

AURORA



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The Royal Astronomical Society of Canada - Windsor Centre

March 2012

The Star, Which They Saw in the East by Matthew McCall

A brilliant conjunction of Jupiter & Venus occurred this month, as the two brightest planets closed to within just under 4° of each other on March 15. We witnessed the pair coming together in the sky over the winter, but far more spectacular & rare conjunctions were observed over 2,000 years ago... **Now when Jesus was born in Bethlehem of Judaea in the days of Herod the king, behold, there came wise men from the east to Jerusalem. Saying, Where is he that is born King of the Jews? for we have seen his star in the east, and have come to worship him.**



These first two verses of Matthew chapter 2 in the New Testament describe the events surrounding a rising star around the time of Christ's birth. Before reading on, knowing the significance of the Magi from the east and how they knew of the birth of a king will help us learn the identity of the 'Star of Bethlehem'. Turn to Daniel 2 to find the captive Old Testament prophet saving the order of magicians & astrologers from being killed by king Nebuchadnezzar, by being the only man able to interpret his dream. In verse 48: **Then the king made Daniel a great man, and gave him many great gifts, and made him ruler over the whole province of Babylon, and chief of the governors over all the wise men of Babylon.**

Later, chapter 6 shows Daniel caught praying & cast into a lion's den after Darius of the conquering Medo-Persians decreed no man ask of any God or man save of him the king. When Daniel is unharmed, Darius writes to the whole world another decree that all in his kingdom must fear Daniel's God, in verse 27 he says: **He delivereth and rescueth, and he worketh signs and wonders in heaven and in earth...** The Magi astrologers revered Daniel & his writings, they were aware of a 483 He-

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Calendar of Events

Our next meeting...

Tuesday April 17, 2012

7:30 p.m.

at

[Ojibway Park Nature Centre](#)

5200 Matchette Road

Main Speaker...

TBD

Topic...

"TBD"

Activities...

Spring Equinox: Tuesday March 20 at 1:14 a.m. EDT.

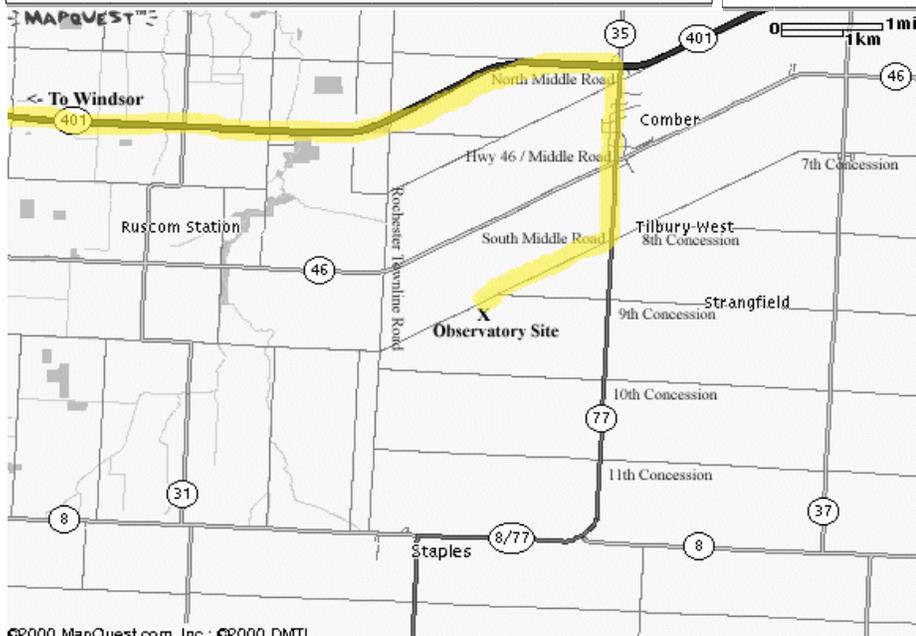
Open House Night at Hallam: The next open house night at Hallam is on Saturday March 24 at 7:30 p.m..

