

# AURORA



Volume 45, No. 4

The Royal Astronomical Society of Canada - Windsor Centre

January 2020

## Wither Stargazing? by Randy Groundwater

I have been thinking a lot about light pollution lately. About how its effects have grown over the years, especially in our region. As sky watchers we have always had to chase the dark night sky to wherever we could find it and that journey has become a farther and harder trek as the years have passed.

My earliest memory of darkness came in the early 1960s when I was perhaps seven or eight years old. In summer my Dad would rent a cottage at Dunk's Bay, near Tobermory on the Bruce Peninsula. It was small and very modest but somehow all eight of us in the family in those days found a way to make it work.

At night I would look through the open screen door into the blackness beyond the porch where the only sounds to be heard were the occasional breeze rustling the trees and the waves lapping the sandy beach. But it was the darkness, the utter blackness out there that I most remember. It did not scare me; rather it seemed strangely comforting.

A few short years later, I had become interested in the stars and was sky watching in the backyard with a 60mm refractor, then with a 114mm (4.5") reflector. It was darker here in south Windsor in those days and the faint, general outline of the Milky Way could even be traced without too much difficulty on moonless summer nights. I still have the notes and drawings I'd made of objects like M13, M31, M57 and of course Jupiter along with Mars during its close opposition of 1971, all from just a few steps off the porch.

But it was not until 1972 that I clearly remember first seeing a really dark sky. That was on the first of what would be many outings with the Nova Astronomy Club of Windsor to Wheatley Provincial Park. There on the bluff overlooking Lake Erie, the universe and some of its many wonders clearly came into view. An overnight trek with that same group of amateur astronomers to Pinery Provincial Park, in 1974, revealed for just a few, short hours on a Saturday night, even darker vistas. By then we were using home-made reflectors from 150mm to 250mm (6"-10") in aperture.

A few more years went by. Neon tube streetlights were replaced with the orange brilliance of high-pressure sodium in inefficient "cobra head" fixtures. By the late 1970s, the suburban sky was clearly changing as seen from my backyard observatory. Point Pelee and Holiday Beach became more typical places nearby to escape to the dark.

In August of 1979 I was invited by a friend to take my 317mm (12.5") Newtonian to Lake Penage, in Northern Ontario. It was nearly a full week of sensational dark sky probing like nothing I'd ever done to that point. I remember virtually no light pollution there to hinder the amazing views. It left an indelible impression. When I returned home I discovered that my interest in viewing through the greying south Windsor sky had suffered.

*(Continued on page 6)*

### *In This Issue*

Wither Stargazing?	Cover & Page 6
Events / Housekeeping Items	Page 2
November 2019 Meeting Minutes	Page 3
At the Eyepiece: 2019 Observing Highlights	Page 4
President's Message & 2020 RASC Executive/Council	Page 5
Member Astrophoto - The Double Cluster	Page 5

## Calendar of Events

### *Our next meeting...*

Tuesday February 18, 2020  
7:30 p.m.

