



Newsletter of the Pomona Valley Amateur Astronomers

There is nothing noble in being superior to your fellow man,  
true nobility is being superior to your former self.

*Ernest Hemingway*



Volume 44 Number 7

*nightwatch*

July 2024

### Club Events Calendar

<b>July 19</b>	<b>General Meeting 6:30 PM Ken Elchert "Extended Presentation on DART Mission"</b>	<b>Oct 9</b>	<b>Board Meeting 6:15 PM</b>
		<b>Oct 12</b>	<b>Star Party – Cahuilla Park</b>
		<b>Oct 18</b>	<b>General Meeting 7:30 PM</b>
<b>July 27</b>	<b>Star Party – GMARS</b>	<b>Nov 2</b>	<b>Star Party – GMARS</b>
<b>Aug 7</b>	<b>Board Meeting</b>	<b>Nov 6</b>	<b>Board Meeting 6:15 PM</b>
<b>Aug 16</b>	<b>General Meeting Time TBD</b>	<b>Nov 15</b>	<b>General Meeting 7:30 PM</b>
<b>Aug 31</b>	<b>Star Party – GMARS</b>	<b>Nov 27</b>	<b>Board Meeting 6:15 PM</b>
<b>Sept 11</b>	<b>Board Meeting</b>	<b>Dec 7</b>	<b>Holiday Party</b>
<b>Sept 20</b>	<b>General Meeting 7:30 PM</b>		
<b>Sept 28</b>	<b>Star Party – GMARS</b>		

### PVAA Officers and Board

#### Officers

President .....	Mathew Wedel .....	909-767-9851
Vice President ..	Joe Hillberg .....	909-949-3650
Secretary .....	position is currently open	
Treasurer .....	Gary Thompson .....	909-935-5509

#### Board

Jim Bridgewater (2026).....	909-599-7123
Richard Wismer(2026) .....	
Ron Hoekwater (2025).....	909-706-7453
Howard Maculsay (2025).....	909-913-1195

#### Directors

Membership / Publicity....	Gary Thompson	909-935-5509
Outreach .....	Jeff Schroeder .....	909-758-1840
Programs .....	Ron Hoekwater .....	909-391-1943

### PVAA General Meeting 06/21/24

Ron Hoekwater, Claire Stover, and Laura Jaoui went to this year's Grand Canyon Star Party that was held from June 1<sup>st</sup> thru June 8<sup>th</sup>. Claire gave a presentation of her experience of the event. This took place during the week of the new moon after Memorial Day. They had 154 volunteers for the event and the volunteers received free camping. Next year it is being held from June 21<sup>st</sup> through the 28<sup>th</sup>, 2025. One of the volunteers added up the size of all the telescopes and produced a diameter total of 923 inches!

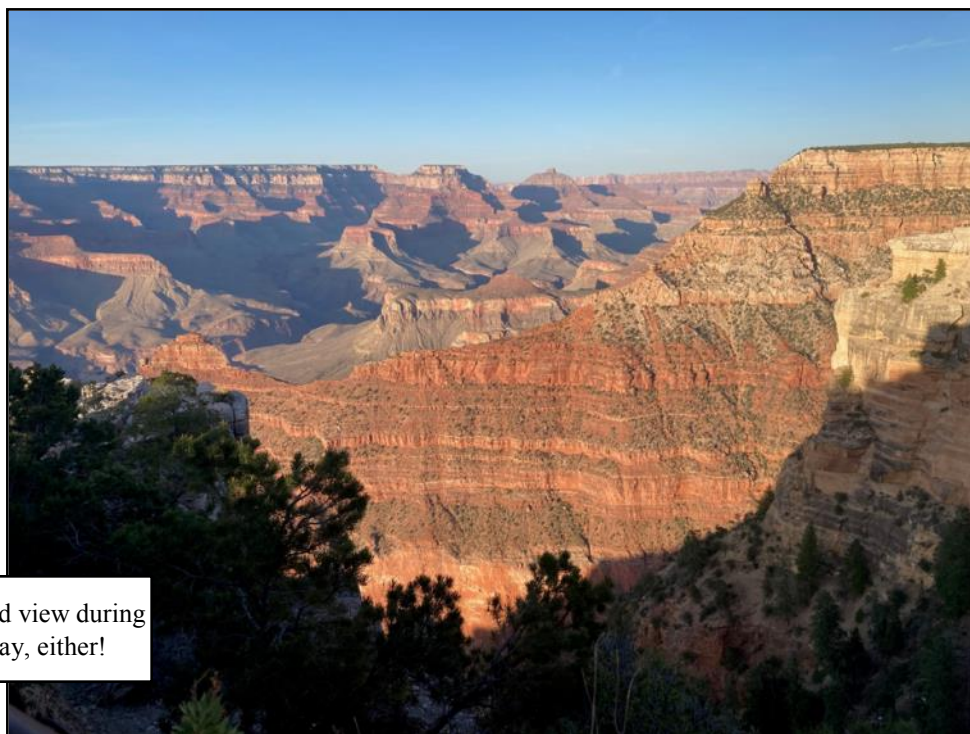
Laura then gave a presentation on her experience of the Grand Canyon Star Party. A Park Ranger gave an orientation to the volunteers, there were several presentations from the volunteers and even NASA after sundown before the sky was completely dark. The rangers explain to the public that this is designated International Dark Sky Site, and in the use of red lights. Some volunteers were designated "Star Guides" to help the public get to the places they want to go. You can volunteer for only one night, or all the nights, or any number of nights.



