PeGASus

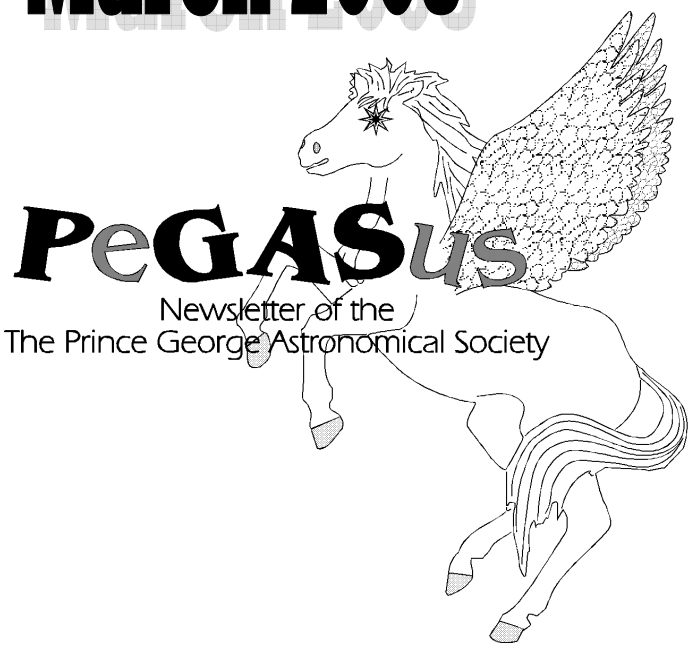
Newsletter of the

Royal Astronomical Society of Canada: Prince George Centre

Published: January to May & September to November. www/rasc.ca/princegeorge

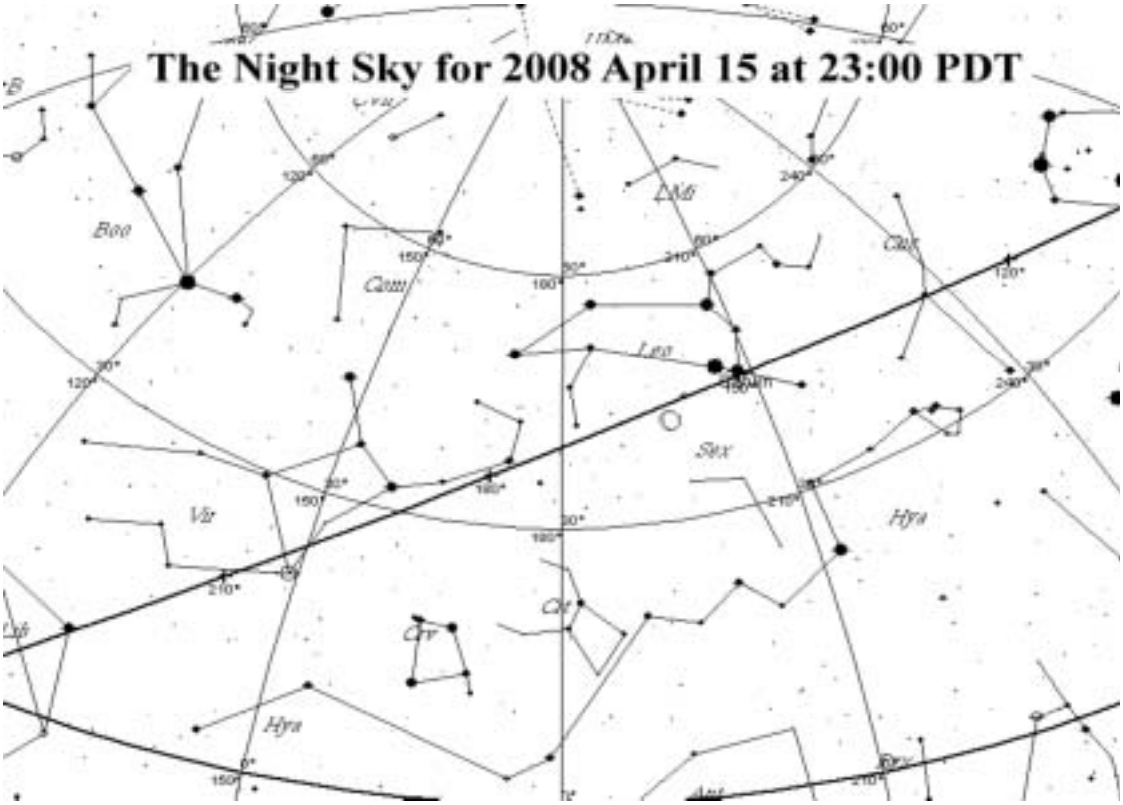
March 2008

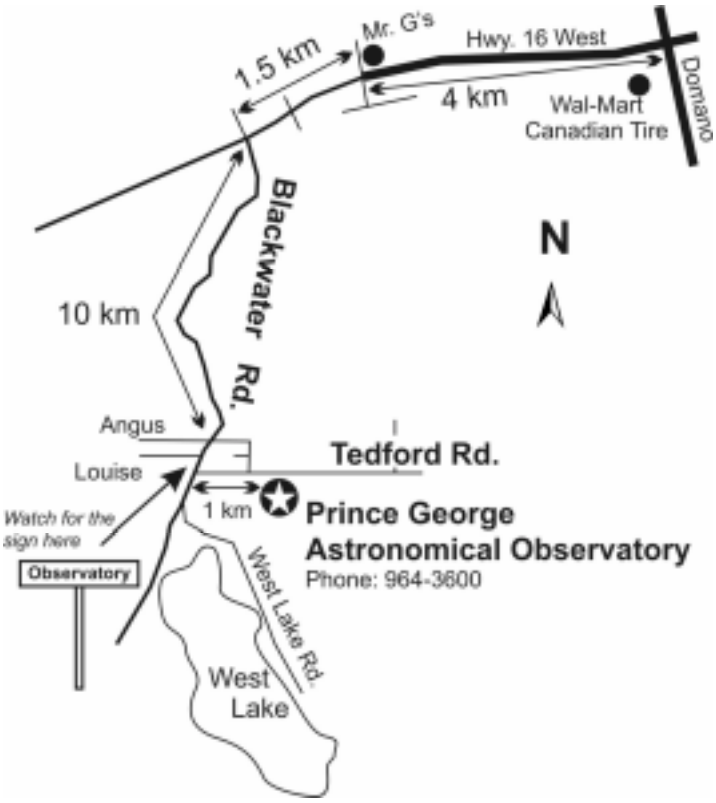
Our pursuits are out of this world.
Our activities are astronomical.
Our aim is the sky.



In Issue # 166

The RASC: Prince George Centre meets next,
Saturday April 26, 7:30pm
at the Observatory for a Social Evening





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Contributions to the newsletter are welcome.

Deadline for the next issue is
April 18, 2008

PeGASus Editor
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Coming Events

To Volunteer to help run an event please contact Brian Battersby.
brianbattersby73@yahoo.ca
Phone: 561-8138 (day) 612-4623 (evening)

Date	*Event*	*Time*	*Place*	*Volunteers*
Mar. 22	NOVA Class 5: Celestial Sphere	7:00 pm	Observatory	Wayne S
Mar. 29	Tour: Girl Guides	8:00 pm	Observatory	Glen H, Wayne S
April 5	NOVA Class 6: Moon & Eclipses	7:00 pm	Observatory	Wayne S
April 9	BUSINESS MEETING	7:30 pm	299 Victoria Street. Maurice S. office.	
April 19	NOVA Class 7: Solar System	7:00 pm	Observatory	Maurice S
April 26	Social Meeting	7:30 pm	Observatory	Gil S
May 3	NOVA Class 8: Stars	7:00 pm	Observatory	Greg M
May 17	NOVA Class 9: Observatory Op.	7:00 pm	Observatory	Brian B
May 24	Tour: Girl Guides (large group, 70+)	8:30 pm	Observatory	Brian B, Glen H, *HELP*
May 31	Year End Barbeque Social	TBA	Observatory	Gils S

For an up to date list of the Volunteer Schedule visit our website in the MEMBERS AREA
www.rasc.ca/princegeorge

Editorial

by Brian Battersby

In last month's "Night Sky" column Bob commented on an "apparent error" in the Observer's Handbook. I've pasted the portion below to provide the correct context.

> MARS, in Taurus until March 4, after which it passes into Gemini, is an evening object all month. At sunset (mid-month), it lies high (61° up) in the SSE sky; it transits at about 19:53; and it sets at 04:52 (all times PDT). (Note the apparent error in the Observer's Handbook – it says before 03:00 – standard time, presumably - which must be for Toronto, latitude 44°!) It's a 8" gibbous blob of magnitude 0.5.

