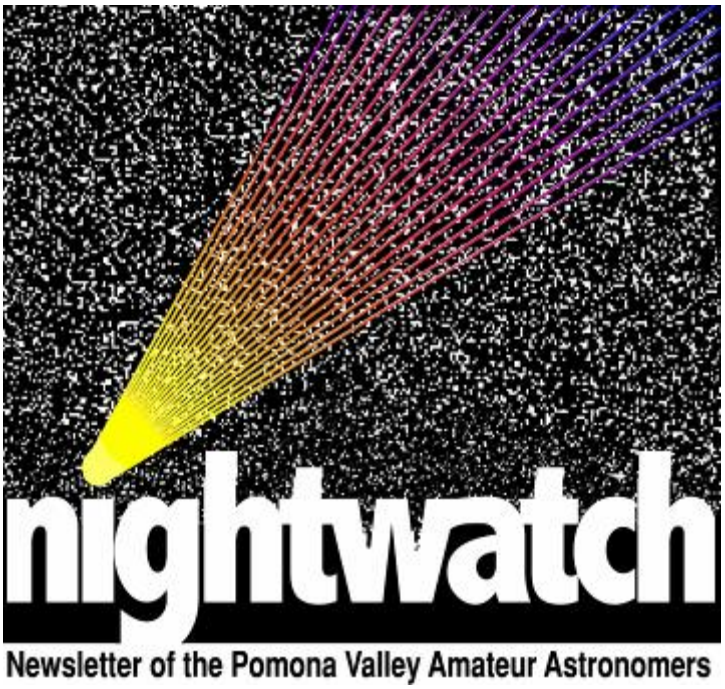

Newsletter of the Pomona Valley Amateur Astronomers

If people sat outside and looked at the stars each night,
I'll bet they'd live a lot differently.

Bill Watterson

CHECK OUT PVAAs YOUTUBE CHANNEL

Volume 45 Number 2 ***nightwatch*** **February 2025**

Club Events Calendar

Feb 7	**General Meeting 7:30 PM Briley Lewis "Looking at Planet Formation with Polarized Sunglasses"**
Feb 22	**Star Party – Anza Borrego**
Feb 29	**Board Meeting 6:15 PM**
Mar 5	**Board Meeting 6:15 PM**
Mar 14	**General Meeting 7:30 PM**
Mar 29	**Star Party – Salton Sea Mecca Beach**
Apr 2	**Board Meeting 6:15 PM**
Apr 5	**Cahuilla/Joat Park in Claremont**
Apr 11	**General Meeting 7:30 PM**
Apr 26	**Star Party–GMARS**
Apr 30	**Board Meeting 6:15 PM**
May 9	**General Meeting 7:30 PM**
May 24	**Star Party – GMARS**
Jun 4	**Board Meeting 6:15 PM**
Jun 13	**General Meeting 7:30 PM**
Jun 21	**Star Party – White Mountain**
July 2	**Board Meeting 6:15 PM**
July 11	**General Meeting 7:30 PM**
July 26	**Star Party – TBD**
July 30	**Board Meeting**
Aug 8	**General Meeting 7:30 PM**
Aug 23	**Star Party – TBD**
Aug 27	**Board Meeting**
Sep 5	**General Meeting 7:30 PM**
Sept 20	**Star Party – TBD**
Oct 1	**Board Meeting 6:15 PM**
Oct 10	**General Meeting 7:30 PM**
Oct 18	**Star Party – TBD**

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

Testing out a New Camera

Our last outing was at the end of October, seemingly so long ago. November's full moon was over the Thanksgiving holiday, which was book-ended by home football games, so there was no time to image. I booked the campsite for the weekend after Christmas, but the weather didn't cooperate, and we canceled. I was really missing imaging especially since I bought a new color camera early in December. I did mention that the weather was bad in December, right? Undoubtedly because of the new camera! In between the terrible fires we've had here in January, I did manage to get a few test shots in using the new equipment.