at  
Ojibway Park Nature Centre  
5200 Matchette Road

### *Main Speaker...*

To Be Determined

### *Topic...*

To Be Announced

### *Activities...*

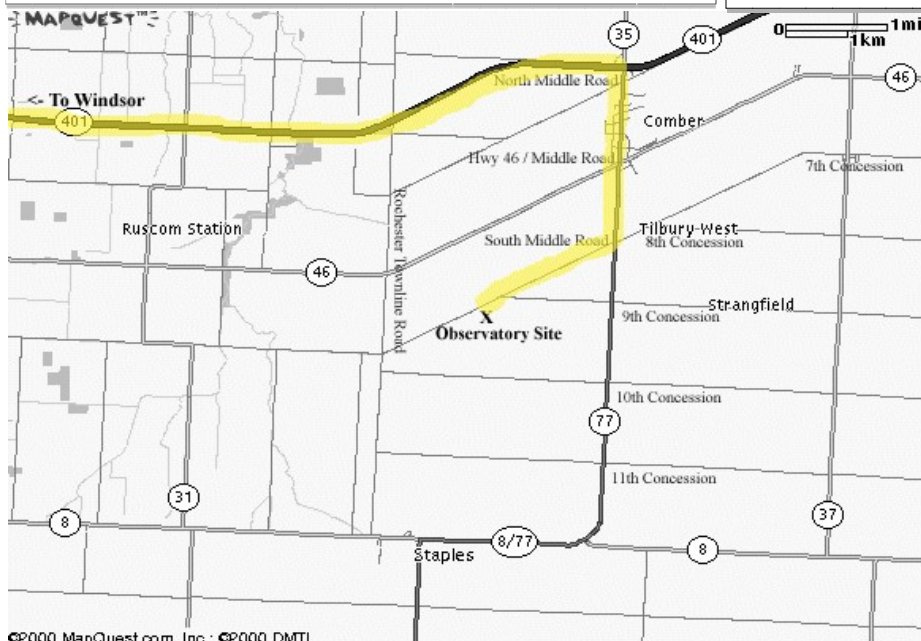
**Venus and Neptune:** On Monday evening January 27th Venus and Neptune will be separated by 0.08 degrees. For Windsor they will be separated by about 12 arc minutes.

**Mercury:** Will be at greatest elongation east on Monday February 10 and visible in the evening sky.

**Council Meeting:** The RASC Windsor Centre Council will be meeting on Tuesday February 11th at 7:30 p.m. at Mike Mastronardi's employer Stantec.

**Moon and Juno:** On the morning of Thursday February 13th the moon occults minor planet Juno starting at 4:30 a.m. through 5:41 a.m..

**Moon and Mars:** On the morning of Tuesday February 18th the Moon will occult Mars. Mars disappears behind the sunlit limb of the Moon at 7:15 a.m. and reappears from behind the dark limb at 8:43 a.m.. With sunrise occurring at 7:24 a.m. most of this event occurs with the sun in the sky.



### 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 ([greg.mockler@live.com](mailto:greg.mockler@live.com)) or visit our website at: <http://www.rascwindsor.com> for more information.

# November 2019 Meeting Minutes by Sandy van Gaalen

The monthly meeting of the **Royal Astronomical Society of Canada - Windsor Center** was held at the Ojibway Park Nature Centre on **Tuesday November 19, 2019**.

Windsor Centre **President, Mike Mastronardi** chaired the meeting and **called the meeting to order at 7:45 p.m.** and welcomed members and guests to the Ojibway Park Nature Centre.

Mike invited members to review **the minutes of the October 15, 2019** meeting which were printed in the Aurora Flyer. A **motion to accept the minutes** was made by **Susan Sawyer-Beaulieu**, seconded by **Rick Marion**. **MOTION CARRIED**.

Mike showed some pictures from the **ArtSpeak Gallery event** and expressed appreciation to the members for their contributions.

Mike provided an overview of the meeting and introduced RASC Windsor Centre member **Mike Ethier** to the floor for his talk on creating a custom double star list.

Using the website in his "At the Eyepiece" article in the October Aurora newsletter, Mike discussed how to **make your own custom double star list / catalogue**.

A double star is two stars which are really close together. They may look like one until you look closer at them and distinguish two. According to the Observers Handbook 85% of the stars in our galaxy are binary or multiple. Our sun (star) is a minority.

It is worth looking at binary stars just to observe the colour differences. **Washington Double Star Catalogue** is the most popular. The full catalogue of 149,000 double stars can be viewed on the website. The right ascension tells you where east or west the star is located and the declination tells you the north or south co-ordinates (how far above the horizon). Many different lists are available—**Binocular doubles, Popular stars, Binary stars, Triples, Otto Struve double star list**, etc..

Mike search the data base for double stars appropriate for a **6 inch telescope** and it came up with 65 double stars visible. First star separated by 1.6 degrees. You can eliminate ones you don't want to view.

