

Event Horizon

May 2000

Volume 7 Issue 7



Last Night April 12, 2000

Last night
I stepped from my real world
into one infinitely greater.

With the opening of a door
I left all that experience had provided me
and stepped into a world
unstoppable in its magnitude.

Leaning back into the truckbed
I gazed heavenward
Dwarfed by the fullness
Of what nature had given me.

There in the silence
And serenity of night
I saw perfection.....
The moon and each encircling star
Enrobed in clarity
An ocean of infinity
Encompassing them

And for one brief moment
The only sounds to split
the stillness
Came from
Inside my head.

Barbara Bentham



The next meeting of the Hamilton Amateur Junior Astronomers (HAJA) will be on Tuesday, May 16, at 7pm at McMaster University in the Burke Science building, room B148. HAJA is a group of young people, roughly between the ages of 4 and 12, who are interested in astronomy. There is a meeting once a month where the members learn about astronomy, and participate in a related craft project. We occasionally visit the planetarium and on clear nights go outside for observing. If you know any children who might be interested contact Rosa at 540-8793 for more information.



inside...

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Chair's Report

It is with great sadness and difficulty that I write this Chair's report. It's a black day for the HAA and for amateur astronomy that **Otmar Eigler** has passed away. I considered Otmar a very close friend, and although I have shed many tears over his passing, I find it very difficult to put my feelings on paper.

Otmar had many friends, and his memorial service was well attended. Since his passing, I have received correspondence from a number of people, and would like to share the following message from **Dave MacDonald**, a close friend of Otmar's from the North York Astronomical Association.

"Otmar had a lot of friends. Most were, if not all, astronomy related. He had a keen and genuine love for the hobby. His creative and analytic mind helped him design and build many great accessories for his telescope and mount that just deepened his enjoyment of astronomy. Some of which were an award winning power supply box for his scope, a tangent arm for his guide scope or camera, Messier marathon finder charts, stainless steel counter weights and many more miscellaneous related parts. He was always willing to share his accomplishments and plans with anyone who asked.

Otmar was a member of the RASC (Royal Astronomical Society of Canada) from the

early 1980's, a dedicated member of the NYAA (North York Astronomical Association) since the mid to late 1980's and of course a member of HAA in the 1990's. He was a tireless individual behind the scenes at Starfest setting up and tearing down to help make it a success. Most people knew Otmar, if not by name, then by his recognizable face. He was a relentless ambassador to the hobby of astronomy. Rarely would you catch him without an astronomy T-shirt or hat displaying hat pins denoting the various astronomy events he had attended over the years. He had his own dress code standard that would not allow him to stop wearing shorts until the first snowfall.

Otmar loved to be under the stars. He enjoyed being with others at Star Parties sharing his experiences, his photographs and most of all his love for the heavens. I met Otmar over 10 years ago and have shared some incredible times with him. I will deeply miss my friend. I count myself fortunate to have had the opportunity to travel, observe, photograph and reminisce with a man that I could truly call my best friend!"

Dave has said what I felt, and I thank him for his tribute to Otmar.

Grant Dixon, Chair
grant.dixon@home.com

(Please note my new e-mail address – if you send a message to my old NetAccess address, I

HAMILTON
AMATEUR
ASTRONOMERS

Event Horizon is a publication of the Hamilton Amateur Astronomers (HAA).

The HAA is an amateur astronomy club dedicated to the promotion and enjoyment of astronomy for people of all ages and experience levels

The cost of the subscription is included in the \$15 individual or \$20 family membership fee for the year. Event Horizon is published a minimum of 10 times a year.

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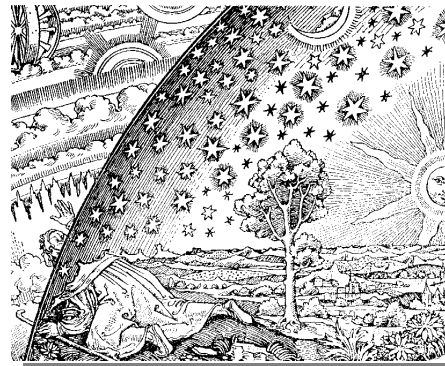
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Upcoming Events: 21st Century Canadian Solar Eclipses

- Ray Badgerow

Last month, I showed future eclipses that will occur globally in the next 20 years. Now it is time to preview upcoming eclipses in the 21st Century that will be visible from Canada. No doubt, some of those reading this article may be able to view a number of these events. There will be some 15 eclipses next century: 7 annular and 8 total. Here is the list.

