

# NOVA NOTES

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THE NEWSLETTER OF THE HALIFAX CENTRE OF THE RASC  
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## PRESIDENT'S REPORT:

BY DAVID CHAPMAN

Hey! Didn't I do one of these just last week? Time seems to be just slipping by this spring. I was sorry to miss Comet Night in May ... I guess I'll have to borrow that Comet Odyssey video from Dave Lane sometime. By all accounts (a report of the meeting is elsewhere in this issue) everything went well and Clint capably filled my shoes in my absence. You will note that Clint is clawing his way to the top of the organization, starting in the time-honoured position of Librarian, today Centre Ferengi, tomorrow...?

The hot news last month was the vandalizing of the St. Croix Observatory. (Yes folks, the name is official now.) No permanent damage or loss was suffered, but security has been beefed up and there was a short but lively debate on the Halifax Discussion Group listserv regarding security, insurance, etc. Shawn learned how to spell "vandal" and I learned how to spell "deductible".

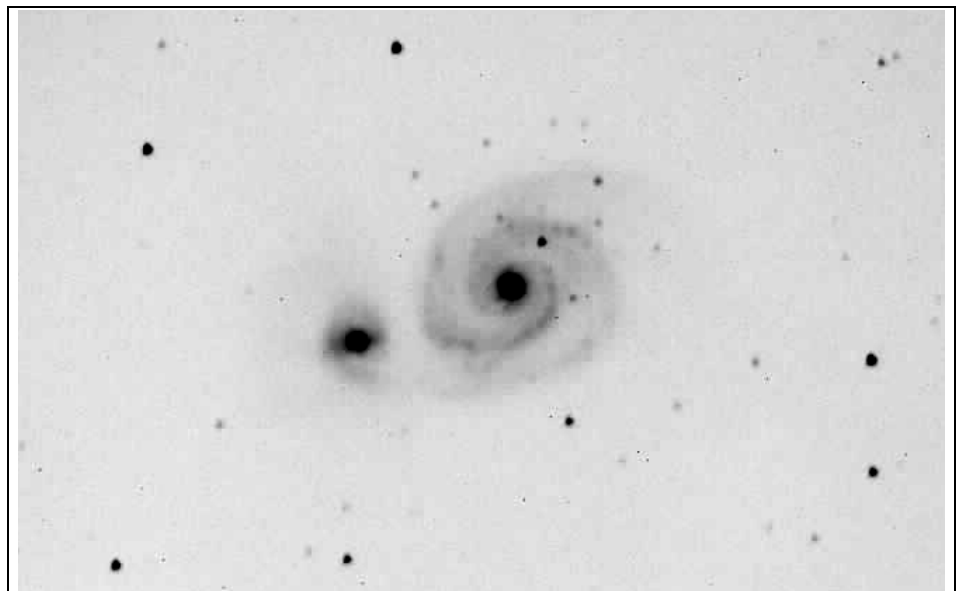
By coincidence, Shawn also generated and broadcast an observatory use policy. I won't go into the details here, but I do recall something about signing a contract in blood and forfeiting your first-born

# St. Croix Observatory Official Opening Saturday, June 21<sup>st</sup> (see page 6)

child if you lose your key. (Actually, it is not as bad as all that. Shawn will be happy to explain it all to you. Just remember, we know where you live...)

A brief word on upcoming meetings and events: On June 20th, we will all be bursting to hear from Dr. Leslie Sage (an editor of the prestigious journal *Nature*) about Gamma Ray Bursters. The following day, which happens to be the Summer Solstice, is the official opening of the

St. Croix Observatory, including special guests and speeches by important dignitaries. (ahem) More importantly, we are having a bring-your-own, pot-luck Star-B-Q. (See elsewhere this issue for the details.) The eagerly anticipated review of cosmology by Roy Bishop and Pat Kelly has been postponed to the September meeting, allowing them to include late-breaking developments in the history of the Universe, Life, and Everything.