2024 Grand Canyon Star Party Picture by Grand Canyon Conservancy – note the green lasers coming from both sides of the telescope field (no, they aren't light sabers).

They are pointing to the Chinese Space Station, which was visible two nights of the Star Party.

A few nights featured Space X launches of Starlink satellites.



Not a bad view during the day, either!





Tucson Amateur Astronomy Association (TAAA or T Triple A) host a pizza party for volunteers in the campground



Astronomers listen to the Park Service Ranger and to group announcements at a “Popsicle Party” prior to every night’s event. Come join us next year to find out what that’s all about.

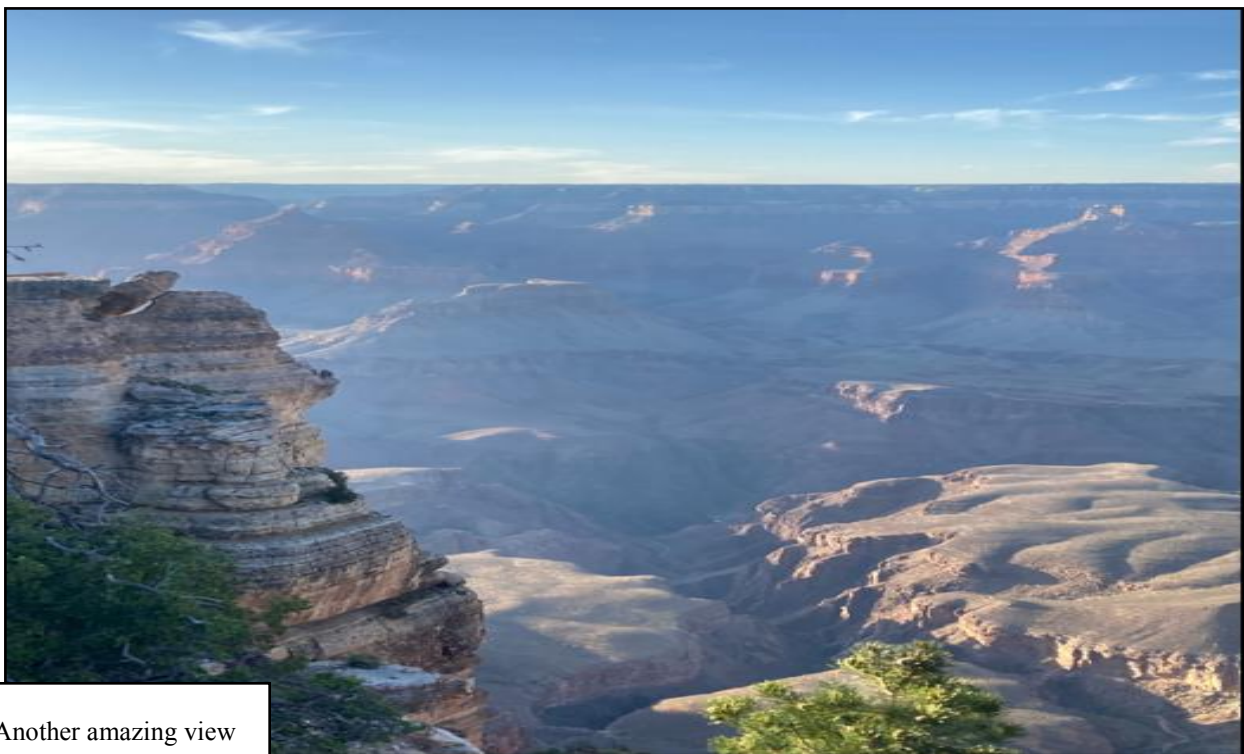




Claire Stover, Ron Hoekwater, and Lucy Stover  
setting up Ron's telescope.