August 1, 2008 - Total

The umbra touches down in the northernmost part of the NWT in the early morning, and narrowly misses the towns of Cambridge Bay, on Victoria Island and Resolute, on Cornwallis Island. The town of Alert will experience 40 seconds of totality with the Sun low in the sky. This “nighttime” eclipse may make an wonderful sojourn to the

land of the midnight Sun, but I think China is cheaper to go to.

March 20, 2015 - Total

This eclipse ends at the North Pole right at Sunset for approximately 2 minutes. It will lifted above the horizon, but will not likely be seen by anyone.

June 10, 2021 - Annular

This remarkable 3.5 minute eclipse will be visible from western Ontario, as the Sun rises as a ring with only 12% of its disk visible. Due to the Sun's low altitude and the fact that the Moon is near apogee the path is some 531 km wide. The path covers western Ontario, Hudson's Bay, Baffin Island, western Greenland, the North Pole and ends in eastern Siberia.

April 8, 2024 - Total

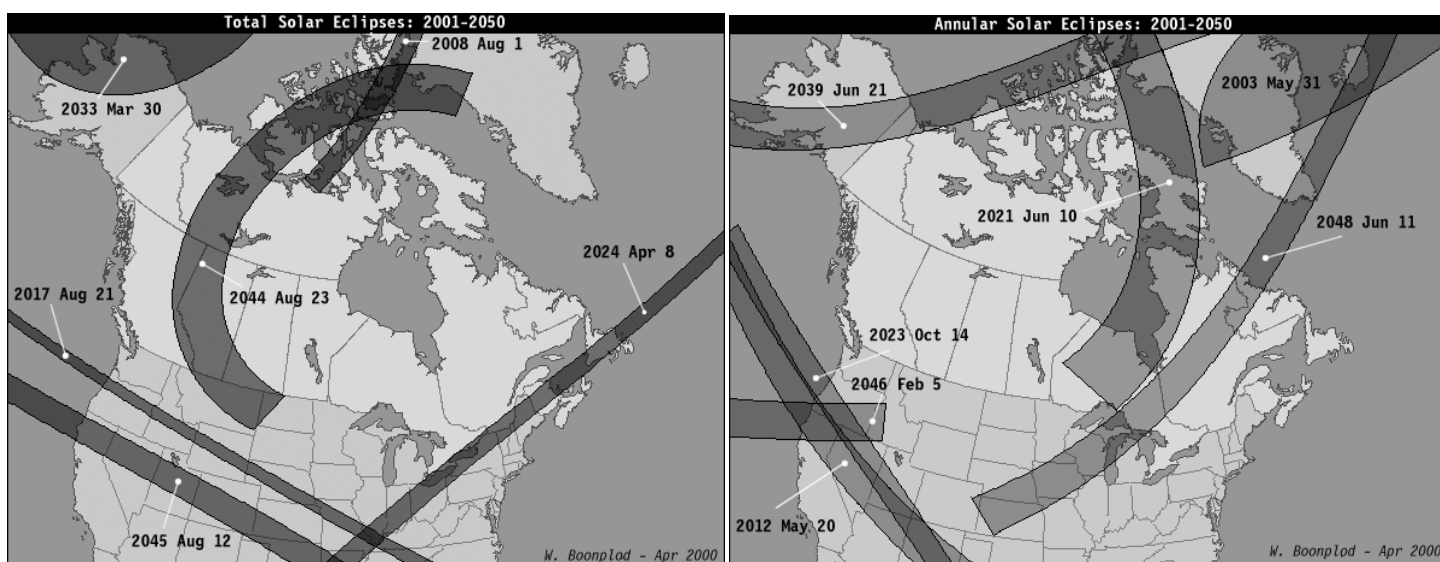
The path of this eclipse starts off in the Pacific Ocean, comes ashore at Mazatlan

then curves northeastward through Texas and the central United States before entering Southern Ontario in mid-afternoon. It continues through southern Quebec, northern Maine, New Brunswick, northern PEI, and central Newfoundland before heading out into the North Atlantic ocean. This is the Triple Saros eclipse (54 yrs and 34 days) for the eclipse of March 7, 1970 that traversed the eastern Seaboard.

