

NOVA NOTES

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THE NEWSLETTER OF THE HALIFAX CENTRE OF THE RASC
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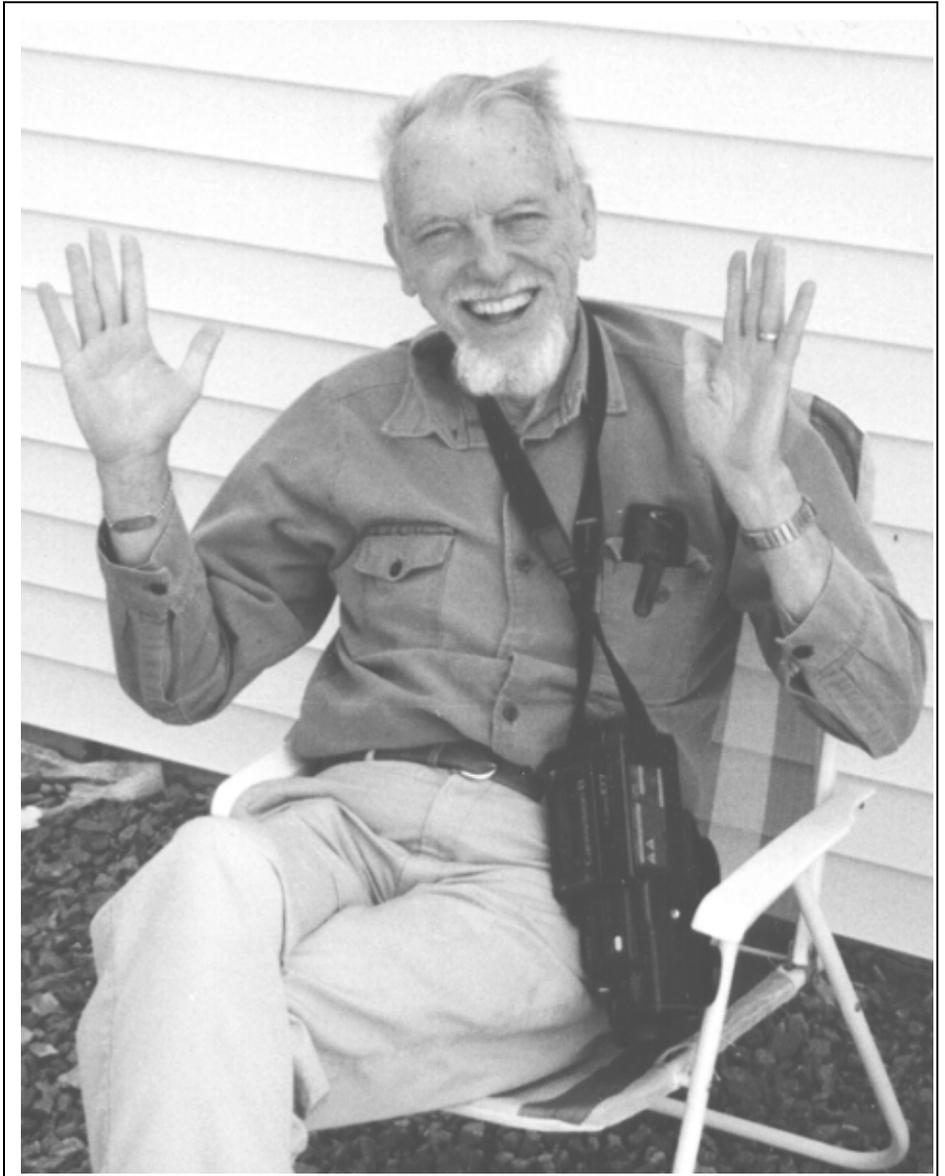
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EDITOR'S REPORT: BY SHAWN MITCHELL

Well the Centre has finished another successful year. We have had some excellent presentations from guest speakers and members at the monthly meetings. Several members (David Lane and Darrel DeWolf) have made good use of the St. Croix Observatory even with all the bad weather we have had this past year. They have jokingly mentioned that they might change the locks on the observatory and make it their own if no-one else from the Centre uses the observatory. Their hopes were dashed on May 23, when we had a large turnout of members at the observatory. About a dozen members came out to observe on this dark clear moonless night to bask in the glories of the late springtime sky.

