



Newsletter of the Pomona Valley Amateur Astronomers

Look deep into nature,  
and then you will understand everything better.

*Albert Einstein*

Due to the lateness of publication, speaker announcement is more historical than informational.  
Dick Olson, Harvey Mudd Professor Emeritus was to speak about the founding and early years of Dudley Observatory in Albany, New York.  
We hope to hear more about his lecture next issue!

Volume 38 Number 05

*nightwatch*

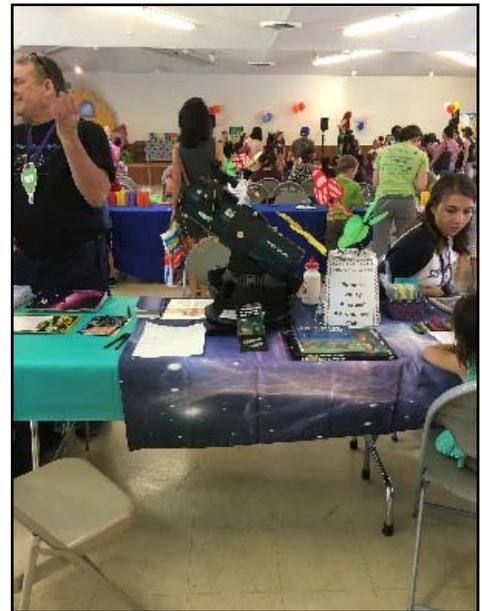
May/June 2018

### The 7th Annual Claremont Library Public Children's Book Festival



The 7th Annual Claremont Library Public Children's Book Festival was held on Saturday April 28, 2018 from 1-4pm at Taylor Hall in Claremont. The Library is currently closed for renovations. PVAA had four volunteers: Gary J, Richard W, Pam R. and Cori C. Gary set up a Solar Telescope and also had solar sun glasses for viewing. About 100 people looked through the telescope. We had a sign-in sheet for the Library's Telescope Lending Program, which was a hit. The children participated in Moon drawings on a photo copy of the Moon. We were presented with volunteer certificates from the Library, along with Astronomy books designed for children, for future activities. It was a beautiful sunny day with a few moving clouds.

*Cori Charles*



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An acquaintance of mine, Christian Niece, took this picture over the weekend on our property in Oregon. Bob and Ron might recognize the location on the way out to the point. Vega is the bright star on the top branch; Cygnus is behind the tree.

*Ludd*

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### Club Events Calendar

**June 1** [General Meeting](#)

**June 9** [Star Party - White Mtn](#)

**July 14** [Star Party - Cow Canyon Saddle](#)

**July 18** [Board Meeting](#)

**July 27** [General Meeting](#)

**Aug 11** [Star Party - Angeles Oaks](#)

**Aug 15** [Board Meeting](#)

**Aug 24** [General Meeting](#)

**Sept 8** [Star Party - Anza Borrego](#)

**Sept 12** [Board Meeting](#)

**Sept 21** [General Meeting](#)

**Oct 6** [Star Party - Joshua Tree National Park](#)

**Oct 17** [Board Meeting](#)

**Oct 26** [General Meeting](#)

**Nov 10** [Star Party - Mecca Beach](#)

**Nov 14** [Board Meeting](#)

**Nov 30** [General Meeting](#)

**Dec 8** [PVAA Holiday Party](#)

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This article is provided by NASA Space Place.

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## What Is the Asteroid Belt?

There are millions of pieces of rocky material left over from the formation of our solar system. These rocky chunks are called asteroids, and they can be found orbiting our Sun. Most asteroids are found between the orbits of Mars and Jupiter. They orbit the Sun in a doughnut-shaped region of space called the asteroid belt.

Asteroids come in many different sizes—from tiny rocks to giant boulders. Some can even be hundreds of miles across! Asteroids are mostly rocky, but some also have metals inside, such as iron and nickel. Almost all asteroids have irregular shapes. However, very large asteroids can have a rounder shape.

The asteroid belt is about as wide as the distance between Earth and the Sun. It's a big space, so the objects in the asteroid belt aren't very close together. That means there is plenty of room for spacecraft to safely pass through the belt. In fact, NASA has already sent several spacecraft through the asteroid belt!