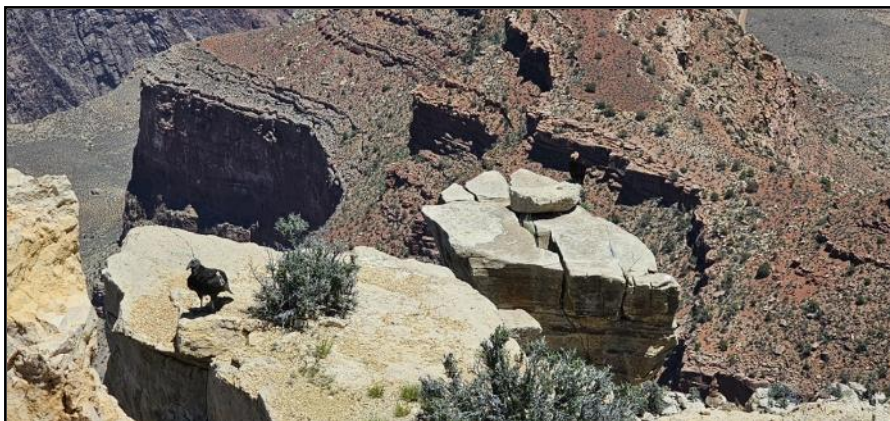


National Park Service Ranger Rader Lane



Another amazing view



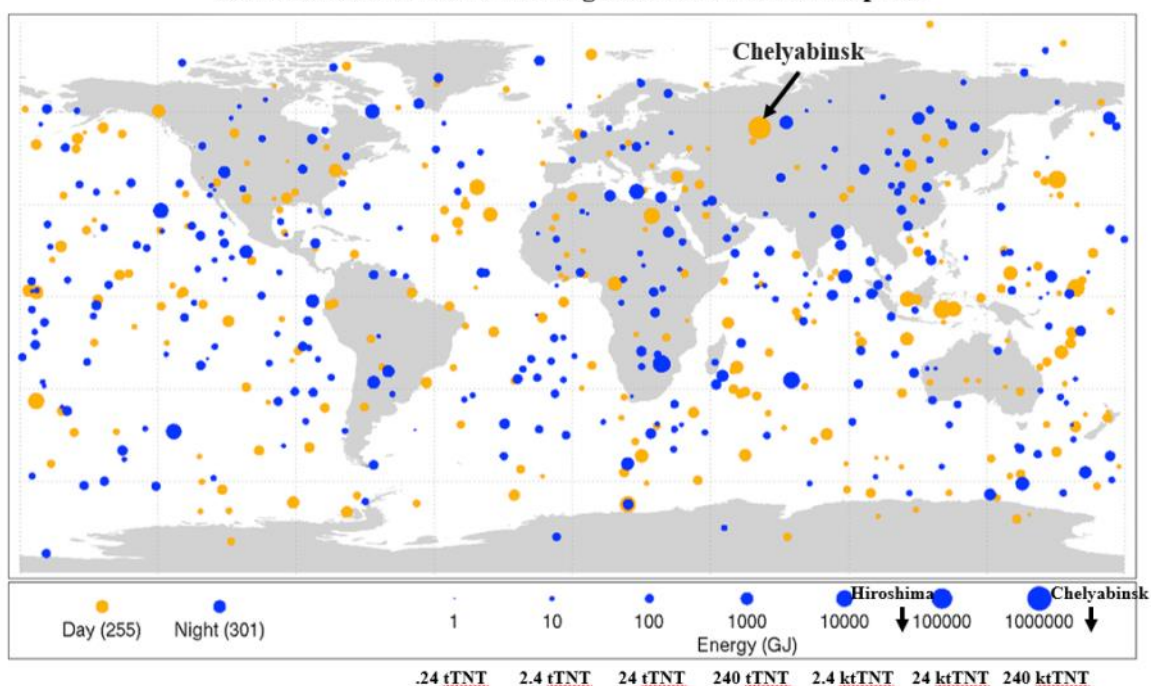


Claire gets distracted by the sight of two endangered California Condors seen from the Maricopa Point overlook. Switches from Star Guide to Raptor mode.

Ken Elchert gave the main presentation of the night. His topic was an update of the DART mission. He started out with the Earthrise photo from Apollo 8 taken on Christmas Eve 1968. Bill Anders, who took the Earthrise photos, died on June 7, 2024.

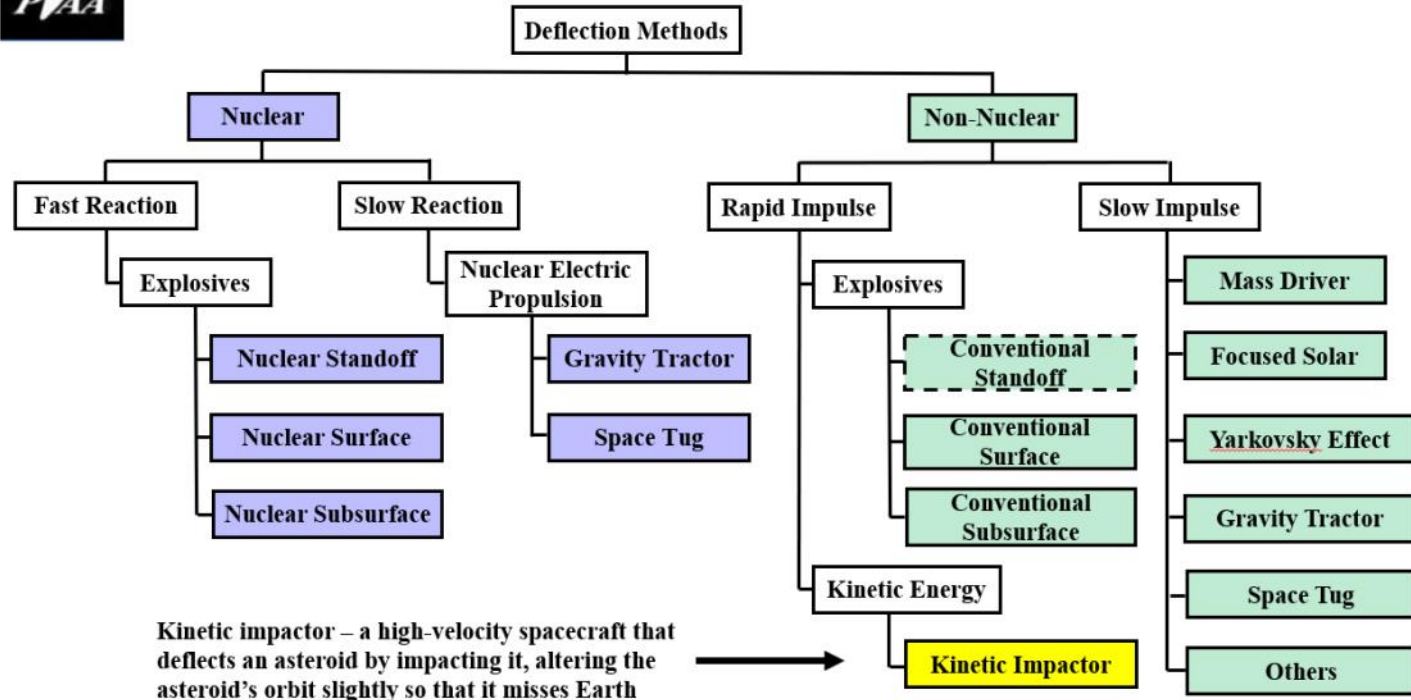
Every day over one hundred billion micrometeoroids, meteors, and space debris enter the atmosphere. At about 48.5 metric tons per day this adds up to 17,700 tons per year. Mostly these are the size of a grain of sand, burn up in the atmosphere, and do not hit the ground. But 10 to 50 per day are larger than 10 grams when they do reach the surface. Back on March 22, 1989, a 300-meter asteroid passed within 684,000 km of Earth but was not discovered until 9 days after its Earth fly-by. It was this event that got NASA to begin serious study of potentially harmful objects in space. March 22<sup>nd</sup> is now known as 'near-miss day.'