If you were an inquisitive sort you might have wondered if the OH was indeed in error. Why does the time the Handbook says Mars rises seem so out of whack?

It turns out that the Handbook is not in error (whew!). Prince George Centre member and writer of the "Sky Month by Month" section of the Observer's Handbook, Alan Whitman, has provided the following explanation. The Editor's additions are in [ ].

> The relevant text from the Observer's Handbook is: "On the 15th it transits near the end of evening CT [civil twilight]. It [Mars] is then high in the south for northern observers. It sets in the northwest before 3:00.... ." [OH 2008 pg. 100]
>
> [Referring to] page 92 for the Introduction to "The Sky Month by Month". The relevant definitions in the first paragraph [state] "Any stated planet visibility times are in local mean time [LMT], which may differ significantly from standard or Daylight Saving Time (see pp. 44, 48)." [and] "'Northern observers'... are assumed to be at latitude 45 degrees N... ." Using those definitions the passage is NOT in error.

The problem is that the Observer's Handbook is giving the planetary visibility time in LMT at latitude 45 degrees N for us northerners not in PST at 54 degress N. In order to get the proper visibility time we need to convert from LMT to PST.

After spending an entire evening trying to figure out this conversion I have come up with the following. *x*LMT = *x*(UT+TIME ZONE) + LATITUDE. + LAT. & LONG. CORRECTION (OH pg 195) + SOLAR DRIFT CORRECTION (OH 2008 pg. 179) So in this case to convert the 3:00 LMT Mars set time to its PST Prince George March 15, 2008 equivalent you plug in the following:

3:00 LMT = 3:00 (UT + (–8)) + 54 + 11 + (-9)

Notice that 3:00 (UT + (–8)) is the same as saying 3:00 PST.

This ends up giving a Mars set time of 03:56 PST (4:56 PDT) in Prince George on March 15, 2008. According to my planetarium program Mars sets at 03:57 PST (04:57 PDT) on that day. I'll chalk the 1 min. error up to having to guess at the small table on page 179 of the OH and or the fact that I am thinking of GMT as being equivalent to UT and perhaps that is not quite accurate.

