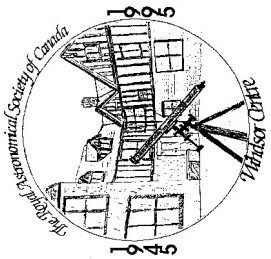




AURORA



September 2020

The Royal Astronomical Society of Canada - Windsor Centre

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Barnard's Star - 2020 Edition by Steve Mastellotto



Barnard's Star is about six light-years away from Earth in the constellation of Ophiuchus which makes it the fourth-closest star to the Sun. The three components of the Alpha Centauri system are closer which makes Barnard's Star the closest star visible from the Northern Hemisphere. Barnard's Star is a low-mass red dwarf star which makes it dim at about 9th magnitude despite its close proximity. It is named for American astronomer E.E. Barnard. He was not the first to observe the star but in 1916 he measured its proper motion or movement against the background sky as 10.3 arc seconds per year. This is the largest-known proper motion of any star relative to the Solar System.

The image above or more correctly the 11 images above were captured by Dave Panton (assisted by Al DesRosiers) and Steve Mastellotto. Since 2010 Dave captured an image of the field that contains Barnard's Star and for 2015 - 2020 Steve captured the images. 2010 was the first year of this personal project when Barnard's Star was in the lowest position in the above composite image created by Steve. In early August Steve captured the 2020 image (top position) which now represents 103 arc seconds of movement over the intervening years or a rate of 10.3 arc seconds per year. At this rate it will take about 175 years to span the width of the Moon.

Over the years Dave and Steve captured the images with slightly different set ups but in general the images are through the Celestron 14 inch scope at Hallam using Nikon and Canon digital cameras and about 2 minute exposures at ISO 800 or 1600. Focus is achieved using a Bahtinov mask.

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Calendar of Events

Our next meeting...

November?, maybe January
at
[Ojibway Park Nature Centre](#)
5200 Matchette Road

Main Speaker...

To Be Determined

Topic...

To Be Announced

Activities...

Neptune: Is at opposition on **Friday, September 11th.**

Autumnal Equinox: On **Tuesday, September 22nd** at **9:31 a.m. EDT.**

Mercury: Is at greatest elongation East (evening sky) on **Thursday October 1st.**

Venus and Regulus: On the mornings of **October 2nd and 3rd** look for Venus less than a half degree from Regulus.

Mars Party: Hold the night of **Saturday October 10th** for a member's Mars observing night at Hallam Observatory.

Mars: Is closest to Earth on **Tuesday October 6th** and reaches opposition on **Tuesday October 13th.**

Orionid Meteor Shower: Peaks on **Wednesday, October 21st.** Best views will be from the Midnight until Dawn when you can expect to see between 20 - 40 meteors per hour. The moon is just 5 days past new and sets by 10:30 p.m. EDT.



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 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 for current rates.

Contact Greg Mockler (greg.mockler@live.com) or visit our website at: <http://www.rascwindsor.com> for more information.

President's Message

To say that 2020 has been a year of turmoil and frustration would be an understatement. With no regular RASC Windsor Centre membership meetings possible since February, we have all felt the sting of separation and our continued inability to meet, face to face, at the Ojibway Nature Centre. When will all of this finally end?

On the upside, it has been quite remarkable to see our Hallam Observatory, near Comber, being frequently used by many members on clear nights over the summer. Some weekend evenings in particular have been downright busy with many members set up with their binoculars or telescopes on the grounds surrounding the observatory, taking advantage of the wide-open spaces, the fresh air and secluded, rural setting to do their sky watching. It is like a tonic for the times we amateur astronomers are living in.

Our Light Pollution Abatement (LPA) Chairman, Starr Livingstone, is always active in his portfolio, especially when it comes to the problem involving the light pollution generated by the burgeoning greenhouse industry in the Leamington / Kingsville area. Most recently, an article on this very problem in which he is quoted fairly extensively has just appeared in the *Kingsville Observer*. Aptly titled "Land of the Midnight Sun", it can be found online at:

<https://www.kingsvilleobserver.com/post/land-of-the-midnight-sun?fbclid=IwAR21M2V1qcAAyWjyD-Wk9zrVgpQkbCS13956AeChV3hF2tB3kCDWgSqhjUI>

Kudos to Starr and also an honourable mention to Centre council member, Nancy Ng, for providing the excellent photo she took from Hallam Observatory that also appears in this article.