### Bolide Events: 1994 – 2013 556 small asteroids that disintegrated in Earth's atmosphere





## Asteroid Deflection Methods



Ken then went over several ways a threatening asteroid might be diverted. The DART mission used the Kinetic Impactor method. Right now, the only natural disaster that humanity can potentially avoid is a devastating meteor impact. Early detection and precise orbit determination are required for this to be successful.

Unfortunately, the host's computer's battery gave out at this point. Ken will finish his presentation at next month's meeting.

*Gary Thompson*



## Charles Messier

Today is the 294th birthday for French astronomer Charles Messier [1730-1817]. His name is one of the most widely recognized names in astronomy, and certainly is the most widely recognized name amongst amateur astronomers.

His first recorded professional exercise in astronomy was the observation of the transit of Mercury on 6 May 1753. But he had been inspired to become an astronomer by the Great Comet of 1744 (C/1743 X1). This unique comet sported 6 tails, more than any other multi-tailed comet. Messier took up comet hunting, and was a successful comet hunter, with 13 comet discoveries to his credit.

At the time, anyone who discovered a comet had the right to give it a name. Or, for those of entrepreneurial spirit, the right to sell the naming rights to somebody else. So Messier made at least part of his living by discovering comets, and then selling them. Hence, Messier was understandably annoyed by faint fuzzy objects that turned out not to be comets, even though they looked the part. After all, it takes a few nights of observing to make sure the object is a comet, by seeing if it moves with respect to the background stars.

The non-comets, which do not move with respect to the background stars, wasted his time. So he made a list of these annoying objects, things that he did not want to look at. He is famous today for that list, a set of objects heavily observed & studied today, by amateur & professional astronomers alike. The fact that he discovered 13 comets is all but forgotten.

Messier published his initial list of 45 annoying objects in 1774. By 1781 his final list numbered 103 objects (published in 1784). Other astronomers have added to the list since then, by culling through Messier's notes. The current version numbers 110 objects. Some of the objects in the catalog, like the Pleiades open cluster (Messier 45, or M45, the 45th object on his list), could hardly have been mistaken for comets by Messier, or anyone else. Evidently, he wanted his list to be longer than lists being published by other astronomers at the time, so he padded his with interesting, but non-comet like objects.

He is the namesake for lunar impact crater Messier and asteroid 7359 Messier.

The picture of Charles Messier is a portrait attributed to Nicolas Ansiaume [1729-1786] and dated circa 1770.

The other image is a slide from my talk on galaxies. It features a drawing of the Andromeda Galaxy, Messier object 31 (M31). Photography did not exist in the days of Charles Messier, and modern digital imaging was even farther in the future. In those days astronomers made drawings. It was a painstakingly slow process, waiting for clear moments in the turbulent atmosphere, until the astronomer was sure some small feature as real, and would then add it to the slowly built drawing. The drawing is a bit unclear in the image, because of the small size of the original image (linked below).

M31 is a naked eye object, under clear dark skies, first recorded over 1000 years ago, by Persian astronomer Abd al-Raḥmān al-Ḥufī [903-986], in "The Book of Fixed Stars" (circa 964), where he described it as a "little cloud" (or words to that effect, depending on the translator).

The first astronomer to describe M31 with a telescope was Simon Marius [1573-1625], whom Messier credits on his drawing. By the mid 1800s, M31 was recognized as a member of the class of objects called "spiral nebulae", the true nature of which was debated for decades thereafter.

Beginning in 1923, the famous astronomer Edwin Hubble [1889-1953], used the 100-inch telescope at Mount Wilson Observatory, to prove that M31 was in fact what he called an "extragalactic stellar system", which we would today simply call a galaxy. And he showed that it was, by his reckoning, nearly a million light years away, much farther than anyone had even suggested. Hubble had used M31, to discover the universe, in a very literal sense.

The 31st object on Messier's list of things that bugged him because they were not comets, is not the only object in his list, to hold critical legacies in the history of astronomy. But it may well be the most important of the lot.