The new camera is similar to my first dedicated astro-camera; it has an APS-C sized sensor and shoots color images, but it differs in several ways, one of which is that it has two sensors instead of one. The larger, color sensor is that main imaging sensor and there is a smaller, monochrome sensor offset used for guiding. So, the first two images shown here were taken to test how to connect to both sensors at the same time and to get the settings dialed in. The final image was taken after I disassembled the mount to re-lubricate the gears, an annual maintenance procedure, and I wanted to make sure everything was put back together properly and working.

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little further away than the Orion Nebula at about 1,500 light years away and spans about 7.5 light years according to the most recent estimate, and it includes an open cluster of young stars, NGC 1981. While I can make out the shape of the man running, to me it looks more like that old photo of Big Foot that you may have seen.

The second image, taken the evening of January 5, is of a young star cluster of bright, blue stars, the Pleiades (M45), located in Taurus only about 444 light years away. It's also known as the Seven Sisters, although only 6 are usually seen by eye, or in Japan as Subaru. Those of you that might own a Subaru automobile now understand the company's logo. While known since ancient times in many cultures, the cluster is thought to be only 75 to 100 million years old. It's been determined that the cluster consists of over one thousand stars of a total mass 800 times that of the sun. Large telescopes or photographs reveal dust clouds surrounding the cluster. These clouds were originally thought to be remnants left from the stars' births, but it is now thought that the cluster is just moving through a dusty region of space. Regardless of the origin of the dust, it provides a wonderful backdrop to reflect the starlight from the cluster.

The final image, taken the night of January 12, is of the Flame and Horsehead Nebulae, also located in Orion, north of the Orion Nebula. The star Alnitak is the leftmost (easternmost) star of Orion's belt and is seen just above the flame in my photo. This photo is unusual for me in that it is cropped to avoid some unwanted reflections from the Alnilam, the middle belt star outside of the image, and it is rotated so that north is left and west is up to better show the Horsehead. The 1375 light years distant Horsehead is a thick dust cloud designated as Barnard 33 that blocks light from the bright emission nebula, IC 434, 1500 light years away. Light from Sigma Orionis, a multi-star system toward the top of the image is responsible for causing the red glow of hydrogen in IC 434.

The Flame Nebula on the left of the photo is also known as NGC 2024 and lies at about the same distance as the Horsehead and IC 434. It, too, has thick clouds of dust providing its interesting shape. Surprisingly, the emission from the hydrogen gas is not a result of excitation by Alnitak, but instead from young stars embedded and hidden within the nebula. Also in the image are NGC 2023, the glowing cloud between the Horsehead and Flame, and IC 435 along the bottom edge of the photo.

All images this time were taken with the 90mm StellarVue refractor at a focal length of 487mm and a ZWO ASI2600MC Duo camera on a Paramount MYT mount. As mentioned earlier, this camera is a one-shot color camera, so no filter wheel or extra filters were needed to provide color. The Orion Nebula is a stack of 145 30-second individual exposures (1 hour and 12 minutes total) and the Pleiades is a stack of 84 3-minutes individual exposures (4 hours and 12 minutes total). Both were guided using the guide sensor on the camera. In contrast, the Horsehead and Flame photo is a stack of 25 5-minute individual exposures (2 hours and 5 minutes total) that were unguided, meaning the mount needed to track accurately for 5 minutes. Only the main imaging sensor was used. All images were processed essentially the same even though both the Orion Nebula and the Horsehead Nebula are notoriously difficult to process due to the huge range of brightness. Noise and blur were reduced before the stars were removed from the images. The stars were stretched, but not to the point where they would overwhelm the nebulosity in the images. The background and nebulosity were stretched using the generalized hyperbolic stretch process in PixInsight. In all the photos, the saturation was increased somewhat before the stars were added back. Final contrast adjustments were made to get to the result.

Hopefully, we will get under dark skies again soon. Clear skies until next time.

