

AURORA



Volume 33, No. 11

The Royal Astronomical Society of Canada - Windsor Centre

June 2008

Time to Renew ??

Don't forget that you can renew your membership at the treasurer's desk, by snailmail to the National, or online at the RASC 'store' at <http://www.store.rasc.ca/>

Renewing S & T

If you are a subscriber of Sky and Telescope and have done your renewing through the Centre, you can now renew directly with S&T. You need not send your form and payment to the Centre.

If you are not a subscriber but wish to be, send your first payment to the Centre Treasurer for forwarding to S&T and you'll be able to renew directly after that.

Some notable Winter/Spring 2008 Events

- Aug 01 Total solar eclipse
- Aug 12 Perseid meteor shower
- Aug 16 Partial lunar eclipse
- Oct 21 Orionid meteor shower

Observatory Open Houses

Observatory Open Houses

- July 12 9:30 p.m.
- August 16 8:30 p.m.
- September 6 8:00 p.m.

See www.rascwindsor.com/pages/open-house.php for more information and updates.

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Calendar of Events

NOTE the NEW STARTING TIME

Our next meeting...

September 16th , 2008 **7:30 p.m.**

at

K of C Maidstone Recreation Centre
10720 County Road 34 (Old Hiway 3)

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September 20th

Garage Sale

October 14th

Council Meeting

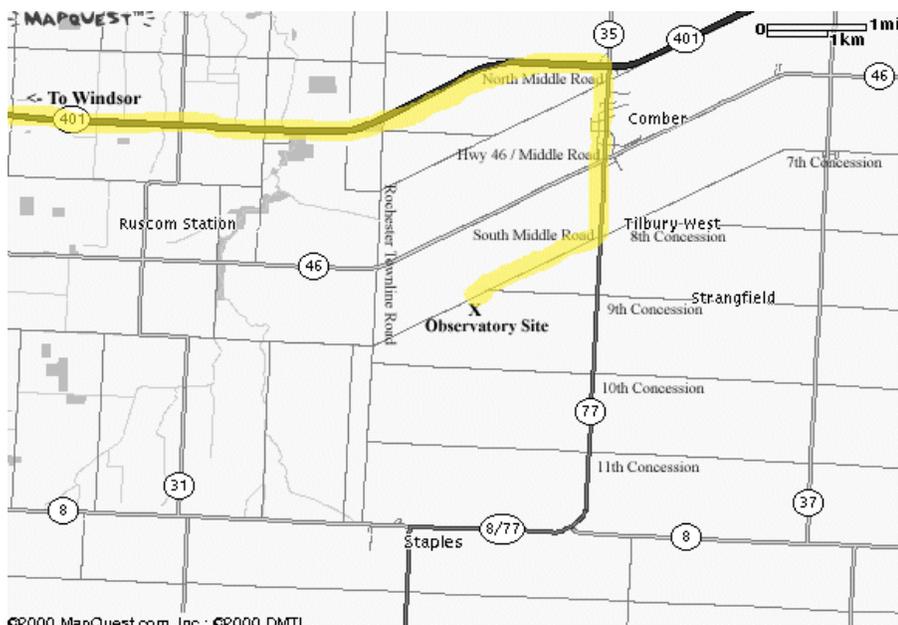
A Little Fund Raising

Got any Canadian Tire money lying around that you'd like to get rid of?

Why not donate them to the Centre?

To date we've collected more than \$100 and of that, about \$65.00 has been spent on trees planted on the grounds, oil and gas for cutting the grass, chain lube for the dome, some bug spray and even a kettle for you tea, coffee and hot chocolate drinkers.

Bring them along to any meeting and drop them off at the treasurer's table, and they will be put to good use.



Hallam Observatory Site

Directions: The map above shows the Comber area and it includes the major highways (401, 77, 8 and 46) that are in the area of the observatory.

The most direct route from Windsor is "highlighted" on the map which is to take 401 East to Highway 77 South to South Middle Road. While on South Middle Road you go about 1 kilometer and just after the barely discernable point where Concession 9 joins it you will find the observatory site on the South side of the road.