Not all the observing was bad this year, just ask the members who went



DR. MURRAY CUNNINGHAM 1947-1998
HONORARY PRESIDENT, HALIFAX CENTRE

Dr. Murray Cunningham enjoying the opening ceremonies of the St. Croix Observatory June 21, 1997. Murray had made several trips to the St. Croix Observatory during its construction, and also took part in the official roll-off of the observatory roof during the opening ceremonies. Photo courtesy of Past President David Chapman.



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 **April 17th, 1998**. 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 Caribbean to observe the total solar eclipse in February. They all came back with wonderful memories, stories and photographs that they shared with the rest of us At the April meeting. The stories and photographs were so compelling that some people were talking about going on the next eclipse expedition to Turkey in August of 1999.

This year also had its sad moments, several members of the Halifax Centre former and current have departed this world. Most notably our beloved Honorary President Dr. Murray Cunningham past away on June 5. During Murray's memorial service his family announced that his ashes would be flown aboard an upcoming

shuttle mission so that Murray can touch the stars that he loved so much. Ω

PRESIDENT'S CORNER:
 by Clint Shannon

WE LOST OUR HONORARY PRESIDENT, DR. MURRAY CUNNINGHAM ON JUNE 5, 1998. During the years that I knew Murray Cunningham I never heard him complain about his poor health. The conversations that we had were always about astronomy, of which he had an abiding interest. He was an active participant at the Centre meetings and could always be counted on to ask searching questions of the speakers. He took a keen interest in the Centre's activities and projects and made donations of telescope equipment to the Centre. The Centre is honoured that his family chose the St. Croix Observatory Project as the sole beneficiary of memorial donations. See the obituary published in this issue of Nova Notes for details of Murray's most interesting and active life. He is gone but he will not be forgotten.

Well, our man Dave Lane has done it again. In 1995 he received the Ken Chilton Prize for being a co-discoverer of supernova SN1995F and in 1996 was awarded the RASC's Chant Medal for his Earth Centred Universe (ECU). Now he has added to his laurels the RASC's 1998 Service Award for having provided exemplary service to the RASC at both the Centre and National levels. Congratulations David!

Don't forget to mark your calendars for the Nova East dates of August 21-24. I would suggest that those who are planning on staying at the park chalets make their reservations early in order to not be disappointed. The phone number for the Caledonia Highlands Inn &

Chalets is 506-887-2930 and the Fundy Park Chalets phone is 506-887-2808.

Once again we plan on holding a public observing evening on the Halifax waterfront in July and August. You will be advised by e-mail and telephone when the dates are selected.

As is our custom, there will be no monthly meeting in July and August. Ω

THE EARTH – DIVER MYTH
 BY F. GRAHAM MILLER

Abstract:

The earth-diver myth was that God, unable to descend into the cosmic waters, asked the Devil to help him; he did so, and brought up mud with which God created the earth. It is suggested that God was the star Vega, in ancient time not setting below the northern horizon, and that the Devil was Arcturus.

The myth of the earth dive or cosmic dive was that God was unable to reach down into the primeval waters to bring up mud with which to create the land. He asked the Devil to help, and he did: diving down three times, on the last try he brought up mud in his mouth. From it God made the land. (Eleade 1965:85ff).

The myth is found in an area north of Lat 45°N from Bulgaria to northeastern Siberia. It is not, however, found farther south: what the ancient Greeks said was that Zeus spent two months each winter, January and February, in the bed of Hera (Allen 1963:46). Hence the authors of the earth-diver myth must have lived above Lat 45°.

I suggest that God was a star of fairly high declination that descended close to the horizon at the north point without setting, while the Devil was one that did set. The God-

star would be expected to have the following characteristics 1. It would be very bright. 2. At a credible observer's latitude, it would descend to near the northern horizon but not set. 3. Mythically it would be reputed to be the Supreme Being.