I hope this is all clear as mud now. If you think I am wrong (and I might be) feel free to send me a clear, detailed explanation to print in the next newsletter! :-)

Brian

News Flashes

Glen Harris has been awarded the national RASC Isabel Williamson Lunar certificate. He is the third person in the RASC to achieve this huge accomplishment and the first other than the developers of the certificate. He has also viewed 760 of the 1000 objects on the extended Isabel Williamson Certificate, the "Lunar 1,000" Congratulations Glen! You can see more info on the certificate programs here: `http://www.rasc.ca/certificates/index.shtml`

***

If you have loaned any club items over the winter months (telescopes, dvd's, books, etc.) please return them for others enjoyment in the spring session. Thanks!

***

The club has received its gaming grant for 2008.

***

National Council Meeting: Saturday, March 29. The main issue discussed was how previously unknown CRA charity regulations affect the RASC.

***

The roof at the observatory is leaking (again) Maurice S is investigating costs and method of repairs.

***

The executive has directed Bob N to purchase a telescope controller board, hand controller and acquire compatible drive motors and voltage amplifiers for the ongoing telescope upgrades.

***

The annual year end barbeque will be held on May 31. Time TBA.

RASC eNews

2008 GA

GA Accommodation Update

York University has confirmed to the 2008 GA team that the Pond Road Residences are not available as alternative accommodation at this year's GA. A limited number of rooms at the Schulich School of Business's Executive Learning Centre are recommended instead.

Mar 20, 2008, 11:43

Announcements

April 2008 Journal On-line

The April 2008 Journal is now on-line at this site: www.rasc.ca/journal/currentissue.shtml Watch for the email announcement with the regular username and password.

Mar 13, 2008, 00:39

2008 GA

Facing Mars Event Details Announced

On June 9, 2008, the Ontario Science Centre in Toronto will launch its new exhibition FACING MARS. Featuring interactive exhibits that encourage visitors to “walk on Mars”, test and launch rockets and “fly over” the Martian landscape. This thought-provoking exhibition was entirely developed by the Ontario Science Centre in consultation with leading experts from the field of space exploration. Participants in this year's General Assembly will get a unique opportunity to tour this exhibit and to meet with some of its creators as part of the Hamilton Centre's Centenary celebrations.

Mar 11, 2008, 14:44

Across the RASC

Our Printed History Goes On-line

Thanks to **Walter MacDonald** of the Kingston Centre, a significant part of the Society's recent history has been added to the National website. Back issues of the *Bulletin* and the *National Newsletter* are now available at www.rasc.ca/publications/printhistory.shtml.

Mar 10, 2008, 21:15

Northern Skies

Meteor Sighted Over Toronto Centre Observatory

The Toronto Centre's partnership with the University of Western Ontario has paid off with a meteor sighting and "landing candidate" that streaked over the Toronto Centre's Carr Astronomical Observatory on Wednesday, March 5th at 10:59 pm. This evening was clear with excellent observing conditions (the Toronto Centre of course had a meeting that night) and the footage from the CAO's all-sky camera captured an excellent candidate.

UWO reports that this is the largest meteor they have yet seen in their program and their tracking of it was made possible by our partnership.

Congratulations to Dr. Peter Brown and his team at UWO. For more information on their program visit http://aquarid.physics.uwo.ca. [Visit Website]

Mar 8, 2008, 15:49

Across the RASC

Thunder Bay Centre Hosts Eclipse Event

The Thunder Bay Centre hosted an observing session to view the total eclipse of the Moon, along with the planets Saturn and Mars, at Hillcrest Park in Thunder Bay on the night of February 20, 2008.

Mar 5, 2008, 11:55

2008 GA

2008 General Assembly Registration Now Open!

Registration for the 2008 General Assembly is now officially open! Plan now to join the Hamilton, Mississauga and Toronto Centres for "Astronomy Night in Canada" from June 28-30, 2008. This year's GA features exciting guest stars and a full program. Hosted by the York University Department of Physics and Astronomy this year's GA will help to highlight and accelerate the Society's preparations for the International Year of Astronomy in 2009.

Mar 3, 2008, 16:33

Northern Skies

The Sky This Month - March 2008

We will look at the faint constellation - Monoceros the Unicorn.

Mar 2, 2008, 23:04

Across the RASC

Guide to February 20th Available!

RASC members may be interested in a comprehensive brochure prepared for tomorrow's lunar eclipse by Roland Dechesne of the Calgary Centre. Permission is granted for public distribution and use.

Feb 19, 2008, 15:30

The Night Sky for April 2008

by Bob Nelson, PhD

Hi Folks,

As I write this, spring seems to have arrived. Spring equinox was yesterday and the weather has been definitely spring-like of late (although every once in a while it still snows!). I personally have had a lot of observing in the last week or so (even if the Clear Sky Clock was discouraging). I have trained myself to go out and look at the night sky every hour or so – even when it is not supposed to be clear. Often I am pleasantly surprised. I then swing into action, rolling off the roof of my observatory and sending the telescope into its home position, ready to go after my first target star. The whole process takes about a minute – ah, the joys of a home observatory! As many of you know, I study eclipsing binaries and publish my results. My 'bread and butter' work is determining accurate times if minima (the time of the mid-eclipse, when one star is in front of the other). These are important in monitoring orbital changes which in turn yield information about what is going on between the two stars (often mass exchange or sometimes the presence of a third star). I can do 3 or sometimes 4 ToMs in a night. On very clear nights, I do light curves in two or more filters (as I should have been doing last night). Over several nights, I get a full light curve (and this ties in nicely with my spectral studies at the DAO), and I can then do a full analysis to determine fundamental stellar parameters.

