stars while the other names have been forgotten.

The only mythology that I could find associated with Lacerta comes from China. In ancient China Lacerta was seen as the coiling T'ang-chie, the Awakening Serpent. When the T'ang-chie culminated at the end of January it meant the winter was ending and all the hibernating serpents could stir and leave their winter burrows; and that spring was finally at hand.

The Stellion Observing List

Object	R. A.	Dec.	Mag.	Distance
IC 5217	22h 23.9m	+50°58'	12.6	3200 parsecs
NGC 7296	22h 28.2m	+52°17'	10.0	?
NGC 7243	22h 15.3m	+49°53'	6.4	880 parsecs
NGC 7245	22h 15.3m	+54°20'	9.2	?
NGC 7209	22h 05.2m	+46°30'	6.8	900 parsecs

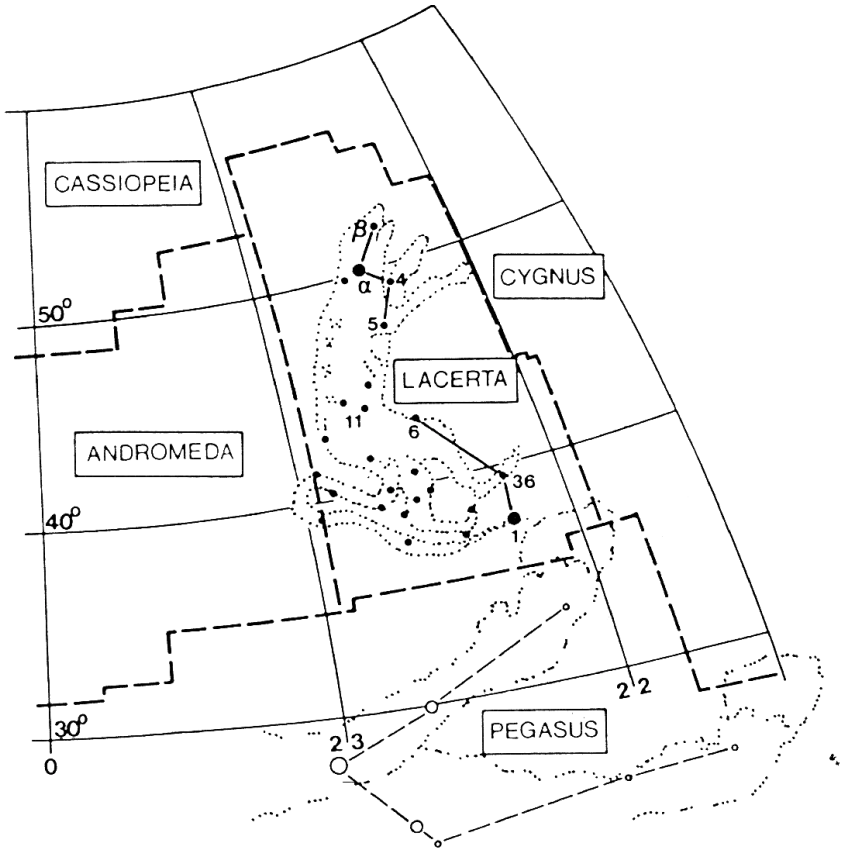
IC5217 shows as a strange planetary nebula with long, thin, narrow wisps of nebulosity running North and south from the centre. It is Mag 12.5 and the central star is a Wolf-Rayet type. Burnham's says it has a diameter of 8" x 6" with a 14 magnitude O-type central star.

NGC 7296 is described in my notes as a nice, triangle shaped grouping of stars with one bright member. It is an open cluster with a diameter of about 4 minutes of arc.

NGC7243 is another open cluster showing as a big, bright, splash of stars. Burnham's says it is large, 20 arcmin in diameter, containing 40 stars, loose and only a little condensed.

NGC7245 is an open cluster described in my notes as a very obscure group of stars in the Milky Way. Burnham's says it is small and rich with 50 very faint stars, and having a loose structure with a diameter of 3 arc minutes.

NGC 7209 is an open cluster that for some reason I did not observe, but according to Burnham it is large, rich, 20 arc minutes in diameter, and containing about 50 stars between 9th and 12th magnitudes.