June 21, 2039 - Annular

The path of annularity starts in the Northern Pacific, crosses Alaska, NE Yukon, then through the Arctic Archipelago, northern Greenland, then northern Norway & Sweden before leaving the Earth in the Russian Federation. This eclipse occurs 5 hrs after the Summer Solstice, and would be visible as a midnight Sun eclipse for these north of the

(Continued on page 6)



Constellations of the Month - Ophiuchus and Serpens

- Margaret Walton

Ophiuchus is identified with Aesculapius, the son of the god Apollo and the nymph Coronis. His mother was killed before he was born and he was raised by the centaur Chiron, who taught him all the arts of medicine. He became the ship's surgeon of the Argo. A serpent revealed to him the secrets of healing the dead and was his symbol of healing. Hades, god of the underworld, was fearful of Aesculapius' power and protested to Zeus. Zeus killed Aesculapius with a thunderbolt and placed him in the heavens. In the sky, Ophiuchus is shown holding the serpent, thus the constellation of Serpens is cut in two, with the head of Serpens on one side of Ophiuchus (Serpens Cauda) and the tail on the other side (Serpens Caput). This same snake is found on the symbol of medicine all over the world – the caduceus.

The midnight culmination of Serpens Cauda is late May, Ophiuchus is early June, and Serpens Caput is late June. Ophiuchus contains at least 20 globular star clusters, the greatest number of any constellation.

Stars

70 Ophiuchi: This is one of the

best known and most studied binary stars. The magnitudes are 4.2 and 5.9 and the stars are of contrasting colours – yellow and red/violet.

RS Ophiuchi: This is one of seven known recurrent novas, and is visible to the naked eye at its maximum. The last known outburst was in 1985, previous to that they occurred in 1898, 1933, 1958, and 1967. Its magnitude is 11.1 normally, rising to 4.0 – 5.0 at its maximum.

Barnard's Star: This is a faint, red dwarf, and is notable as it has the greatest known apparent motion of any known star. Magnitude is 9.5 – this is the second closest star to us. Its space velocity is about 103 miles/second.

Objects in Ophiuchus

M9 (NGC6333): Globular Cluster. This is a small, bright, rich cluster of magnitude 7.9. It is the brightest of a trio of clusters.

M10 (NGC6254): Globular Cluster. Bright, very large, round, rich cluster of magnitude 6.6. A chain of stars starts north of the cluster and cuts through it, seeming to bisect the cluster.

M12 (NGC6218): Globular Cluster. Very bright, very large cluster of magnitude 6.6. As per the NGC, this is a !!

remarkable object.

M14 (NGC6402): Globular Cluster. Very bright, large, round, rich cluster of magnitude 7.6. As per the NGC, this is a ! remarkable object.

M19 (NGC6273): Globular Cluster. Bright, large, rich cluster of magnitude 7.2.

M62 (NGC6266): Globular Cluster. Very bright, large cluster of magnitude 6.6 with a high central concentration of stars. As per the NGC, this is a ! remarkable object.

M107 (NGC6171): Globular Cluster: Large, very rich cluster of magnitude 6.6.

Pipe Nebula: This is an area of the Milky Way containing a large, black cloud. This is visible to the naked eye and starts 2 degrees to the east of and just below Theta Ophiuchi. This is very large and extends a distance of 7 degrees. Dark skies are needed to view this object.

NGC 6287/6284/6232: Globular Clusters. This is a trio of bright globular clusters ranging in magnitude from 9.0 to 10.2.

NGC6293: Globular Cluster. Very bright, large, round cluster with a high central

(Continued on page 5)

Ophiuchus and Serpens

(Continued from page 4)

concentration of stars.
Magnitude is 8.2.

NGC6304: Globular Cluster. One of a pair of clusters. This is bright, large and round with a magnitude of 8.4.

NGC6309: Box Nebula. This is a bright, small nebula with traces of ring structure. Magnitude is 11.5.

NGC6316: Globular Cluster. This is a bright, round, small cluster with a high central concentration of stars. Magnitude is 9.0.

NGC6342: Globular Cluster. This is a bright, small, rich cluster of magnitude 9.9.

NGC6355: Globular Cluster. This is a faint, large, round

cluster of magnitude 9.6.

NGC6356: Globular Cluster. This is a very bright, large, well resolved cluster of magnitude 8.4.

NGC6384: Galaxy. Bright, small, slightly elongated galaxy with four filamentary arms. Magnitude is 10.6.

NGC6401: Globular Cluster. Bright, large round cluster of magnitude 9.5.

