



Newsletter of the Pomona Valley Amateur Astronomers

.There are no passengers on Spaceship Earth.
We are all crew.
Marshall McLuhan



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nightwatch

November 2018

President's Message

We have another probe operating on Mars now. NASA/JPL's InSight lander touched down safely on Elysium Planitia this Monday, Nov. 26. That brings the number of active missions on or orbiting Mars to 8 or 9, depending on how you count them. The veteran of the bunch is the Mars Odyssey orbiter, which has been at Mars since 2001, and which has enough propellant to function until 2025. The other orbiters are the Mars Express (ESA, arrived 2003), Mars Reconnaissance Orbiter (NASA, 2006), MAVEN (NASA, 2014), Mars Orbiter Mission (India, 2014), and the ExoMars Trace Gas Orbiter (ESA, 2017). On the surface are the rover Curiosity (NASA, 2012) and now InSight.

The ninth potentially active Mars mission is NASA's Opportunity rover, which landed in 2004 and functioned up until this summer, when a global dust storm forced it into hibernation.

Dust accumulating on the rover's solar panels has caused it to go into hibernation before, and scientists are hopeful that between now and January increased wind on Mars will blow enough dust off the solar panels for Opportunity to wake up.

This Friday's general meeting will be the last of 2018. Our speaker is our own club Secretary, Ken Elchert, who will speak on the Apollo 8 mission around the moon, the 50th anniversary of which is happening this December.

In lieu of a general meeting in December, we'll have our club holiday party at the IHOP at 80 N Euclid Ave in Upland, at 7:00 PM on the evening of Saturday, December 8. As always there will be a raffle and prizes for everyone, so come on out and celebrate another great year for the PVAA!

Matt Wedel

Club Events Calendar

Nov 30 General Meeting:

1st Earthlings to the Moon: Fact vs. Fiction—Ken Elchert

Dec 8 PVAA Holiday Party

Jan 5 Star Party – Afton Canyon Campground

Jan 9 Board Meeting

Jan 18 General Meeting:

Apollo Command Module by Bill Little

Feb 2 Star Party – Culp Valley

Feb 13 Board Meeting

Feb 22 General Meeting

Mar 2 Star Party – TBD

Mar 13 Board Meeting

Mar 22 General Meeting Apollo 9

Apr 6 Star Party – TBD

Apr 10 Board Meeting

Apr 19 General Meeting

May 4 Star Party – TBD

May 8 Board Meeting

May 17 General Meeting Apollo 10

Jun 1 Star Party – TBD

Jun 5 Board Meeting

Jun 14 General Meeting

PVAA General Meeting 10/26/18:

Mathew Wedel gave a presentation on Apollo 7, the first manned Apollo flight into space. It had several other firsts: First manned launch of the Saturn-1B, first 3 person American crew, first live TV broadcast from space.

Apollo 7 launched from Launch Complex 34 on October 11, 1969 at 11:02:45 EST. It orbited the Earth 163 times, traveling 4,546,918.3 miles in 10 days, 20 hours, 9 minutes, 3 seconds. Walter Schirra Jr. was the commander, Donn Eisele the command module pilot, and Walter Cunningham was the lunar module pilot. The main objectives were to test out the spacecraft systems, fire the CSM (Command Service Module) main engine, and dock with the 3rd stage booster rocket. It turned out that the lunar module adapter panels did not fully open and they could not dock. This would not be a problem on the Saturn 5, as the panels would be jettisoned explosively. All 3 astronauts got sick with congested head colds during the flight, and became grumpy to the ground crew. They also found that trying to do navigational sightings after a water-waste dump proved problematic. They had to wait for the field to clear. They found

their fuel cells running hotter than expected, and their batteries returned 50-75% less energy than expected. All these issues were taken care of before Apollo 8. The mission was such a great success that NASA changed its plans for Apollo 8 – the first trip to the moon.