Photo Opportunity: Look for the Moon to be near Jupiter on March 25th and Venus and the Pleiades on March 26th.

Venus at Greatest Elongation: On March 27 Venus will reach it's farthest angular separation from the Sun.

Saturn at Opposition: On April 15 Saturn will rise as the sun sets.

Earth Day 2012: Sunday April 22nd come out to Mic Mac Park and enjoy the Earth Day festivities.



Hallam Observatory Site

Directions: The map at left 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 Highway 401 East to Highway 77 South to South Middle Road. Turn right onto South Middle Road and go about 1 kilometer and just after the point where Concession 9 joins it (it is hard to see this intersection) you will find the observatory site on the South side (left) of the road. 3989 South Middle Road.

If you hit the Rochester Townline Road (you come to a stop sign) you have gone too far.

Submissions

Aurora is published monthly except for July, August and December. The September, October, January, March and May issues are full newsletters (usually 6 pages) with a number of member submitted articles. The November, February, April and June issues are short flyers (2 pages).

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.

Editor: Steve Mastellotto Email: mmastellotto@cogeco.ca

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 the RASC Journal in print form—online version free.

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

Contact Greg Mockler at (519) 326-7255 or visit our website at <http://www.rascwindsor.com> for more information.

February 2012 Meeting Minutes by Art Rae

The monthly meeting of The Royal Astronomical Society of Canada - Windsor Centre was held at the Ojibway Park Nature Centre on February 21, 2012.

Windsor Centre **President Paul Pratt** chaired the Meeting. Paul called the Meeting to order at 7:35 p.m. and welcomed members and guests to the Ojibway Nature Centre.

Paul made a few short business announcements including:

- The Windsor Centre Council meeting was held on February 13, 2012.
- Current membership stands at 102 with 2 associate and 6 student members.
- Upcoming events of note include Earth Day, Science Rendezvous, Venus transit, Point Pelee dark skies night February 25th, possible field trips this year and viewing glasses coming from National for the upcoming Venus transit.

Main Talks

Paul introduced **Pierre Boulos** who described and demonstrated the **Windsor Centre's new Facebook page**. On Facebook you will need to make an account (e-mail and password) then search for "RASC Windsor Centre". With this new communication venue the old Yahoo Group will be shut down.

Paul introduced **Steve Mastellotto** who gave slide show history of **Hallam Observatory** starting on April 26, 2001 when the dome building was moved from St. Clair College and mounted on it's present site, showing it's development, features and improvements to the facility and instruments there. Improvements include a motorized dome rotation, an additional 114mm refractor and a viewing deck around the building. Access is available to the public and members. There is a user fee of \$10 for grounds access and \$40 fee for access to the telescope facility. A one time fee of \$10 is for a key to the building.

Paul then introduced **Brian Thomas**, one of our active astrophotographers at Hallam who presented musical slide show of some of the objects he has captured this past year including images of the Sun, planets and deep sky objects, galaxies and nebulae.

Break

The **50:50 draw** was held after the Break.

Director of Observing Report, Steve Pellarin: Steve provided a quick tour of sky events for the coming month. Included in the report:

- A partial solar eclipse visible in western Canada this month
- Aurora seen on February 18th expected again on February 25th
- Spring constellations are now showing in the eastern sky
- Planets prominent include Mercury, Saturn, Jupiter and Venus
- Venus is the brightest in 8 years
- February 29th is best for Mercury just after sunset
- Jupiter and Venus will show closest approach on March