When I can't do a full light curve here in PG (often the case), I work in collaboration with other astronomers in other parts of the world. Last year, a group in Turkey gratefully accepted my results from the DAO and published a paper on DN Boo, for which they already had the light curves. I have a list of targets from them and will attempt to get the data for them this year in April (or again in September). It seems like a fruitful way to go, at least until I get my telescope relocated in the US southwest (whenever that happens!).

Hopefully, I will have some news for you next month on the drive upgrade.

Anyway, here is what is happening in our skies next month:

MERCURY lost in the glare of the Sun this month.

VENUS is lost in the glare of the Sun this month.

MARS, in Gemini until May, is an evening object this month. At sunset, it lies 56° above the SSW horizon and sets over 7 hours later – at 03:38 (PDT). It's only a 6" gibbous disk of magnitude 1.0.

JUPITER, in Sagittarius until 2009 (Jan) is a morning object this month. At mid-month, it rises at 03:09 (PDT) and at sunrise, lies 13° above the SSE horizon. Then, it's a 39" disk of magnitude -2.3.

SATURN, in Leo until 2009 (Sept), is visible most of the night this month. At sunset, it lies 44° above the SSE horizon; later on, it makes a transit at 22:51, and then sets at about 05:13 – all at mid-month.

URANUS, in Aquarius until 2009 (March), is a morning object all month, rising at mid-month at 05:17 (PDT). At sunrise, it lies low in the ESE (only 6° above the horizon!) As usual, it's a 3.6" disk at about magnitude 5.7.

NEPTUNE, in Capricornus until 2010 (March), is a morning object this month, rising at mid-month at about 04:30. At sunrise, it lies 11° above the SE horizon. As usual, it's a 2.3" disk at about magnitude 8.0.

CONSTELLATIONS to look for in April (at 10 PM, PDT) are Central Hydra, Crater (Crt), Sextans, Leo and Leo Minor.

Central Hydra ("The Sea Serpent", not to be confused with Hydrus, "The Water Snake" - WAY to the south, hence the "s" at the end of the constellation name) is out of the Milky Way and contains two galaxies: NGC 3923 and 3621. The former is a 2.0' x 1.2' ellipse of magnitude 10.7; the latter, a 12' ellipse of magnitude 10.0. One of the catalogues in Guide 7 tells me that NGC 3923 is travelling away from us at some 1400 km/s and is therefore about 20 megaparsecs (64 million light-years) away, using Ho = 70 km/s/Mpc for the Hubble constant.

Crater ("The Cup") contains galaxies NGCs 3672, 3962, and 3887 plus the 6th magnitude variable star SY Crt. (The Hipparcos catalogue -- available in Guide 7-- tells us that it's a slow irregular variable of spectral type M3 III (that makes it a cool red giant) and is 570 times as bright as the Sun and lies 570 light years away.)

Sextans ("The Sextant") contains the galaxies NGCs 2974, 3115, 3166, and 3169.

Leo ("The Lion") is familiar to most of us. It's a constellation that actually resembles what it's supposed to be. The head of the beast, on the right, contains at its base the first magnitude star Regulus. It also contains numerous galaxies (almost to many to mention) M65, 66, 95, 96, 105, plus NGC 3628, 3384, 2903. Those from the first group are typically 10th magnitude and 5-10' in size. The latter group are generally fainter, typically 11th magnitude (NGC 2903 is 9.5) and smaller 3-5' (NGC 2903 is 12.5'). Note that M65 and 66 is a famous pair visible in the same field of view.

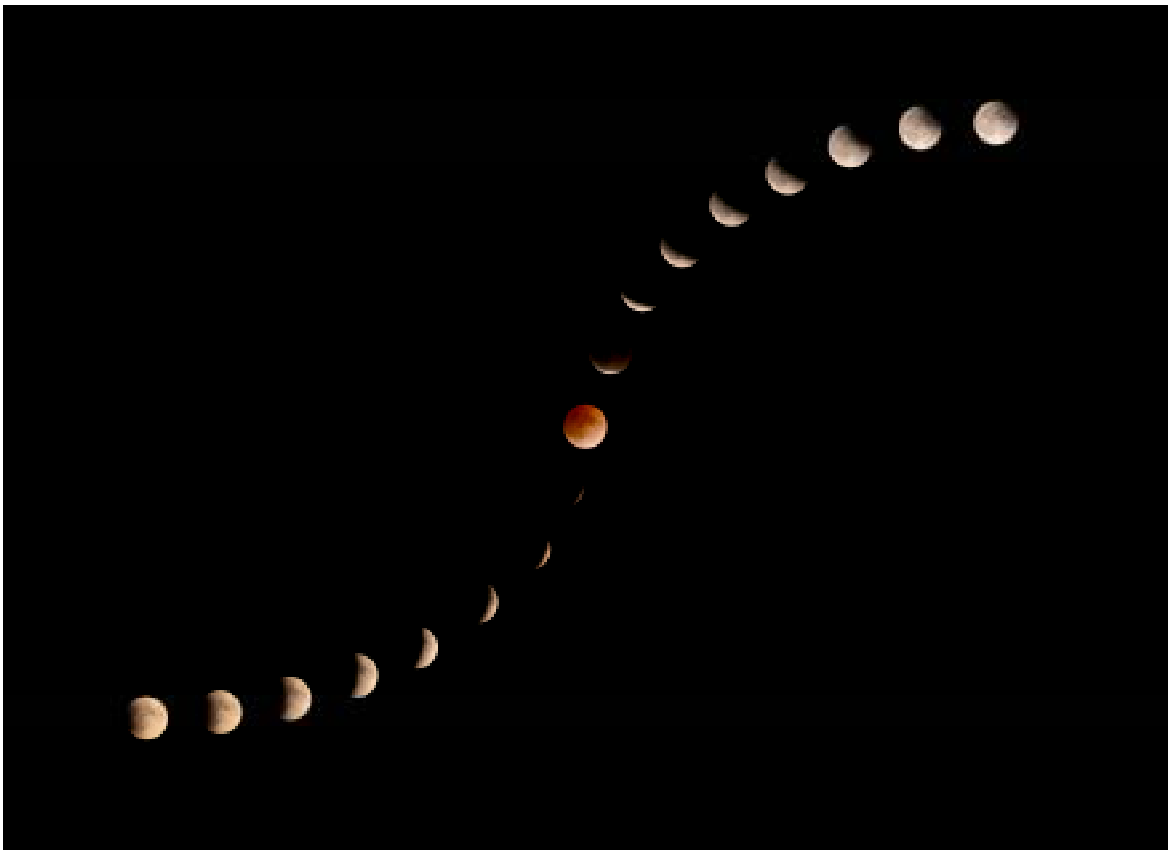
Leo Minor ("The Little Lion") contains galaxy NGC 3344 (10.4 mag, 7.2' in size).