NGC6517: Globular Cluster. Bright, large cluster with a high central concentration of stars. Magnitude is 10.3.

NGC6572: Planetary Nebula. Bright, small, round nebula with a very green colour. This is best with an OIII filter. Magnitude is 8.1.

NGC6633: Open Cluster. This is a large, rich cluster of magnitude 4.6. It is visible with binoculars. IC4756 is in the same field.

IC4604: Nebula. This is a large area of rich nebulosity including dark nebula, emission nebula and reflection nebula illuminated by light from Rho Ophiuchi. This is on the edge of one of the largest dark nebula called by Hershel 'A Dark Hole in the Heavens'.

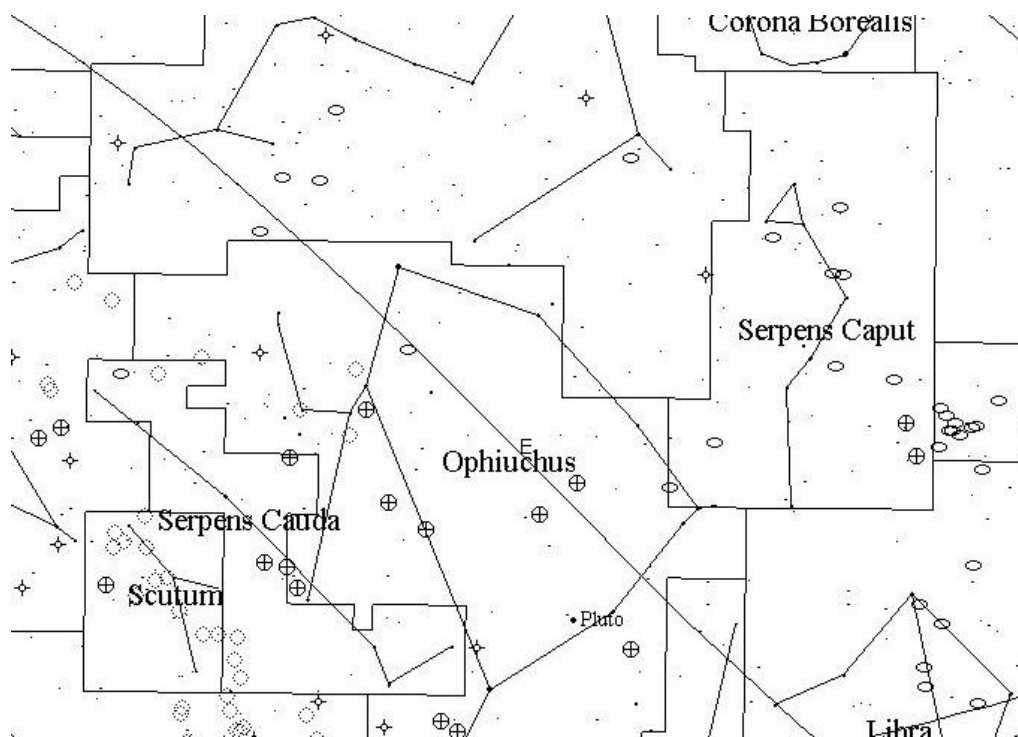
Objects in Serpens

M5 (NGC5904): Globular Cluster. This is a bright, very large, very condensed, rich cluster of magnitude 5.8. It is visible with binoculars and is considered one of the finest globulars.

M16 (NGC6611): Eagle or Star Queen Nebula. This is an area of nebulosity containing an open cluster. It has a magnitude of 6.0 and the nebulosity shows up best with a UHC filter.

NGC5921: Galaxy. This is a bright, large, irregular galaxy with filamentary arms. The nucleus has dark lanes and the galaxy has a magnitude of 10.8.

IC4756: Open Cluster. This is rich, very large cluster visible with the naked eye. Magnitude is



21st Century Canadian Solar Eclipses

(Continued from page 3)

Arctic Circle.

August 23, 2044 - Total

This total eclipse starts on the west coast of Greenland, arches across southern Ellesmere Island, the central NWT, then through Alberta covering both Calgary & Edmonton for just over 2 minutes with the Sun only 9 degrees off the horizon. The umbra then curves southeastward into northern Montana and Nebraska. This eclipse begins and ends at sunset and is the last total eclipse in Saros 126.