**ASTROPHOTO OF THE MONTH - M51**

BLAIR MACDONALD TOOK THIS IMAGE OF M51, THE WHIRLPOOL GALAXY FROM HIS BACKYARD IN HALIFAX. IT WAS A 5 MINUTE EXPOSURE USING HIS MEADE 416XT CCD CAMERA COUPLED TO HIS 200MM MEADE SCHMIDT-NEWTONIAN TELESCOPE.



**NOVA NOTES**, 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 **August 1<sup>st</sup>, 1997**. 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:

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The June 20 meeting completes our meeting season, after which we take a summer break that ends with *Nova East* on Labour Day weekend. However, there will be a few other events during the summer.

Boardwalk observing on the waterfront was such a big hit last year, we are doing it again. The dates are the first clear nights of 8-10 July and 5-6 August. The location is on the boardwalk behind the Maritime Museum of the Atlantic. Come help show the Moon and the stars to the public!

As I said, *Nova East* will be on Labour Day weekend at Fundy National Park (see the flyer included with *Nova Notes*). By registering ahead of time, you can actually reserve a camping spot in a National Park on a holiday weekend. Bonus!

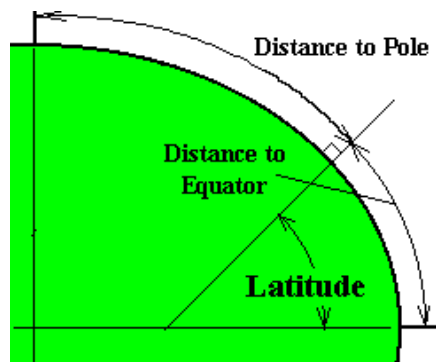
For those that can't wait, New Brunswick Astronomy's *Astro Atlantik* is July 4-6 at the same park. (OK, I give up, what's with the "k"? (*The "k" is a compromise between the English "Atlantic" and the French "Atlantique" - Ed*)

Due to work commitments, I will not be available (again) to preside at the June meeting, but Blair McDonald has kindly agreed to quell the unruly mob .... er, I mean, look after things that night. However, I should make it back in time for the Star-B-Q, so I will see you all there. I'll be the one wearing the bug shirt. What, me worry? Ω

### MIDWAY FROM THE EQUATOR TO THE NORTH POLE:

BY ASSEMBLED BY LARRY BOGAN FROM INFORMATION PROVIDED BY SHERMAN WILLIAMS

Recently, there was a small controversy in the Nova Scotia media about the correct location of a monument near Stewiacke, Nova Scotia. In the 1930's, the marker was erected to indicate one place in Nova Scotia that is midway between the North Pole and the Equator. That marker is north of the 45th parallel and some people felt that it was at the wrong place.

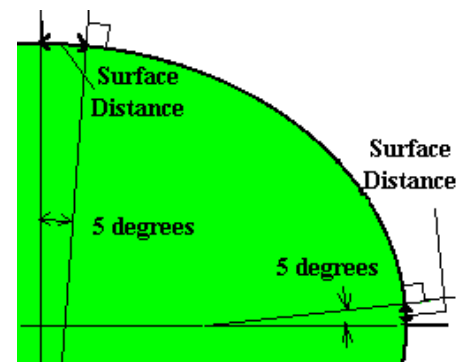


The controversy occurs because the midway point can be defined in a couple of ways. The first and simplest definition is a point on the 45th parallel. This latitude is halfway between the equator at 0°N latitude and the North Pole at 90°N latitude in angle only. The other method is to use

the distance along the surface of the Earth between the two limits. If the Earth were a perfect sphere, then 45°N latitude would also be midpoint as specified by this method.

The Earth is, in reality, an oblate spheroid because the Earth's rotation causes it to bulge at its equator and flatten at its poles. The local latitude is determined by the angle between a plumb bob and the equatorial plane of the Earth. A plumb bob hangs perpendicular to the surface. As you can see in the image below, the plumb bob in this case does not point at the center of the Earth. If that latitude were 45°N, then the location of that point on the Earth will be closer to the equator than the North Pole.