If you hit the Rochester Townline Road (i.e. you come to a stop sign and have to turn left or right) you have gone too far.

Submissions

Aurora is published monthly except for August. The October, December, February, April and June issues are full newsletters (usually 6 pages) with a number of member submitted articles. The November, January, March, May and July issues are short flyers (2 pages) with one short article. September is a dual issue with the full 6 page newsletter mailed just **before** the meeting and a flyer available **at** the meeting. Submitted articles can be of any length from a paragraph to multiple pages. I can scan pictures and/or diagrams (both prints and film) to support your article and the originals will be returned to you. Submission deadline is the 1st of the month.

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Ass't: Dan Anzovino

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Membership

The Windsor Centre of The Royal Astronomical Society of Canada meets on the 3rd Tuesday of every month (except July and August) at the K of C Maidstone Recreation Centre. In addition to regular meetings the centre hosts a number of observing nights, a picnic and a December social. Members receive a copy of the Observer's Handbook, a subscription to SkyNews magazine and access to the Centre's library and telescopes. And optionally (at extra cost) the RASC Journal (in print form—Online is free).

Annual Membership Fees: Please see the RASC website at www.rasc.ca for current rates

Contact Ken Garber at (519) 966-3478 or visit our website at <http://www.rascwindsor.com> for more information.

MEETING MINUTES

May 20th, 2008 as compiled by Dave Panton

Chaired by Dr. Pierre Boulos

The minutes from the April meeting were read. Tina Chichkan made the motion to accept them, Joady Ulrich seconded and the motion carried. Pierre made special mention and thanks to all those who assisted at the "Earth Day" event at Mic Mac Park.

Main Presentation:

"Nightfall" by Harry Brydon

Referring to the science fiction novel by Isaac Asimov Harry presented a theme of the human animal's natural fear of the dark. Now we are able to provide light nearly everywhere at all times will there be total panic when energy reserves are depleted and darkness at night returns? Harry encouraged energy conservation at all levels to help extend our planets resources.

Earthquake Disaster in China:

Walter Jin spoke of the need for help and encouraged members to contribute via The Windsor Chinese Association.

Coffee Break and 50/50 Draw

Refreshments were set up by Tom Sobocan. The 50/50 draw was won by Steve Mastellotto. Steve donated his winnings to Windsor Centre.

Pierre asked members to share astronomy related experiences of all kinds by speaking about them at meetings. Speakers are always needed and welcome. He repeated his concern for the need to fill two open positions. Windsor Centre needs a National Representative and also a Director of Public Education. Are there any volunteers?

Reports

Secretary: David Panton

Nil report

Treasurer: Ken Garber

Ken reported our current bank balance is \$3499.51 and there are 99 paid up members.

Newsletter Editor: Ken Garber

Ken has an article for the June newsletter. He can easily make it larger if more are received.

Librarian: Rick Marian

Nothing new to report.

Public Education Director: Open Position

Joady Ulrich did a presentation at a church in Sarnia. Steve Pellarin has a couple of guide groups interested in an astronomy presentation. Randy Groundwater has two classes of grade nines interested in a similar presentation.

Earth Day was the main event in May. The public turnout was good. Al DesRosiers and Susan Sawyer-Beaulieu both had solar telescopes set up to view an unfortunately spotless Sun. Lots of RASC flyers were distributed and the left over flyers to be stored at Hallam. Mike Mastronardi suggested our displays are showing the signs of age and should be reworked or replaced. A suggestion was made to feature photos taken by members rather than the usual standard images. Perhaps a "Year Book of Hallam Astrophotos" would be useful. A suggestion to put Hallam observatory onto the Essex County Website was discussed with reservations concerning too much publicity may overwhelm our facilities. Our Trillium Grant mandate includes public education so that too is a consideration.

Public Relations: Tina Chichkan

Tina is organizing the annual picnic at our observatory. The event is set for June 14 2008 setup starting at 6:00 p.m. Meat and buns are c/o Windsor Centre. She asked participants to bring a side dish, and a lawn chair. Some games for children will be supplied, more are welcome. A swap table for astronomical equipment was suggested.