Correspondingly, 1. The Devil-star would also be bright. 2. It would dip below the horizon, but only by a few degrees. 2a. It would begin its dip after the God-star had passed its lowest evation. 3. It would be reputed to be a devil.

I will suggest that the God-star was Vega, a Lyr, $V = 0.03$; some 13,000 years ago it was the pole star but, subject to the precession, it gradually "fell," and now is 51° from the pole. (For the movement of the pole, see Millar 1995:145.) Vega was non-setting for an observer north of a latitude dependent on the epoch. The Devil might have been Deneb, a Lyr, $V = 1.25$; the possibility must at least be addressed since, among bright stars, it was the next nearest to the moving pole, and could set; however, as will be shown, it was not likely the diver.

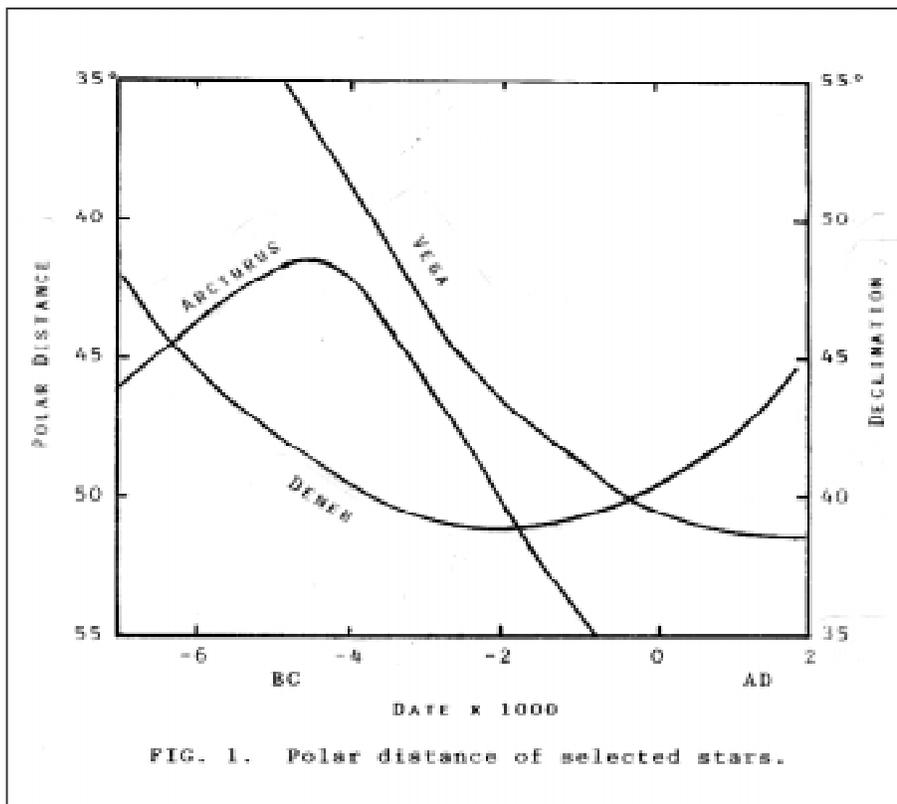
Rather, the Devil-star was Arcturus, a Boo, $V = -0.04$.

The three stars named were bright. Here please refer to Fig. 1, a plot of their polar distances. The scale of polar distance may also be read as the latitude of the observer who would see the star just touch the north horizon at the associated epoch. Consider the polar distance of Deneb in the era between one and two thousand BC: it is disqualified as the Devil because its appropriate dip below Vega would have been apparent only to observers at latitudes much too far south. On the other hand, consider Arcturus in the era between four and five thousand BC: it then had a greater polar distance than Vega by about the right amount, and would dip below the horizon for an observer at around Lat 38 to 40°N .

Thus requirements 1 and 2 have been met. Disconcertingly, condition 2a is not satisfied: Arcturus, having always a lesser hour angle than Vega, always dips low at an earlier season or hour than Vega. Mythologically, however, as is

to be shown, Arcturus was indeed the Devil. It seems certain that Vega was the great god Varuna. He was the cosmic god and Universal Sovereign, the god of the starry sky, the god with a thousand eyes (Eliade 1962:92). He descended from his heavenly palace to become a god of the waters, but remained the god of the western part of the universe. His cult disappeared early (Basham 1988:316). The waning of his cult is consistent with his descent from the hub of the sky. Thus, quite surely, Vega was the Supreme Being.

