

NOVA NOTES

VOLUME 31 — NUMBER 2 — APRIL 2000

THE NEWSLETTER OF THE HALIFAX CENTRE OF THE RASC
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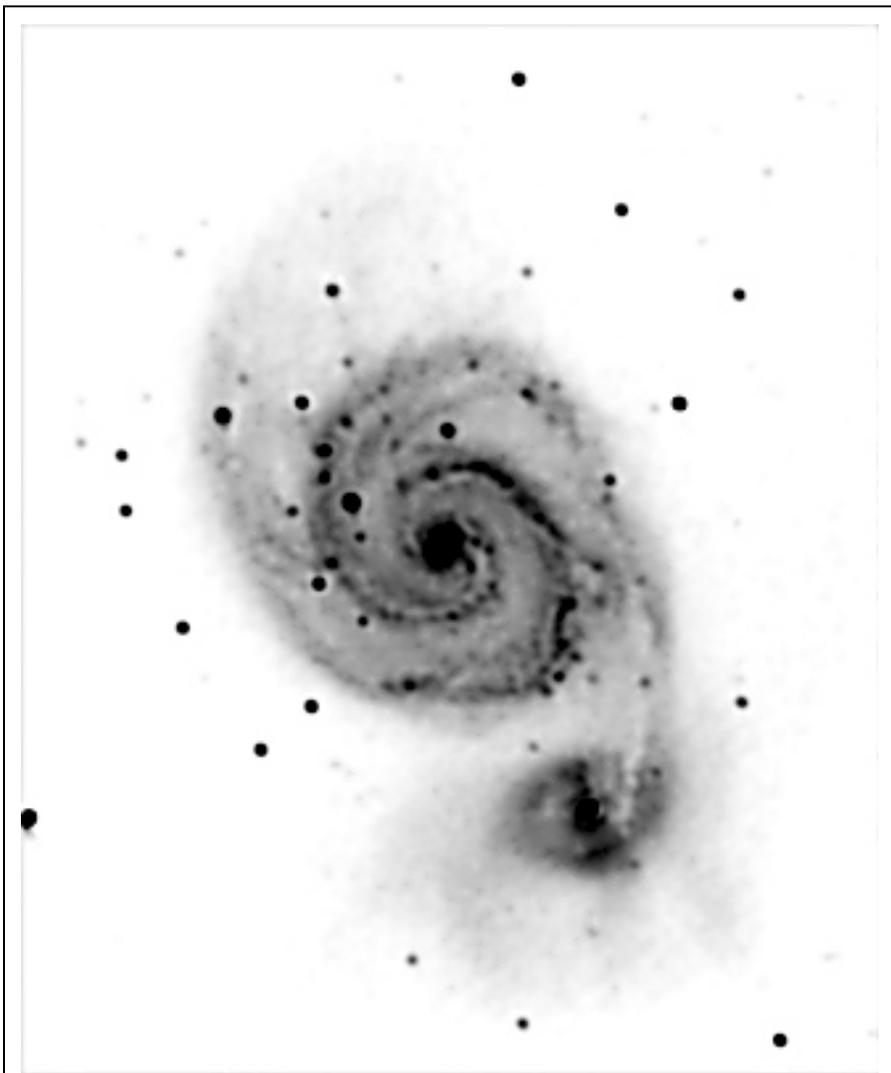
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Notice of Meetings and Other Stuff

EDITOR'S REPORT: BY SHAWN MITCHELL

Well another issue done, and in the mail. I had lots of articles for this issue but I'll be needing a few for the next two issues in June and August. Both these months have been traditionally hard to fill as many people are away on summer vacations. So before heading off this summer pick up your pens and send in an article on summer observing hints or places to go.

Speaking of places to go, this year Nova East has been brought home to Nova Scotia. This year it will be held at Smiley's Provincial Campground on August 5 to 7,



ASTROPHOTO OF THE MONTH — M51

Image of the Whirlpool Nebula (M51) taken recently by Blair McDonald at the St. Croix Observatory using his Meade Pictor 416 XT CCD camera.

located just outside of Windsor. You have probably found the enclosed flier as it fell out of the envelope. Don't just toss it on your to-do pile and forget about it, fill it in and send

it to the organizing committee. We are hoping to get more members out this year because Nova East will not be as far from home.