Lacerta contains one newly-designated stellar grouping. David Levy reported in the May/June 2000 issue of Sky News that a small, faint ring-like grouping of 12th and 13th magnitude stars is now officially known as Levy-Wallach J2204.4+4509, with the nickname of Wendee's Ring. The number designation gives us the celestial co-ordinates of Wendee's Ring: R.A. 22h 4m, Dec. +45° 9m. These are faint stars for my eight inch SCT but definitely worth a look.

So, laugh no more! Get out your telescopes and observe the Stellion's star-rich region of the Milky Way. There's much more to the celestial Lizard than first meets the eye.

Lacerta, or Stellion, as initially conceived by Johannes Hevelius as a weasel-like creature with a long, curly tail. It looks more like a small mammal than a lizard. From "The New Patterns in the Sky - Myths and Legends in the Stars" by Julius D. W. Staal.

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THE LEONID METEOR SHOWER 2000

BY MICHAEL BOSCHAT

Well, as I watched the weather satellite images on November 16 they were not looking very good clouds and showers giving us about 2 weeks of very poor weather, was there any hope of seeing the Leonids? During the day of the 16th the forecasts changed to clear skies. "Hmm...clear skies?" I decided to wait till about 7 pm and if it looked good to bike with camera and tripod to Dal and do an all nighter. It was looking ok, so off I went, and arrived at Dal in 10 minutes. I set the camera up on the roof and watched as the sky for the so-called "grazer" meteors. These were the ones that appear as the radiant is on the horizon and thus the meteors come in the atmosphere straight on producing bright fireballs. Well, I saw none and began firing off
30 second exposures of the Jupiter/Saturn area.

After a 1/2 hour I saw clouds fast approaching and in 10 minutes the sky was completely overcast. I waited for a bit and the sky did not want to cooperate, so I left after 2 hours and arriving back home I saw that the clouds were again parting for semi-clear skies. I went on the balcony and made some visual observations but saw nothing from 10 pm till midnight only cloud coming in again. But I was hearing meteors all that time so I knew it was going on and as the night went on my count went up.

The next day, the 18th was again not looking good for anything and I was still up listening to the Leonids but stopped by 8 am, my ears were hearing just "PINGGGGG... PINGGGG" and all day I was hearing that in my head! So watching the forecasts again it called for clearing, "Hmm...ughhh..not again." I was thinking. So, I figured may as well eat something, at 5 pm I had a chicken cold cuts and watched TV. I saw the clouds still there and the 1st peak this night was to occur about midnight, so at 9:30 pm I logged on to look at email. When I got really sweaty and felt like passing out, I shut the computer off and crawled onto the bed, the meteor radio was still on as I laid there not wanting to move.

I fell asleep and woke up an hour or so later, I slowly could hear the meteors on the radio but my head and stomach were feeling lousy, I went out on the balcony to get some air and saw it was clear, looking up at Jupiter a -4 red Leonid appeared! I thought to heck with my stomach and grabbed the camera set it up and began taking 30 second exposures. Again clouds appeared! I took the camera in till they passed and started over again. About 3-4 am it clouded over and we had a brief shower, so I figured that was it and just listened to the meteors. It again cleared and this was getting to be annoying, cloud, clear, cloud, clear..So the next clear time it stayed clear but was damp and to me a bit hazy looking. I began to see Leonids from my limited area of sky and after 3 rolls of film nothing, on the 4th roll I had 3 Leonids go through the area I was shooting but the first two were faint being about -1 each and I just went to my next exposure, I had just opened the shutter and was counting 1001..1002..when at about 10 count a -4 red fireball went in the area. I quickly stopped the exposure and looked through the viewfinder, "Shoot it's a miss." I thought and was ready to rip the film out and put a new one in when I remembered that what you see in the viewfinder is smaller than what you get on film, may be was lucky? I rewound the film and kept it. A good thing to, the fireball was seen on the print and also another fainter meteor was in the same location earlier!

I was ecstatic...what I missed at St. Croix in 1998 with the ripped film, and in 1999 with that fireball miss in Orion the light polluted city gave me three meteors, go figure.

I have included my data for the nights of November 16/17 radio only and November 17/18 both radio and visual.