Astrologically, the magic force of a constellation is concentrated in its lucida, notably Arcturus in Boötes. I have shown (Millar 1995:149) that Boötes - squatting in the Buddhic position - was the Horned One. I now suggest that he was a malignant Celtic god known as Cromm Cruach. In pagan times, In Ireland on the plain of Mag Slecht (Lat $54^\circ06'\text{N}$, Long $7^\circ43'\text{W}$), there stood the gilded king idol of Cromm Cruach, and around him four-times-three stone idols. To him on Samhain (Hallowe'en) the hosts of the Gaels would prostrate themselves and sacrifice the firstlings of every issue including the child heirs of the chieftains, pouring their blood around the king idol in petition for milk and corn in the year to come (Squire 1910:38ff). I submit that, from his name, Cromm Cruach was Boötes; "Crom cruachan" means crooked hip (MacAlpine 1979) or, freely, crooked thigh. Folklorists have offered other derivations because, not knowing of the association with the squatting Horned One, they saw no sense in "crooked hip." There is more. Without resort to mathematics, it may be reasoned that around the beginning of the Christian era, Arcturus had its heliacal rising about at Samhain, so signalling the New Year. Ireland was then still pagan, as Christianity would not arrive for some hundreds of years. So Cromm



Cruach was most probably Arcturus. Accordingly condition 3 has been satisfied: Arcturus was indeed the Devil.

To sum up, then, the myth of the earth-diver is to be explained in these terms: God (Vega) skimmed over the cosmic waters in the north without dipping below the horizon, but the Devil (Arcturus) did dip, although at a different season. The respective stars had strong mythological credentials as Varuna, the Supreme Being, or the Horned One, the terrible Crook-thigh. The myth appears to have been formed between 4000 and 5000 BC.

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MEETING REPORT FOR MARCH 1998 BY BLAIR MACDONALD

At 8:01:42.02564 Mar 20, 1998 (approximately) our great, glorious and not a Dave leader Clint Shannon, called the meeting to order. Now just so everyone realizes, this is a new record for the start time of a meeting surpassing the previous record of 8:01:42.02565 (I asked Gazer!). After the usual welcome to the audience (and the unruly mob in the first row) Clint made his usual pitch for new members. As Clint continued with the opening remarks microphone trouble forced our

former great, glorious and definitely a Dave ex-president (once removed) Mr. Lane to make hasty repairs (meeting reporter's note: he turned it on).

Our observing chairman Mike made an excellent what's up presentation, telling us about the upcoming occultation of Jupiter by the Moon (and other events that would also be clouded out).

Dave Lane then introduced the guest speaker Dr. Michael West who gave a wonderful talk on galaxy formation. Dr. West's hypotheses is that globular clusters can tell us much about the formation of a galaxy. It turns out that the cluster population varies with the Hubble type of a galaxy and with its local environment. When a galaxy is massive and is located within a rich galaxy cluster, statistically it has a larger population of globulars. Dr. West's theory is that many of the globulars are extra-galactic and trace out the mass profile of the galaxy cluster. These along with some other arguments hint that the metal rich globulars may be the oldest not the youngest clusters. All in all, a fascinating theory that may, if it turns out to be correct, upset some standard theories on the formation of galaxies and globulars.

The meeting adjourned at 9:25:32.02546 approximately (I was told to be as accurate as possible) for the usual social hour. Ω

MEETING REPORT FOR APRIL 1998 BY PATRICK KELLY

Almost fifty people showed up on a dreary, drizzly April evening, lured by the prospects of basking in slides of the Caribbean sunshine. Mary Lou was modeling the latest in Canadian Space Agency fashion wear: a T-shirt with a huge round mission

patch of the shuttle mission that had carried Canadian astronaut Dave Williams into orbit earlier that day.

