

# AURORA



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The Royal Astronomical Society of Canada - Windsor Centre

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## My Own Experience with Totality by C. Joady Ulrich



“Instead of a dazzling body without visible structure, the sun has become extremely beautiful and complex. Around the dark disk of the moon, the delicately colored pearly white corona, something like cottony tufts, may have streamers extending outward for several solar diameters.” Helen Sawyer Hogg, *The Stars Belong to Everyone*, 1976, pg. 104.

The following account is of my experience while seeing the total eclipse of the Sun on Monday, August 21, 2017. It is an edited excerpt from my journal. The place chosen along the track of totality in the United States where I saw this definitely much anticipated event was in the eastern vicinity of St. Genevieve, Missouri. The description given is mainly connected with what occurred from second to third contact as the Sun's disk was fully obscured by the Moon. I travelled to see this eclipse with Tom Smart, Dan Taylor, John Thompson and Mike McBride, all members of the Nova Astronomy Club, founded in Windsor, Ontario in 1972. The photograph of the eclipse was taken by John Thompson.

I was surprised to see that the level of illumination seemed constant up to about 90% coverage of the Sun. At about 70% coverage, the sunlight took on a smoky silver hue, which smoky tint seemed to thicken as the eclipse progressed.

John Thompson called out with excited exactness, “Oh diamond ring!” when the last of the solar

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# Calendar of Events

## Our next meeting...

Tuesday February 20, 2018  
7:30 p.m.

at  
Ojibway Park Nature Centre  
5200 Matchette Road

## Main Speaker...

To Be Determined

## Topic...

To Be Announced

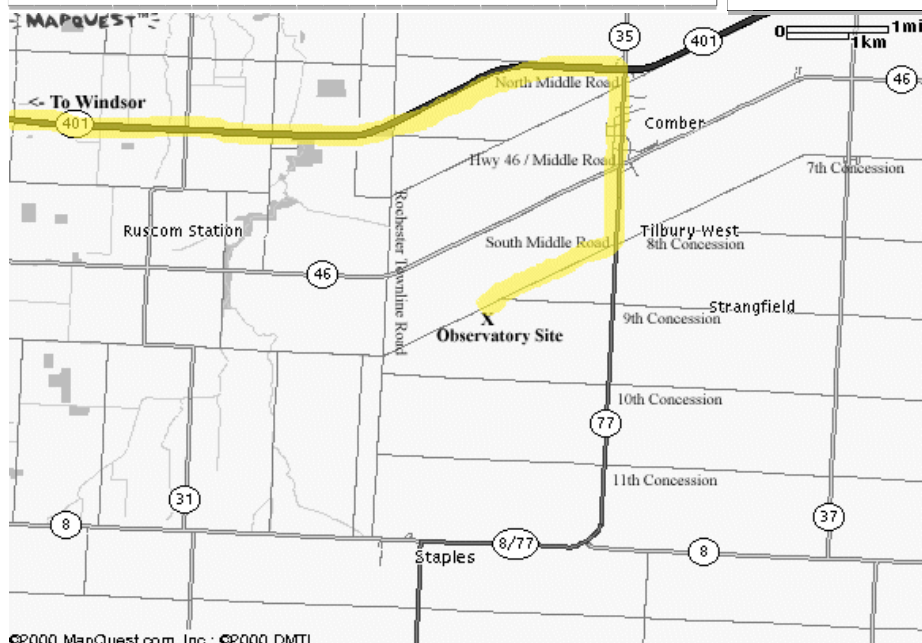
## Activities...

**Double Shadow Transit:** On Friday January 19th at 4:43 a.m. that shadows of Europa and Ganymede will briefly share the disk of Jupiter.

**Total Lunar Eclipse:** On Wednesday January 31 the Full Moon slips into the Earth's shadow and totality will begin at 7:51 a.m. EST. The Moon sets during totality so this event will be difficult to observe from Windsor.

**Council Meeting:** The RASC Windsor Centre Council will be meeting on Tuesday February 13th at 7:30 p.m.. Location is To Be Determined.