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 JUNE 16TH, 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:

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Building time is also upon us again. This year we plan to put some amenities in at St. Croix. Some of you may remember Mary Lou Whitehorne's video last year highlighting the composting toilet that she had purchased for her cottage. So to honor her dedication

to having a toilet at St. Croix, work will start on "Mary Lou's lou" in June, all assistance offered will be greatly accepted. I'll be posting construction dates on the Halifax list server when dates are set. Ω

MARCH MEETING REPORT: BY PATRICK KELLY

The weather the day of the March meeting was a wild, a day of wind and rain followed by an evening of ice pellets. Our newly-elected president, David Tindall, was concerned that he might have to begin his presidency by canceling two of the first three meetings! Despite the adverse conditions outside, over two dozen people showed up for the meeting. In what appeared to be a violation of the Pauli Exclusion Principle, this scribe saw Doug Pitcairn, Joe Yurchesyn, and Walter Zukauskas all in the room at the same time.

The meeting started off with Paul Evans doing the What's Up report. He looked at the brighter deep-sky objects that would be visible in the southern spring sky. He also mentioned the possibility of holding a Messier marathon at the St. Croix observatory during the coming New Moon period.

Next, Michael Boschat gave a short presentation on his role in a project that is using data from the *SOHO* satellite to discover new comets. The *SOHO* satellite is located between the Earth and the Sun and makes continuous observations of the Sun in a variety of wavelengths. A series of images can be downloaded in real time and "flipped" in sequence. The Sun appears to stay in the middle of the sequence, and the Earth's motion around the Sun causes the background stars to all move in one direction. Any other object, like a comet, will move relative to the Sun,

but not in the same way that the stars move.

Since new images are available approximately every 30 minutes, there are a lot of people trying to use them. Since he started in early February, he just missed several comets, on one occasion by only half an hour. As a result, he started keeping his e-mail program in a state of constant readiness. His first discovery came on March 4th. He showed the series of images from which he and three others made the discovery. He also told us about a really bright object that he caught moving past the Sun in one series of images. Sure that it was too bright to be a comet, he decided to report it anyway and received a reply about five minutes later to congratulate him on rediscovering Mercury!

The main presentation was by Walter Zukauskas, who brought with him three astronomy text books. One was current, one was from the 1950s and the last was a volume from the turn of the century. He had looked through them to see what astronomical morsels could be found in them.

One contained an interesting diagram that explained why total solar eclipses happen more often than total lunar eclipses. I have made an approximation to it below; note that it is not to scale! As you can see, when the Moon is in front of the Earth, there is a much greater portion of its orbit where its shadow can strike the Earth, compared to the portion that would carry it into the Earth's shadow. When this is combined with the amount of time that the line of nodes of the Earth-Moon system point towards the Sun, the difference is explained.

A common misconception addressed in one text was the concept of precession. Most amateur astronomers are aware that the ecliptic now passes through 13 constellations (1 week in Scorpius versus three weeks in Ophiuchus).

The common misconception is that precession results in the ecliptic moving relative to the background stars, causing it to pass into new constellations in the process. A comparison of the officially adopted constellation boundaries with those of Ptolemy show that the stars that we now consider to be in Ophiuchus, were considered to be part of Ophiuchus in the distant past as well. For some reason, the originators of the zodiac seem to have overlooked this. In fact, precession causes the stars to move **parallel** to the ecliptic, so that a star's ecliptic latitude stays the same, its ecliptic longitude is what changes.

Another interesting item that came to his attention was the caption for the picture in one text. The image was a standard picture of part of the sky, full of stars, with a caption stating that one of the stars was, in fact, a solitary neutron star. While this may have been the case, there was no way that someone looking at the picture would be able to distinguish the neutron star from any of the other specks of light. So, how could such a claim be made? The caption also included a credit listing the astronomer who had produced the image. A quick internet search soon filled in the rest of the story. The star marked the location of a strong X-ray source, but there was no strong radio source to accompany it. (The two are usually found together.) When the optical and X-ray spectra were combined it was clear that the object had a surface temperature of about 700,000 K. What is being seen is, in effect, the photosphere of a neutron star. This is the first one that was not first detected as a pulsar and its beams of radiation do not line up with the Earth at all, or there may be no beams — a dead pulsar, a bare neutron star.