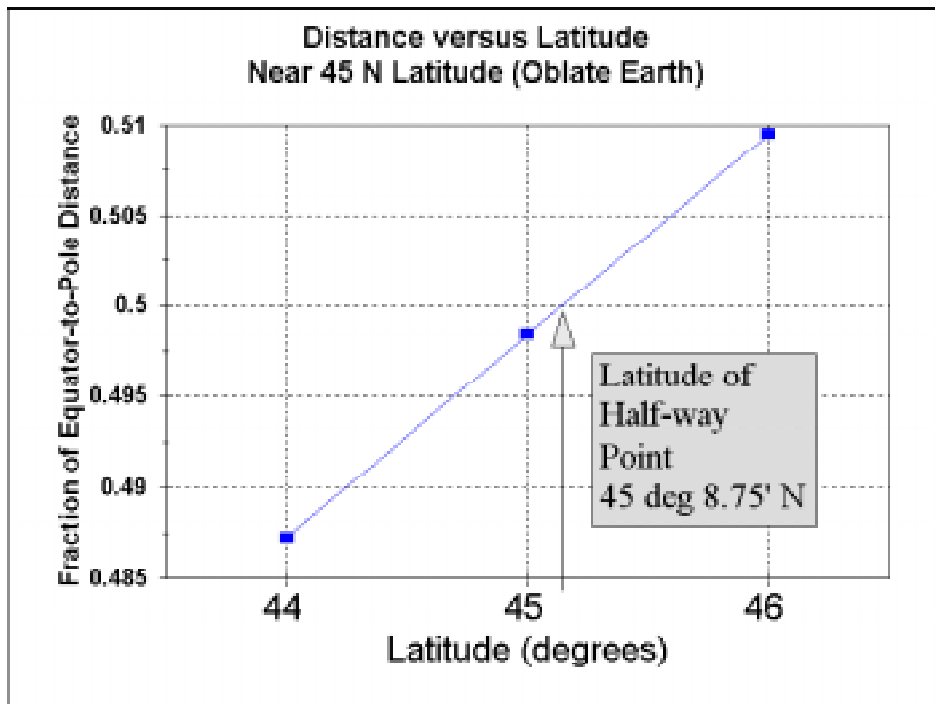
The distance along the surface of the Earth for a given change in latitude varies with the latitude. Near the North Pole, the Earth's curvature is smaller than near the equator. As a result, the distance required to change the latitude by one degree at the North Pole is larger than that distance to change by the same latitude near the equator. This is because the radius of the surface at the poles is larger than the same radius at the equator.



The Observer's Handbook gives the relationship to calculate the distance required to change one degree of latitude at any latitude. (see p. 22 of the 1997 Observer's Handbook).

$$\text{Distance between one degree of latitude (in km)} = 111.133 - 0.559 \times \text{Cos}(2 \times \text{latitude})$$

A summing of the distances for each degree of latitude allows one to calculate the fraction of the distance



between the equator and pole for every degree of latitude. The results are shown in the graph above for just the latitudes near 45°N. Note that half way is not at 45°N but slight north of that parallel. Half way is determined to be at about 45° 8.65' of latitude.

Below is a map of central Nova Scotia showing 45°N latitude as well as the parallel (45° 9' N) on which you will be half way between the Equator and the North Pole. Some local communities that lie on or near that line are Harbourville and Sheffield Mills. The line is just north of the town of Canning. Ω

### MEETING REPORT:

APRIL 1997

BY MARY LOU WHITEHORNE

April's meeting had three distinct phases. **Phase one** convened around the dinner table at McKelvies Restaurant where several of the Centre's members plus our guest speaker attempted to stuff themselves. I am happy to report that this phase of the meeting was a success.

**Phase two** took place at the Nova Scotia Museum of Natural History.



8:05 PM and the Command Team was still fumbling about at the front of the room while the congregation rumbled with conversation. We're off to a good start... 8:06 PM and El Presidente Chapman called the room to order and opened the meeting with the usual ramblings and announcements. Then, with nothing more than a snap of his commanding fingers, several appointed ones rose to their feet, one after the other, in perfect order, to deliver the following reports:

**What's Up** - Shawn Mitchell: Comet Hale-Bopp, the Moon, the Sun, the stars, meteors, planets, the same old stuff that's up there most every night. We were instructed to forget about the Eta Aquarid Meteor shower on May 4.