**Zodiacal Light:** For the first two weeks of February look for the Zodiacal Light in the West after sunset. It is best seen for about half an hour at the end of twilight and is caused by dust in the Solar System. Due to the geometry of Earth's tilt and the path of the zodiac it is best seen in the evening sky in February and March.



## 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](mailto: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 Ojibway Park Nature 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. Optionally the RASC Journal is available in print form—online version free.

Annual Membership Fees: Please see the RASC website at [www.rasc.ca](http://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.

# November 2017 Meeting Minutes by Dan Perissinotti

The monthly meeting of the Royal Astronomical Society of Canada - Windsor Center was held at the Ojibway Park Nature Centre on Tuesday November 21, 2017.

Windsor Centre **President, Randy Groundwater** chaired the meeting and called the meeting to order at 7:34 p.m. and welcomed members and guests to the Ojibway Nature Centre.

Randy invited members to review the minutes of the October 17, 2017 meeting which were printed in the October newsletter. A motion to accept the minutes was made and the **MOTION CARRIED**.

Randy provided an overview of the meeting and introduced our main presentation to the floor.

## Main Presentation

Randy introduced **Tom Sobocan** for a presentation titled **RASC Windsor – A Photo Retrospective**. Various photos from events throughout the year were shown, and brief explanations were given by the photographer and by those photographed.

Randy thanked Tom for his photo presentation.

Rick Marion was up next to present an overview of the **2018 Executive Council and Council**. New Executive and Council Members were voted in by the membership. Executive members are as follows:

President	Mike Mastronardi
1st Vice-President	Rick Marion
2nd Vice-President	Open Position
Secretary	Dan Perissinotti
Treasurer	Nancy Ng
National Council Rep.	Tom Sobocan
Past-President	Randy Groundwater

For a complete list see page 5 of this newsletter or visit our website at [www.rascwindsor.com/pages/council](http://www.rascwindsor.com/pages/council).

Randy then welcomed our Honorary President **Dr. Bill Baylis** to give an Overview on Astronomy and Science. Topics included, science literacy, USA EPA issues, Religious Rights and Creationists, Evolution, N-Star collisions, Vertical farming, and other science news in the recent months. An update on the state of the Canada South Science City was also presented.

After the coffee break, a **50/50 draw** was held, **Mike Mastronardi won** and donated it back to the club.

Susan presented a painting of **Jupiter, created by a past member Ken Rounq**. The painting was created in August 1997 and based on the artists' recollection of a transit of one of the Galilean moons. The painting was being **donated to the club as a fund raiser during the December social**.

## Director of Observing Report

Steve Mastellotto was welcomed to the floor and he opened the discussion with a question period on some local observing and members' photographs, outings, and stories. Including two impressive photos of Uranus and Neptune, by Juliana Grigorescu. Steve also showed an excellent photo of the Sharpless 2-187 in the constellation Cassiopeia. The photo was taken with a total exposure time of 855 minutes on a setup of Steve's in California. Steve shared an image from Larry Burges with a questionable star highlighted in the center of frame. After blinking (switching between two images multiple times to highlight changes or irregularities between the two), and some research, Steve came to the conclusion that the irregular star was highlighted due to imaging with and without IR filters. The star in question turns out to be one of the reddest stars in the sky.

Upcoming Planet viewing:

**Mercury** – in the evening sky during late November and early December. Moves to the morning sky by the end of December

**Venus** – too close to the sun to observe in the coming months

**Mars** – rising early in the morning

**Jupiter** – like Mars, will be rising quickly in the morning sky, near Mars' location

**Saturn** – Heading into conjunction with the Sun on December 21<sup>st</sup>

**Uranus** – in opposition with the sun in September, can be viewed in the evening sky in Pisces

**Neptune** – located in Aquarius, well placed for early evening views

**Geminid meteor shower** will peak on December 14<sup>th</sup>, after midnight. Aside from clouds, this event should be quite clear, as a new moon is 4 days after. The **Winter Solstice** is on December 21<sup>st</sup> at 11:28 a.m., marking the first day of winter in the northern hemisphere. Later an **occultation of Aldebaran** will occur on December 30<sup>th</sup>.