June 11, 2048 - Annular

This annular eclipse starts in Kansas at sunrise then curves to the northeast diagonally through Central Ontario & Quebec before crossing southern Greenland, Iceland, Scandinavia, Russia, and ending in northern Pakistan at sunset. This is the Triple

Saros eclipse for May 10, 1994 that passed through Southern Ontario.

July 1, 2057 - Annular

This annular eclipse starts in Northern China, goes through Mongolia, Russia, across the Bering Sea, then northern Alaska. Curving through Canada to the southeast, the antumbral shadow passes through Yukon, NWT, northern Saskatchewan, Manitoba, and ends in Southern Ontario at sunset in our area. This will be a spectacular “ring of fire” eclipse for the Hamilton-Toronto area on Canada Day.

June 21, 2066 - Annular

The path of annularity starts off the Katmatcka Peninsula, goes through northern Alaska, then eastward through the Arctic Islands then curves into the Atlantic Ocean, ending in the Azores at sunset.

May 1, 2079 - Total

This total eclipse begins in the morning in NE Pennsylvania, through New Jersey, Connecticut, Rhode Island, Massachusetts then covers all of Nova Scotia, western Newfoundland, central Greenland then ends in the high Arctic.

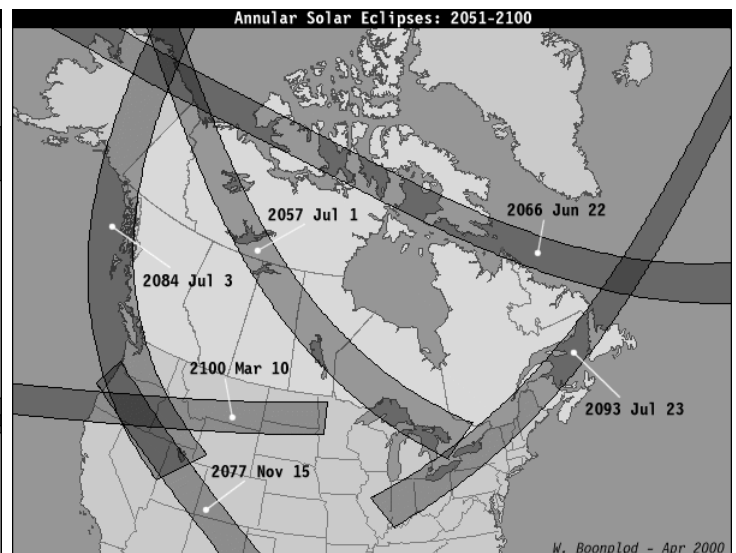
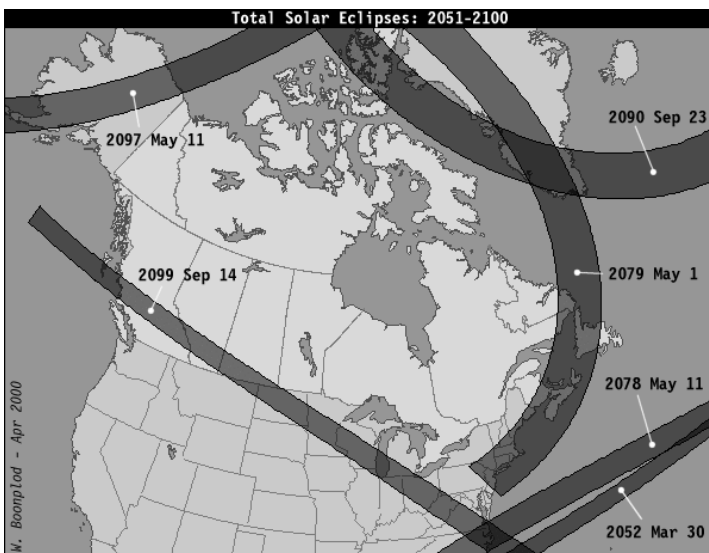
July 3, 2084 - Annular

This eclipse begins in Western Russia, passes over the Arctic Ocean, through central Alaska down the Panhandle, the BC Coast, the western United States, and ends in NW Colorado at sunset.

September 23, 2090 - Total

This total eclipse begins in the high Arctic off Ellesmere Island, continues across southern Greenland then crosses the North Atlantic to the SW coast of the UK, and ends in northern France at

(Continued on page 7)



(Continued from page 6)
sunset.