**Lunar Graze** - Dave Lane aka ECU: reported on the Lunar Graze expedition of last Saturday night in the wilds near Tatamagouche. It had nothing to do with cows munching on the Moon.

Surprise, surprise: Prezidente Chapman called **Heather Cameron** to the front of the room. Then he called RASC National President Doug George to the front of the room. What's this? Oh, not much, just Doug George announcing that Heather is the recipient of the **Ken Chilton Prize**. He read the citation that National Council did not dare to dispute, and invited Heather to come to the 1997 General Assembly in Kingston this summer to receive her award. She seemed a little surprised by the whole thing. Nobody else was surprised. Must be something to do with the doctored version of *Nova Notes* that she got in the mail while the rest of us knew about all this long ago.

**The Ferengi Moment** - Darrin Talbot & Dave Lane: The Dedicated Duo took the floor to flog the comet photos they have for sale. Sales to date are on the order of \$1400. All proceeds go to the Observatory Fund.

**Annual Treasurer's Report** - Ian Anderson: Ian holds the Centre's most thankless position; that of having to balance our books. He presented the figures for 1996 with grace and aplomb in spite of having been attacked by an auditorium chair earlier in the evening. Revenue was

around \$12,000 and expenditures around \$14,000 giving a deficit for the year on the order of \$2000. Since we built an observatory this state of financial affairs came as no surprise to most of us. Chapman asked that the membership accept Ian's report; so moved by Dave Lane, seconded by yours truly, motion carried. We all kow-tow to Ian's financial prowess. The Universe is unfolding as it should.

**Main Event** - Doug George, National President of the RASC and co-discoverer of Comet Skorichenko-George: CCD Astronomy!

Hmmm... how very odd, he started with a slide of Hale-Bopp taken on photographic emulsion! But then he got to the good stuff - everything you ever wanted to know about CCD astronomy. Doug's talk was beautifully illustrated with fine examples of many different kinds of astronomical objects. Recent years have seen great improvements in film technology, particularly in the advent of fine grain, high speed emulsions with good colour balance. We were treated to a well organized discussion on the advantages of film over CCD's and CCD's over film; a quick description of how the CCD chip works and how it is read out to a computer, an overview of a general telescope-plus-CCD set-up; the need for guiding on long exposures; imaging and guiding with CCD's; and how the CCD works as opposed to how film works. Doug presented a balanced comparison of the two media with regards to resolution, sensitivity, linearity of response to light, scale, colour balance and quantum efficiency. Image processing was mentioned briefly for both CCD and photographic imaging. The talk

wrapped up with some photographic images that had been subjected to the same sort of image processing techniques that are common in CCD work, with wonderful results.

I wonder how many new CCD cameras will materialize in the dark at St. Croix in the near future? He made it all look so easy...

**Apré Main Event** - Dave Lane (again!): ECU took to the floor once more and showed a short video of the March 23rd Lunar Eclipse, taken from the Burke-Gaffney Observatory.

Presidente Chapman declared the meeting closed at 9:50 PM and invited everyone to partake of the goodies prepared for us by our faithful friend Ralph Fraser.

**Phase three.** Aha! I'll bet you forgot that the meeting had three distinct phases! The third phase took place around the table at Hogies, where once again, a number of our members challenged themselves with yet more food.

Naturally, phase three was an outstanding success. We are all looking forward to May for the next meeting of the Halifax Centre of the Royal **Gastronomical** Society of Canada, when we will imbibe of comets.  $\Omega$

## MEETING REPORT: MAY 97

BY LARRY BOGAN

There was a full house on meeting night with some people standing for awhile in the isles, waiting to see photos of comets and a video about the filming of a comet. Clint Shannon, substituting for our esteemed president, welcomed members and visitors before giving

the announcements. Clint, true to his position as 2nd Vice President showed polished salesmanship when he displayed samples of the goodies available from the merchandising arm of our great organization.