November 16/17, 2000 Radio Leonids

LEONID RADIO OBSERVATIONS

Observer: Michael Boschat
Location: Halifax, Canada (63 36'W, 44 39'N, 58 meters above sea level)
Listening Frequency: 83.24 MHz
Receiver: Icom R-10
Antenna : resonant dipole
Antenna Direction: Horizontally polarized with lobes in E-W plane, elev 0
deg
Filter : high-Q (Q at least 300) bandpass filter between antenna & receiver.
Listening Mode: CW
Recording method: listening by ear

Leonids heard per hour on Nov.16/17

UT	#/hr
12 =	14
13 =	-
14 =	21
15 =	9
16 =	8
17 =	9
02 =	2

03 = 9
04 = -
05 = -
06 = 19
07 = 103
08 = 230
09 = 108
10 = 33
11 = 20

November 17/18, 2000 Radio & Visual Leonids

VISUAL

UT	Number Obs. Leonids	Average Magnitude
0500-0600	9	-1.1
0600-0700	11	-0.7
0800-0900	12	-0.3
0900-1000	6	+0.3

Magnitude Range

magnitudes	# Leonids
+2	1
+1	13
+0	0
-0	1
-1	12
-2	8
-3	1
-4	0
-5	1

Leonid Colours

Red Blue Blue-White White

Number Leonids leaving trails +/- 1 second duration = 3

LEONID RADIO OBSERVATIONS

Observer: Michael Boschat
Location: Halifax, Canada (63 36'W, 44 39'N, 58 meters above sea level)
Listening Frequency: 83.24 MHz
Receiver: Icom R-10
Antenna : resonant dipole
Antenna Direction: Horizontally polarized with lobes in E-W plane, elev 0
deg
Filter : high-Q (Q at least 300) bandpass filter between antenna & receiver.
Listening Mode: CW
Recording method: listening by ear

Leonids heard per hour on Nov.17/18

UT	#/hr
00 =	8
01 =	5
02 =	7
03 =	10
04 =	58
05 =	128
06 =	---
07 =	219
08 =	149
09 =	99

Michael Boschat Ω

TREASURER'S REPORT BY DAVID LANE

1999/2000 has been another good financial year for the Halifax Centre and a routine one for its treasurer (I have now completed three years as your treasurer). At our September 30th year-end, we had a surplus of $1990.87.

Membership levels were similar to previous years, however, we did loose a few members this past summer due to transfers to the new Moncton and Charlottetown Centres. At year-end our membership stood at 164 members. Its puzzling why our centre is not growing — the total national membership is now over 4500 and has been growing steadily during the last several years.

Two large expenditures were capitalized this year. First, a cart to house most of the centres library and make it easily accessible at meetings was built by Steve Tancock at a cost of $356.20. This was recorded as part of our library assets.

Second, in contrast with past accounting practices, the construction costs of the new washroom and storage shed at St. Croix (which by year-end totalled $3364.66) was recorded as a capital asset. I decided to capitalize this expenditure, rather than show it as an expense for the current year, because this structure and its contents could be easily moved to a new site, should that ever become necessary, without any loss of its value. Observatory capital expenditures that were expensed this year included a kitchen cabinet, which was installed in the warm room and a solar charge controller.

One new expense this year was the property taxes ($24.36) for the St. Croix Observatory — seems after several years, they have finally found us

And finally, counting the observatory, we are now worth (at least on paper) $37,476.82 and have no liabilities. In the past 10 years our equity has increased by $28,855.66!

Respectfully submitted,

Dave Lane, Treasurer

Details of the 1999/2000 Income Statement

REVENUES:

Membership Fees $2457.35: Membership fees were up slightly from last year.

Life Members Grant $446.40: Our grant from National Office was up by

one member this year, now equalling 31 life members.

Donations and Observatory Donations $372.69: The centre received these generous donations from its members.

Interest $107.44: 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. Our bank account earns little interest.

Handbook Sales (net) $232.43: Handbook sales were up slightly over last year.

Sales of Merchandise (net) $364.51: Merchandise sales were down from last year. Sales were realized mostly from Observer's Calendars.

Nova East (Net) $474.45: Nova East profits were down over previous years despite a record attendance. This was a conscious decision of the organising committee to increase participation. 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 $1,010.33: $145.28 was spent on our meeting treats and meals for out-of-town speakers. Nova Notes cost us $389.76 to print and $475.29 to mail to our members.

