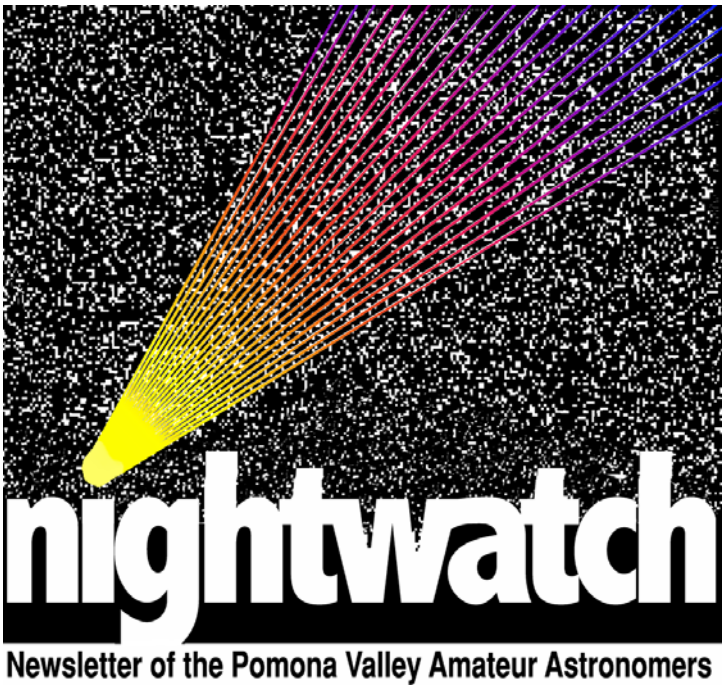


Newsletter of the Pomona Valley Amateur Astronomers

I have fallen in love with The Cosmos
and all the possibilities it does hold.
Cometan

We are in Shanahan B460
Sept 13, 7:30pm.

Volume 39 Number9 ***nightwatch*** **September 2019**

Club Events Calendar

Sept 13 General Meeting
Sept 19-22 RTMC

Oct 2 Board Meeting
Oct 11 General Meeting
Oct 26 Star Party – Cottonwood

Nov 6 Board Meeting
Nov 11 Transit of Mercury
Nov 15 General Meeting Apollo 12
Nov 23 Star Party – Mecca Beach

Dec 7 Christmas Party

Jan 8 Board Meeting
Jan 10 General Meeting
Jan 25 Star Party -- TBD
Jan 29 Board Meeting

Feb 7 General Meeting
Feb 22 Star Party -- TBD
Feb 26 Board Meeting

Mar 6 General Meeting
Mar 21 Star Party -- TBD

Apr 1 Board Meeting
Apr 10 General Meeting (presentation: TBD; Apollo 13)
Apr 25 Star Party -- TBD
Apr 29 Board Meeting

May 8 General Meeting
May 23 Star Party -- TBD
May 27 Board Meeting

Clash of the Titans: Hubble's Universe Unfiltered

Ludd Trozpek shared a very interesting video on Hubble Space Telescope discoveries about the future of our local group – Andromeda (M31), Triangulum (M33), and Milky Way Galaxies.
https://www.youtube.com/watch?v=r8YQsFZyGzw

PVAA Officers and Board

Officers

President ….....	Mathew Wedel	909-767-9851
Vice President ..	Joe Hillberg	909-949-3650
Secretary	Ken Elchert	626-541-8679
Treasurer	Gary Thompson	909-935-5509
VP Facilities	Jeff Felton	909-622-6726

Board

Jim Bridgewater (2018).....	909-599-7123
Richard Wismer(2018)	
Ron Hoekwater (2019).....	909-706-7453
Jay Zacks (2019) …….	