[https://en.wikipedia.org/wiki/Charles\\_Messier](https://en.wikipedia.org/wiki/Charles_Messier) (Wikipedia)

<http://scihi.org/charles-messier-nebulae/> (Charles Messier and the Discovery of Nebulae - SciHi Blog, 26 June 2020)

<https://www.lindahall.org/.../scientist.../charles-messier> (Linda Hall Library, Scientist of the Day, 26 June 2017)

[https://en.wikipedia.org/wiki/C/1743\\_X1](https://en.wikipedia.org/wiki/C/1743_X1) (The Great Comet of 1744 - Wikipedia)

[https://en.wikipedia.org/wiki/Messier\\_catalog](https://en.wikipedia.org/wiki/Messier_catalog) (The Messier catalog - Wikipedia)

<https://en.wikipedia.org/wiki/Pleiades> (Open cluster M45 - Wikipedia)

<https://messier.seds.org/> (The Messier catalog - Students for the Exploration and Development of Space (SEDS), USA)

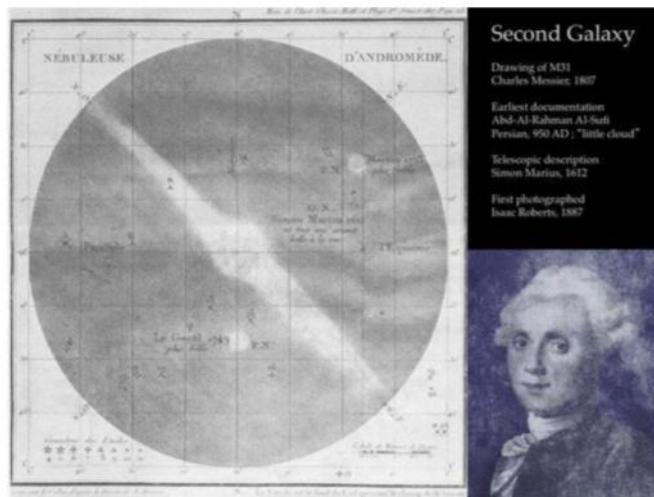
<http://www.messier.seds.org/m/m031.html> (Messier 31 - SEDS Messier catalog)

[https://en.wikipedia.org/wiki/Andromeda\\_Galaxy](https://en.wikipedia.org/wiki/Andromeda_Galaxy) (Andromeda Galaxy, Messier 31 - Wikipedia)

<https://www.universetoday.com/33475/messier-31-andromeda/> (Observing Messier 31 - Universe Today)

<https://science.nasa.gov/.../hubble-messier.../messier-31/> (Messier 31 - NASA)

[https://commons.wikimedia.org/wiki/File:Charles\\_Messier.jpg](https://commons.wikimedia.org/wiki/File:Charles_Messier.jpg) (Messier Image source - Wikimedia)  
[http://www.messier.seds.org/xtra/history/m-m31\\_42.html](http://www.messier.seds.org/xtra/history/m-m31_42.html) (Messier's drawing of M31 - SEDS Messier catalog)



*Tim Thompson – Facebook post 6/26/24*

### RIP Irene Magdziarz

The Club heard recently from Sue Magdziarz, daughter of Ray and Irene - who were very active and dedicated PVAA members for many years. She wrote to share that her mother, Irene, suffered a stroke on 6/13. While she was able to recover enough to be discharged from the hospital on 6/26, which one doctor said was nearly miraculous considering how extensive the stroke was and that she was 91, there were complications afterwards that were too much for her. She passed away peacefully on July 1st with Sue and her younger brother holding her hands and her other siblings on the phone with them.

Just during the last 20 years when I was a member of the Club, Ray was on the Board of PVAA, attended almost every meeting, and produced the Nightwatch every month – including folding, stamping, stapling and mailing every single issue in the days before email. In later years, Ray also provided coffee and cookies at our monthly meetings, along with his wife Irene. And though we just saw her in person assisting with our meeting break goodies, I'm just positive Irene was often there behind the scenes doing her part to help Ray make sure the Club ran smoothly for us all for many years.

Sue asked me to share the news with members of the Pomona Valley Amateur Astronomers since so many of you knew Irene – and Ray, who passed away in 2020.

The family will be holding a celebration of their mom's life on Thursday, July 25th from 2 pm to 4 pm at Claremont Manor, which is at 650 Harrison Ave in Claremont. Anyone from the PVAA Club is welcome to join them. Here is a link to the obituary: <https://claremont-courier.com/obituaries/obituary-irene-magdziarz-78723/>

In case anyone from the Club is interested, Irene's funeral will be on 7/24. There will be a visitation at Todd Memorial Chapel in Pomona at 8:30 am and the funeral Mass at Our Lady of the Assumption church in Claremont at 10:30 am. She will be buried at the National Cemetery with Ray in Riverside at 1 pm.