Office Administration $103.74: This includes the cost of postage for routine correspondence ($20.94) and the rental or post office box ($82.80).

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

Insurance $500.00: This is entirely the insurance for the observatory.

Observatory - Operating $434.54: This figure includes the $1 land lease paid in April and some operating expenses such as propane for the stove and furnace and bug spray! Two items related to ongoing construction included a kitchen counter and solar panel charge controller. For the first time we had to pay property taxes which amounted to only $24.36. Capital spending that has been expensed on the observatory has totalled $19,584.01 since the project was started in the spring of 1996.

Details of the 1999/2000 Balance Sheet

ASSETS:

Cash $1896.18: This represents the cash balance at the Toronto Dominion Bank in Halifax on September 30, 2000 (but not including the profits from Nova East attributed to the Minas Astronomy Group and the Nova Central Astronomy Club, see below).

Cash – Nova East Profits $316.30: This represents two-thirds of the profits from the 2000 Nova East which is 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 $680.18: This represents cash and cheques that were on hand but not deposited at year-end.

ROYAL ASTRONOMICAL SOCIETY OF CANADA, HALIFAX CENTRE
COMPARATIVE INCOME STATEMENT FOR 1998/1999 AND 1999/2000 MEMBERSHIP YEARS

	YEAR Oct 1999 - Sep 2000	YEAR Oct 1998 - Sep 1999	Increase over 1998/1999
REVENUE			
Membership Fees	$2,457.35	$2,076.12	$381.23
Life Members Grant	$446.40	$432.00	$14.40
Donations and Obs. Donations	$372.69	$71.96	$300.73
Interest	$107.44	$80.85	$26.59
Handbook Sales (Net)	$232.43	$198.85	$33.58
Sales of Merchandise (Net)	$364.51	$598.03	-$233.52
Nova East (Net)	$474.45	$658.02	-$183.57
Miscellaneous	$0.00	$0.00	$0.00
Total Income	**$4,455.27**	**$4,115.83**	**$339.44**
EXPENSES			
Meetings & Newsletter	$1,010.33	$1,039.82	-$29.49
Equipment & Supplies	$0.00	$0.00	$0.00
Office Administration	$103.74	$48.64	$55.10
Legal Expenses	$25.00	$25.00	$0.00
Educational Activities	$0.00	$0.00	$0.00
Insurance	$500.00	$500.00	$0.00
Awards & Donations	$0.00	$50.00	-$50.00
Observatory - Operating	$434.54	$575.04	-$140.50
Miscellaneous Expenses	$390.79	$0.00	$390.79
Total Expenses	**$2,464.40**	**$2,238.50**	**$225.90**
NET INCOME	**$1,990.87**	**$1,877.33**	**$113.54**

Accounts Receivable $244.00: As of September 30, 2000, the Nova Scotia Government Bookstore owed us $45 and a member owed us $32.40.

Merchandise Inventory $1423.45: This consisted of 24-T-Shirts, 26-BOGs, 81-2000 Calendars, 45-centre Pins, 5-bumper stickers, and 8-Star chart place mats.

Investments $2,000.00: The Halifax Centre holds a money market account with the Toronto Dominion Bank.

Accrued Interest $453.06: 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 from the last quarter of this year since it was not known at the time that this report was prepared. It will be included in the 2000/2001 financial year.

Estimated Library $2,985.70: Our library's value is probably an estimate of all money spent there since the beginning. There were no book additions to the library this year, however $356.20 was spent on materials to build a new portable library cart.

Observatory Equipment $7,608.00: This year $378.63 was spent to purchase more parts to build the new 17.5-inch telescope for St. Croix. Most of the parts to build this telescope are now in hand and safely stored in two members' homes. It is hoped that this winter it will be actually built. As of the end of the fiscal year, $3,364.66 was spent to build a washroom and storage shed at St. Croix.

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.