As the late summer eases into fall an observational highlight for many sky watchers is undoubtedly the outer planets, Jupiter, Saturn and Mars; all of them now well positioned for viewing. Jupiter glows so brightly that it cannot be missed, low in the south as darkness descends, with Saturn trailing just a few degrees away to its left. They are beautiful to the eye, and mesmerizing through the telescope. Jupiter's Great Red Spot is very prominent when it is rotated into view and Saturn's south polar region is peeking out from behind the rings which are themselves perfectly presented.

However, it is really Mars that is deservedly getting special at-

tention now. Well up in the southeast by midnight, it is becoming ever-brighter as it approaches its October 13th opposition. On that night, it will shine impressively at magnitude -2.6 and be a scant 63 million km. away from the Earth. Through the telescope, its disc will subtend an angle of about 22.5 arc seconds and just as importantly, with its placement well above the celestial equator, it will be high enough when near the meridian in late evening to produce sharp images when the air is steady. Even now its size is generous enough to make high-powered views of surface and weather features worth watching.

In honour of this very special opposition, mark the evening of Saturday, October 10th on your calendar as we will be holding a "Mars Night" at Hallam Observatory for members of the Windsor Centre. A good time to arrive would be in evening twilight when there is still some light left, and bring a lawn chair and your telescope, if you have one. There is plenty of room on the grounds surrounding the observatory to observe "social distancing" as you enjoy exploring the splendid early autumn sky in this darker, country setting. More information on this special evening will soon be forthcoming, so watch your email inbox.

Randy Groundwater - President

The planets have been the stars of the Summer and Fall for 2020. Mars and Venus by Pete Bararo and Jupiter and Saturn by Steve Mastel-lotto

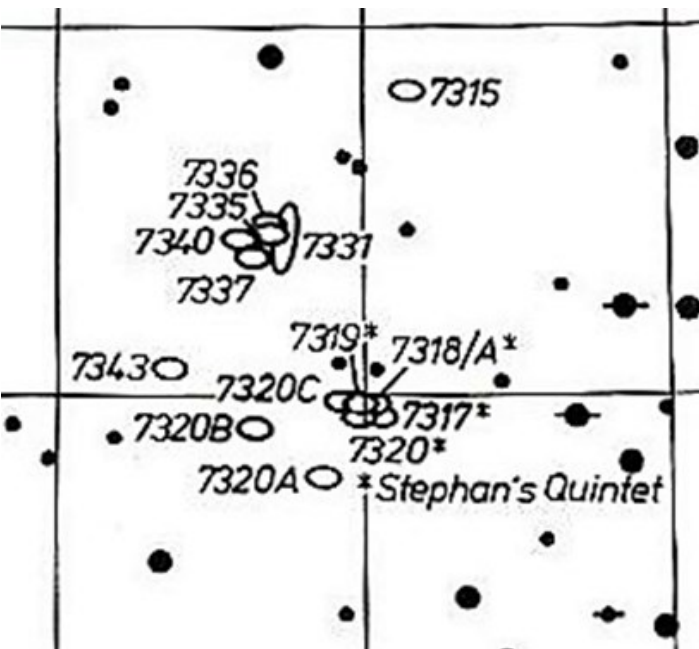


At The Eyepiece: A Galaxy Quintet by Mike Ethier

Lying very close to Stephan's Quintet in Pegasus (which is more like a quartet, but I quibble), the eg 7331 quintet is much more rewarding in moderate sized telescopes, thanks to the overwhelming presence of one of the great NGC galaxies. Four of its visual neighbours can be located in dark skies with a 12" scope, a few of them quite easily. Anything larger, including our club's 14" instrument, should provide satisfying views. A sixth NGC member is a very faint double star, and a seventh was also incorrectly labeled, actually being a star.

I first came across eg 7331 on the night of October 16th, 1991. Back in those days I could see galaxies from my back deck in Anderton with my 8" Edmund reflector. I logged it as a major surprise of the night, since I was also competing with an 8-day old moon! That is one bright galaxy. It was easily swept up at 36x. 112X showed the elongated shape, with a much fuller size seen at 169x. The central area remained bright, but the outer areas were pretty faint. None of my maps at the time showed the other galaxies.