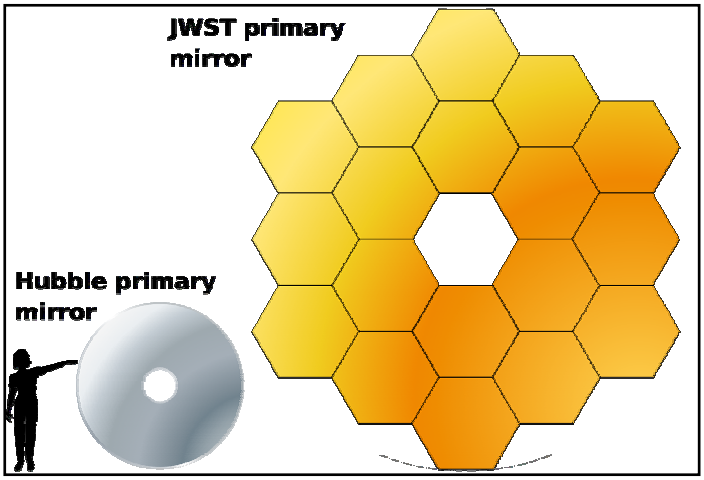
Directors

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

General Meeting 08/16/19

Mathew Wedel opened the meeting and we went right into a presentation by Nathan Little about his visit to the James Webb Space Telescope. Northrup Grumman is the prime contractor, and Nathan visited their facility in Orange County. The telescope was named after the 2nd NASA Administrator who served from 7/14/1961 to 10/7/1968. He was the administrator through the Mercury and Gemini projects, and the start of Project Apollo.

The James Webb Space Telescope (JWST) is huge compared to the Hubble Space Telescope. Hubble is circular with a diameter of 96 inches. (2.4 meters) JWST is 252 inches (6.5 meters) in diameter, and has 18 hexagonal segments. It will be focused on the near and mid infrared spectrum, enabling it to see objects much further away than Hubble. Due to the spectrum shift caused by objects moving away, the visible spectrum shifts toward the infrared. The James Webb Space Telescope is scheduled to be launched on March 30, 2021 on an Ariane 5 rocket from French Guiana.

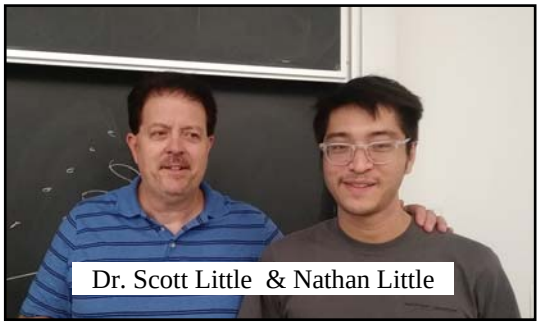


Credit: https://commons.wikimedia.org/w/index.php?curid=23838124

Ludd Trozpek

Credit: https://commons.wikimedia.org/w/index.php?curid=7793655

Ludd Trozpek gave a brief presentation on a Red-Dot Finder Scope he found on eBay for $17 including shipping. It works great, and was easy to install.



Dr. Scott Little & Nathan Little

The main speaker of the night was Dr. Scott Little. He talked on Cosmic Strings – defining, explaining, and the search for. A cosmic string can be a "rip" of the fabric of space-time. Strings have been theorized to have been formed near the Big Bang. Hawking 'loops' could be a string forming a loop that may condense down to a black hole. Some strings could be stretched out to proton thin and stretch millions of miles long. Gravity waves would move around them, causing ripples like a stick poking out of a stream. A 1 kilometer string could have the mass of the earth, with lots of energy.

We are searching for cosmic strings using LIGO (Laser Interferometer Gravitational-wave Observatory).

https://www.ligo.caltech.edu/

https://space.mit.edu/LIGO/aboutligo.html

Scott then offered us, as individuals, to get involved by joining 'Einstein@Home' https://einsteinathome.org/, which will use your PC or laptop's computing power to do complex searches when you are not using your computer. The science community is gathering much more data than it can possibly examine. Using your computer will just help it scrutinize more data than it can by itself. One or two PCs might not make much of a dent, but think of 1,000 or 10,000 PCs shifting through the data every night - that will make a huge difference.

Gary Thompson

Wallowa County Star Party

Ron observing in Sagittarius. 15 seconds at ISO 12,400. Illuminated by red light from his trailer.

M31 and M32 (barely). 6 minute exposure at ISO 800, 200 mm with 3/4 sensor. Early attempt.