**Mike Mastronardi thanked Mike Ethier** for his presentation.

Mike then welcomed **Mahayarrahh-Starr** to the floor for his talk on **Raspberry-Pi 3** computer module.

**Starr** started his presentation with an explanation of how the telescope runs and is guided by **remote control**. The Raspberry-pi is extremely small with HDMI and 3 USB ports. You don't have to use a laptop, you can use a tablet and wireless connection and the tablet battery lasts longer. It has **polar alignment, focusing and field rotation** functions built in and it will even open the dome if you have that set up. You can take 50 frames of one subject then 50 of another and or switch filters. There are a couple of software options available. such as stel-lamate. It can run on **Wi-Fi, Bluetooth, or Ethernet** cable.

The cost is approximately **\$60 with a case**. A monitor, cable, micro SD card and keyboard are required. He explained how to use it for taking pictures and that it can be set up for taking random pictures.

**Mike** thanked **Starr** for his presentation.

A few announcements were made regarding the **December Social**.

**Randy Groundwater** showed a few slides from the past and explained that since 2020 will be **our 75th anniversary** he will be taking a few minutes during each meeting to show some pictures.

In **1943 – 1944** we were called the **Astronomy Club Windsor** and an advertisement was placed in the paper for the first meeting. **100 people showed up** and the room was hardly large enough. The ad was better written for the net meeting and hardly anyone showed up.

In **1945** we became the **RASC Windsor Centre**. Randy went through a list of past **Presidents from 1945 to present**.

## 2020 Elections

**President:** Randy Groundwater, motioned Steve Pellarin, seconded Joadi Ulrich. Motion Carried.

**1st Vice-President:** Rick Marion motioned Susan Sawyer-Beaulieu, seconded Donna Ronconi. Motion Carried.

**Secretary:** Sandy van Gaalen motioned Steve Mastellotto, seconded Steve Pellarin. Motion Carried.

**Treasurer:** Greg Mockler motioned Susan Sawyer-Beaulieu, seconded Paul Pratt. Motion Carried.

**National Council Representative:** Tom Sobocan motioned Joadi Ulrich, seconded Greg Mockler. Motion Carried.

**Council Members:** Mahayarrahh-Starr Livingstone, Steve Mastellotto, Nancy Ng, Steve Pellarin, Paul Preney, Joadi Ulrich motion Susan Sawyer-Beaulieu, seconded Al DesRosiers. Motion Carried.

A complete list of 2020 Executive and Council can be found on page 5.

**Break. 50/50 draw** was won by Jeremy Hanson.

## Director of Observing Report

**Steve Mastellotto** began the report with a recap of last month including; **Mercury** moves into the evening sky in October, **Mercury Transit** on November 11th (it was clouded out here), **Leonid and Orionid** Meteor Showers, **Uranus / Neptune** visible all night and **Jupiter** and **Saturn** visible in early evening

Steve showed some pictures including; **Mercury Transit** (not from our members) by James Wise, our exhibit at ArtSpeak and **Bubble Nebula** picture by **Brian Simpson** taken with ASI 1600 camera.

Sun is moving South since the summer solstice and reaches the furthest point on **December 21 at 11:19 p.m.** Late November, early December will be a good time to look for **Mercury** in the morning sky. **Mars** rising around 5 a.m. **Jupiter** dipping behind the sun and will be in conjunction on November 27th. **Saturn** right behind Jupiter and will be in conjunction on December 13th. **Uranus and Neptune** just past opposition October 28th and September 10th. Steve explained **Opposition** being when the planet and Earth are on the same side of the Sun on the Earth is in between. **Conjunction** is when the planet is in line with the Sun and not visible. Mercury and Venus can have a **Inferior Conjunction** when they are on the same side of the sun as Earth. A **Superior Conjunction** is when the planet lies on the opposite side of the sun.

**Upcoming events:** **Last Quarter** - Nov. 19, Dec 18, Jan 17, **New Moon** - Nov 26, Dec 26, **First Quarter** - Dec 4, Jan 2, **Full Moon** - Dec 12 (**Cold Moon**), Jan 10 (**Wolf Moon**).