ROYAL ASTRONOMICAL SOCIETY OF CANADA, HALIFAX CENTRE
COMPARATIVE BALANCE SHEET FOR 1998/1999 AND 1999/2000 MEMBERSHIP YEARS

	YEAR Oct 1999 - Sep 2000	YEAR Oct 1998 - Sep 1999	Increase over 1998/1999
ASSETS			
Cash	$1,896.18	$5,413.94	-$3,517.76
Nova East Profits (MAG/NCAC)	$316.30	$0.00	$316.30
Undeposited Funds	$680.18	$70.00	$610.18
Accounts Receivable	$77.40	$244.00	-$166.60
Handbook Inventory	$0.00	$0.00	$0.00
Merchandise Inventory	$1,423.45	$979.33	$444.12
Investments	$2,000.00	$2,000.00	$0.00
Accrued Interest	$453.06	$351.21	$101.85
Estimated Library	$2,985.70	$2,629.50	$356.20
Observatory Equipment	$7,608.00	$3,761.22	$3,846.78
Estimated Miscellaneous	$452.54	$452.54	$0.00
Total Assets	**$17,892.81**	**$15,901.74**	**$1,991.07**
LIABILITIES			
Accounts Payable	$0.00	$0.00	$0.00
Est. Handbook Payable	$0.00	$0.00	$0.00
Fees owed to National Office	$0.00	$0.00	$0.00
Other Liabilities	$0.00	$0.00	$0.00
Total Liabilities	**$0.00**	**$0.00**	**$0.00**
EQUITY	**$17,892.81**	**$15,901.74**	**$1,991.07**
Observatory Investment to Date	**$19,584.01**	**$19,266.02**	**$317.99**

LIABILITIES:

The Halifax Centre has no liabilities. Ω

MERCHANDISE SALES REPORT FOR 1999-2000
BY IAN ANDERSON

Our merchandise sales for 2000 was $1945.00 which was undoubtedly our slowest year in a long time. Again this year, no sales targets or major initiatives were in effect. I believe that beyond annual printed items such as Calendars and Observers Handbooks, we have saturated our markets with our traditional fare.

Overall sales were down from 1999 in nearly every category. According to our treasurer, net profits came in at only $596.94 in fiscal 2000. I can think of no miscellaneous revenue sources this year, but Dave Lane could prove me wrong if he knows something I don't.

We used discounts to sell to our retailers, or to get the slow moving stuff out of inventory. We surrendered about $600.00 worth of discounts and write-offs this year. Speaking of slow moving, we wrote off the remaining stale 3r^{d} edition of the BOGs which we were saddled with at this time last year. We now have 26 of the new 4th edition BOG's which are – you guessed it – slow moving as well. We also had to return 23 unsold 2000 Observers Handbooks to National Office for credit.

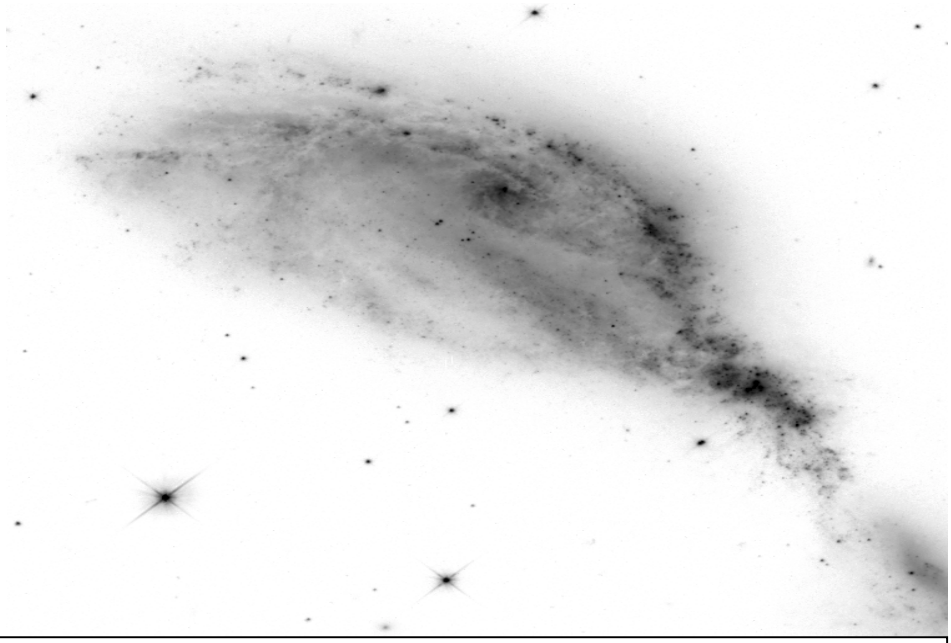
Sales of T-shirts, and non-printed items remain slow. Inventories of these will remain indefinitely at current sales rates. For 2000, sales of calendars moved well.