David Nakamoto was the guest speaker for the night. The title of his presentation was “The Comet That Refused to Die” The subject of his talk is the Comet Biela, a periodic Jupiter-family comet. Periodic means, like Halley’s Comet, it returns after a certain period – in this case 6.619 years. This was the 3rd comet known to be periodic. Jupiter-family means that the comet has orbital periods of less than 20 years, and low inclination to the solar system’s plane – and therefore highly influenced by Jupiter.

The comet was first recorded in 1772 by Montaigne and Messier. It was identified as a periodic comet by Wilhelm van Biela in 1826, and holds his name. In 1852 it split into two, and has not been seen since. It is considered destroyed, but remnants appeared to exist, and create the Andromedids meteor showers every year. While the comet itself cannot be seen, each year around November 9th (9/25 – 12/6, peaking about 11/9) we get to see a meteor shower of what once was Comet Biela.

David also pointed out that Comet 46P/Wirtanen may become a naked eye object in December or January. It will be very dim, so you need to be in a dark sky area. Closest approach to Earth is 12/16.

Gary Thompson

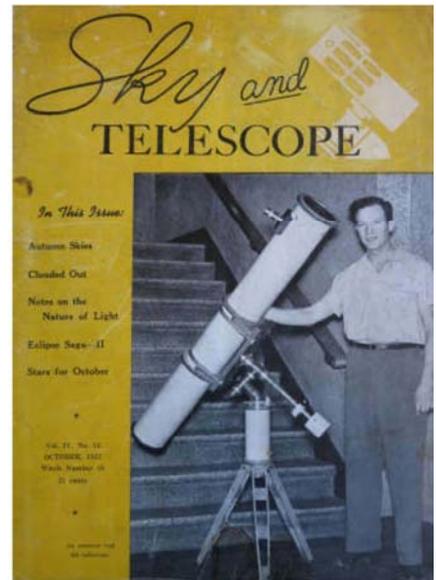


By E. Weiß - E. Weiß: "Bilderatlas der Sternenwelt",
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ASTRONOMERS!

Would you like to scan the heavens from an observatory located on the airless **MOON**? It can happen in **YOUR** lifetime! Join the **United States Rocket Society, Inc.** 1000 Americans organized to Conquer Space! Three year membership \$5.00, one year \$2.00. Join now! Astronomers are tomorrow's leaders!

UNITED STATES ROCKET SOCIETY, INC.
Box 29, Glen Ellyn, Ill.



This little advertisement appeared in the October 1945 issue of *Sky and Telescope* magazine. Many similar ads appeared in the early 1940s, primarily in pulps such as *Popular Science* and *Sci-Fi* rags like *Astounding Stories* and *Startling Stories*. With this ad, though, it reached the serious astronomy community. There's something of a story behind Robert Farnsworth and the United States Rocket Society, Inc. Maybe his ideas to settle the Moon were a little bit "out there", but much of the space observation he anticipated has actually occurred, just not from the Moon. The two paragraphs that follow are excerpted from an account of Robert Farnsworth and the United States Rocket Society:

If one thought of the moon as real estate—who owned it? And how could someone buy property? The question was once pie in the sky but with the development of rocket technology, Farnsworth thought, the question was pressing. And so he wrote to the Department of the Interior, wondering if there were rules. The Department noted that homesteading the moon would be controlled by the General Land Office, and the 5,000 public land laws it administered. That meant anyone wanting to stake a claim on the moon had to submit an affidavit of interest and establish a permanent residence on that site within six months of approval. .

The next month—January 1945—saw Farnsworth hitting his stride. He told newspapers the technology was no longer the problem—the only reasons humans stayed earthbound was financing. And this was a big risk, not shooting for the moon. The Germans might get there first, and drop bombs from the high heavens—or even, as precision increased, from Europe. If, on the contrary, Americans perfected rockets first, and reached the moon, it would be a boon for businesses: humans could settle there, living in specially made rockets while they constructed buildings on the surface. The moon, he said, was a perfect observatory, an excellent vantage for mapping the earth, a laboratory for viewing the weather, and—most importantly—the key way station for interplanetary travel. By this point, Farnsworth claimed membership in his Society numbered 4,000.