From July 22 through August 4 Ron Hoekwater visited me at my place in northeast Oregon. Not accidentally, this coincided with the waning Moon, New Moon, and the early crescent phases. Except for the first two nights we had perfect weather—eleven clear, mostly calm, and mostly comfortable summer evenings. Although at that latitude it didn't get fully dark until around 10 p.m., the sky then was great. Ron had his 25-inch Obsession which really spoils you for any other telescope. One night we looked at a half-dozen or 10 galaxies in Delphinus. Who even knew there were that many? The mount and bearings on his scope are amazingly smooth and stable. Motions induced from following an object or adjusting focus damped in way less than a second. He got his Argo-Navis working after two nights of intermittent connection due to a pulled cable, and it worked well.

His mirror is superb. On nights of really good seeing, even full aperture, you could easily shadow transits of Io and Europa on Jupiter, and there were many festoons visible in the bands. On nights when it was facing us, the Great Red Spot showed itself easily and with some detail. We made a field-expedient mask which stopped him down to f/10 instead of f/4, and it was even better (perhaps sharper—hard to say—but less bright which helped on the planets). The Galilean moons of Jupiter showed small discs, not points.

On Saturn, I'm not that great of an observer, but the Cassini division was obvious and I saw structure in the clouds for the first time. Both Saturn and Jupiter were well placed in the southern sky for comfortable viewing from a chair and not a ladder.

I amused myself by getting familiar with the 8-inch Meade SCT that the club offered for sale in January. It really works quite well despite it's tarnished secondary. I finally figured out how to quickly and reliably polar-align, and took some pictures through the telescope and also with my camera piggy-backed on it while it tracked. I'm only just beginning to photograph, but it was fun. The telescope came with eyepieces and all the hardware to mount a camera in various ways.

We saw a number of meteors; two or three that illuminated the landscape. One bit of serendipity was that the space station was visible in its orbit almost every night, often twice and once three times. Ron would check the computer and we would look for it.

Text and photos by Ludd Trozpek except as noted.

Above: Ron Hoekwater with his 25-inch f/4 Obsession. The ladder was only necessary about half the time, and then it was only up a couple of steps. My comparatively puny 8-inch SCT is in the background, covered.
Below: One of my first attempts at tracking. The southern Milky Way. 4-minute exposure at f/4. 28mm equivalent focal length. The trees are smeared because the piggy-backed camera is following the stars.

Above: Moonrise over Table Mountain across Joseph Canyon from where we were set up. The trees are about 2 miles away. This picture was taken through the f/10 Schmidt Cassegrain at a focal length of 2000mm (about 3000mm equivalent on an old-style 35mm SLR). 1/40 second at ISO 1600. This is trickier than you might think: you have to be pre-focused and then guess where the Moon is going to break the horizon. Then you only have two or three minutes to frame things before the rising Moon clears the trees.

Left: One day Ron got the itch to go out and test his four-wheel drive. We drove across the canyon from my property which was a 50-mile roundabout trip to get 2 miles across the canyon. Here, Ron caught me photographing my place from the opposite rim.

Next page: the northern Milky Way and a Ponderosa Pine. M31 is visible on the right; Cassiopeia and the Double Cluster visible left of the tree. 15 seconds at ISO 12,400.

This article is distributed by NASA Night Sky Network

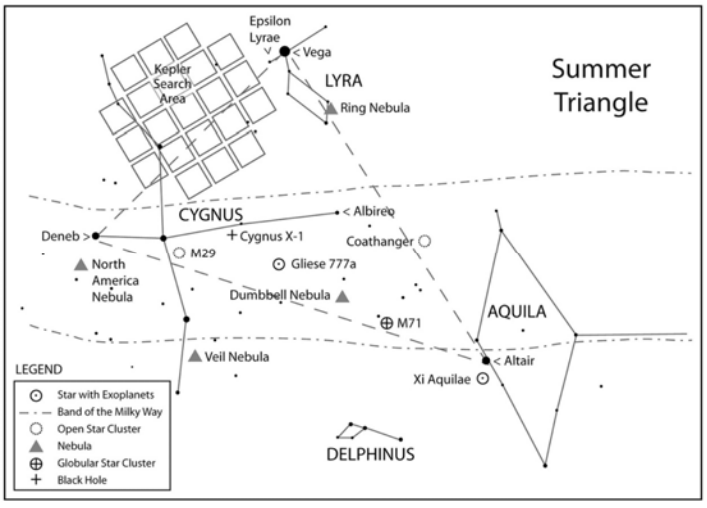
The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Spot the Stars of the Summer Triangle

September skies are a showcase for the **Summer Triangle**, its three stars gleaming directly overhead after sunset. The **equinox** ushers in the official change of seasons on September 23. **Jupiter** and **Saturn** maintain their vigil over the southern horizon, but set earlier each evening, while the terrestrial planets remain hidden.