The meeting got off to a great start with the presentation of the centre's Burke-Gaffney Award to Michael Boschat for an article on radar detection of meteors, which had appeared in last year's *Nova Notes*. He had no sooner returned to his seat when he was called back to centre stage for the "What's Up" report. One interesting upcoming event that Michael reported on was a daytime occultation of Aldebaran by the Moon. He also gave an overview of what to expect during the Boötid meteor shower which will be coming in May.

At this point, Clint Shannon turned control of the meeting over to David Chapman who was to be our host for the evening's main event, a retrospective look at the February solar eclipse which crossed the Caribbean. Roy Bishop kicked things off by comparing the difference between what happens when the Earth occults the Sun (which it does every day) compared to what happens when the Moon does the same thing to the Sun. If you decided that you were going to stay in one spot and wait for a total eclipse to come to you, the average wait would be around 375 years. That, of course, assumes that it is clear all the time. When you factor in Nova Scotian weather, you would be waiting for close to 1000 years! He then showed a properly scaled drawing of a total eclipse because most people tend to think of the geometry of the greatly distorted figures that are often found in astronomy textbooks. It is amazing how long and thin the shadow really is. He wrapped up by showing maps of the areas that were affected by the eclipse. One benefit of the trip that members made to Curaçao and Antigua is that they are in the same time zone as Halifax, so jet lag was not a problem.

Mary Lou Whitehorne then took over from Roy and began by showing us the hotel that she and her family stayed at. How many places do you know that have a pool with a swim-in bar? It was interesting that the lush foliage that surrounded the hotel resort was entirely artificial. No, I do not mean that the plants were made out of plastic. Curaçao's natural climate is desert and without the supply of water from the desalination plant, the luxuriant plant life would quickly die and be replaced by native cacti. She also showed some shots of Williamstad, the capital. It had many interesting features, including the distillery that makes Curaçao liqueur and a movable pontoon bridge that spans the harbor. Another favorite spot for tourists is the aquarium where you can go snorkelling or scuba diving and feed sea turtles or sharks. They even have a section of the underwater fence replaced with a large sheet of plexiglass that has small feeding holes. They will even send down someone with an underwater video camera and by setting up the camera angles properly, the plexiglass does not show up and you look as though the sharks are coming up to you and practically eating out of your hand!

Dave Lane continued with some aerial photos of the actual observing site which was at the extreme north end of the island. The trade winds blow continuously at that time of the year, and in an effort to make a windscreen, the Curaçao government made a long windscreen of double-stacked ship containers. Despite this, the site was still dusty and Dave was planning to give a thorough cleaning to all of the equipment that he had brought back.

Normally, this part of the island is a desert, with the ground covered by many varieties of cacti, none of which looked comfortable to sit on! In addition to the windbreak, the government had also cleared and

levelled the observing site, set up washrooms, first aid, tents and provided beverages, including Amstel beer which came in special cans of "Eclipse Beer". All of this was provided, for an entrance fee to the area, but the amenities were welcome considering the heat and low humidity.

A total of about 400 people used the site and Dave showed many pictures of people setting up equipment, or sitting in the shade waiting for the Moon's shadow to arrive. When the shadow did arrive, Dave took a nice series of photos, of increasing length, showing the detail in the corona. He also had a picture of the next day's local newspaper showing Clint Shannon, who had made the front page. Unfortunately, the accompanying article was not in English so none of them could read it! Dave had rebuilt one of his Dobsonian scopes to take down with him as he stayed for a week to get in some deep-sky observing. He had some nice pictures of southern objects as well as a wide field shot showing the Southern Cross in the background with "Curaçao" written into the scene with a red light!

Next up was John Jarvo. This was his first eclipse, and he decided to follow the advice of many and chose not to try taking pictures but to observe the event visually. Instead of a photographic record, he decided to use a tape recorder to make a permanent audio record of the event. He played back the section of the tape leading up to totality and the during the actual event. One got the notion that he was rather impressed with the event!