**Conjunctions:** Venus and Jupiter Nov 23-24, Venus and Saturn Dec 10

**Meteor showers :** **Alpha Monocerotids** November 15-25, **Geminids** meteor Dec 13-14, **Quadrantids** Dec 28-Jan 12

**Nancy presented Jeremy** with a ribbon for donating the money from the sale of his Eagle woodworking project.

**Reminders:** Astro Luncheon at **Skippy's Restaurant** every second Wednesday of the month, at noon. Located at 954 University Ave West, Windsor.

**Mike** thanked everyone for coming out to the meeting and reminded everyone that the **next regular membership meeting** would take place on **Tuesday January 21, 2020 at 7:30 p.m.**

**Meeting adjourned** at 9:52 p.m. November 19, 2019.

## At The Eyepiece: 2019 Observing Highlights by Mike Ethier

This time of year very little time is spent at the telescope eyepiece. I did enjoy a fine night on December 21<sup>st</sup>, but as of early January that has been it, other than a few naked eye peeks at Betelgeuse. Instead, I will talk briefly about the 2019 highlights and lowlights, and say a bit about 2020.

For me, 2019 will be remembered as the year I had to abandon the Hallam site for my observing program. The greenhouse lights to the south have reached a level of insanity I could not have imagined even a few years ago. While in the long term I am optimistic that the stray light problem from Leamington will be addressed, in the short term Hallam is now reserved (for me) for lunar and planetary work. I have had to move my deep sky observing to Chatham Kent County, where I can at least enjoy good skies to the north, east, and south. The success of Detroit's streetlight program has made the west and northwest sky much more light polluted than several years ago, when nearly half the streetlights in that city did not function.

And yet another big problem lies in the near future, as nearly six thousand new satellites will be orbiting the Earth within two or three years. These satellites will be used to bring fast internet to the entire planet. They are supposed to be highly reflective, too. In 2020, 1500 of them will be launched. The first batch of 60 is already up there. Even using remote telescopes for photography will be greatly affected. Needless to say, it isn't only amateurs who are worried; major observatories will have some serious obstacles to overcome as well. And what happens to these satellites if Earth is struck by a major solar flare? If you think we have a lot of space junk up there now, just wait.

My NGC observing project continued in 2019, as I managed to get out under clear skies with my telescope 34 times, totaling over 100 hours of observing. That is considerably better than 2018, one of the cloudiest years I have ever seen. One of those observations was the total lunar eclipse of January 20<sup>th</sup>, possibly the coldest observation I have ever recorded from Essex County. It was a very fine and clear night, however.

And in Spring 2019 I finally managed to complete my viewing of the entire NGC list in the constellation boundaries of Leo! That was a seven year project that took me to some fabulous sights, a few of which I have shared in these pages. My newest Spring observing adventure lies within the border of Coma Berenices, and might take me just as long. Will I ever get to tackle Virgo someday? If I do, you will read about it here.

Winter months are an excellent time to plan a viewing program

for the warmer months. I wish you all many happy observing planning sessions, and excellent skies with which to undertake those plans.

### Messier of the Month: M 1, "The Crab Nebula"

Approximately 7500 years ago, a star exploded in the direction of the constellation Taurus. Seen and recorded over a thousand years ago by the Chinese in 1054 A.D., the remnant from this supernova was the first astronomical object to be identified as such. The Earl of Rosse drew the object in 1840, observing it with his 36" telescope. His drawing was said to resemble a crab, and thus the nickname. This is one of the most studied objects in the sky, and provides for some fascinating on-line reading. Stunning photos reveal the object in breathtaking detail. What is highly unusual about M 1 is that on very detailed professional photos, significant changes can be noted in less than a month.