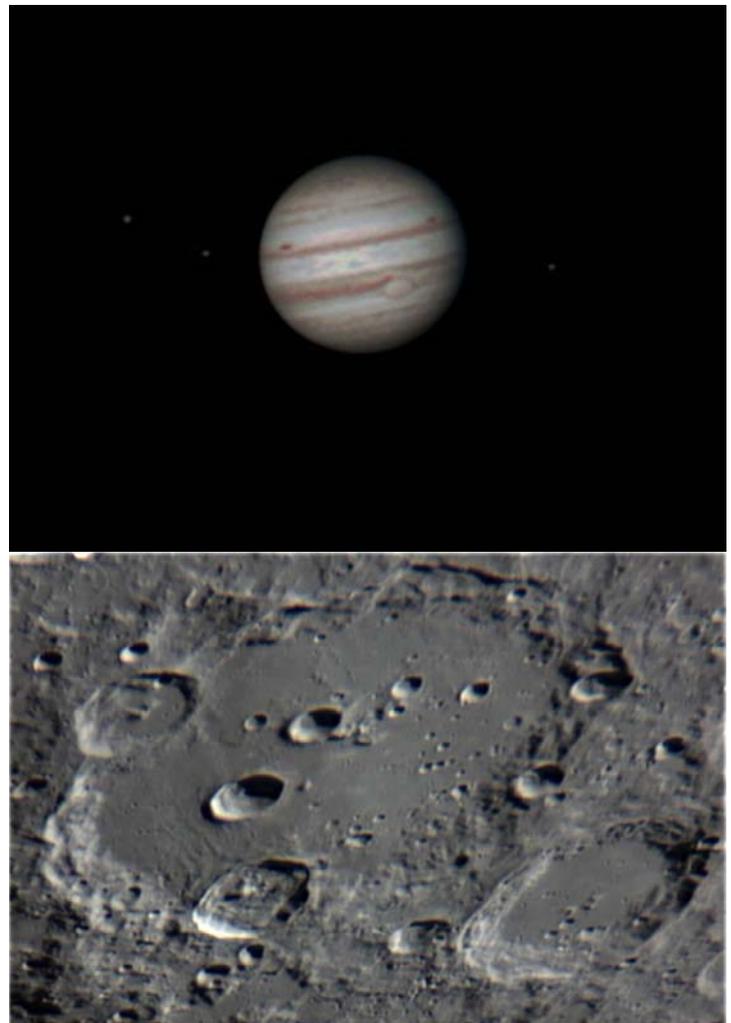
12th as was demonstrated with a Stellarium planetarium program

- Mars will be at opposition on March 3rd
- Steve showed the differences in apparent size of Mars at opposition over a period of years
- On March 1st the Moon is at it's highest point in the sky this year
- Zodiacal light should be visible about now
- Comet Garradd is still visible
- Deep sky objects to look for now include: in Orion, NGC1788 the Fox nebula near Beta Eridanus
- Looking to the Moon search for the crater chain Davy near Aristarchus and Ptolemaeus. It is best to find 8 days after the new moon.

Paul Pratt reminded members that he hoped to see them at the next Hallam Open House Night on February 25th or at Point Pelee that same night.

Next meeting will be on March 20, 2012 at the Ojibway Nature Centre.

The Meeting was adjourned at 9:40 p.m..



Jupiter and the lunar crater Clavius images by Pete Barbaro

Significant Sunspot activity has permitted doing some daylight astroimaging at Hallam. Once the solar filter is fitted onto the C14 and caps on guider, finder and AT111 telescope the C14 telescope can be safely pointed at the Sun. The view in the eyepiece has to be seen to be believed. The spots change shape quite rapidly and move across the face of the Sun in a matter of days. Unfortunately the best series of Sun spots was lost via several consecutive days of overcast. This is a target that does not require long exposures or exotic computer programs to obtain great images. Only a few minutes at the telescope are needed and then what does one do the rest of the day?

Al and I spent some time one nice Sunny day determining that in daylight stars as dim as magnitude three can be seen via the C14 telescope when pointed directly at them via the computer program that controls the telescope mount. Our intention was to start a polar alignment check in late afternoon and finish the adjustments as needed in the dark. This was a failure when we found the cross focal length of the cross hair eyepiece, essential for the task was quite short and the ideal star images were too dim to be seen in daylight.

Later in the dark, it was found our polar alignment was not perfect and small adjustments were made in the mount to bring it into an acceptable range. They were so small pointing accuracy was not noticeably affected.