All of the previous presenters had joined the excursion that had been mounted by the Calgary Centre. David Chapman and his family had opted for the Toronto Centre's expedition. That group had set up some distance from the others, but David found himself gravitating back to be with the Halifax members,

which also kept him quite close to the stores of Amstel beer! He had a couple of interesting images, including one section of a tent roof which looked as though it had been hit by a shotgun blast. Each of the holes acted as a tiny pinhole camera and as totality neared, there were dozens of tiny crescent Suns on the ground under the roof. David also showed a close-up of a small mirror that Roy had set up to reflect an image of the Sun onto the inside wall of a tent. The small mirror was held in position by what appeared to be a paper clip which held the mirror and was then stuck into a regular eraser.

Michael Falk continued with some pictures that had been taken by his son, Dan, who had gone to see the eclipse. One of them was particularly striking. It showed several people, silhouetted against the dark sky, looking up at the eclipsed Sun with three planets also visible.

When Roy had first planned to mount a Halifax eclipse expedition to the island of Montserrat, Sherman Williams had decided to sign on. When the dormant volcano on the island began erupting shortly thereafter, the plans for the Montserrat trip were cancelled and, so Sherman thought, were his expectations of seeing the eclipse. He finally changed his mind and decided to go only three weeks before the actual date of the eclipse. Instead of travelling with either RASC expedition, which were already full, he found an organization called the Last Minute Club, and was able to get aboard a cruise ship which would be at the island of Antigua for the eclipse. He had planned on presenting a computer-generated slide show of his adventures, but was unable to get it connected to the projection system in the theatre. Instead, he left it running on his Powerbook for those who wanted to look for it afterwards during the social hour.

He found that cruise ships tend to be brightly lit at nighttime, but if you want to do any observing, the bow of the ship is left dark so that those on the bridge can see clearly without any glare. As a result, he spent several evenings observing the southern sky from that location. He also became the ship's eclipse expert as the cruise was not organized specifically to see the eclipse and he appeared to be the only amateur astronomer on board. When the ship headed for Antigua, he found that they were not alone! Several other cruise ships that they had been playing leapfrog with for the past few days were also heading there. In total, four cruise ships were in port for the eclipse. One interesting aside to his trip was that his ship passed by Montserrat twice and he had no trouble seeing the smoke that was still coming from the volcano that had tried to keep him out of the Moon's shadow. Sherman concluded by reading a brief account of his trip that had been published in the "Nature Notes" section of the valley paper.

The last speaker was Clint Shannon who showed us a beautiful picture of totality. It was a great way to wrap up an eclipse wrap up! We were not quite finished with eclipses, as Dave Lane gave us a quick overview of the August 1999 eclipse which will cross Europe and the Middle East. From a weather point of view, the best place to view the eclipse is from the northern parts of Iraq and Iran. The Calgary Centre is planning an expedition to northeast Turkey, which will be easier to reach as well as being somewhat more hospitable. Since this eclipse starts just out past Sable Island, there is the possibility that the centre might organize a charter flight to view the eclipse from the air.

The last event for the evening was a trivia contest that was organized by Dave Lane and Mary Lou. As in most contests held in the

past, members were asked to classify themselves into one of three categories, novice, intermediate and expert. These were subject, of course, to reclassifying by the organizers. The questions also fell into the same three categories. There were lots of them, some of which were quite tough, and they covered a wide range of topics. Some generated some rather humorous replies. When all of the answers were tallied up, the winner in the expert classification was none other than Roy L. Bishop. He and his wife Gertrude had a big advantage over a lot of us, as one of the questions had been: "What does the "L" in Roy L. Bishop stand for?". (The answer is Lovitt.)

SHAWN: I didn't take any notes during the trivia contest. Could you check with Dave and see who won in the other two categories. You might also want to check to see if Roy's middle name is spelled correctly (I think that I have also seen that name spelled Lovett).

That brought the meeting to a conclusion and, as usual, there was still time left over for lots of discussion over drinks and munchies provided by Ralph Fraser. Ω

WHAT'S UP FOR JULY AND AUGUST 98
BY MICHAEL BOSCHAT

July

Tue.14 - Jupiter 1 degree North of Moon at 1900 UT (4pm).