Todd Memorial Chapel  
 570 North Garey Ave  
 Pomona, CA 91767

Our Lady of the Assumption  
 435 Berkeley Ave  
 Claremont, CA 91711

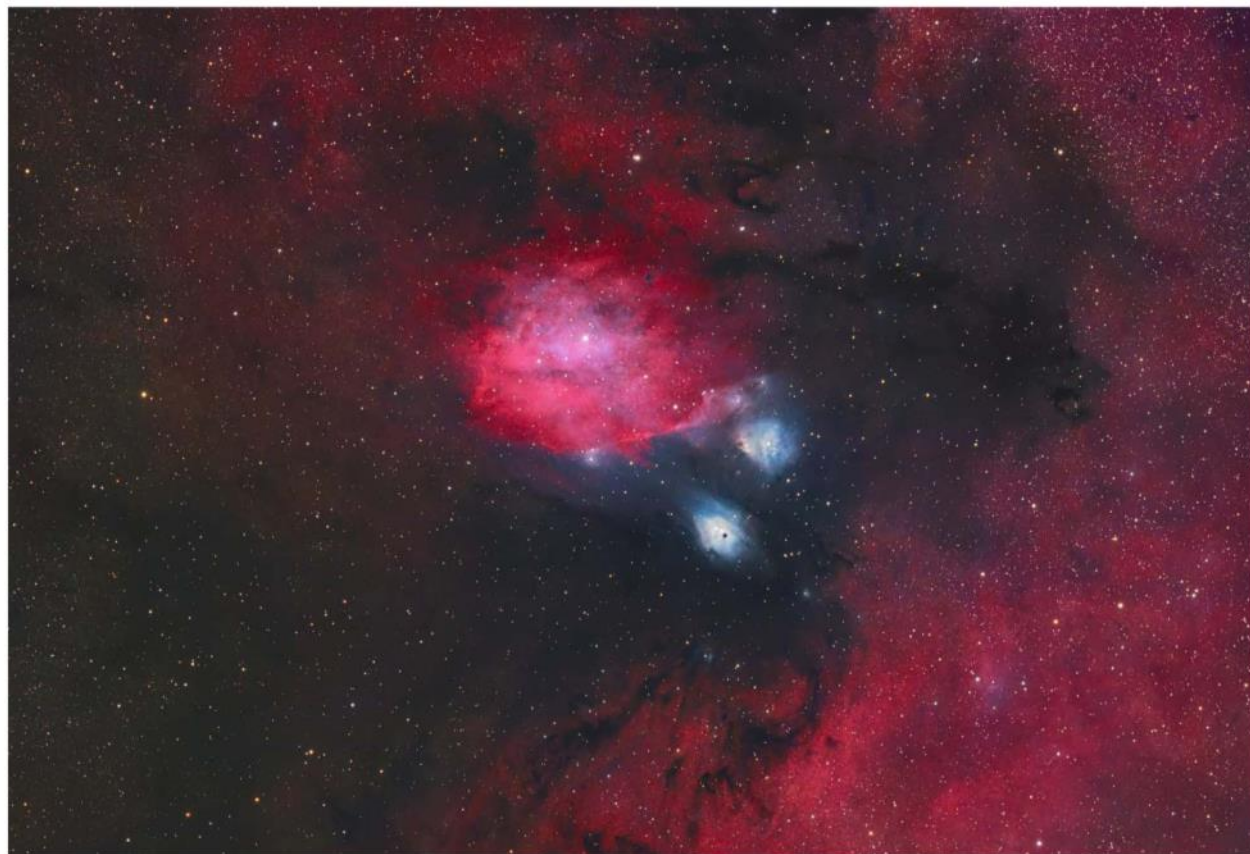


*Claire Stover*



## Summer Photos

I can't believe it's been 3 months since my last posting. I had planned to miss May's outing, but unforeseen circumstances caused me to miss June's outing also. Of course, the first new moon back and the temperature was forecast to be excessive. It didn't disappoint. We arrived late Thursday afternoon to avoid some of the heat but Friday's temperature got to at least 107 F. The thermometer showed 112 F, but it may have been partially in the sun. Saturday was a little cooler at only 105 F!! Cooling towels and a kiddie pool that friends brought helped a lot.



The target for the month was taken from the Sharpless catalog, SH2-37 (aka IC 1284), in Sagittarius. It's very low in the sky, so difficult to image well. The target nebula is the bright, pinkish nebula near the center of the image. There isn't much written about this region from what I could find, but I suspect the star causing the excitation of hydrogen is the bright yellow star near its center. The nebula lies just south of the Sagittarius star cloud, M 24, in what appears to be a very dusty region of space. Look at all the snake-like dark nebulae above and below SH2-37 in the image. Also in the image are two bright reflection nebulae, NGC 6589 (aka IC 4690, the lower of the two nebula) and NGC 6590 (the upper of the two nebulae). These nebulae are being lit by bright blue stars within the dust cloud. Some of that dust apparently overlies the emission nebula creating bluish-gray clouds.

This image was somewhat experimental. I had been reading about advantages of using the lowest gain setting on my camera versus the unity gain setting I normally use. Some argue that the noise is less, however, with this particular camera, the noise at unity and zero gain are nearly identical. The downside of using a low gain is that longer exposures are required, therefore exceptional tracking or a guider are needed. Since I wasn't set up for guiding, I had to settle for 5 minute exposures and hope that I could pull out the details I wanted without messing up the dark regions. I think I was successful. The image is an LRGB composite of 124 luminance, 22 red, 20 green, and 20 blue frames, all 5-minute exposures, calibrated with 15 darks, 15 flats, and 15 flat dark frames. The telescope was the 120mm Sky-Watcher refractor operating at 885mm focal length. Total exposure was 15 hours, 30 minutes over three nights – summer has got very short nights! Typical processing was done in PixInsight by separating the stars from the images and processing each separately. Saturation was boosted in the RGB stars and starless frames before putting the stars back. Once stars were back in the RGB and luminance frames, the two were combined and final adjustments were made to the image.