(It should be noted that the amateur astronomer pictured on the cover of the October 1945 issue above is Allyn Thompson, author and editor of the *Scientific American* books on amateur telescope making, the "Bible" for many years and still of great value.)



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!

November's Dance of the Planets

November's crisp autumn skies bring great views of our planetary neighbors. The Moon pairs up with Saturn and Mars in the evenings, and mornings feature eye-catching arrangements with dazzling Venus. Stargazers wanting a challenge can observe a notable opposition by asteroid 3 Juno on the 17th and watch for a few bright Leonid meteors.

Red **Mars** gleams high in the southern sky after sunset. **Saturn** sits westward in the constellation Sagittarius. A young crescent Moon passes near Saturn on the 10th and 11th. On the 15th a first quarter Moon skims by Mars, coming within 1 degree of the planet. The red planet receives a new visitor on November 26th, when NASA's InSight mission lands and begins its investigation of the planet's interior. News briefings and commentary will be streamed live at: bit.ly/landsafe

Two bright planets hang low over the western horizon after sunset as November begins: **Jupiter** and **Mercury**. They may be hard to see, but binoculars and an unobstructed western horizon will help determined observers spot them right after sunset. Both disappear into the Sun's glare by mid-month.

Early risers are treated to brilliant **Venus** sparkling in the eastern sky before dawn, easily outshining everything except the Sun and Moon. On November 6th, find a location with clear view of the eastern horizon to spot Venus next to a thin crescent Moon, making a triangle with the bright star Spica. The following mornings watch Venus move up towards Spica, coming within two degrees of the star by the second full week of November. Venus will be up three hours before sunrise by month's end – a huge change in just weeks! Telescopic observers are treated to a large, 61" wide, yet razor-thin crescent at November's beginning, shrinking to 41" across by the end of the month as its crescent waxes.

Observers looking for a challenge can hunt asteroid **3 Juno**, so named because it was the third asteroid discovered. Juno travels through the constellation Eridanus and rises in the east after sunset. On November 17th, Juno is at opposition and shines at magnitude 7.4, its brightest showing since 1983! Look for Juno near the 4.7 magnitude double star 32 Eridani in the nights leading up to opposition. It is bright enough to spot through binoculars, but still



Caption: This finder chart shows the path of the asteroid 3 Juno as it glides past 32 Eridani in November 2018. The asteroid's position is highlighted for selected dates, including its opposition on the 17th. Image created in Stellarium for NASA Night Sky Network.

appears as a star-like point of light. If you aren't sure if you have identified Juno, try sketching or photographing its star field, then return to the same area over the next several days to spot its movement.

The **Leonids** are expected to peak on the night of the 17th through the morning of the 18th. This meteor shower has brought "meteor storms" as recently as 2002, but a storm is not expected this year. All but the brightest meteors will be drowned out by a waxing gibbous Moon.

Stay warm and enjoy this month's dance of the planets!

By Jane Houston Jones and David Prosper

With articles, activities and games **NASA Space Place** encourages everyone to get excited about science and technology. Visit spaceplace.nasa.gov to explore space and Earth science!

November Speaker Announcement

50 years ago, the Apollo 8 spacecraft and her three astronauts headed towards the moon on a mission which lasted from December 21st to the 27th, 1968. Club member Ken Elchert will be speaking to us about that exciting and record setting adventure. He will also delve a bit further into the past to talk about Jules Verne, whose adventures took place between the covers of his books.

Amazing Facts



Scientists can estimate the number of galaxies in our universe by counting how many galaxies are in a particular unit of visible space and then multiplying this by the total size of the universe. One tiny fraction of space mapped by the Hubble telescope in 2012 contained over 5000 galaxies. At the moment scientists' best guess is that there are between 100 billion and 200 billion galaxies, but there may be as many as a trillion or more.