Fri.17 - Mercury greatest elongation east (27 degrees). Evening sky.

Sun.19 - Aldebaran (Alpha Tauri) 0.3 degrees South of Moon at 2100 UT (6pm) occultation for western US.

Sat.25 - Regulus (Alpha Leo) 0.7 degrees North of Moon at 2100 UT

(6pm) occultation for southern S. America.

Wed.29 - South Delta Aquarid Meteor Shower peaks at 0000 UT (9pm), about 20 per hour.

August

Sat.8 - Penumbral Lunar Eclipse
Begins: 0131 UT (10:31pm)
Maximum Eclipse: 0224 UT (11:24pm)
Ends:0318 UT (12:18am)

Tue.11 - Jupiter 0.9d North of Moon at 0000 UT (9pm) occultation for Antarctic.

Tue.13 - Perseid Meteor Shower peaks at 0000 UT (9pm), about 60-100 per hour, Moon near Last Quarter. Note possible meteor storm this year.

Thu.20 - Venus 3d north of Moon at 1400 UT (11am)

Sat.22 - Annular Solar Eclipse for New Guinea area.

Sun.23 - Double shadow transit on Jupiter at 0220 UT (1120pm).

Planet Roundup

Mercury: will be seen with difficulty mid-July in west northwest. In August it will be seen in morning sky during the last week of the month.

Venus: Rises 2 hours before the Sun in July but rises later in August.

Mars: Rises 2 hours before the Sun in July then is hard to see in August.

Jupiter: Rises 2.5 hours after sunset, gets better month by month now.

Saturn: Rises near midnight in mid-July and then rises earlier during the following months. Ω

LETTER FROM A FRIEND
BY MARY LOU WHITEHORNE

We have received a letter from Mexico - remember Brenda Pulido? She wants me to pass along greetings to the Centre. Here are the bits for the Centre from her letter:

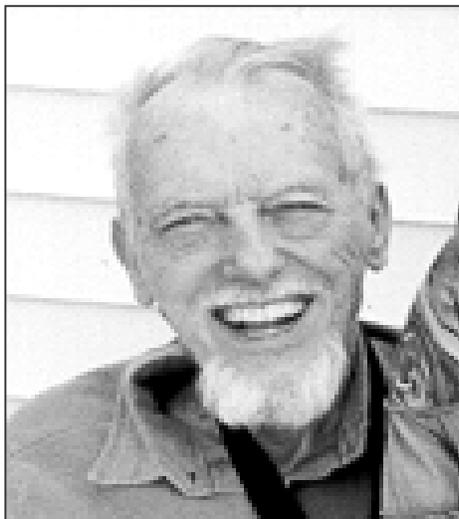
She says:

"How are you all? I really miss you. No matter what, I will always remember your beautiful skies, full of comets, and stars. I definitely won't forget the first time we met and the time I had the chance to watch a comet... I will still love the sky, the entire universe...the universe is science, philosophy, poetry. We belong to the universe; the universe doesn't belong to us.

With love from Monterrey, Mexico,

Brenda Pulido Ω

DR. MURRAY CUNNINGHAM
1923 - 1998



Cunningham, Dr. Robert Murray – 74, Died June 5, 1998, in the QEII Health Sciences Centre, New Infirmary Site. Born in China of missionary parents, James Dutton Cunningham, Leith, Scotland, and Mildred Jocelyn Armstrong, Roundhill. He graduated from the University of Toronto Medical School in 1947. He did general practice in eastern Saskatchewan, then postgraduate studies in radiotherapy in London, England, and on return, practiced in Montreal. He spent two years with the Columbo Plan in Rangoon, Burma, establishing a cancer treatment/radiotherapy unit. He joined the staff at the Victoria General Hospital, Halifax, now the Cancer Treatment and Research Foundation, in 1961 until his retirement in 1986, and was physician –in-charge for several years. He had a lifelong interest in