July 23, 2093 - Annular

The path of annularity starts at sunrise in eastern Illinois, then Indiana, Ohio, through

in a diagonal fashion across British Columbia, Alberta, Saskatchewan, and Manitoba before crossing the United States and heading out into the Atlantic Ocean and exiting the Earth near the Equator.

| Date(M/D/Y) | Type | Can Dur(m:s) | Can. Width(km) | Can. Altitude(deg) | Saros | Rel# | Gamma |
|-------------|------|--------------|----------------|--------------------|-------|------|--------|
| 8/01/2008 | T | 1:58 | 220 | 17 | 126 | 18 | 0.8304 |
| 3/20/2015 | T | 2:06 | 409 | 0 | 120 | + | 0.9452 |
| 6/10/2021 | A | 3:50 | 531 | 21 | 147 | -17 | 0.9151 |
| 4/24/2024 | T | 3:52 | 180 | 48 | 139 | -3 | 0.3430 |
| 6/22/2039 | A | 4:04 | 227 | 32 | 147 | -16 | 0.8312 |
| 8/23/2044 | T | 2:04 | 451 | 15 | 126 | 20 | 0.9609 |
| 6/11/2048 | A | 4:04 | 375 | 38 | 128 | 17 | 0.6465 |
| 7/01/2057 | A | 4:17 | 313 | 36 | 147 | -15 | 0.7455 |
| 6/21/2066 | A | 4:40 | 308 | 42 | 128 | 18 | 0.7327 |
| 5/01/2079 | T | 2:48 | 435 | 21 | 149 | -17 | 0.9080 |
| 7/03/2084 | A | 4:17 | 428 | 26 | 128 | 19 | 0.8204 |
| 9/23/2090 | T | 3:12 | 419 | 14 | 155 | -27 | 0.9158 |
| 7/23/2093 | A | 4:41 | 276 | 32 | 147 | -13 | 0.5717 |
| 5/11/2097 | T | 3:08 | 331 | 30 | 149 | -16 | 0.8515 |
| 9/14/2099 | T | 3:50 | 208 | 28 | 136 | 6 | 0.3938 |

Southern Ontario early in the morning. The path continues across S. Quebec, New Brunswick, PEI, northern NFLD, across the Atlantic to northern England, Eastern Europe, the Black Sea, eastern Turkey, Iraq, then ending in Pakistan.

May 11, 2097 - Total

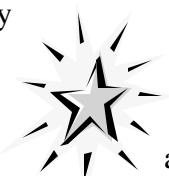
The path of this eclipse starts in the Northern Pacific, passes through central Alaska, then continues on into the Arctic Ocean north of Greenland and ends at sunset in northernmost Russia.

September 14, 2099 - Total

The path of totality starts off the BC coast, where it moves

This table contains numerical data relevant to the above eclipses. All values of greatest duration, altitude, and width have been adjusted to Canadian values.

The eclipse diagrams were made up by Worachate Boonplad of The Eclipse Zone, at <http://www.geocities.com/CapeCanaveral/7137/ez.htm>. Let him know what you think of them as they will be



appearing there in the near future.

Links of the Month

The first link to check out is the Canada-wide Astronomy Buy & Sell at <http://home.ica.net/~pmarkov/buysell.htm>. Of course the best way to get to this page is through the HAA's web pages at <http://www.science.mcmaster.ca/HAA/index.html> via Links. Paul Markov who is a member of the Toronto Centre of the RASC created this page. He has been running the buy & sell for the Toronto Centre since 1984. In January 1998 he put the whole thing on-line. He recently broadened its scope to cover all of Canada and is now run independently of the Toronto Centre. The "Canada-wide Astronomy Buy & Sell" is free of charge to whoever wants to buy or sell astronomy related equipment.

The second page is about the most complete high resolution database of Earth's topography. This was obtained by the Shuttle Radar Topography Mission in February of this year. The page is located at <http://www.jpl.nasa.gov/srtm/>

Stewart Attlesey



SKY & TELESCOPE DISCOUNTS TO HAA MEMBERS

The Hamilton Amateur Astronomers are registered with Sky & Telescope's Club Plan. This means that HAA members are entitled to a discounted subscription to Sky & Tel.

The regular subscription rate to Sky & Tel is \$47.95 (U.S. funds) to Canadian addresses. Our members enjoy \$10 (U.S.) off that rate: \$37.95 (U.S. funds).

If you wish to take advantage of this offer, **contact Ann Tekatch** - (905) 575-5433 or **tekatch@nas.net**.