Clear skies,
Bob Nelson

February 20, 2008 Lunar Eclipse Gallery

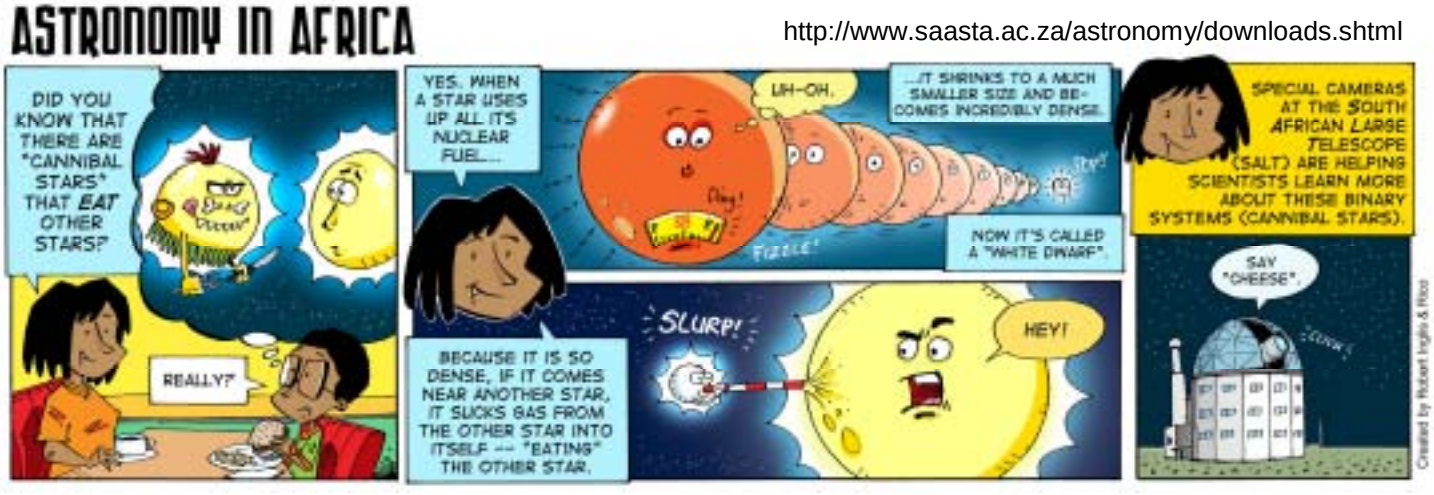
left: **Wayne Sanders & Rusty Hoff—RASC P.G.**
Photos taken piggy back on LX90 scope with a Meade DSIc mated to a 135 mm cameras lens .

2 frames selected from a automated sequence of .1 sec shots taken 30 sec. apart for the entire duration of the eclipse sequence contains more cloud than eclipsing moon.



above:
Doug Wayland—RASC P.G.
Canon 35mm FTbN camera loaded with Kodak Ultra Max 400 film attached to prime focus of Meade 8" SCT. The exposure time was approximately 8 seconds. Photo was taken at about 20:10 PST as the moon was coming out of the Earths umbral shadow.

left:
Mitch George—Calgary AB
(Wayne's son)
Canon Rebel piggy-backed on ETX 125. Digitally composed in Photoshop.



http://www.saasta.ac.za/astronomy/downloads.shtml

Lunar Eclipse Over the Chilcotin: Feb 20, 2008

by Dan Hicks

Above and north of Alexis Creek, on the late afternoon of February 20th, 2008, the Moon rose over Anahim Meadow into a clear sky. Moonrise locations and times were much as a website calculator had predicted (see below) and I was ready with my tripod-mounted camera. Fortunately, as I was at that general location observing the total lunar eclipse for three and a half hours, 17:20 to 21:00, the temperatures dropped to only moderately below freezing; however, the night was chilling because I was standing still and operating my camera with ungloved hands.

I remained with my Jeep on the Anah Lake Road, an ideal location because traffic was minimal; only three pickups passed by. One of these trucks stopped ahead of me. The driver was a new Alexis Creek resident who was there with his family to see the eclipse.