Ron Ugolick
https://www.astrobin.com/users/ruccdu/

Guillaume Le Gentil

9/12/24 was the 299th birthday for French astronomer Guillaume Joseph Hyacinthe Jean-Baptiste Le Gentil de la Galaisière (commonly known simply as Guillaume Le Gentil) [1725-1792], one of the most dedicated astronomers in history, with a colorful tale to back it up.

He set off from France in 1760 to observe the 1761 transit of Venus from India. But war with the British, and bad weather, forced him to be at sea during the transit, and unable to make astronomical observations.

So, rather than return "empty handed" as it were, he set off to observe the 1769 transit of Venus from the Philippines. But the hostile Spanish forced him out. However, peace had returned to India. So, he went to the French colony at Pondicherry, built an observatory, and patiently awaited the transit.

After a long string of clear & sunny days, transit day arrived (4 June 1769) and the transit was invisible behind the clouds, driving Gentil to distraction, and the brink of a nervous breakdown.

He finally returned to Paris in October 1771 (11 years after he had left), only to discover that he had been declared legally dead in the meantime, his spot on the French Academy of Sciences taken by someone else, his wife remarried, and his estate "enthusiastically plundered" by his relatives.

Somehow he managed to recover, regain his place in the Academy, regain some of his estate (thanks to the personal intervention of the King of France), remarry, and live until 1792. Le Gentil published his own account of his adventures in the two-volume “Voyage dans les mers de l'Inde” (1779 & 1781).

As Wikipedia puts it:

“Transits of Venus are among the rarest of predictable astronomical phenomena. They occur in a pattern that generally repeats every 243 years, with pairs of transits eight years apart separated by long gaps of 121.5 years and 105.5 years. The periodicity is a reflection of the fact that the orbital periods of Earth and Venus are close to 8:13 and 243:395 Commensurabilities.”

The last pair of Venus transits came on 8 June 2004 and 5-6 June 2012. The previous pair came in December of 1874 & 1882, and the next pair will arrive in December 2117 & 2125.

Precision timing of Venus transits, observed from multiple locations, can be used to compute the value of the average distance between the Sun & the Earth. Observing transits of Venus has long been a significant event for astronomers, so it is no surprise that le Gentil would consider it a big deal to observe one when the opportunity came along. But his dedication in this case was “beyond the call of duty”.

https://en.wikipedia.org/wiki/Guillaume_Le_Gentil (Wikipedia)

https://princetonastronomy.com/.../the-ordeal-of.../ (“The Ordeal of Guillaume Le Gentil” - Sidereal Times, 6 February 2012)

https://www.lindahall.org/.../guillaume-joseph-le-gentil (Linda Hall Library, Scientist of the Day, 12 September 2017)

https://www.skyandtelescope.com/.../transits-of-venus-in.../ (“Transits of Venus in History - 1761” - Sky & Telescope, 1 June 2012; Image source)

https://pantheon.world/profile/person/Guillaume_Le_Gentil/ (Pantheon, world digital search profile)

https://worldcat.org/identities/lccn-n2019027017/ (Guillaume Le Gentil in WorldCat ,”the world’s largest library catalog”)

https://en.wikipedia.org/wiki/Transit_of_Venus (Transits of Venus - Wikipedia)

The picture here comes from Sky & Telescope magazine in June of 2012, credited to Leah Tiscone.

Tim Thompson - Facebook Post 9/12/24

NASA Night Sky Notes February 2025

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 to find local clubs, events, and more!

February Night Sky Notes: How Can You Help Curb Light Pollution?

By Dave Prosper
Updated by Kat Troche

Before and after pictures of replacement lighting at the 6th Street Bridge over the Los Angeles River. The second picture shows improvements in some aspects of light pollution, as light is not directed to the sides and upwards from the upgraded fixtures, reducing skyglow. However, it also shows the use of brighter, whiter LEDs, which is not generally ideal, along with increased light bounce back from the road. Image Credit: The City of Los Angeles

Light pollution has long troubled astronomers, who generally shy away from deep sky observing under full Moon skies. The natural light from a bright Moon floods the sky and hides views of the Milky Way, dim galaxies and nebula, and shooting stars. In recent years, human-made light pollution has dramatically surpassed the interference of even a bright full Moon, and its effects are now noticeable to a great many people outside of the astronomical community. Harsh, bright white LED streetlights, while often more efficient and long-lasting, often create unexpected problems for communities replacing their older streetlamps. Some notable concerns are increased glare and light trespass, less restful sleep, and disturbed nocturnal wildlife patterns. There is increasing awareness of just how much light is too much light at night. You don't need to give in to despair over encroaching light pollution; you can join efforts to measure it, educate others, and even help stop

or reduce the effects of light pollution in your community.