As mentioned, I need to get guiding working better than it had been previously, that's why I went to unguided exposures. In the past, unguided frames appeared to be sharper than guided ones. To figure out the correct parameters, I used M13, a globular cluster that I have used in the past for experimentation. The last time I shot this was June of last year, so you can look back to that write-up for details about the object. The second image attached is a cropped version shot from home using the TPO 8" Ritchey-Chretien scope without a field flattener operating at 1609mm focal length – very difficult to get long, unguided exposures with this telescope. I used an attached 50mm guide scope with a 2x Barlow lens to get a focal length of about 324mm. The guide scale/imaging scale based on arcseconds/pixel was right at the recommended upper limit of 10:1. Surprisingly, after using the guiding wizard in PHD2, the guide software, I was able to get round stars with 10-minute exposures. To do so from home, I needed to use narrowband filters which don't work well for making nice pictures of clusters. Instead, the image presented is a guided LRGB image made from 9 2-minute luminance frames, and 3 each of 3-minute red, green, and blue frames. 15 darks were used for calibration and no flats were used. I think this is probably the sharpest version of M13 I've ever taken.

For those of you who wonder "What is guiding?", here is a brief explanation. The mechanics of even professional telescope mounts are not able to be machined precisely enough to avoid errors, primarily in roundness and tooth spacing in the gears. Because of this, even though the gears are turning at the constant rate needed to track the sky, the imperfections cause the tracking to repeatably speed up and slow down slightly. The variability in speed is enough to cause stars, especially when shot through long focal length telescopes, to become elongated. To combat this, most mounts include a means for learning where in the gear cycle to adjust the speed to negate the variability in tracking. For long focal lengths, this is sometime not sufficient, so guiding is used. Basically, a second camera is used to track a chosen star. The guiding software essentially stares at the location of the guide star and if it moves ever so slightly, the software sends a signal to the mount to move the star back to its original location. Doing this often enough greatly reduces the tracking variability.

Clear skies until next month.

*Ron Ugolick*

<https://www.astrobin.com/users/rucedu/>





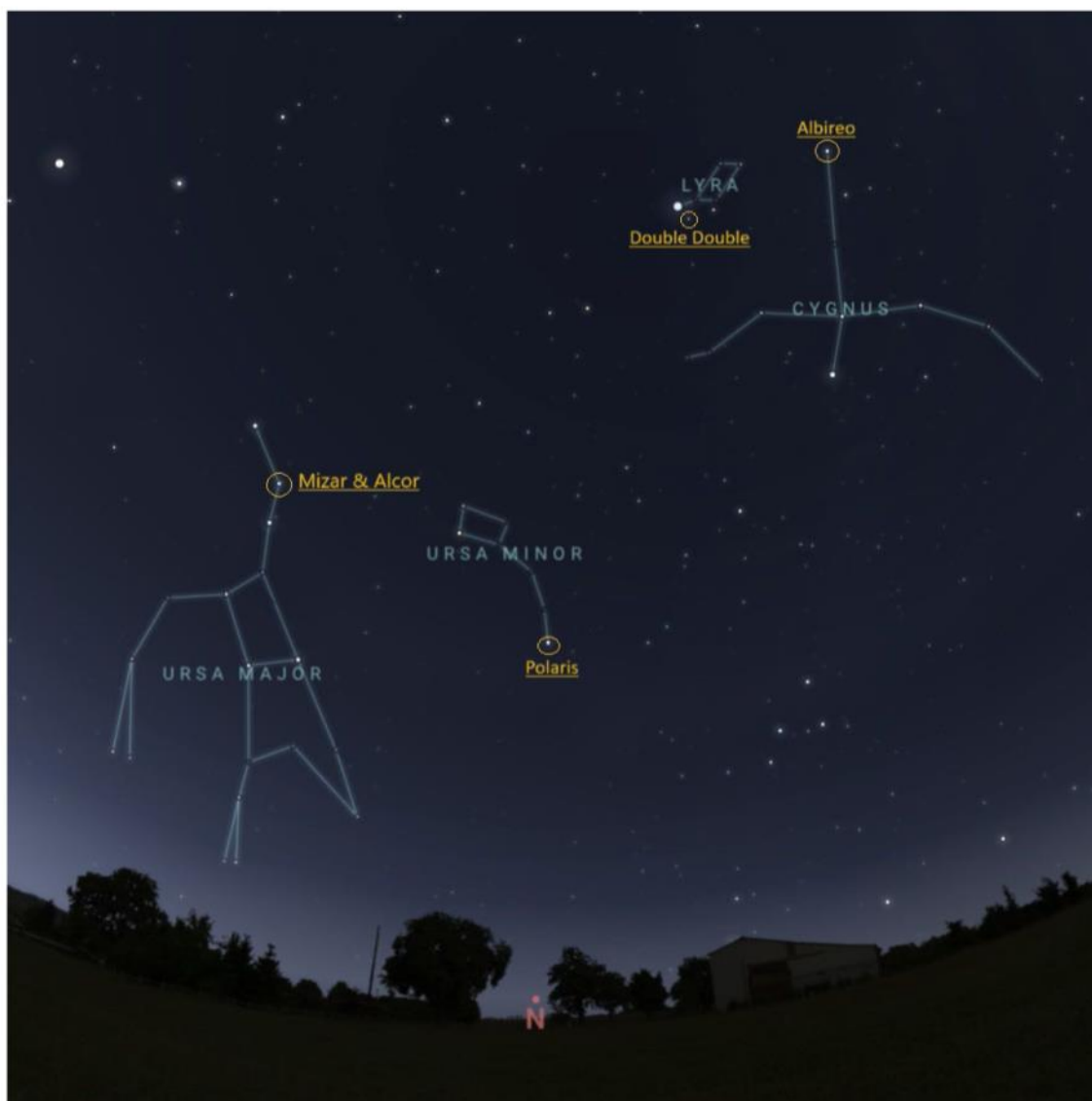
**This article is distributed by NASA's Night Sky Network (NSN).**

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit [nightsky.jpl.nasa.gov](https://nightsky.jpl.nasa.gov) to find local clubs, events, and more!