Light Pollution Abatement: Dan Taylor

A photo by Ken Garber showed typical wasted light at Howard Avenue and Memorial Drive where a bright ground mounted light is shining brightly up a tree. Dan gave a LPA presentation to about 20 people at Point Pelee. In LaSalle an environmental group is questioning the wisdom of building a huge new big box retail complex near the Ojibway Nature Centre. A positive development in Windsor is the implementation of a "light mentoring program" sponsored by City Hall to encourage sensible lighting. On a less positive note, Dan reported the gross lighting at the Big 3 used car lot was originally approved by Windsor City councilors under a deviation from normal standards. Steve Pellarin asked if the City has approved Caesars "Jumbotron" light screens.

RASC Annual General Assembly in Toronto:

Mike Mastronardi plans to attend the 3 day event in June. Steve Mastellotto suggested he take proxies from Windsor Centre Members and use them to vote on our behalf.

Observatory Director: Peter Bondy

Peter was absent. Steve Mastellotto reported considerable work was being done on the C14 mount at the observatory to reduce its pointing and periodic errors.

Membership Chair Person: Paul Pratt

Paul expects common interests between our group and the Friends of Point Pelee may result in Windsor Centre gaining some new members.

Fund Raising: Al DesRosiers

Al has generously taken on the task of organizing a garage sale at his 149 Lesperance Road home on September 20th. Windsor Centre's expenses exceed our current revenue so this event is very important and help from all is requested. Donating saleable items is a great way to assist. Volunteers will be needed to help prepare for the big day and on sale day His home is on a high traffic road and prior fund raising sales at his home for other groups were successes. Publicity will include community notes on AM 800, CBC 1550 and cable 11 .

Director of Observing for May: Juliana Grigorescu

Juliana distributed observer's guides for May and suggested taping them to member's refrigerators. She reminded us that astronomy is really about ourselves and observing the beauty of our night skies. The main events at this time are many. Mercury, high in the West in the evening is a great sight. Gorgeous Saturn is being lost in the West and its rings are slowly tipping edge on from our view. Big Jupiter is emerging as a morning sight. She displayed some of her first prime focus astrophotos taken with her camera at prime focus in the C14 during the May open house.

She noted a variety of Messier objects, double stars and NGC objects of interest at this time of year. An easy "object" is the International Space Station now large enough to be seen in some detail through 10x50 binoculars.

The major coming event in astronomy is the pending landing of Mars by the Phoenix Lander from the Messenger Space Craft. It is expected to land near the North Pole of Mars on May 25th. The event will be broadcast live that evening for all to watch on TV. Additional detail is available on the NASA website and Space Science News. Its prime purpose is to search for water and signs of life.

Steve Pelarin followed, showing a variety of exotic photographs from the Hubble space craft and other sources.

Pierre thanked both Juliana and Steve and adjourned the meeting at 10:25 p.m.

David J. Panton
Recording Secretary

How are binary stars formed?

The fraction of binary/multiple stars is very high, but we cannot tell for sure. Of the stars nearest to the Sun, about half are known to be in multiple systems (Alpha Centauri A and B and Proxima Centauri is a good example of a multiple system). A binary/multiple star system emerges out of a cloud of gaseous material collapsing and forming more than a single star at the same time in a small proximity. This type of a collapsing event does not necessarily form only two stars -- it can form more than two, but it all depends on their unique environment in which stars form. One by one the stars free themselves from the group. Two stars is the most stable configuration. Also it is most unlikely for a single star to capture another star in a typical stellar space. When two stars encounter, they tend to swing by each other and almost never captures one to another by their own gravitational field.

Use of binary stars.

When two stars are close together, they effect each other in many ways, and we can learn a lot from those effects. For example, two stars close together exert a gravitational pull on each other changing the way they move. By measuring their movements very carefully we can often figure out how much material is in each star - how heavy it is. We use Newton's gravitational law in doing that.



Classification:

We can detect them visually, simply 2 stars together, almost in the same spot in the sky. Two stars could be together in the sky by chance, projected in the same spot of the sky with no physical connection or they can have a physical connection. The first ones are visual double stars and the second ones are true binaries.