Lastly, Walter pointed out some of the more humorous pictures and extra items included in the current

book by Pasachoff. These included some Snoopy cartoons and even some music where the each note was based on the rotation rate (frequency) of a different millisecond pulsars, and the notes were placed on the score in the order of the pulsars' discovery. Ω

DECEMBER MEETING
REPORT:
BY IAN ANDERSON

Halifax RASC's meeting for December had about 45 on board as it departed dockside at 20:00h. Bright skies and good sailing were the main topics of tonight's cruise. Captain Clint started by announcing to those assembled that Dr. David Tindall will be serving as the new Halifax Centre President.

Also, the 2000 Observer's Handbooks were finally in, and the stale 3rd edition Beginner's Observing Guides were now available free. Amazing what you can give away that wouldn't sell for \$2!

A letter by David Chapman to the Halifax Bridge Commission about light pollution from their bridge lighting spectacle, and the events that have occurred since were discussed.

Then, our new "What's Up" guru Paul Evans presented this season's southern sky. Easy Messier objects that can be seen with modest equipment are on the Centre's Mini Messier list. He encouraged everyone to try for these objects and receive a Mini Messier Certificate. Volunteer observers for January's Quadrantid meteor shower were asked to come forward.

Paul Heath was next on light pollution issues. Paul is a member of the Light Pollution Abatement group that was assembled to inform bureaucracies and governments about the wastes of glare, light trespassing and sky glow. He presented overheads showing the light propagation patterns of typical Cobra

lighting standards used throughout the Halifax municipality, shielded ones, flat lens types, and "shoebox" fixtures. While improvements in the latter cast light evenly towards the ground around them, the convex Cobra lenses throw their light up to 20 degrees above the horizon. Even relatively cheap light shields improve the problem by cutting glare to 10 degrees below horizontal.

It is a matter of educating the municipality to the hazards of glare, the infringement of light trespassing, and to the marked savings through reduction in power consumption with efficient lighting systems. His recommendation: the RASC should form a committee to fight light pollution issues.

The main speaker Dr Roy Bishop was up next. Roy's talk came in several parts. A presentation of 80 slides of his trip with Australia's replica of the "Endeavour" on a short leg of its circumnavigation tour was the highlight of the evening. The account of the voyage was prologued with helpful explanations of historical and astronomical contexts of the original vessel's mission.

Roy began by presenting the state of understanding of the "Universe" by the mid-eighteenth century, and of the quandaries faced by astronomers in Europe. The proportions and mechanics of the visible solar system were in place by this time, but the exact semimajor axis of the Earth's orbit - the Astronomical Unit, was poorly known.

Methods of triangulation and parallax were understood - as was the size of Earth. Parallax could be tried on Venus at almost any point in its orbit, and it was known that the closest pass to Earth by any of its planetary neighbours was during inferior conjunctions of Venus, but the simple problem of simultaneity was unsolved. Prior to instantaneous communications and accurate timepieces, no exactly simultaneous measurements of

anything could be guaranteed from opposite ends of our vast planet.

The best proposal for accomplishing parallax of Venus was when the planet made an extremely rare transit of the Sun's face. The first Venetian transits known to mankind were predicted by Kepler to occur in Decembers of 1631 and 1639. No one saw the first, the second in 1639 was seen by Jeremiah Horrox. It was correctly estimated that the next would not occur until June 1761, and June 1769, but not again until 1874 and 1882, (and again in 2004) dates well beyond the lifespans of those involved with the problem.

The 1761 transit had been observed, but the data available were not complete enough to perform meaningful computations, so the necessity of getting it right in June of 1769 was extremely urgent - not unlike the time scale of our race to the Moon by 1969 in our century. Obviously, any effective attempts at parallax required intercontinental scope and perhaps international co-operation.

The Royal Society of London proposed to King George III that a voyage be undertaken so that an island be found in the South Seas where one of three transit observations by astronomers would be viewed. (One was to occur at Fort Churchill in Canada.) The second order of the voyage was to find and chart *Terra Australis Incognita* "The Unknown Land of the South".

The Vessel to make the passage would be HM Bark Endeavour. The man to captain this mission was James Cook. From August 1768 to July of 1771 Cook made his voyage, took useful measurements of Venus during its transit, and charted the lands of New Zealand, Australia and the South Seas.

Interestingly, the selection of Cook for the voyage was based in part on his experience mapping the Canadian Maritimes. Cook was familiar with

the port of Halifax, as he was stationed here from 1758 to 1762.