## August Night Sky Notes: Seeing Double

By Kat Troche

During the summer months, we tend to miss the views of Saturn, Jupiter and other heavenly bodies. But it can be a great time to look for other items, like globular star clusters such as Messier 13, open star clusters such as the Coma Star Cluster (Melotte 111), but also [double stars](#)!

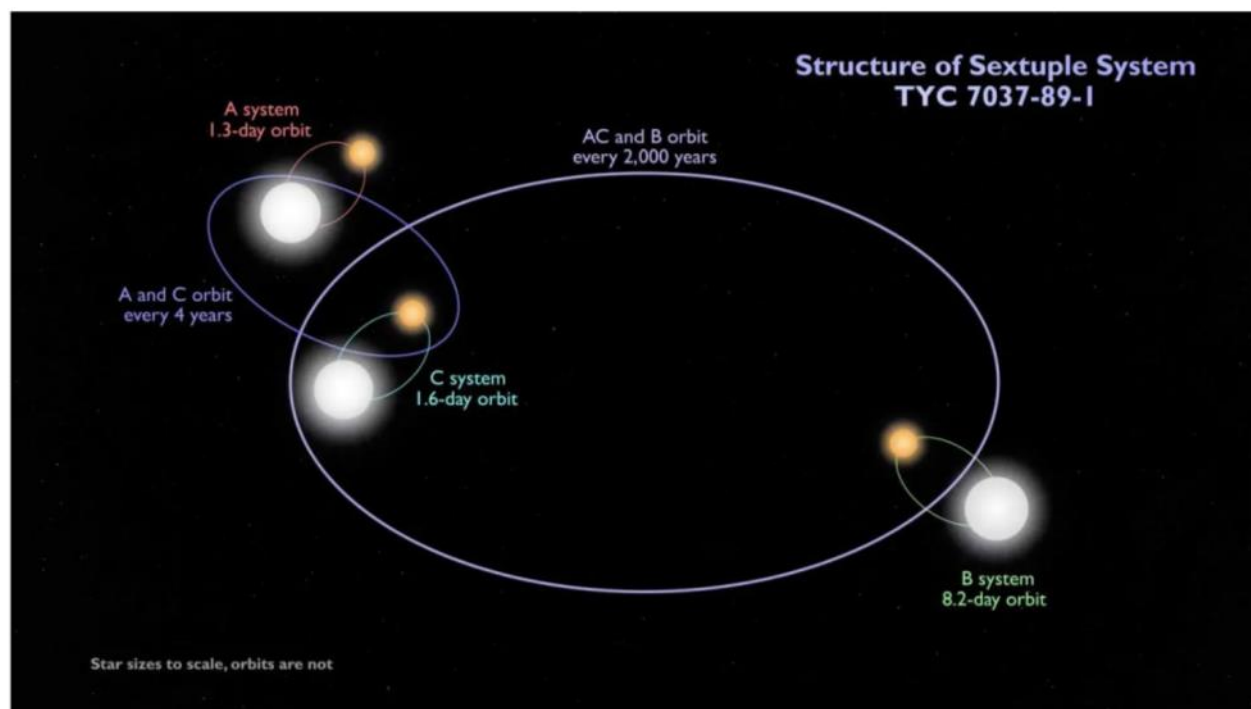


Mid-August night sky constellations with the following multiple star systems highlighted: the Double Double in Lyra, Albireo in Cygnus, Polaris in Ursa Minor, Mizar and Alcor in Ursa Major. Credit: Stellarium Web

## What Are Double Stars?

If you have seen any movies or read any books that refer to having two suns in the sky, that would be a *double star system*. These star systems typically come in two types – binary and optical doubles. Binary stars are two stars that are gravitationally bound and orbit each other, and optical double stars only *appear* to be close together when viewed from Earth, but in reality, are extremely far apart from another, and are not affected by each other's gravity. With a small telescope, in moderately light polluted skies, summer offers great views of these stellar groupings from the Northern Hemisphere:

- **Double Double:** also known by its technical name, Epsilon Lyrae, this multiple star system appears as one star with naked eye observing. But with a small telescope, it can be split into 'two' stars. A large telescope reveals Epsilon Lyrae's secret – what looks like a single star is actually a *quadruple* star system!
- **Albireo:** a gorgeous double star set – one blue, one yellow – in the constellation Cygnus.
- **Polaris:** while technically a multiple star system, our North Star can easily be separated from one star to two with a modest telescope.
- **Mizar and Alcor:** located in the handle of the Big Dipper, this pair can be seen with the naked eye.



This schematic shows the configuration of the sextuple star system TYC 7037-89-1. The inner quadruple is composed of two binaries, A and C, which orbit each other every four years or so. An outer binary, B, orbits the quadruple roughly every 2,000 years. All three pairs are eclipsing binaries. The orbits shown are not to scale. Credit: NASA's Goddard Space Flight

Center



NASA Night Sky Notes

August 2024

Aside from looking incredible in a telescope or binoculars, double stars help astronomers learn about measuring the mass of stars, and about stellar evolution. Some stars orbit each other a little too closely, and [things can become disastrous](#), but overall, these celestial bodies make for excellent targets and are simple crowd pleasers.

Up next, learn about the Summer Triangle's hidden treasures on our mid-month article on the [Night Sky Network](#) page.