The Moon moved steadily into the Earth's shadow until it was dimed to a glowing orange orb. The winter constellations and the Milky Way emerged to attain a prominence denied them by an uneclipsed full moon. Along with Ursa Major, Orion, Taurus, Gemini, and Leo, were the planets, Jupiter and red Mars. Lunar eclipses occur only during full moons. The Moon's aerie orange illumination was caused by indirect sunlight reaching its surface after being refracted through our atmosphere. Had Earth no atmosphere (God forbid), the Moon would be pitch black and invisible against its stellar backdrop.

Below me, back down the road towards Alexis Creek, a boisterous party of cross-country skiers began a night ski on the trails through the trees. In McAuley Meadow, on Alexis Creek's east side, an observing party of adults and children also enjoyed the lunar eclipse, the children concurrently amusing themselves by descending a mild snowy slope on an inner tube.

Rural locations like Alexis Creek feature a vibrant night sky lost to urban locations where light pollution, caused by the glare of conventional uncapped lighting, obliterates most of the natural night sky, including the Milky Way. Those who took the time to view the beautiful orange eclipsed moon of February 20th had their lives momentarily enriched, especially those observers who witnessed the event under a dark sky. The Skyandtelescope.com website is good source of astronomical information and features photos of the eclipse as seen from across North America and Europe. The next total lunar eclipse comes our way on December 20th, 2010, and who knows what viewing opportunities the weather will allow us at that time.

Dan Hicks
Alexis Creek, B.C.

The *Williams Lake Tribune* (wltribune.com), in its *Tribune Weekend*, published my Fully Eclipsed Moon photo (D) on the February 22nd, 2008 front cover, & my Partially Eclipsed Moon over Anahim Meadow photo (A) & narrative in the February 29th paper as "Eclipse Clear in the Country" (page A5) .

D. 19:05: Fully eclipsed moon.
The Moon is completely within the Earth's shadow, although it was never deep within the shadow, as demonstrated by its bright edge.

A. 17:58: Partially eclipsed moon over Anahim Meadow, looking east. Composite photo.

Tracking Wildlife from Space

by Patrick Barry

It's 10 o'clock, and do you know where your Oriental Honey Buzzard is?

Tracking the whereabouts of birds and other migrating wildlife across thousands of miles of land, air, and sea is no easy feat. Yet to protect the habitats of endangered species, scientists need to know where these roving animals go during their seasonal travels.

Rather than chasing these animals around the globe, a growing number of scientists are leveraging the bird's-eye view of orbiting satellites to easily monitor animals' movements anywhere in the world.

The system piggybacks on weather satellites called Polar Operational Environmental Satellites, which are operated by the National Oceanic and Atmospheric Administration (NOAA), as well as a European satellite called MetOp. Sensors aboard these satellites pick up signals beamed from portable transmitters on the Earth's surface, 850 kilometers below. NOAA began the project—called Argos—in cooperation with NASA and the French space agency (CNES) in 1974. At that time, scientists placed these transmitters primarily on buoys and balloons to study the oceans and atmosphere. As electronics shrank and new satellites' sensors became more sensitive, the transmitters became small and light enough by the 1990s that scientists could mount them safely on animals. Yes, even on birds like the Oriental Honey Buzzard.

"Scientists just never had the capability of doing this before," says Christopher O'Connors, Program Manager for Argos at NOAA.
Today, transmitters weigh as little as 1/20th of a pound and require a fraction of a watt of power. The satellites can detect these feeble signals in part because the transmitters broadcast at frequencies between 401 and 403 MHz, a part of the spectrum reserved for environmental uses. That way there's very little interference from other sources of radio noise.

"Argos is being used more and more for animal tracking," O'Connors says. More than 17,000 transmitters are currently being tracked by Argos, and almost 4,000 of them are on wildlife. "The animal research has been the most interesting area in terms of innovative science."

For example, researchers in Japan used Argos to track endangered Grey-faced Buzzards and Oriental Honey Buzzards for thousands of kilometers along the birds' migrations through Japan and Southeast Asia. Scientists have also mapped the movements of loggerhead sea turtles off the west coast of Africa. Other studies have documented migrations of wood storks, Malaysian elephants, porcupine caribou, right whales, and walruses, to name a few.

Argos data is available online at www.argos-system.org, so every evening, scientists can check the whereabouts of all their herds, schools, and flocks. Kids can learn about some of these endangered species and play a memory game with them at spaceplace.nasa.gov/en/kids/poes_tracking.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

P. G. Centre Spots Debris from USA 193 Shoot Down

by Paul Strickland, Prince George Citizen

The fragments of USA Spy Satellite 193 streaking across the night sky provided a spectacular show Wednesday for visitors to the Prince George Astronomical Observatory viewing the lunar eclipse.

The objects came out the southwest sky, went overhead and then moved into the northeast, said Maurice Sluka, vice-president of the Royal Astronomical Society of Canada-Prince George Centre.

"There were at least eight objects, all on a parallel course -- each with a very bright yellow-gold flare light," he said. "Each also trailed a luminescent yellow tail that would last over one minute.

"These objects, when they were overhead, were spanning as widely as 40 degrees wide between the North Star, Polaris, and an area above the eclipsing moon in the eastern sky."

These fragments were going across the sky in a loosely aligned group heading northeast, he said.

A couple of the fragments burned up before they made it that far, said Glen Harris, secretary of the RASC-Prince George Centre. "Others disappeared into clouds as they headed toward the horizon," he said Thursday.