The Endeavour was not built for speed. At 109 feet in length and 29 feet wide she was a tub with a flat bow. Her hull was so flat on the bottom that when she ran aground on coral, the damage was repairable. A sleeker craft would certainly have been destroyed. She was packed with provisions for the compliment of 94 that called her home for three years. For its bicentennial celebrations, Australia built the replica "Endeavour" exact in detail to the original. In a world tour that brought it to Halifax in October 1998, space for one supernumerary was waiting to be filled on its departure to Bermuda. On his third visit to the docked museum, Roy was lucky enough to learn of this space, and promptly secured his opportunity to sail with the Bark for eight days.

Roy packed his camera, and made the tour of the ship on film -finding the defining moment in each shot. Actually some defining moments lasted several minutes - like the signature of Jupiter's light on a camera secured to the rocking deck. Pictures were taken from the pier in Halifax, aloft the mast, from within the officers' cabins. Dr Bishop has beautifully captured the detail of this marvellous vessel and the experiences of his extraordinary adventure. We are fortunate that he shared these pictures and his experience with us. Ω

GA 2000 :
BY LINDSAY PRICE

Summer is the season when starry skies, late nights, astronomers and mosquitoes all gravitate to each other. This year in Winnipeg we anticipate the brightest stars, the smartest astronomers and the biggest mosquitoes ever! It all comes together from June 29 through July

02. Planned for this event is an exciting line-up of speakers and paper presentations, as well as events and activities to be enjoyed and remembered by family members for years to come.

The list includes three dynamite speakers for the Assembly, lead off by Dr. Wendy Freedman, one of the three co-leaders of the Hubble Space Telescope Key Project. Recently featured in Astronomy magazine, Dr. Freedman's interests lie at the beginning of things - the age and evolution of the universe. Those beautiful images from Hubble showing distant galaxies, Cepheid variables, and the transient glow of supernovae are all part of her search for the beginning of it all.

Steve Edberg and Don Parker are well-known names in the amateur and Professional community. Both appear frequently in the pages of Sky and Telescope and Astronomy magazine, Don for his spectacular high-resolution images of the planets and Steve for his equipment reviews and observing tips. In his day job, Steve works for the Jet Propulsion Laboratory in Pasadena where he helps manage the Cassini probe that is now on its way to Saturn. Don is the consummate planetary observer whose first love is Mars. His work has found a place in professional journals and graced the pages of other publications as well.

The Centre of activity will be the campus of the University of Manitoba. Reasonably priced accommodation is available at St John's College. Meals, residences, lectures, the banquet, the Barbecue - everything is within walking distance. For family leisure and entertainment, arrangements have been made for lots of activity. Waiting for visitors is the Zoo, The Fort Whyte Nature Centre, Oak Hammock Marsh Waterbird Sanctuary, the Museum of Man and Nature, and the Planetarium. The

Red River Exhibition will be in full swing until the 1st of July.

Just one hour away are the sunny beaches of Lake Manitoba, reckoned one of the best in the world with their incredible white sands. From the Centre of Winnipeg, at the historic confluence of the Assiniboine and the Red Rivers, is The Forks, from which river boat trips go down river to the restored Hudson Bay Company fort. The Forks is also the place to be on Canada Day to join in the big party to celebrate our national identity with a Stage Show and Fireworks, or perhaps visit the shops, Children's Museum, or take in the Children's Theatre. Astronomy has not been forgotten either – the Winnipeg Centre's observatory with its 14" 'scope is always pointed up!

Information and registration packages can be found at the GA 2000 web site:
<http://www.rasc.ca/ga2000/>

by contacting Stan Runge at stan.runge@mts.mb.ca, or by sending a note to:

Stan Runge, GA 2000
35 Cunard Place
Winnipeg, MB,
R3T 5M1.

Information on poster and paper presentations can also be found in the same places. A limited number of Registration packages are also available through your Centre representatives.

Love to see ya!"