You can get T-shirts in all sizes, Beginner's Observing Guides in one size, and the world famous Observer's Handbook not to mention prints of Comet Hale-Bopp (The details have been displayed in the last issue of this newsletter). Funds from the sales of the latter are ear-marked towards building a large telescope for the Centre. Clint must have impressed many people because they kept Dave Lane and Darren Talbot busy selling pictures during the refreshment and gossip period after the meeting.

**Other announcements:** The picnic for the opening of the 'no-name' observatory is on June 21 at St. Croix and sidewalk observing in Halifax is in the July 8-10 period. (Every one was very careful not to bias the membership in advance of discussions of the name for the --- Observatory.)

Mary Lou Whitehorne, announced that Mary Fraser, had donated three books to our Centre Library from the library of Nat Cohen. Two were on astro-photography and will be of interest to budding photographers.

Shawn Mitchell, as observing chairman, quoted from the astronomy bible (Observer's Handbook) as to what Mars, Jupiter, (Venus?), and the Moon were doing this month. A geomagnetic storm caused an aurora across North America on the morning of the 16th. Although we could not see it through the clouds that covered the sky, these phenomena should become more frequent as the solar sunspot cycle moves away from its

Cartoon (not available in the on-line version of Nova Notes)

current minimum. The Mir and Space Shuttle will be visible in the next few weeks.

Vandalism has occurred at the 'no name' observatory. The door knob was knocked off the roll-off roof observatory but nothing else was damaged or taken. Sturdier dead-bolt locks have been purchased and installed. As a result of the change, all old keys should be turned into to Shawn. Keys that fit the new locks will require a non-refundable deposit of \$5. A new policy has been adopted by the executive with regard to who may have a key: 1) The person must be a member who has been checked out for proper operation of the observatory. 2) They must have been a member for over one year OR must be vouched for by a member holding a key and the observing chairman.

Paul Gray announced *Nova East* to be in its 11th year and will occur August 28-September 1 at Fundy National Park. (See the flyer included with this issue for more details)

**The Video "Comet Odyssey":** The Main Event of the evening was the showing (with permission) of the video "Comet Odyssey" with Peter Ceravolo, Doug George, Paul Boltwood, and Glenn LeDrew — all of the Ottawa Centre

The plot is as follows: Peter C sees a short motion picture of motion of a comet through the stars. He then builds a special camera to make movie of Comet Hyakutake. Peter recruits Glenn LeDrew, who has more experience with astrophotography, and Doug George to help process the photos into video format. Paul Boltwood is included to image the comet with his CCD camera. The group realize that there will not be enough clear nights in Ontario to accomplish their objective of at least a week of continuous imaging.

A group decision is made to move the operation to Arizona which has a much better chance of having more than one night of clear skies! With the help of friends in Arizona, the point of operation is placed in the Chiricauha Mountains east of Tucson in a National Park parking lot.

There were many difficulties to overcome: imaging for every 4

minutes for 10 hours every night for 10 nights; developing the film every other day in Tucson (2-1/2 hours drive away); sleep deprivation; slightly out of focus stars with no time to do focusing runs; 900 images collected over 10 nights have to be scanned and processed to produce a smooth motion picture with each frame having as similar in background as possible.

The result is a short 1-1/2 minute movie that ended all too soon. However, the changing details shown are by far better than any other existing record. A movie is also made with the 1000+ images taken with Paul's CCD camera, but of the jets near the nucleus of the comet instead of the comet's inner tail as was the case with Peter's movie. In this animation, the rotation of the comet's head and the evolution of the jets can clearly be seen.

The movie has been shown at many places and is available commercially. It can be ordered from the National Museum of Science and Technology in Ottawa for \$37.50. (See the inside back cover of your latest 'Sky News'.) The movie has been praised by professional astronomers. The passing of Hyakutake so close to the Earth is a once-in-a-lifetime event and we are lucky to have had it captured in this video. If you haven't seen it, you should purchase it the next chance you get!