Sluka checked with Heavens Above, an astronomy website, which forecast the spy satellite would cross above northern B.C. Wednesday at 7:39 p.m. "That was within a minute of when we saw it," Sluka said.

The website said the satellite would be overhead at 7:41 p.m. and would disappear into the northeast 7:43 p.m.

Sluka also found information that the missile aimed at the satellite was launched at 7:25 Pacific Standard Time. "That was less than 15 minutes between the launch and our seeing it after it had been hit by the missile," Sluka said. "The impact was not visible from our location."

"All the circumstantial evidence -- from where the satellite was forecast to go overhead and the time it was expected to appear in the southwest and where we did see the debris -- shows those fragments should have been from that satellite," he said. "They wouldn't match a meteor shower," Sluka said. "Meteors from meteor showers are far more random in appearance and timing.

"What we had was a group of bright objects on a parallel course."

"It was a spectacular visual display," Harris agreed.

About 40 people visited the observatory on Tedford Road to observe the total eclipse of the moon. Clouds in the east interfered with the view of the moon during much of the time that it was fully eclipsed. However, breaks in the cloud cover allowed brief glimpses of excellent sharp images of its darkened surface through large telescopes astronomers had set up on observatory grounds for the visitors.

Cloud cover remained intermittent and light enough between 7:45 and 8:45 p.m. that visitors also enjoyed a good continuing view of a returning area of brightness growing from below as the moon moved out of the earth's dark main shadow and into the thinner outer shadow called the penumbra

The earth was completely out of the umbra at 9:09 p.m. and the penumbral portion of the eclipse ended at 10:15 p.m., with the full moon shining with its total brightness again.

The next full eclipse of the moon does not occur until 2010, Harris said.

Visitors also enjoyed a good view of Mars. The red planet was in clear skies almost directly overhead at mid-evening.

North-central B.C. residents may have been the first to see the satellite fragments after the impact from the missile, Sluka said. The North Pacific is unpopulated. The B.C. Central Coast is lightly populated, and may have been clouded over at the time the fragments passed over.

Sluka received calls and requests for interviews from radio stations in Edmonton, Toronto and even as far away as university radio station 2NURFM in Newcastle, Australia.

Paul Strickland

There will be another article on the USA 193 debris sighting written by Maurice Sluka in PeGASus #167.

2008 RASC General Assembly

http://www.rasc.ca/ga2008

The 2008 General Assembly of the Royal Astronomical Society of Canada will be held in Toronto at York University, Keele Campus, from June 27 to July 1, 2008.

This years General Assembly (GA) will be co-hosted by the Hamilton, Mississauga and Toronto Centres along with the Department of Physics and Astronomy at York University. These Centres would like to invite members from across the country to join them for the GA, and to help them celebrate the 100th anniversary of the Hamilton Centre, the 140th anniversary of the Toronto Centre and the 2nd anniversary of the Mississauga Centre. The GA will also serve as a launchpad and forum for the exciting events and programs that will highlight astronomy in Canada and around the world in 2009 during the **International Year of Astronomy**. The theme of this year's GA is "Astronomy Night in Canada" and the schedule will feature many entertaining mash-ups between hockey and astronomy!"

We are very fortunate to have an excellent line up for the GA. Speakers so far include:

-Dr. Phil Plait an internationally renowned astronomer, author, and lecturer. His numerous appearances on radio, television, podcasts, and in front of audiences have made him a celebrity in science circles, and put him in demand as an expert on astronomical matters. Dr. Plait will be giving the Helen Sawyer Hogg lecture this year, as well as talking to the Society about dealing with the public about the International Year of Astronomy.

-Dr. James Hesser Director of the Dominion Astrophysical Observatory in Victoria, BC. His research applies ground and space-based facilities, like the Canada-France-Hawaii Telescope and the Hubble Space Telescope, to questions concerning the history of how the Milky Way and other galaxies formed and have evolved, with particular emphasis on the oldest stars and on clusters of stars. He joins us at the 2008 General Assembly in his role as Canada's national representative for the International Year of Astronomy.

-Terence Dickinson editor of SkyNews since the magazine's first issue in 1995. He has been involved in astronomy full-time since 1967 as a writer, an editor, a teacher and a broadcaster and will celebrate his 50th anniversary as a member of the Society at the 2008 General Assembly.

-Scott Young the Society's National President. An accomplished science educator, Director of the Planetarium at the Manitoba Museum and speaker. Scott will be speaking at the closing banquet of the 2008 General Assembly setting forth his vision for the Society as we enter the International Year of Astronomy.

Friday is tour day at the GA. In the afternoon, we plan to visit MacDonald, Dettwiler and Associates Ltd. (**MDA**) Plan to arrive early for the General Assembly and get a firsthand look at Canada's role in space exploration. The creators of Canadarm I and II, components for the Mars Phoenix Lander and other space hardware, along with the Dextre Manipulator System launched aboard STS-123 and transferred to the International Space Station in March 2008. The Space Missions division of MDA hosts a special tour of their facilities for RASC delegates.

Later that day, will be the **Toronto Telescope Tour**. Transportation will be provided to dinner at a deli situated between two of Toronto's telescope stores, Efston Science and Kahnscope Centre. There will be time to eat (members from Montreal can critique Toronto smoked meat sandwiches!), and shop.

These tours have limited capacity, so book early.