Steve highlighted **Taurus for deep sky observing** over the next 2 months. Within the constellation Taurus, there are multiple, easy to observe targets; M45, M1 (the Crab Nebula), NGC 1647, NGC 1746 (1750 & 1758), and NGC 1807/1817.

Steve proceeded to answer questions from the audience. Randy thanked Steve for the DOR presentation.

**REMINDER:** Astro Luncheon at **SKIPPY'S RESTAURANT** every second Wednesday of the month, at noon. Located at 954 University Ave West, Windsor.

**Randy** thanked everyone for coming out to the meeting and reminded everyone that the **next regular membership meeting** would take place on **January 16<sup>th</sup>, 2018 at 7:30 p.m.**

Meeting **adjourned at 10:10 p.m.** November 21, 2017

## At The Eyepiece: Orion by Mike Ethier

The beginning of a new year is usually a good time to both reflect on the past year and its achievements, and to look ahead and set some reasonable goals for the upcoming year. In 2016, I made it my goal to get out and observe on every clear night I could. For my galaxy observing I require nearly pristine, dry skies. So to compensate for Essex County skies, I needed many different types of objects that could be observed at Hallam if under less than perfect conditions. It was a good year for planets; I also did some remarkable double star work, and I even got back into lunar observing. I managed to observe on 72 different nights in 2016. By comparison, 2017 saw me under the stars only 34 times. Had my goals changed? Not by much. I missed the April dark sky session because of travel plans, and ended up missing three good nights as a result. Even so, the weather last year was often less than ideal for astronomers. Was it just one of those years? I hope so. If I could make one wish upon a falling star, it would be for more frequent clear nights (not counting those beautifully clear nights around a full moon!).

While January is a great time to look back on the year's notes, and to plan new observing goals, it is often a terrible time to be outside setting up a big scope. The nights in deep winter are often more suitable for naked eye and binocular observing than for any telescopic work. It is also a great time for some armchair astronomy. I like pulling out my old Olcott book and glancing through it near a warm indoor wood fire.

William T. Olcott, in his Field Book of the Skies, divided the night sky into seasonal work. His winter constellations include Taurus, Orion, Lepus, Canis Major, Monoceros, and Eridanus. Using a telescope I have completed observations of NGC and other deep sky objects in Taurus, Lepus, and Monoceros. My clipboard is now prepared for Orion, and includes a grueling list of 178 winter objects. However, before trying to navigate outside with freezing toes and fingers using my 12" Dob, it is always a good idea to explore some of the constellation with naked eye and 8 x 35 binoculars first.

It is not surprising how many sky-watching novices think that stars are only white. When colourful stars are presented, it can be an astonishing revelation for them. Comparing Rigel and Betelgeuse with the unaided eye, a difference in colour is apparent. However, using binoculars the difference is much more astounding. If you are showing the orange and red star to a beginner, you might also make mention of Professor Michelson (1852-1931). A number of interesting facts can be mentioned regarding this American physicist (born in modern-day Poland). He was the first American to win a Nobel Prize in the sciences, for one thing. His main work was in refining measurements of the speed of light. However, it was his work in interferometry that brings his name into Olcott's book, in conjunction with the star Betelgeuse. This star became the first one, other than our Sun, to have its diameter measured (in 1920-21). Michelson's interferometer design is still in use today at major observatories. Incidentally, Betelgeuse is 1.64 billion km in diameter. Our sun, by comparison, is

1.39 million km. But wait, there's more! In popular culture, no less a man than Ben Cartwright helped Michelson get his career started. In the "Look To The Stars" episode of Bonanza, broadcast in 1962, the 16 year old budding scientist (played by actor Douglas Lambert) is aided in his struggle for admission to the US Naval Academy by the Cartwrights. Michelson did live in Nevada at that time in his life! The episode can be watched on YouTube.