**Hale-Bopp Slides:** Several astrophotographers showed the results of their efforts on the comet of 1997. Mary Lou Whitehorne, Roy Bishop, Dave Lane/Darren Talbot, Barry Burgess, and a non-member whose name I did not get. I can not do justice to these photos by describing them, you would have to see them for yourselves.

Roy had very interesting comparison between Hale-Bopp and Hyakutake. He showed us photos of each taken with the same camera, lens, type film and approximately the same exposure. Hyakutake was by far the bigger event in the sky but Hale-Bopp had the brighter tail. Where Hyakutake had a long, faint gas tail; Hale-Bopp had a shorter but very

bright dust tail. Roy also showed images Hale-Bopp taken from March 1 to May 5. This sequence showed the evolution of the dust and gas tail very clearly. Initially the gas tail was longer and more interesting but as the comet approached perihelion, the dust tail brightened and the gas tail broadened and became fainter.

The most 'scenic' Hale-Bopp photographs in my opinion were ones by Barry Burgess who not only imaged the comet but put attractive Earth foregrounds in the photos. This was possible because the comet was always near the horizon.

**The Observing Site Name:** The last event of the evening was to agree on the name to use in addressing the 'no name' observatory at St. Croix. There was little argument when it was moved to call it the **St. Croix Observatory** and the motion passed unanimously. Ω

## Radio Astronomy Projects

This book, recently written by member Bill Lonc, will soon be available at the Saint Mary's University Bookstore. The price has not been set yet, but it will likely be about equivalent to US\$20.

**THE DATE OF EASTER:  
SCIENCE OFFERS A  
RESOLUTION OF A LONG  
STANDING RELIGIOUS  
CONTROVERSY:  
PREPARED BY DAVID CHAPMAN**

*[The material in this article is an edited version of a press release from the World Council of Churches dated 1997 March 24.]*

Senior church representatives have come up with an ingenious proposal to set a common date for Easter. At present, churches in the East and West celebrate Easter on two different dates in most years. At a recent consultation in Aleppo, Syria (5-10 March), organized by the World Council of Churches and the Middle

East Council of Churches, representatives of several churches and Christian world communions became convinced a solution to the problem is possible, based on modern astronomical science.

Churches in the East and West calculate the date of Easter by the same principle: This is the one given by the Council of Nicea in 325 which determined that Easter should be celebrated on the Sunday following the first full moon after the March equinox. Differences in dating occur because churches follow different calculations of the equinox and the full moon. The recent Aleppo gathering has proposed that — from the year 2001 — the date of Easter should be calculated using precise modern astronomical determinations. In this way, the Nicea principle will be preserved and neither churches in the East or West will have to change their policy.

Astronomical observations, of course, depend upon the position on Earth which is taken as a point of reference. Therefore, it is proposed that the basis for reckoning be the meridian of Jerusalem, the place of Christ's death and resurrection.

It is suggested that the new method of calculation begin in 2001 when the date of Easter, using the old methods and the new, will be the same: 15 April, and that a common date be kept from then on. [It is a coincidence that the first year of the third millennium happens to be the next time the eastern and western churches celebrate Easter on the same day.] However, before that can happen, churches must consider the proposal and give their reactions. The consultation called on the WCC to

organize a meeting between now and 2001 to receive reports and discuss possible implementation.

The World Council of Churches is a fellowship of churches, now 330, in more than 100 countries in all continents from virtually all Christian traditions. The Roman Catholic Church is not a member church but works cooperatively with the WCC.

*[The above information was found on the world wide web via a link from the page <http://cssa.stanford.edu/~marcos/ec-cal.html>, if anyone is interested in deepening their appreciation of this issue.]* Ω

**THE ST. CROIX  
OBSERVATORY OFFICIAL  
OPENING AND FAMILY  
POT LUCK STAR-B-Q**

**O**n June 21<sup>st</sup>, the opening ceremonies for the Centre's new observatory at St. Croix will be held. The rain date is the next day (Sunday) — call Dave Lane (443-5989) if the weather is "iffy."

We have invited a number of guests including people from Minas Basin Pulp and Power (who own the land we are on), our excavation contractor, the municipal planning officer, etc.