There will be two banquets during the GA. On Sunday June 29, the Hamilton Centre will be celebrating its centenary at the Ontario Science Centre, with an early arrival planned to view the exciting new exhibit "Facing Mars". On Monday, the Toronto Centre hosts the closing banquet following the Helen Sawyer Hogg lecture.

GA's are not usually renowned for the observing, especially in an urban environment. However, the Department of Physics and Astronomy's observatory will be accessible during the evenings at the GA, weather permitting. If on vacation, there is much to do in Toronto during the summer months for members and their families. There is a TTC (Toronto Transit Commission) bus stop within short walking distance of the Vanier residence building, which provides public transportation to Downsview subway station, and to downtown Toronto and all its attractions.

There will be many opportunities to talk about how to best celebrate the International Year of Astronomy in 2009, including a panel session on Saturday morning, lead by Dr. Hesser.

After the official ceremonies have ended, plan to stay in Toronto for an extra day or two and spend Canada Day at the Toronto Centre's E.C. Carr Astronomical Observatory (CAO), one of the best amateur observatories in Canada, located on the beautiful Niagara Escarpment overlooking Georgian Bay. Come and see it for yourself.

Mark your calendars and make your plans to attend, to renew friendships, and meet members from all Centres across the country.

Registration is now open and early bird registration ends April 30. Please visit www.rasc.ca/ga2008 for more information, to register and to apply to present a paper session. Check back regularly for updates as more information becomes available.

Come and join us for the opening face-off on 2008 June 28!

Want to join the RASC Prince George Centre?
Fill out the form below and mail it in to the address at the top of the form.
Existing members can use this form to renew as well!

THE ROYAL ASTRONOMICAL SOCIETY OF CANADA

LA SOCIÉTÉ ROYALE D'ASTRONOMIE DU CANADA
136 Dupont Street, Toronto, ON M5R 1V2 Canada
Tel: 416-924-7973 Fax: 416-924-2911 Email: membership@rasc.ca
Website: http://www.rasc.ca/ E-store: http://www.store.rasc.ca/

FORM UPDATED: 2008 JAN 07

MEMBERSHIP APPLICATION

APPLICATION DATE:

NAME _____
(PLEASE PRINT IN FULL)

ADDRESS _____

CITY: _____ PROV: ____

POSTAL CODE _____

TELEPHONE: (___) _____

EMAIL: _____

MEMBERSHIP BASE FEES $_____

CENTRE SURCHARGES $_____

SUB-TOTAL $_____

eJOURNAL INCLUDED

PRINTED JOURNAL $_____
($16.80 IN CAD / $23 US INTERNATIONAL)

TOTAL PAID $_____

☐ My cheque/money order is enclosed
(PLEASE MAKE PAYABLE TO RASC)
NOTE: FOR NON-CANADIAN MEMBERS PRICES ARE IN US DOLLARS.

☐ VISA ☐ MASTERCARD
#
_____

EXPIRY DATE _____

SIGNATURE _____

Please return this form with your payment to:
The Royal Astronomical Society of Canada
136 Dupont Street, Toronto, ON M5R 1V2 Canada

MEMBERSHIP INCLUDES: OBSERVER'S HANDBOOK
6 ISSUES OF RASC eJOURNAL / 6 ISSUES OF SKYNEWS

☐ Personal information is collected for membership and/or order fulfillment purposes only.
See http://www.rasc.ca/ for the RASC Privacy Policy.

MEMBERSHIP CATEGORY

YOUTH MEMBERS MUST NOT HAVE REACHED THEIR 21ST BIRTHDAY AT THE TIME OF PAYMENT.

ANNUAL MEMBERSHIP BASE FEES:
- ☐ YOUTH ---------- $36.75
- ☐ ORDINARY ---------- $59.00
- ☐ LIFE ---------- $2100.00

Please choose one affiliation:

Annual Centre Surcharges			
✓	Centre	Ordinary	Youth
	Belleville	8.00	4.00
	Calgary	13.00	8.00
	Charlottetown		
	Edmonton		
	Halifax		
	Hamilton	13.00	
	Kingston	5.00	
	Kitchener-Waterloo	10.00	10.00
	London	4.00	
	Mississauga		
	Centre Francophone de Montréal	22.00	5.75
	Montréal	9.00	3.25
	New Brunswick		6.25
	Niagara	4.00	
	Okanagan	5.00	
	Ottawa		
	Prince George	4.00	
	Québec	11.00	4.50
	Regina	4.00	
	St. John's	4.00	
	Sarnia		
	Saskatoon	10.00	
	Thunder Bay		
	Toronto (see note below)		
	Vancouver	2.00	
	Victoria	2.00	2.00
	Windsor		
	Winnipeg		
	Unattached		

Surcharges support Centre activities. Please contact the Centres for details.
http://www.rasc.ca/member/2008contactlist.pdf

* APPLICATIONS FOR THE RASC TORONTO CENTRE ARE PROCESSED LOCALLY.
Please visit http://toronto.rasc.ca/content/membership.shtml for details.

Please keep this portion for your records.

The Royal Astronomical Society of Canada
La Société Royale d'Astronomie du Canada
136 Dupont Street, Toronto, ON M5R 1V2 Canada
Tel: 416-924-7973 Fax: 416-924-2911

Website: http://www.rasc.ca/ E-store: http://www.store.rasc.ca/

Email us at: membership@rasc.ca

Your Membership is appreciated
Thank you.

DATE _____ Amount paid $_____ ☐ CHEQUE ☐ VISA ☐ MASTERCARD

Royal Astronomical Society of Canada
Prince George Centre

AKA the ***Prince George Astronomical Society***

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