The bright three points of the **Summer Triangle** are among the first stars you can see after sunset: Deneb, Vega, and Altair. The Summer Triangle is called an **asterism**, as it's not an official constellation, but still a striking group of stars. However, the Triangle is the key to spotting multiple constellations! Its three stars are themselves the brightest in their respective constellations: Deneb, in Cygnus the Swan; Vega, in Lyra the Harp; and Altair, in Aquila the Eagle. That alone would be impressive, but the Summer Triangle also contains two small constellations inside its lines, Vulpecula the Fox and Sagitta the Arrow. There is even another small constellation just outside its borders: diminutive Delphinus the Dolphin. The Summer Triangle is huge!

The **equinox** occurs on September 23, officially ushering in autumn for folks in the Northern Hemisphere and bringing with it longer nights and shorter days, a change many stargazers appreciate. Right before sunrise on the 23rd, look for Deneb - the Summer Triangle's last visible point - flickering right above the western horizon, almost as if saying goodbye to summer.

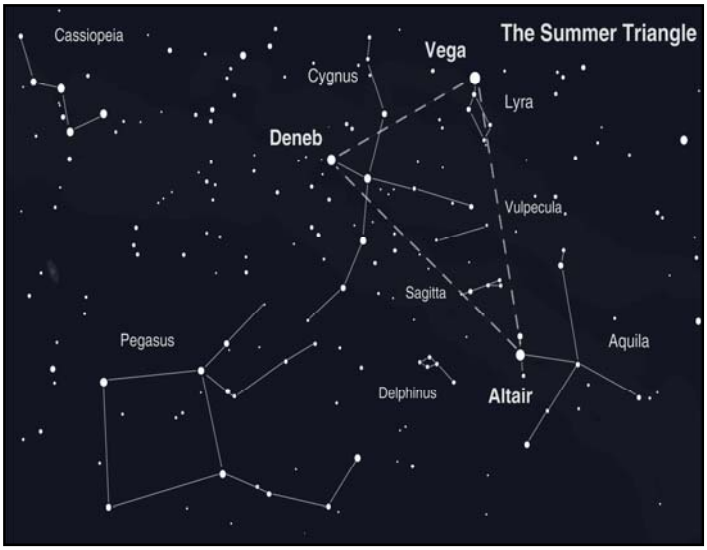


Caption: Once you spot the Summer Triangle, you can explore the cosmic treasures found in this busy region of the Milky Way. Make sure to "Take a Trip Around the Triangle" before it sets this fall! Find the full handout at ***bit.ly/TriangleTrip***

The Summer Triangle region is home to many important astronomical discoveries. Cygnus X-1, the first confirmed black hole, was initially detected here by x-ray equipment on board a sounding rocket launched in 1964. NASA's Kepler Mission, which revolutionized our understanding of exoplanets, discovered thousands of planet candidates within its initial field of view in Cygnus. The Dumbbell Nebula (M27), the first planetary nebula discovered, was spotted by Charles Messier in the diminutive constellation Vulpecula way back in 1764!

Planet watchers can easily find **Jupiter** and **Saturn** shining in the south after sunset, with Jupiter to the right and brighter than Saturn. At the beginning of September, Jupiter sets shortly after midnight, with Saturn following a couple of hours later, around 2:00am. By month's end the gas giant duo are setting noticeably earlier: Jupiter sets right before 10:30pm, with Saturn following just after midnight. Thankfully for planet watchers, earlier fall sunsets help these giant worlds remain in view for a bit longer. The terrestrial planets, Mars, Venus, and Mercury, remain hidden in the Sun's glare for the entire month.

By David Prosper



Caption: This wider view of the area around the Summer Triangle includes another nearby asterism: the Great Square of Pegasus.

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