FL Price
3348 Assiniboine Ave
Winnipeg, Canada
R3K 0B1

Tel: (204) 831-0150

E-mail:

flprice@mb.sympatico.ca Ω

**OBSERVATIONS OF VENUS:
BY BILL MICHAEL BOSCHAT**

On May 11, 1999 I was at Dalhousie University with my 80mm f/10 refractor waiting to observe Mars. I noticed Venus and decided to make an observation not knowing that this would not be the last. At 90x the planet showed a gibbous phase and upon closer observing I noticed that the south part was slightly brighter. I had two filters with me a number 21 orange and a number 58 green and using them separately I still could distinguish the brighter south area, which I will refer to by the proper term of Cusp Cap. After a few minutes of observing I noticed a very slight shading near the center of the planet's disk, I was doubtful about it because Venus is very notorious for making one see what is not there. I finished observing Venus after an hour or so and made my Mars observations.

The next morning I looked at my notes and drawing, I was getting the Venusian bug were I had to know if what I saw was there or not. That evening of May 12 it was clear and I setup my 20cm Schmidt-Cassegrain f/10, 2000mm focal length on the balcony of my apartment, I armed myself with my other filter I had not used a number 47 violet. If there were going to be markings it would show something. As the Sun set Venus was shining brightly, I put in my 10mm eyepiece for 200x and turned the SCT to Venus, there was the planet nice and steady. I put the violet filter over the eyepiece and there was the bright southern Cusp Cap and a faint dusky shading near the center. I also noticed a limb brightening many of which I was to see later on in the next 2 months.

I was unsure about what I saw and wanted confirmation, so I posted my observations to our Royal Astronomical Society of Canada newsgroup. A few days later I received a reply from Mr. Harry Pulley in Ontario who confirmed my

observation as he saw some before. Later on in June I received a reply from Mr. Gary Dymond in Newfoundland who also was observing the planet and had noticed some features. We decided to make a joint effort in observing Venus during the daytime so as to eliminate the brightness of the planet and I made two observations during each clear day we had, one near local noon and another just 30 minutes before the sun set. And only the day after making our observations we emailed each other with what we had observed the day before. It was an excellent time because we all saw the dusky markings and bright south Cusp Caps, later on in our observations we saw blunting of the south Cusp Cap and some indentations into the terminator. Thus we had confirmed we saw features and that I would say Venus was fairly active during the months we made our observations. Ω

WHAT'S UP: BY PAUL EVANS

May

Thu 4 – New Moon (observing at St. Croix?).

Thu 4 – Eta(η) Aquarid meteor shower (zenithal hourly rate of 20) after midnight. Radiant does not rise high – better for southern observers.

Fri 5 – The Sun, Moon, and five brightest planets are grouped in a 26° arc of ecliptic longitude.

Wed 17 – Venus 42" N of Jupiter (but are 7°W of Sun).

Thu 18 – Full Moon.

Sun 28 – Saturn and Jupiter are as close as 1.2° apart for several mornings.

June

Thu 1 – Jupiter and Saturn are within 4° of Moon after midnight.

Fri 2 – New Moon (observing at St. Croix?).

Sat 3 – Moon at perigee (large tides).

Fri 9 – Mercury at greatest elongation (E 24° - in Gemini).

Fri 16 – Full Moon.

Tue 20 – Summer Solstice.

Wed 28 – Jupiter and Saturn are within 4° of Moon after sunset. Ω

SELENE, THE MOON

GODDESS:

BY MARY LOU WHITEHORNE

Selene was the sister of Helios, the Sun God, and she would take over for Helios in the evening when he would take his tired horses for a refreshing dip in the ocean waves. She was also the wife of Jupiter, with whom she had three daughters. Selene has been described as the Queen of the Night; a most beautiful goddess clad in flowing robes, wearing a radiant tiara, who drove a chariot pulled by shiny horses.

Although Selene was the wife of Jupiter, she was very much attracted to a young man named Endymion, who became King of Elis in the Peloponnesus. One day while Endymion was resting in the mountains after a strenuous day of hunting, Selene saw him and could not resist stealing a kiss from him while he slept. Endymion saw this in his dreams. When he awoke, Endymion asked Jupiter for eternal youth and immortality, which Jupiter gave him under one condition - that he would remain eternally asleep. Selene is said to have come ever since during the night to have a look at her sleeping lover and to steal another kiss.

Perhaps this is symbolic of the inevitable influence the Moon still seems to have on the amorous affairs of Earthly mortals.