The objective of all this was to solve the mystery of stars shifting a tiny bit, always in the same direction from frame to frame during autoguided astroimaging sessions. In theory they should always be in the same spot but are not. The cause of this effect is still unknown and is the most intriguing of the many problems solved at Hallam in making it into the great amateur observatory it is today.

The used replacement for the automobile battery to power the dome shutter motors showed signs of eminent complete failure and was replaced by a new battery. Al DesRosiers did the heavy work in obtaining and installing the new battery.

January and February open house nights were well attended. Lots of people come out even under totally overcast skies just to see and enjoy the facility. Many are fascinated to see the telescope, operated from the warm room whirr it's way to point to objects that are somewhere out there behind the clouds. The ceiling mounted projector is a important asset as all can see what is going on at the computer screen projected on the North wall of the warm room. Members' astrophoto collections (all shot from

Hallam) never cease to awe and amaze visitors. The warm room becomes a comfortable mini-theatre. We could use a selection of astronomy related DVD's to add to the entertainment venue.

Brian Thomas has a new camera designed to rapidly capture hundreds of bright Moon and planetary images which are then processed to pick the best and stack them to create beautifully detailed color images. His Mars images belong in an astronomy magazine. Percival Lowell, a pioneer Mars observer would love to have had images like Brian's back in his day.

Proving cleanliness of telescope objectives is not a major factor in taking good astroimages. Matt McCall and I took a series of good looking images of the small open cluster Caldwell C10 in the constellation Cassiopeia. Then we discovered about a cup full of snow had dropped down from somewhere up inside the dome

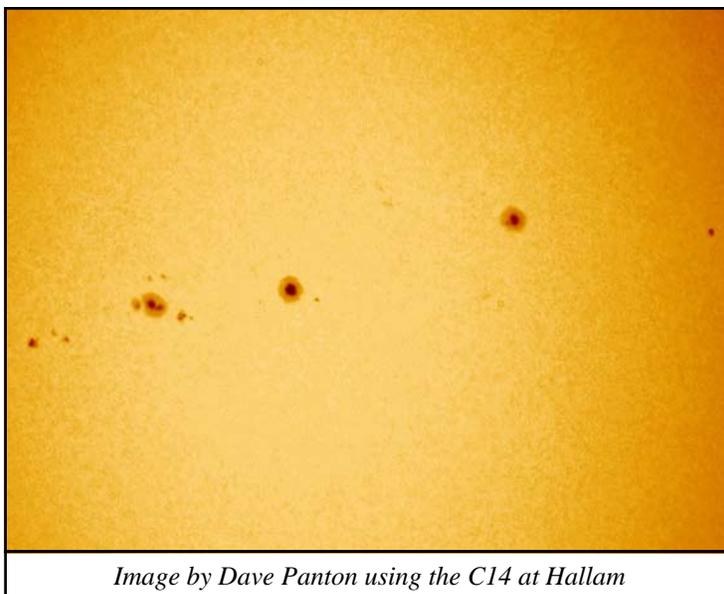
onto the C14 corrector plate. I regret abandoning the session at that point rather than carrying on to take the dark frames and "flats" required for a full session with subsequent computer processing. Even without them, the finished stacked image was fairly presentable in spite of the mess on the corrector plate.

Another discovery was made at Hallam in doing some experiments with various Bahtinov mask configurations. Three were tried in the C14 with respectively. The first had the absolute minimum of three slots forming the characteristic "Y" shape. The big surprise was finding a mere three slot mask

works perfectly. Of course a bright star (Sirius in this case) is needed because so much light is blocked by the rest of the blanked out mask. Focus with a 17 and then 33 slot masks were identical to that obtained with the simple three slot mask. This simple device has virtually revolutionized astroimaging by allowing imagers to quickly and accurately obtain perfect focus. Mr. Bahtinov's name will long live in astronomy.