Binaries are sometimes so close together that we can only detect them by using a spectrograph. These stars are called spectroscopic binaries and are detected when a spectrum is seen to contain two sets of lines which move slightly relative to each other, in step with the two stars movement about their common center of gravity. If we are roughly in the plane of the binary orbit, we will see the first one set of lines slightly blue-shifted and the other slightly red-shifted (as one star moves towards us and the other away) and then the opposite effect (after another 180 degrees of mutual revolution). If the two stars are similar the two sets of lines will be similar, but if the stars are quite different the lines will be too.

Continued >>>

Eclipsing binaries are stars that revolve around their center of mass eclipsing each other periodically. Usually they can be seen as one variable star.

Observing binaries.

The main interest in amateurs who view double stars is to learn to see doubles that are real close together. The separation is measured in terms of angular distances, being segments of a circle or arc called arc minutes and arc seconds. An arc minute (') is one-sixtieth of a degree while an arc second (") is one-sixtieth of an arc minute. Another fascinating aspect of viewing double stars is observing the colour contrast between the two stars. Astronomers know that the colour of the surface of a star is a good estimation of the surface temperature of a star. Temperatures range from 3000 to 3500 degrees Kelvin for red stars to 11,000 to 70,000 degrees for blue/white stars. To get a star's true colour one needs to use spectroscopic equipment.

Estimating temperatures by visual colours seen through a telescope, however, is inexact at best. Many factors influence what we perceive the colour of a star to be. The most important factor is that each person's eyes are different and see shades of colours differently. Also the colour of one star may affect what we see as the colour of the double.

Famous Binaries:

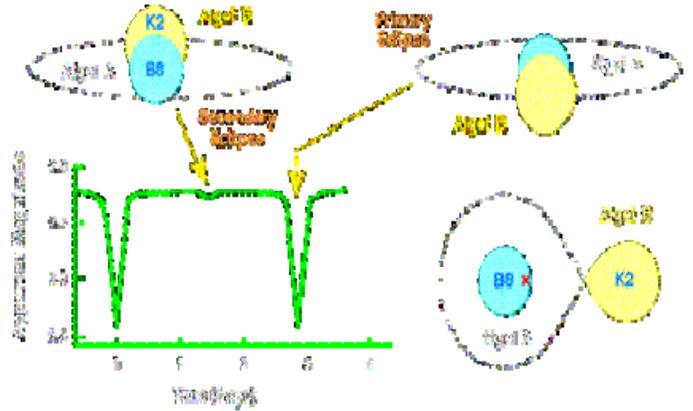
There are a number of binaries that are well known in our astronomical community (VIP's):

Mizar (Zeta Ursa Majoris) shows itself to be a fine white star with a companion also white. It was the first double star discovered (in 1650 by Riccioli). It was also the first double star to be photographed. Bond took a picture of it 200 years later in 1857. Mizar is paired, though not physically with another naked eye star just 11' 48" away, Alcor. They are visual doubles. As a pair they give a test of good eyesight. They reside the middle of the handle of the asterism called the "Big Dipper" or "Plow". It is nice observing Mizar and its companion and Alcor in the same field at 70X.

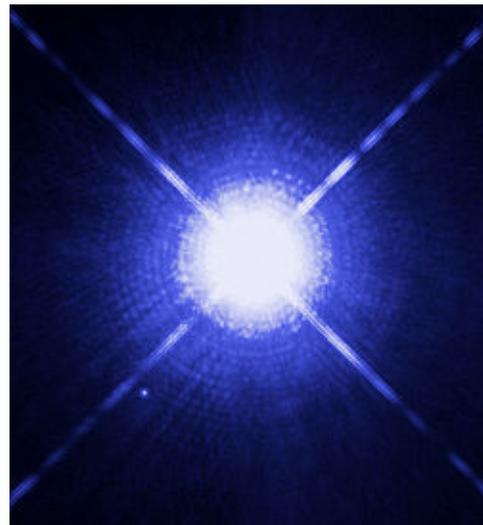
Another famous one is Albireo (Beta Cygni), which consists of two stars orbiting around each other every 7,300 years at a mean distance of about 400 billion miles (650 billion km) – see picture below.