Excerpted from
"The New Patterns in the Sky"

Julius D. W. Staal MacDonald & Woodward Publishing Co.
Blacksburg, Virginia, 1988, p.272 Ω

MIKE BOSCHAT HONORED: BY WALTER ZUKAUSKUS

Mike Boschat received from the American Association of Variable Star Observers (AAVSO - mercifully) one of its highest honors – an AAVSO Observer Award. The AAVSO is truly an "observer's organization", and it doesn't dispense observing awards just to be nice. If Mike got it, then he earned it - the old-fashioned way, one observation at a time. Of the nearly 600 active observers in the AAVSO, only about a half-dozen qualify each year for an Observer Award. A minimum of ten Thousand variable star observations is required to qualify. And until this past autumn, no members of the AAVSO Solar Division were even

eligible.

Mike was part of the first group of AAVSO solar observers recognized with the Observer Award, a member of a group that, for decades, has made significant contributions to solar astronomy. From now on, candidates will have to accumulate a minimum of either 1,000 days of sunspot observations, or 60 months of Sudden Ionospheric Disturbance (SID) reports. There are easier ways to win awards!

Congratulations, Mike. You did it.
Walter Zukauskas
Dalhousie Physics Dept.

Mike has also been the co-discoverer of two recent sun-grazing comets. Comet C/2000 E1 (SOHO) on March 04th, and Comet C/2000 H2 (SOHO) on April 28th. Mike found these comets while searching through the daily image archive on the SOHO web page. Ω

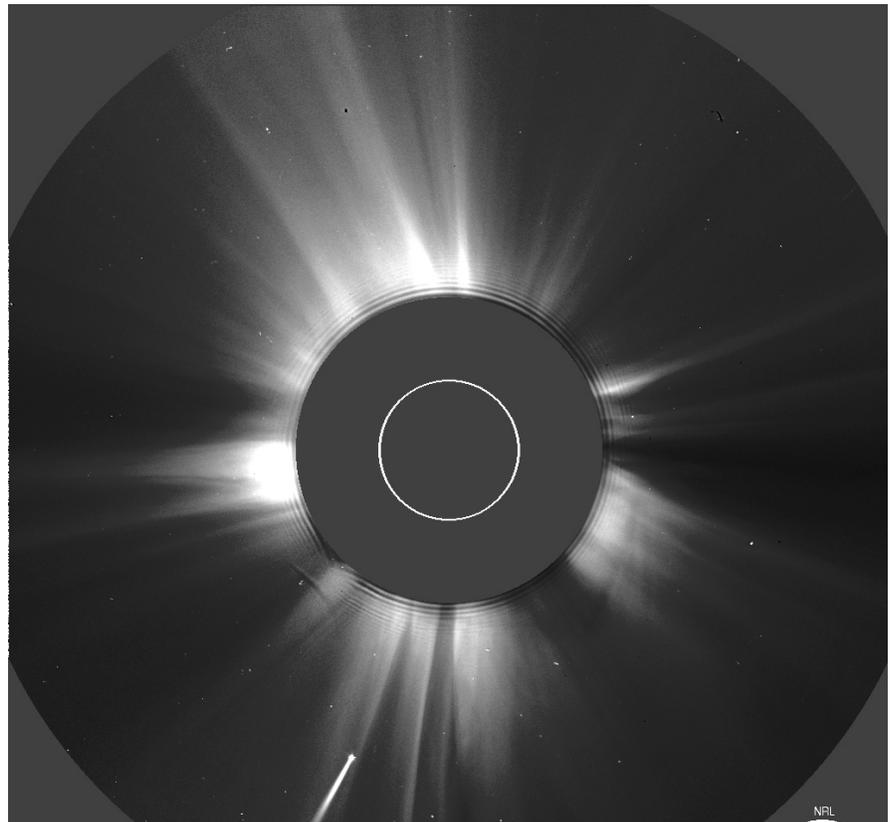


Figure 1: SOHO image from April 29 showing comet C/2000 H2 (SOHO) at the lower left on the image co-discovered by Mike Boschat.

**LIBRARIAN'S REPORT:
BY MIKE FALK**

We have a wonderful collection of books which are very much underused. The problem stems from the very inadequate storage arrangements at the museum. Our present collection, if properly shelved, would occupy approximately 10m of shelf space. While the cupboard that is presently available has only 3m of shelves for book storage. This cupboard also serves to store the coffee and cookie supplies. The books are thus stored two-deep or three-deep with an overflow in my basement. I cannot even manage to go over the books to weed out the less desirable items, as there is just no convenient access to the books we have.