Amateur astronomers and potential citizen scientists around the globe are invited to participate in the Globe at Night (GaN) program to measure light pollution. Measurements are taken by volunteers on a few scheduled days every month and submitted to their database to help create a comprehensive map of light pollution and its change over time. GaN volunteers can take and submit measurements using multiple methods ranging from low-tech naked-eye observations to high-tech sensors and smartphone apps.

Globe at Night citizen scientists can use the following methods to measure light pollution and submit their results:

- Their own smartphone camera and dedicated app
- Manually measure light pollution using their own eyes and detailed charts of the constellations
- A dedicated light pollution measurement device called a Sky Quality Meter (SQM).
- The free GaN web app from any internet-connected device (which can also be used to submit their measurements from an SQM or printed-out star charts)

Night Sky Network members joined a telecon with Connie Walker of Globe at Night in 2014 and had a lively discussion about the program's history and how they can participate. The audio of the telecon, transcript, and links to additional resources can be found on their dedicated resource page.

NASA Night Sky Notes February 2025

Light pollution has been visible from space for a long time, but new LED lights are bright enough that they stand out from older streetlights, even from orbit. Astronaut Samantha Cristoforetti took the above photo from the ISS cupola in 2015. The newly installed white LED lights in the center of the city of Milan are noticeably brighter than the lights in the surrounding neighborhoods. Image Credit: NASA/ESA

The International Dark-Sky Association (IDA) has long been a champion in the fight against light pollution and a proponent of smart lighting design and policy. Their website provides many resources for amateur astronomers and other like-minded people to help communities understand the negative impacts of light pollution and how smart lighting policies can not only help bring the stars back to their night skies but also make their streets safer by using smarter lighting with less glare. Communities and individuals find that their nighttime lighting choices can help save considerable sums of money when they decide to light their streets and homes "smarter, not brighter" with shielded, directional lighting, motion detectors, timers, and even choosing the proper "temperature" of new LED light replacements to avoid the harsh "pure white" glare that many new streetlamps possess. Their pages on community advocacy and on how to choose dark-sky-friendly lighting are extremely helpful and full of great information. There are even local chapters of the IDA in many communities made up of passionate advocates of dark skies.

The IDA has notably helped usher in "Dark Sky Places", areas around the world that are protected from light pollution. "Dark Sky Parks", in particular, provide visitors with incredible views of the Milky Way and are perfect places to spot the wonders of a meteor shower. These parks also perform a very important function, showing the public the wonders of a truly dark sky to many people who may have never before even seen a handful of stars in the sky, let alone the full glorious spread of the Milky Way.

More research into the negative effects of light pollution on the health of humans and the environment is being conducted than ever before. Watching the nighttime light slowly increase in your neighborhood, combined with reading so much bad news, can indeed be disheartening! However, as awareness of light pollution and its negative effects increases, more people are becoming aware of the problem and want to be part of the solution. There is even an episode of PBS Kid's SciGirls where the main characters help mitigate light pollution in their neighborhood!

Astronomy clubs are uniquely situated to help spread awareness of good lighting practices in their local communities to help mitigate light pollution. Take inspiration from Tucson, Arizona, and other dark sky-friendly communities that have adopted good lighting practices. Tucson even reduced its skyglow by 7% (as of 2018) after its own citywide lighting conversion, proof that communities can bring the stars back with smart lighting choices.

Originally posted by Dave Prosper: November 2018
Last Updated by Kat Troche: January 2025