Now it's time for a look at the Great Nebula. Though it presents a distinctive mystery to the naked eye, in binoculars the mystery at least becomes a more beautiful one. I have trouble with the trapezium star in hand-held binoculars, but with a steady hand the area makes for fun sweeping. Olcott suggests that it was a Swiss Jesuit by the name of Cysatus, in 1618, who made the first report on the nebula. His full name was Johann Baptist Cysat (c. 1587-1657), and his main interest as an astronomer was in observing comets. He was one of the first to make astronomical and scientific use of a telescope. Even in 1804 his descriptions of comets were still among the best available. Here is Cysat's brief description of the Great Nebula:



Image by Scott Stuckless

"Another of these phenomenon in the heavens is the congeries of stars at the last star of the Sword of Orion, for there one can find a similar congestion of some stars in a very narrow space, and all around and in between the stars themselves is a diffused light like a radiant white cloud."

We actually suspect now that the first notated observation was in 1610, by Nicholas Peiresc, though he was silent on the nebula afterwards. Surprisingly Galileo did not mention it in his early observations of 1609 and 1610, though he did map the stars of Orion. Over the years hundreds of descriptions have come down to us. I will leave this topic with Olcott's own description:

"...The nebula is a stupendous mass of gas in a state of violent agitation, a gigantic whirlpool. Even when viewed with an opera or field glass the star Theta Orionis appears to be enveloped in a haze

which indicates the presence of the great nebula which is a glorious and wonderful sight in a large telescope. Words fail to describe its beauty."

Oddly enough Olcott goes on to describe the Horsehead Nebula in the unaided eye and field glass section of his Orion section. The Belt stars, where we will finish up our cold winter's night viewing, point in one direction towards Aldebaran in Taurus, and in the other down towards Sirius in Canis Major. There is fine sweeping in those areas, too. From bottom to top the belt stars are Alnitak, Alnilam, and Mintaka, all around 2<sup>nd</sup> magnitude. These stars have attracted attention since the dawn of human sky gazing. The *Orion correlation theory* holds that there is a correlation between the three largest Egyptian pyramids and the three belt stars in Orion. That itself is worthy of some future Aurora article, and certainly worth a casual mention at a winter star party. Wishing everyone clear skies in 2018!



## Totality (continued from page 1)

disk appears as a final flash of bright light before it is obscured by the Moon, which is second contact. Though I did not see this part of the eclipse, I did look at the ground and noted that the Moon's shadow, in an immediate way, deeply darkened it, like a door was rapidly shut from a brightly lit room at night. There were from the other people present, excited exclamations, including cheers, of wonder and approval. The accumulated effect of all of the surrounding peoples' excitement, added with my own, along with a sense of awe in newness encouraged me to shout out, "Oh beautiful!" I also exclaimed, "Oh John, its everything you said it would be, man." One lady enthusiastically said twice with genuine amazement, "That's so cool." I did readily notice that besides the peoples' vocal acknowledgements, there had come a profound silence where no insects, birds or other usual noises of the day were heard. While totality continued, a few seconds before Tom Smart called out with courteous precision, "Mid eclipse!", the insects started up again, sending out their usual sounds.

I spent most of the time during the 2 minutes and 40 seconds of totality, looking at the eclipse through my 16x50mm binoculars (it was safe to do so since the Sun's disk was now fully covered) and got a fine enough view. At the meeting of the RASC - Windsor Centre held last June, I used my 10x30mm hand held telescope in a test to see how well I could look at a picture of a total solar eclipse projected on a screen and did so well enough, which gave me confidence that I'd see this eclipse all right. The inner corona was easily visible as a pale white glow outlining well the dark sharpness of the Moon's round edge. I would estimate its visible width was within a quarter of the Moon's diameter. During the first few seconds on seeing this scene, it did not seem real to me. I thought it was just a photograph, but I quickly realized, with the help of the confirmation from others present, that what I saw was real. This reminds me of something that I had experienced during one of my trips to Germany. My Aunt Annemarie Huebotter and I were in a *garten platz* (garden place) in Wiesbaden, when I heard what I thought was a cuckoo (coo coo) clock sounding off. I thought, "Who would put a cuckoo clock outside?" After I had mentioned this to her, my aunt pointed out that what I was hearing was from a real cuckoo bird.