As long as we remain at the museum, very little can be done, but a move to Saint Mary's University would solve the situation. A cart on wheels has already been designed, that would shelve all our books properly. The cart could be stored in the space provided by the department of Astronomy & Physics and be easily transported to the auditorium/room we are in during the monthly meeting.

So, I very much hope that a move to the SMU site is imminent. Such a move would restore the full usefulness of the library to the members. Ω

ASTRO ADS:

FOR SALE:

CELESTRON ULTIMA 10X50
BINOCULARS
sharp, multi-coated premium optics
great eye relief super lightweight (21oz)
AND INCLUDED WITH THEM
twin Thousand Oaks Solar Filters
(for viewing the parade of sunspots during the Solar Maximum)
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The package is \$400.00

Contact Daryl Dewolfe
@ (902) 542-2357

For Sale:

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In great condition

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For Sale:

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Contact: Paul
@ (902) 477-7060

For Sale:

Meade model 2080, 8"
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-Super Plossl 56mm, 2"
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-Ultra Wide angle 14mm 1.25/2" Meade (143X)
-Ultra Wide Angle 8mm 1.25/2" Meade (227X)

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Retail Value \$3750.00

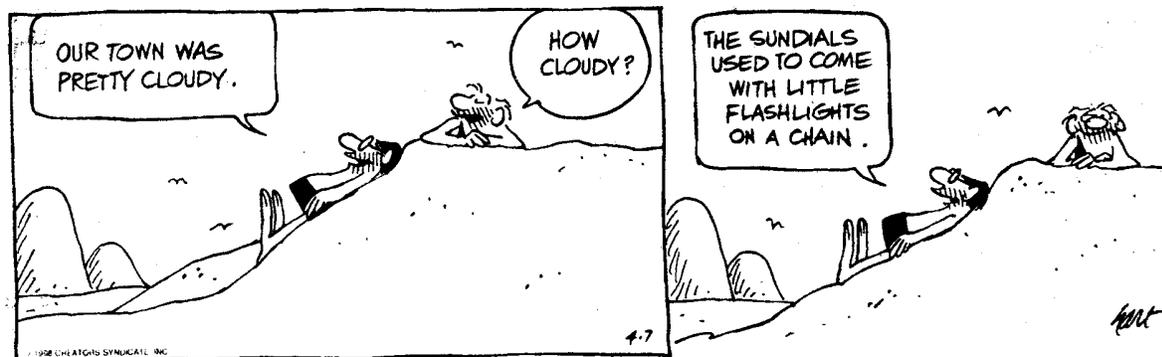
For sale as Package \$3000.00 or best reasonable offer.

Contact: Bill McCarron
Lower Sackville, NS.

Tel (902) 865-0922

To place an ad in
Nova Notes
Contact the editor at
smitchell@ap.stmarys.ca
or call (902)-865-7026

B.C.



NOTICE OF MEETINGS AND EVENTS

REGULAR MEETINGS

Date: **Regular Meeting — Friday, May 12 at 8pm;**
7pm for the council meeting.

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

Topic: **A Fun Look at Amateur Telescope Makers**
Speaker: Tom Clark

Date: **Regular Meeting — Friday, June 16 at**
8pm; 7pm for the council meeting.

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

Topic: **Video from AASVO, Intro by Walter**
Main Speaker: Walter Zukauskus

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

Place: To Be Announced.

Topic: **Nova East Report & Members Night**

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.

ASTRO ADS CONTINUED:

11x70 omcon binos and case 250\$
2.5 x televue barlow 175\$
18 mm omcon ortho 48\$
40mm televue plossl 130\$
celestron lpr#a filter 60\$
50 mm celestron right angle finder and
dovetail bracket (no crosshairs) 75\$.

Call: Peter Haverstock 876-8568.

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1 Meade T-Adapter
ALSO INCLUDES
1-Meade 9.5mm, 1.25" Plossl eyepiece
1-Meade #126 2x Barlow Lens 1.25"
Both are brand new from Perceptor

Telescope has been used maybe 10x's.
Considered as Mint Condition Asking \$600,
and \$140 for eyepiece and Barlow
Please contact Tony Marissink at
tonym@ns.sympatico.ca

2000 HALIFAX CENTRE EXECUTIVE

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