HAA members who subscribe to Sky & Telescope through our Club Plan are also entitled to 10% off all Sky Publishing books and products. An online catalogue can be seen at **www.skypub.com**, or check out the ads in every issue of Sky & Tel.



☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

☆☆ **Did you** ☆☆

☆☆ **know that...** ☆☆

☆☆ our week of seven days ☆☆

☆☆ originated in honour ☆☆

☆☆ of the seven visible ☆☆

☆☆ wanderers amongst ☆☆

☆☆ the stars - the Sun, ☆☆

☆☆ Moon and ☆☆

☆☆ 5 planets. ☆☆

☆☆ Sunday (Sun), ☆☆

☆☆ Monday (Moon), ☆☆

☆☆ Tuesday (Mars), ☆☆

☆☆ Wednesday (Mercury), ☆☆

☆☆ Thursday (Jupiter), ☆☆

☆☆ Friday (Venus) and ☆☆

☆☆ Saturday (Saturn). ☆☆

☆☆ **Rob Roy** ☆☆

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

Where were we?

Okay you super sleuths, you supernova spiers, you galaxy goons, you comet caperers, you double star dippers, we could not make it to the last meeting, because we got lost. Where are we? N 18 deg 24.644' W 77 deg 08.367' Help! Help!

Oksana and Lou Darcie
Astronomaires Extraordinaire

ASTRONOMY MAGAZINE DISCOUNT TO HAA MEMBERS

Hamilton Amateur Astronomers are entitled to a discounted rate for subscriptions to Astronomy magazine. Instead of the regular annual rate of \$50.00 U.S., HAA members pay only \$40 U.S.!

(Astronomy magazine recently hiked its newsstand price per copy to \$6.50. If you buy it off the rack, it'll cost you almost \$84 Canadian annually!)

If you're interested in subscribing to Astronomy, contact **Ann Tekatch** @ (905) 575-5433 or **tekatch@nas.net**.

Journey through the Galaxy

Saturday, June 17, 2000
Journey through the galaxy at Stonechurch Vineyards, Niagara-on-the-lake. Stargaze through large telescopes and travel millions of miles in our Star Theatre. Come, experience the excitement 7:30pm to 11pm. Feel free to bring your binoculars and telescope. <http://www.nemy.com> Stargazing, Winetasting.

Carol Legate & John Nemy
The Pacific Observatory
<http://www.nemy.com>
905-892-4531

Star Cruise 2000

The HAA Spring Star Party, originally scheduled for June 2 - 4, will not be held this year. Instead, we invite our members to attend the following star party, which sounds very interesting. The web site is excellent.

Star Cruise 2000

The more than 530 members of the Amateur Astronomy Association of Pittsburgh (Pennsylvania) invite you to attend the second annual "Laurel Highlands Star Cruise", June 1 - 4, 2000.

Star Cruise 2000, as it's being called, will be held at the Tall Oaks Campground, in the Allegheny Mountains about Uniontown, PA. Guest speakers from NASA,

regional universities and the AAAP; special activities; a swap table; and vendors are planned. This is a tremendous dark-sky site. Dark sky photos are available on our website for your perusal. There's a CHANCE to see Omega Centauri and Centaurus A from this site.

There are a lot of area attractions for the non-astronomer (detailed on our web site), so bring the whole family.

If you visit our website you'll see arrangements are still being finalized. But there's a ton of info there already.

Laurel Highlands Star Cruise Website: <http://members.aol.com/lhstarcruise>

AAAP Website <http://trfn>.

CALENDAR OF EVENTS

- Tuesday, May 16, 2000 7pm
- June 1 - 4, 2000
- June 2, 3, 23, 24, 30, 2000 ~ 8pm
- Friday, June 9, 2000 7:30pm
- Saturday, June 17, 2000 7:30 pm
- Tuesday, June 20, 2000 7pm

HAA - We will meet at McMaster University, in the Burke Science Building, room B148. For more information contact Rosa Assalone 540-8793
Laurel Highlands Star Cruise - See article page 10.

BINBROOK OBSERVING NIGHTS - For confirmation or directions call Bret Culver 575-9492, Marg Walton 627-7361, Rob Roy 692-3245

HAA GENERAL MEETING - At the Spectator Building auditorium.

JOURNEY THROUGH THE GALAXY - At Stonechurch Vineyards, Niagara-on-the-lake. Contact Carol Legate & John Nemy at 905-892-4531. See article on page 10.

HAA - We will meet at McMaster University, in the Burke Science