Algol (Beta Perseus) is a system of a blue spectral class B8 star with a diameter of 3 solar diameters and a red-yellow spectral class K2 star of about 3.5 solar diameters, in very close orbit around each other .



Sirius (Alpha Canis Maj.) is a famous double system with its companion Sirius 2 a white dwarf.



If you are interested in observing binaries using a medium telescope here are some good ones:

- Gamma Andromadae**, mag. 2.2, 5., orange, blue, angular separation 9.8" – actually a triple
- Iota Trianguli**, mag. 5.3, 6.9 yellow, blue 3.9"
- Beta Orionis (Rigel)**, mag. 0.2, 6.7 blue, white 9.2"
- Alpha Gem. (Castor)**, mag. 1.9, 2.9 blue, white 3.0" – actually a multiple system
- Iota Cancri**, mag. 4.0, 6.6, yellow, blue 30.4"
- Gamma Virginis** mag., 3.5, 3.5 yellow, yellow 3.0"

Double –

- Double Epsilon 1 Lyrae**, mag. 5.0, 6.1 white, white 2.6"
- Epsilon 2 Lyrae**, mag. 5.2, 5.5 white, white 2.4"

The list goes on and on....

Check a good double stars (Binaries) list over the Internet and ..

..enjoy seeing double!

Continued >>>

History Repeats with Rod Clark

On January 9, 2008, cosmologists Alicia Solderberg and Edo Berger of Princeton University, were observing a distant spiral galaxy, known as NGC 2770. They were using NASA's Swift X-ray telescope. At 9.33 am. the telescope picked up a powerful burst of X-rays coming from that same galaxy. They knew that an X-ray signal of this magnitude was the signature of a supernova event.

Solderberg and Berger soon realized that they had just watched a star exploding into a supernova and that it was probably the first ever witnessed in real time. They had experienced what surely be called an event in the history of cosmology and astronomy..

A plan to bring other telescopes, including the Hubble Space telescope, to follow-up Swift's discover was quickly organized.

To witness an exploding star must be a unique experience and the young astronomers from Princeton deserve all the media fame coming their way. But let us remember an earlier occasion when a star in the Large Magellanic Cloud became a supernova.

It was February 4, 1987 and Canadian astronomer Ian Shelton of the University of Toronto, was observing an area in the LMC at Las Campanas observatory in Chile. His first photographic plate showed an ordinary grouping of stars. The second plate of the same area, taken moments later, showed a very bright star where none had previously been. He went outside the observatory and saw the new bright star with his unaided eyes. The star had exploded during the time between the taking of his first and second photographic plates. The star was Sanduleak and it had become Supernova 1987A, the first to be caught in the act of explosion by modern instrumentation.

In 1987, there was no Swift's X-ray telescope that could alert astronomers to the advent of a supernova. Astronomers would not have the X-ray signals of an exploding star but they did expect a blast of neutrinos to follow the light of a supernova. Right on schedule, the neutrinos did arrive and they did test the operational theory for several of the recently built neutrino sensing devices.

Centre Items of Note by the Editor

More information will follow on many of the items listed so stay tuned:

- A. The Pelee Island Winery will be holding its annual wine event in Kingsville. The Centre plans on having several members staffing telescopes for the attendees. A trip out to the observatory is also a possibility. Some proceeds from the event go to the Centre.
- B. Al DesRosier is planning on holding a garage/yard sale at his place in Tecumseh to help raise funds for the Centre. See the included minutes for more details.
- C. The property where the Observatory is situated will be changing ownership in November. Along with current 'resident' Dave Ainslie, the new owner and his wife came out to the picnic this past Saturday.
- D. Believe it or not . . . A rocket was launched during the picnic AND it was safely recovered a little later.
- E. Starting very soon, the printing of the yearly membership cards will change to "on request". Very few cards are picked up at meetings and are only mailed out once or twice a year. This is the same system the National office uses.
- F. The next meeting is September 16th.
- G. Have a good and Safe Summer