astronomy and was honorary president of the Halifax Centre of the Royal Astronomical Society of Canada, and a life member of the RASC. For many years, he was active with the Dartmouth Experimental Aircraft Association and was involved in building and flying two experimental aircraft. Music was a very important part of his life, attending and performing, and he was a member of the Halifax Chamber Choir until it disbanded. He was an active participant in the Dartmouth Players for several years. Painting, woodworking and pottery were favorite hobbies and he served on the acquisition committee of the Dalhousie Art Gallery for several years. He was a pacifist and a democratic socialist all his adult life, and was a life member of the Nova Scotia NDP. He was a founding member of the Halifax Society of Friends and the Halifax Field Naturalists. Surviving are his wife Patricia Anne (Welton) Morash; daughters, Jocelyn Cunningham, Mahone Bay; Vivian Cunningham Bruce, Moncton; stepson, William E. Morash, St. John's, Nfld; sister, Majorie Levan, Kingston, Ont.; brother, Gordon, Red Deer, Alta; four granddaughters; four nephews and two nieces. He was predeceased by his first wife, Dr. Helen Wasman. Memorial service 2 p.m. June 17 in the Universalist Unitarian Church, 5500 Inglis st., Halifax. Donations can be made to the RASC Halifax Centre, St. Croix Observatory Project. P.O. Box 31011, Halifax, B3K 5T9. Ω

Submitting Articles and Images for Nova Notes

The Editor is always looking for articles and images to publish in Nova Notes. Let the rest of the members of the Centre see what you have been doing. Your new observing techniques and tricks, photographs, drawings, graphs, cartoons, and humor are all welcome. Articles and images can be submitted either on an IBM formatted disk or via e-mail to smitchell@ap.stmarys.ca, please specify "Nova Notes Submission" in the message header. Almost any word processor format can be handled, but please submit articles in plain ASCII text files if possible. Alternatively, articles, photographs, sketches, etc. can be mailed to the Halifax Centre's mailing address, Attention: The Editor.

NOTICE OF MEETINGS AND EVENTS

REGULAR MEETINGS

Date: Regular Meeting — Friday, September 18
at 8pm: 7pm for the council meeting.

Topic: Main Speaker:
Dr. David Turner
Topic: "A Lifetime of Star Clusters"

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

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, Shawn Mitchell.

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.
- 9.

ASTRO-ADS

Celestron C90 spotting scope with sturdy camera tripod, camera adapter (Canon T-Ring included), diagonal, 2 eyepieces, carrying case.

Asking: \$450

Contact: Roy Harding (Digby) 902-245-6257 (or 902-245-4282)

OVER DUE LIBRARY BOOKS

If you have had a Centre book out on loan for more than two months please return it to the library at the next Centre meeting, or if you need it longer for a project contact the Librarian.

Special Summer Events

July 29 at dusk.

Sidewalk astronomy on the pier behind the Museum of the Atlantic. Come down to the waterfront to view the moon, planets and many other wonders of the night sky in telescopes. Rain date July 30.

Aug 21.

Nova East 98 Observing camping weekend at Fundy National Park Aug 21 through Aug 23. Pre-registration form is included in this issue of Nova Notes.

Aug 26 at dusk.

Sidewalk astronomy on the pier behind the Museum of the Atlantic. Come down to the waterfront to view the moon, planets and many other wonders of the night sky in telescopes. Rain date Aug 27.

Observing at the St. Croix Observatory on clear nights around the new moon. Contact Dave Lane or Shawn Mitchell to find out if the observatory will be open.

Summer Work parties at the St. Croix Observatory. On Sunday afternoons throughout the summer volunteers will be working on the observatory doing painting, yard work, etc. If you are interested in helping out, contact Shawn Mitchell 865-7026.

1998 HALIFAX CENTRE EXECUTIVE

Honorary President		
President	Clint Shannon	889-2426
1st vice-president	Pat Kelly	798-3329
2nd vice-president	Darren Talbot	443-9373
Secretary	Mary Fraser	434-3103
Treasurer	David Lane	826-7956
Nova Notes Editor	Shawn Mitchell	865-7026
National Representative	David Lane	826-7956
Librarian	Greg Spears	868-2626
Observing Chairman	Mike Boschat	455-6831
Councilors	Tony Jones	435-0535
	Steve Carrigan	479-0582
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