It wasn't until I returned to Pegasus with the 12" reflector, undergoing my NGC project in that constellation (there are 298 NGC objects here) that I made a new visit to 7331, and went in search of the smaller objects alongside it. This was October 2015, and I was observing from Hallam. I had just finished up with observations of Stephan's Quintet, and moved my scope the short distance to eg 7331. It was remarkably bright at 60x, and very elongated. It is a large galaxy, 10'.5 x 3'.5, and visually bright at mag. 9.5, though its surface brightness drops to 13.2 because of its size. It is still a good object even in a 6" scope, but in a 12" mirror it is an unforgettable sight. It bears magnification easily, so use the highest possible one that still gives good images. 250X showed me a thin, dark line just preceding the bright center.



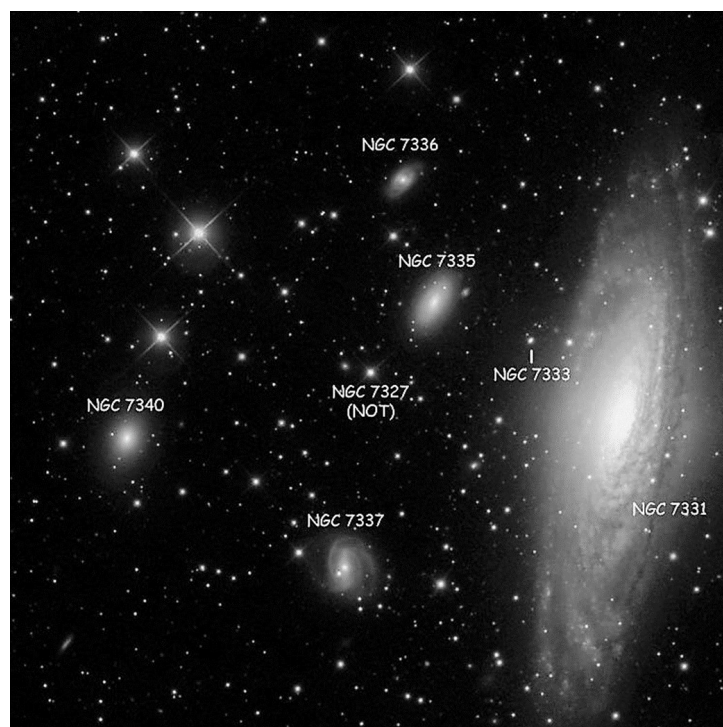
The four smaller galaxies we are concerned with consist of eg 7335, 7336, 7337, and 7340, all located just following the main galaxy. Simply by allowing 7331 to drift to the edge of the field brings the others into view. Taking them in order, eg 7335 is the brightest and most obvious of the smaller objects, and can be

seen with an 8" if one knows where to look. At 12" I first glimpsed it using 100x, just north following the central core of 7331. Views improve with high power, and it eventually appears like a smaller, fainter version of 7331 itself, even in the same position angle. This galaxy is 1'.3 x 0'.6 in size. Visual brightness is 13.4, and its surface brightness is 13.

The next number is eg 7336. This one is pretty faint, but located just north of 7335, so it's not difficult to locate. I viewed it at 187x and 200x, noting its elongation and slightly brighter center. It's size is a tiny 0'.8 x 0'.4. Visually it clocks in at mag. 14.5, but due to its tiny size, the surface brightness ramps it up to a 13.1. Expect to see something halfway between those two magnitudes, thus about 13.8. It is not difficult to see in a 12", and may be visible in a 10".

Eg 7337 is a challenge, and it took me some time to see it. Not only is it rather faint, but it sits close to a star that is brighter than it, hampering the view. Milky Way stars can be a real nuisance sometimes, and this is one of those times. The galaxy's size is 1'.1 x 0'.7. Visually it is mag. 14.4, with a surface brightness of only mag. 14. This one is challenging with a 12" scope, but quite doable if you are patient. It lies south of 7335, and aligned with the south end of 7331.

Last but not least comes eg 7340. After 7335, it is the easiest of the little galaxies to find. Though only a tiny 0'.9 x 0'.6, it is not difficult to see at 136x and 187x. It shows an oval shape at higher powers.



A nice view of the 7331 quintet. Image courtesy of cseeligman.com. 7333 is actually a very close double star. 7327 is a single star. Both were mistaken for galaxies originally.