Our mild Winter has allowed easy access to the observatory (so far). Only a couple of low snow banks were blown in on the site and easily driven across. The sky did not bring snows but nor did it bring many clear nights.

The whole scene at Hallam outdoors has been changed with the removal of the hundreds of dead ash trees by land owner Moe Trepanier. It is much more open and our view to the South and South West greatly improved. The row of Maple trees we could barely see on the Southern boundary of the ash trees was left intact. When they leaf out we will have pretty reasonable blockage from distant farm lights. Thank you Moe!



The Star, Which They Saw in the East (continued from page 1)

brew-year countdown to a time just before his king would be killed, starting with the issuing of an order to rebuild the holy city from after the Babylonian siege, in Daniel 9:25-26.

Know therefore and understand, that from the going forth of the commandment to restore and to build Jerusalem unto the Messiah the Prince shall be seven weeks, and threescore and two weeks: the street shall be built again, and the wall, even in troublous times. And after threescore and two weeks shall Messiah be cut off, but not for himself... The Hebrew term 'weeks' means 'weeks of years', in which one 'week' is seven 360-day years (7 weeks = 49 Hebrew years, [threescore and two] 62 weeks = 434 Hebrew years). Despite calendar conversion uncertainties, the simple point is that Magi knew an incredibly close date for when a fully adult messiah of over 30 years age would die.

Returning to Matthew 2, upon being troubled to learn that reputable stargazers had arrived to pay homage to a Jewish messiah, King Herod gathers the chief priests of Israel together, where they tell him that Christ is prophesied to be born in Bethlehem. He then summons the Magi in verse 7... **Then Herod, when he had privily called the wise men, enquired of them diligently what time the star appeared.** Verse 8 states he sends them to Bethlehem, then in verse 9, at some point after leaving... **the star, which they saw in the east, went before them, till it came and stood over where the young child was.**

We know this 'star' had at some point made itself visible in the eastern sky like all usual celestial objects that rise and set, then at the time they departed Jerusalem, it moved ahead of them in the direction they were traveling, westward leading until it stopped above Bethlehem. It is clearly a 'wandering star' or a planet, as it became stationary in the sky, since there is only one planet the Magi would consider appropriate to attribute to a king of all gods, we know the planet was Jupiter, which began retrograde motion in the middle of the constellation Virgo, on Dec. 25, 2 BC.

And when they were come into the house, they saw the young child with Mary his mother, and fell down and worshipped him...

Matthew 2:11. It must be clearly understood that although astrology & the improper mixing of Judaeo-Christian figures with it is strictly forbidden in Scriptures, the Magi were not adherents to the Hebrew faith, and this is simply the method used as it was what they understood. Note, they were let inside a 'house' to see a 'young child', not a manger with a baby, as a common misconception is that the Magi were present at the nativity scene with the shepherds.

The birth of Christ happened over a year earlier & sometime before that, a dazzling conjunction of Venus & Jupiter rose in the east.



Jupiter and Venus from Bethlehem June 17, 2 BC

So close as to touch that it very nearly gave an appearance of a single bright star, on Aug. 12, 3 BC. There are many facts surrounding plenty more celestial events that occurred in the sky in 3-2 BC, I won't spoil anything by revealing anything more, except by this time, Magi knew they were within less than 35 years of Daniel's writing coming true.

Sometime after the two planets came even closer again, to set together on June 17, 2 BC, they'd been motivated to go to Jerusalem with their gifts, as this 'Star of Bethlehem' would have awed observers far more than the sight just seen of Venus & Jupiter in our skies. Much of the info presented here, and lots more can be found in 'The Star of Bethlehem: The Star that Astonished the World' by Ernest L. Martin. It can be accessed in electronic form online at <http://www.askelm.com/star/index.asp>.

Member Astrophotos



Photos Clockwise from Top-Left: Scott Stuckless Venus and Jupiter, Pete Barbaro Pleiades, Scott Winter constellation mosaic, Brian Thomas Stephen's Quintet, Saturn, Mars, and NGC 6946.