The event takes place at St. Croix (see the back page for directions) beginning at 12 noon with the opening ceremonies beginning at 1pm.

For the pot luck Star-B-Q, we will have gas barbeque space available, so bring your hot dogs, burgers, steaks, etc. We will also provide some

refreshments, paper plates, utensils, cups, napkins, etc. And, there is a rumour that there may also be a special cake to celebrate the occasion.

Please keep in mind that the site is "rustic." There is no running water, no flush toilets, no AC power, etc. We will be attempting to have a "porta-potty" on hand that day assuming the cost isn't too high (but don't depend on it!).

Other items you might want to bring are canoes and bug repellent. Ω

**Nova Notes Editor  
Needed!**

At the end of the year, your editor will be stepping down from his duties as editor of *Nova Notes* after six years at the helm. I've become more involved with the National RASC publications and no longer have the necessary free time.

A good editor would need the following:

1. A reasonably modern computer with access to the internet and a laser printer.
2. Word processing or DTP software and knowledge on how to use it.
3. Reasonable editing and spelling skills.
4. About 3-6 hours every other month to prepare the issue.
5. About 2-3 hours to fold, stuff, and mail the issue to members.

If you are interested, give me a call and I can give you more details.

- Dave Lane (443-5989)

Cartoon (not available in the on-line version of Nova Notes)



## NOTICE OF MEETINGS AND EVENTS

### REGULAR MEETINGS

Date: **Regular Meeting — Friday, June 20 at 8pm**; 7pm for the council meeting.

Place: Lower Theatre, Nova Scotia Museum of Natural History, Summer Street, Halifax. Access is from the parking lot.

Topic: Main Speaker: **Dr. Leslie Sage**, an editor at Nature Magazine. Topic: **“Gamma Ray Bursters”**

### SPECIAL EVENTS

**St. Croix Official Opening and Pot Luck Starbeque** — Saturday, June 21<sup>st</sup>. The rain-date is Sunday, June 22<sup>nd</sup>. See the details on page 6.

**Astro Atlantik** — the annual star party of New Brunswick Astronomy—Astronomie Nouveau Brunswick will be held July 4-6 at Fundy National Park. For information, contact: Adrien Bordage: 506-635-3004 (copies of the registration package can be obtained locally from Dave Lane [443-5989]).

**Nova East** — the Halifax Centre's 11<sup>th</sup> annual star party will be held August 29 to September 1 at Fundy National Park. A detailed flyer with a pre-registration form were mailed with this issue of Nova Notes.

### COMET PHOTOS FOR SALE!

Support the completion of the Centre's St. Croix Observatory. Buy a comet photo today!  
(makes a great gift, too)

See the details in the April issue of **Nova Notes**

## ASTRO ADS

### 6" f8-10 (?) Mirror

Never used, Dates from the early 1970s. Just recently found. Could be made into a good beginner scope.

Asking Price: **Negotiable**

CONTACT: Ed Bezanson (owned by neighbour)  
Phone: 275-4022 (Chester)

### Wanted: 16-18" Truss Tube Dobsonian Telescope

The NBANB (the New Brunswick Association of Clubs) is looking to purchase a telescope like that described above with or without eyepieces? If you have such a telescope to sell or know someone who does:

Contact: Adrien Bordage - Phone: 506-635-3004  
E-mail: [abordage@auracom.com](mailto:abordage@auracom.com)

## JUST WHERE IS THE CENTRE'S CELESTRON C8 TELESCOPE?

Would all members who have Centre equipment out on loan please contact the Observing Chair (Shawn Mitchell at 865-7026). The past Observing Chair has not provided me with a list of members that have Centre equipment out on loan. It has therefore become necessary to post this message asking for the members who have equipment on loan to contact me. Some of the equipment that is currently out on loan, particularly the Celestron C8 telescope, is destined for the St. Croix Observatory. Now that the roll-off observatory is complete, it would be nice to locate some of the equipment there.

- *Shawn Mitchell, Observing Chair*

## 1997 HALIFAX CENTRE EXECUTIVE

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