A Galaxy Quintet (continued)

Stephan's Quintet is easy to find from 7331, too, if you are in the mood for another quintet. Just sweep south preceding until you arrive. It's fun to sweep back and forth between quintets, getting to know this area of the sky. In a future article I will detail my difficult search for Copeland's Septet, seven very small and faint galaxies in Leo. In the meantime, enjoy clear skies!

Messier of the Month: Messier 92

Globular star clusters make a fascinating study. There are only 170 listed in Uranometria, including ones too faint to see with modest scopes, and those visible in the Magellanic systems. They are rarer than one might think. I remember my Tasco 4.5" days very well (1971-1978), trying to imagine what a resolved cluster might look like at the eyepiece. The first one I viewed with an 8" scope (1978) was M 56 in Lyra, followed by M 13 and M 92 in Hercules. What a revelation it was! Even today, despite the incredible resolved photos from Hubble of these mini-galaxies of stars, I prefer visual observation to photos of globulars and open clusters. Some sights can still easily take my breath away.

I logged M 92 officially in late July, 1992, from Lake Penage, west of Sudbury, with my Edmund 8" reflector. I was expecting a bright ball of haze, perhaps beginning to resolve at higher power. Instead, I saw one of the finest globular clusters in the north sky. Not only is M 92 big and bright, but it can be observed directly overhead, usually the best part of the sky in which to observe. I was surprised, to say the least, when it was located at 36x and stars were already resolving to near the center. This is what I had dreamed about during those Tasco 4.5" days! At 59x stars resolved to the core, and I observed three distinct sections: the bright central core, surrounded by a bright collar, or ring, and surrounding all was the outer region of individual stars. M 92 is magnificent at 112x, revealing a blindingly bright core surrounded by a rich background of stars made up of lines, curves, and various patterns. At 169x the area behind the core's many resolved stars was blazing, revealing too many stars to draw or even count. At 200x the effect was like observing a giant explosion of stars hurtling outward. The full cluster goes beyond the field of view. 254X showed good core detail, as it began to break up into chunks of brightness and stars.

In July of 2016 I observed it from Hallam (and many times since!) with my 12" reflector. Though about one third smaller than M 13, and certainly not as rich, it is still one of the most awe-inspiring sights I have ever seen (and I've been to the Rockies 40 times!). At 187x and 200x I noted that to the north and south of the center, the rich outliers reminded me of the wings of a moth, with a very bright head between them. At 374x (I took my time to get a really, really good focus) the core has broken into two halves, and is mostly all resolved. Breathtaking!

M 92 in Hercules can be easily viewed throughout September, offering up a wonderful contrast to M 13. Use the 14" at moderate and high powers, and I guarantee a sight worth seeing.

M 92 (gc 6341): Size 14'; Visual Mag. 6.5; Brightest star Mag. 12.1

Past President - Mike Mastronardi

As the Windsor Centre's immediate Past President, I am also the Nominations Committee Chair, entrusted to establish the proposed slate of Council Members and Officers for 2021. The plan is to provide the proposed slate virtually by email to the General Membership on the date of what normally would be our in-person October Meeting - October 20th. Therefore, through this message, I am calling for nominations from any member of the General Membership in good standing (current in their Annual Dues) who wishes to stand for Council for 2021 at the November Elections. If so inclined, contact me by phone at: 519-965-1705 or by email to: michael.mastronardi@stantec.com before October 12th to let me know. Please, self-nominations only this year.

Also, I will be contacting all current Council Members and Officers shortly to ask their intentions to stay on Council and be on the proposed slate of nominations to be voted on at the November Centre Annual General Meeting on November 17th. The details as to how this Meeting will be conducted, still have to be worked out, as it will in all likelihood have to be a virtual meeting, but the Membership will be notified of the details well in advance. Because of the situation this year, "Nominations from the Floor", will not be able to be entertained at the virtual AGM in November. So let your intentions be known to me by October 12th.

Thank You,
Michael Mastronardi
Past President – Windsor Centre RASC / Nominations Committee Chair



Bubble Nebula and M52 by Randy Drumm

Member Astrophotos - Neowise Showcase



Clockwise from Top-Left: Jeff Peacock, Pete Barbaro, Nancy Ng, Mahayarrahh-Starr Livingstone, Randy Groundwater and Steve Mastellotto.