I looked quickly at the surrounding sky and saw no planets or stars. I did not notice the much brighter fringe of light above the horizon. I did note that the sky looked to me like very deep twilight of a dark gray colour.

My all too brief naked eye glimpse of the eclipse showed a much more extended view of the corona which at its greatest width was somewhat greater than the diameter of the Moon. I was surprised how solid and easily visible this streaming crown of light was. Its light appeared in colour something similar to pearly white and somewhat like seeing the light reflected off the ceiling originating from an indirect lighting lamp. It also seemed as if I was seeing a scene from another world. This view appeared quite unique to me by just looking at the very dark Moon in the place of our familiar very bright closet star, with the Sun only appearing by way of its usually hidden radiating corona.

I made sure that I was again observing through my binoculars the Moon still obscuring the Sun as the end of totality was approaching. Not at any time did I see any of those solar explosions known as prominences appearing beyond the distinct surface of the Moon. John did observe some of them. Someone, probably from our group of eclipse observers, gave a countdown to third contact, when the disk of the Sun begins to emerge from behind

## 2018 Executive and Council of the RASC - Windsor Centre

### Executive

President	Mike Mastronardi
1st Vice-President	Rick Marion
2nd Vice-President	<b>Open Position</b>
Secretary	Dan Perissinotti
Treasurer	Nancy Ng
National Council Rep.	Tom Sobocan

### Councilors

Randy Groundwater	Elizabeth Ismail
Steve Mastellotto	Steve Pellarin
Paul Pratt	Paul Preney
Dr. Susan Sawyer-Beaulieu	Tom Sobocan
Mahayarrahh Starr-Livingstone	C. Joady Ulrich

### Appointed Officers

Honorary President	Dr. William Baylis
Past-President	Randy Groundwater
Alternative National Council Rep	<b>Open Position</b>
Librarian	<b>Open Position</b>
Recording Secretary	Dan Perissinotti
Public Education Director	Mahayarrahh Starr-Livingstone
Public Relations Director	<b>Open Position/2nd-VP</b>
Directors of Observing	Juliana Grigorescu
	Steve Mastellotto
	Nancy Ng
	Dr. Susan Sawyer-Beaulieu
Light Pollution Abatement Dir.	<b>Open Position</b>
Hallam Observatory Director	John Marn
Aurora Editor	Steve Mastellotto
Webmaster	Steve Mastellotto

our single natural satellite. Then I saw it! A sudden, surprisingly silent, immediate bursting forth of dazzling pure white sunlight! appeared, which was the most welcome sight that I saw during the eclipse. This manifestation of the second diamond ring ended the briefest of nights that I'd ever experienced. Twice, I was reminded of the speeded up sense of time during this truly impressive event. First, when Tom called out "Mid eclipse!" and second, when the Sun's disk was again becoming visible indicated when third contact took place. This was a truly uniquely beautiful view in the binoculars. I ended observing the emerging Sun by wisely lowering them within 5 seconds after totality. The regularly perceived amount of light that the Sun sends us was rapidly seen once more.

Shortly after the Sun began to be revealed as the Moon moved on, while still at the observing site, I felt a sense of definite satisfaction, which another member of our diligent group had also expressed. I had said in the early part of totality, "Gentlemen, we have success," and so we did. We obtained what we had planned and worked for to achieve.

## Group Photos



Our annual December Social on Friday December 1 was well attended and enjoyed by all who participated. In addition to the wonderful pot-luck style dinner and desserts there was a gift exchange and a raffle for a Ken Rounge original painting of Jupiter. In addition to this photo by Mike Mastronardi a video greeting celebrating the 150th anniversary of the RASC was also captured.



Since our annual June picnic has been cancelled the last couple of years we took a chance on a Fall date and on Saturday September 16th we had a Star-B-Que. The delicious pot-luck style get together featured Dan Perissinotti on his mobile smoker and smoked ribs. As you can see in the photo the weather was nice and temperatures pleasant for what may be a new Fall tradition.