*The Crab Nebula - Messier 1 by Mitch Arsenault. 300 x 30 second subs AA183C camera @ 400 (low) gain.*

Even so, I still like to view it in a small scope. In a really dark sky it can be seen with binoculars, though my views have been only through telescopes. And it continues to expand, being significantly larger now in photos than when I first began the hobby.

My first look came in March, 1973, using my 4.5" Tasco reflector. With fresh snow on the ground and an unshielded streetlight only a few meters away, it wasn't the ideal first look at such an object. A much better view came from my back deck in Anderton Township in March, 1994. I was using my trusty Edmund 8" reflector. At lower powers it reminded me somewhat of

a very large and bright galaxy. The edges appeared smooth, even at 169x. Skip ahead to late November, 2016. I viewed it with the 12" Dob from Hallam, and found it impressively large, very bright, and quite elongated. The large central area is much brighter than the outer areas. Several faint stars appear to me very close, or even touching the outside edges. The south-following end is very patchy, whereas the north end tapers and fades gradually.

My Space Eye view came in October, 2015, from Hallam. I did not have high expectations of seeing M 1 with the 2" refractor, but it was located at 30x! The nebula was really faint, but quite unmistakable. It was oval, and though fairly small, averted vision really helped bring it out.

Messier 1 (NGC gn 1952): 6' x 4' emission nebula in Taurus.

## President's Message

With the turn of a new year and decade, I wish to extend a warm welcome back to all the members and friends of the RASC Windsor Centre.

2020 is looking promising for sky watchers, with many exciting events taking place. An excellent apparition of the planet Venus, already underway in the evening sky, will last well into the spring. There are also some spectacular conjunctions and occultations from now through to December. And we must not forget that an especially favourable opposition of Mars takes place in the fall. Along with Jupiter and Saturn so bright and near to it, 2020 will be a year of planetary observation to remember.

Details and tips for seeing these and many more sights are of course highlighted during the sky report segments that are delivered so capably at each of the monthly meetings by our "Directorate of Observing" presenters.

A special thank you is extended to all those who cheerfully volunteer their time and many talents, be it with giving presentations at our monthly meetings or the numerous special events that we plan and host as a centre throughout the year. As with many other organizations, we depend solely on the volunteers who share their enthusiasm and skills with their fellow members at the meetings.

With this in mind, a warm invitation is extended, as always, to anyone who would like to give a presentation at one of our membership meetings on any astronomical topic. Perhaps it is a particular area of interest to you, or a project that is being worked on. We would love to give you the time at a meeting to hear from you! Sharing your passion in this way can be just as rewarding as it is to your fellow members who will benefit from your experience.

Finally, many of you are aware that 2020 is the 75<sup>th</sup> anniversary of the Windsor Centre. We have a rich history to value and as the year goes on hopefully we will have opportunities to recall and celebrate some of the stories, images and moments that have brought us to where we are, today.

May we all enjoy a Happy and Prosperous New Year.

Randy Groundwater

## 2020 Council of the RASC - Windsor Centre

### Executive

President	Randy Groundwater
1st Vice-President	Rick Marion
2nd Vice-President	<i>Open Position</i>
Secretary	Sandy van Gaalen
Treasurer	Greg Mockler
National Council Rep.	Tom Sobocan

### Councilors

Mahayarrahh-Starr Livingstone	Steve Mastellotto
Nancy Ng	Steve Pellarin
Paul Preney	C. Joady Ulrich

### Appointed Officers

Honorary President	Dr. William Baylis
Past-President	Mike Mastronardi
Alt. National Council Rep	<i>Open Position</i>
Librarian	<i>Open Position</i>
Recording Secretary	Sandy van Gaalen
Public Education Director	Mahayarrahh-Starr Livingstone
Public Relations Director	<i>Open Position/2nd-VP</i>
Directors of Observing	Juliana Grigorescu
	Steve Mastellotto
	Nancy Ng
	Jessie Passa
	Dr. Susan Sawyer-Beaulieu
Light Pollution Abatement	Mahayarrahh-Starr Livingstone
Hallam Observatory Director	John Marn
Aurora Editor	Steve Mastellotto
Web Master	Steve Mastellotto
	Jack Zhu



The Double-Cluster NGC 869 and 884 by Brian Simpson.