We easily sold the 101 shipped to us before the end of the previous fiscal year. It was one of the few highlights of the past year for merchandising.

This will be my second and last year as your 2nd Vice President of Merchandising. I will be surrendering the position to David Croston. I would again recommend that the board discusses short term and mid-term financial requirements, set revenue and sales targets, come up with a new line of merchandise, and to not over-inventory in case we get stuck again with unsold volumes of printed matter and clothes.

Seasons Greetings and best wishes for 2001.

Ian Anderson Ω



A Hubble Telescope image of NGC 6745 .

WHAT'S UP
BY SHAWN MITCHELL

December

Thursday 14 Geminid Meteor Shower ZHR 95.

Thursday 21 Winter Solstice

Monday 25 Christmas Day Partial Solar Eclipse ~58% eclipsed, at 18:00 UT.

Sunday 31 Last day of the 20th Century.

January

Wednesday 3 Quadrantid Meteor Shower.

Tuesday 9 Full Moon and Total lunar eclipse.

Wednesday 17 Venus at greatest eastern elongation 47 degrees.

Thursday 25 Both Jupiter and Saturn will be statonary.

Sunday 28 Mercury at greatest eastern elongation 18 degrees.

February

Friday 2 Saturn 2 degrees north of the moon.

Wednesday 7 Moon at Perigee

Thursday 8 Full Moon, largest of 2001

Sun 11 Start watching for the Zodiacal light after the end of evening twilight for the next two weeks.

Thursday 22 Venus at Perihelion, and greatest brilliancy.

NOTICE OF MEETINGS AND EVENTS

REGULAR MEETINGS

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

Place: Room L176 of the Loyola Building, Saint Mary's University. Access is from the parking lot behind the McNally building on Robie Street.

Speaker: **David Turner**, Saint Mary's University

Topic: **The Star of Bethlehem: New Ideas on an Old Problem.** The problem of the celestial origins for the story of the Star of Bethlehem is two millennia old, and yet natural explanations for the "Star" continue to be generated by astronomical and historical enthusiasts. Have we inched any closer to a final solution to the riddle, or have we simply overlooked an obvious answer?

Date: **Regular Meeting— Friday, Jan 19 at 8pm**; 7pm for the council meeting.

Place: Room L176 of the Loyola Building, Saint Mary's University. Access is from the parking lot behind the McNally building on Robie Street.

Speaker: **TBA**

Topic: **TBA**

BECOME A ST. CROIX OBSERVATORY KEY HOLDER

For a modest key fee, members in good standing for more than a year who have been briefed on observatory can gain access to the centre's new Observatory, which is nearing completion. To become a key holder, contact Observatory Committee Chair.

JUST WHERE IS THE ST. CROIX OBSERVATORY?

The Centre's Observatory is located in the community of St. Croix, Nova Scotia. To get there from Halifax (Bayers Road Shopping Centre), follow these simple instructions.

1. *Take Hwy 102 (the Bi-Hi) to Exit 4 (Sackville).*
2. *Take Hwy 101 to Exit 4 (St. Croix).*
3. *At the end of the off ramp, turn left.*
4. *Drive about 1.5km until you cross the St. Croix River Bridge. You will see a power dam on your left.*
5. *Drive about 0.2km past the bridge and take the first left (Salmon Hole Dam Road).*
6. *Drive about 1km until the pavement ends.*
7. *Drive another 1km on the dirt road to the site.*
8. *You will recognize the site by the two small white buildings on the left.*

HALIFAX CENTRE EXECUTIVE

2001 HALIFAX CENTRE EXECUTIVE

Honorary President	Dr. Roy Bishop	
President	Dr. David Tindal	4557456
1st vice-president	Pat Kelly	798-3329
2nd vice-president	David Croston	
Secretary	Steve Tancock	465-4092
Treasurer	David Lane	826-7956
Nova Notes Editor	Mike Gatto	
National Representative	David Lane	826-7956
Librarian	Dr. Michael Falk	422-5173
Observing Chairman	Paul Evans	423-4746
Councilors	Clint Shannon	889-2426
	Dave Chapman	463-9103
	John Jarvo	897-0529