Almost 3 hour capture (2 minute subs) through L, R, G, B filters at 500mm focal length (~90mm aperture at f/5.6) with ASI1600MM-Cool camera and ZWO filter set and Nikon 200 - 500mm lens. No autoguiding or precise polar alignment.

Brian commented that he was mostly happy with the result as it is towards the most light-polluted part of the sky from LaSalle (towards Windsor and Detroit).



*The author (seated, right, in the shadows) along with John Thompson (standing) visiting with Michael & Deborah Ethier at their "Aragorn Observatory"; a rocky outcrop under the magnificent skies of Lake Penage, Northern Ontario, in August of 1979.*

During the 1980s, many annual summer trips to the famous Stelafane gathering in Vermont, and beginning later that decade, to the Starfest astronomy convention near Mt. Forest, Ontario were looked forward to for their starry skies. Over the last 30 years I have made a special effort annually to be at Starfest, in part for its dark sky. On my first visit in 1987 the night sky there really was a great experience. But by the mid 1990s light domes from nearby surrounding communities were becoming noticeable. At the end of the 2000s, a dozen of them could be counted dotting the horizon.

In August of 2019, I was once again at Starfest. The late summer weather could not have been finer. But the night sky there is now impaired by a virtually unbroken band of light pollution all the way around the horizon which is worst, of course, in the direction of Guelph and ultimately the GTA, hours of drivetime away. One must now look to the region nearer the zenith, there, to experience how once its sky used to appear in every direction. For me, over thirty years of annual visits to Starfest has proved to be another benchmark in gauging the growth of light pollution in Southern Ontario.

In the early 2000s, the RASC Windsor Centre built Hallam Observatory. Lucky circumstances landed us what we considered at the time to be a pretty dark location in the county, near Comber. Though not perfect, it was quite nice. Through the intervening years, however, the county population has grown while some nearby residents have turned to the use of yard lights that shine with a brilliance that goes far beyond the borders of their properties. Most alarmingly of all, on many nights the light pollution caused by the exploding greenhouse industry in and around Leamington and Kingsville to the south effectively rivals that of the cities of Windsor and Detroit to the northwest when viewed from the observatory grounds. On some nights I have returned from there and looked up from my own backyard, actually pre-

ferring its more evenly illuminated, whitish-grey appearance to the uneven, lighted mess that now plagues Hallam.

Paradoxically, hand in hand with the growth of light pollution has come advances in astronomical equipment that we could scarcely have imagined. Most significant, perhaps, is the incredible breakthroughs in astrophotography. We all know the imaging today that is being done by amateurs – even from urban, light polluted back yards – can rival some of what was coming out of professional observatories only a generation ago. Still others have embraced internet connections to robotic observatories located in remote regions on other parts of the globe, collecting data that they can then process from the comfort of their home. It is no wonder that not just long-time amateurs, but many of those just coming into astronomy choose, or at least aspire to using DSLRs and CCD cameras instead of eyepieces and nebula filters for their telescopes.

Does this mean that simply eyeballing the cosmos – traveling more and more hours in search of retreating darkness in order to squint through lenses at faint fuzzies – will soon be nothing more than a rather quaint activity practiced only by a few old-timers and diehards, fading away into history, in the face of what can now be captured electronically from downtown? Could it be that amateur astronomers may one day cease their endless search of darkness in favour of a return full circle to their own backyards, but using electronic eyes rather than their natural ones? On that day, if I were to live to see it, I would mourn the final loss of the beautiful and comforting darkness.



*The night sky at Hallam Observatory has been significantly compromised from both population growth in Essex County and the recent and explosive expansion of the greenhouse industry in and around the town of Leamington, to its south.*

*This article adapted from an article that first appeared in the October, 2019 edition of the Nova News, by the Nova Astronomy Club*