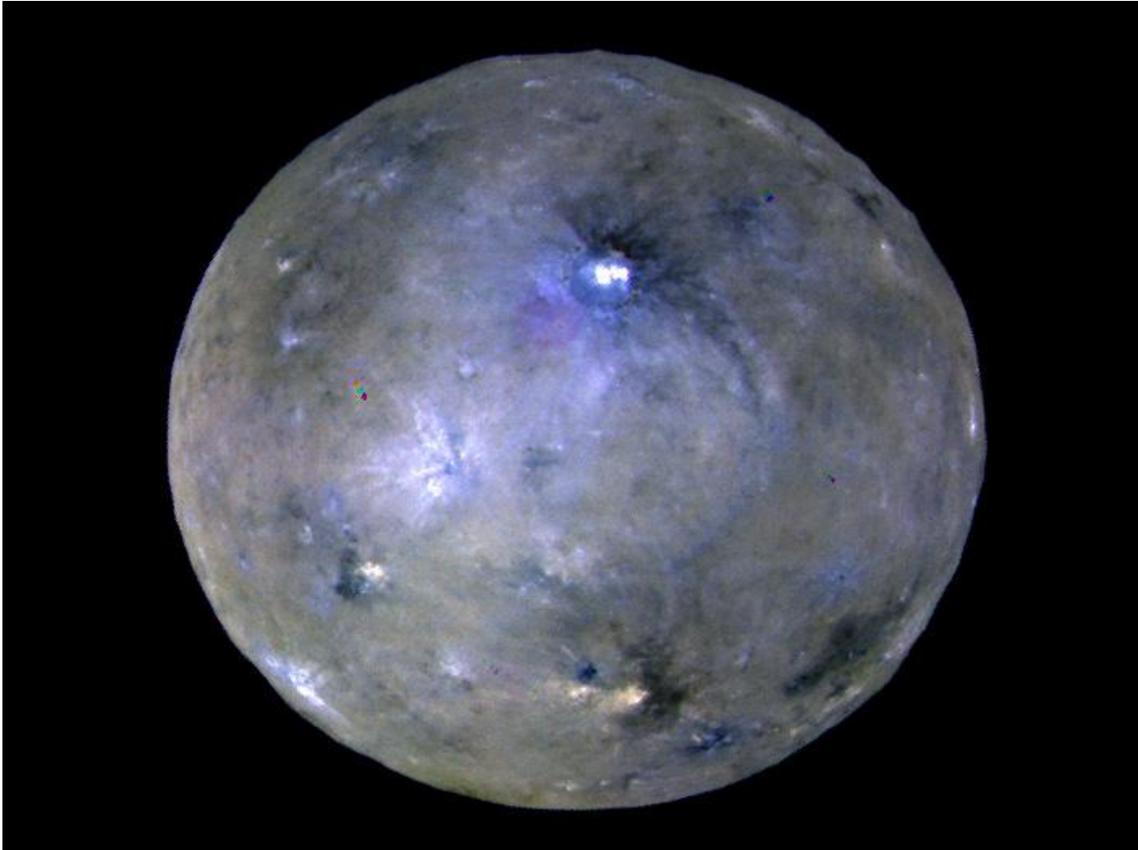
The total mass of objects in the asteroid belt is only about 4 percent the mass of our Moon. Half of this mass is from the four largest objects in the belt. These objects are named Ceres, Vesta, Pallas and Hygiea.

The dwarf planet Ceres is the largest object in the asteroid belt. However, Ceres is still pretty small. It is only about 587 miles across—only a quarter the diameter of Earth's moon. In 2015, NASA's Dawn mission mapped the surface of Ceres. From Dawn, we learned that the outermost layer of Ceres—called the crust—is made up of a mixture of rock and ice.

The Dawn spacecraft also visited the asteroid Vesta. Vesta is the second largest object in the asteroid belt. It is 329 miles across, and it is the brightest asteroid in the sky. Vesta is covered with light and dark patches, and lava once flowed on its surface.

The asteroid belt is filled with objects from the dawn of our solar system. Asteroids represent the building blocks of planets and moons, and studying them helps us learn about the early solar system.

*Linda Hermans-Killiam*



For more information about asteroids, visit:  
<https://spaceplace.nasa.gov/asteroid>

*Caption: This image captured by the Dawn spacecraft is an enhanced color view of Ceres, the largest object in the asteroid belt. Credit: NASA/JPL-Caltech/UCLA/MPS/DLR/IDA*

**Amazing Facts**

Scientists currently believe that there are around 8.7 million different species in the world, with 6.5 million on land and 2.2 million in the oceans. So far, researchers have identified and cataloged between 1.5 and 2 million species. Insects are one of the largest groups of animals, with an estimated 5 million types, while there are only around 5,500 kinds of mammal.

*wiseGEEK*

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## PVAA Gen Meeting 04/27/18

Matt Wedel talked about the Middlesbrough Meteorite. (It fell in Middlesbrough, North Yorkshire, England on March 14, 1881 at 3:35pm.) This meteorite's fall to earth was unusual as no sonic boom was reported, nor were there any reports of smoke trail or fireball. The impact was witnessed by some workers only a few yards away as it hit the ground and created a hole of about 30 cm (~1 foot). It weighed in at 1.5 kilograms (3.3 lb) The meteorite is believed to be as old as the Earth. (4.5 billion years old.)



By Meteorite Recon (Dr. Svend Buhl). - Own work., CC BY 3.0, <https://commons.wikimedia.org/w/index.php?curid=4274531>

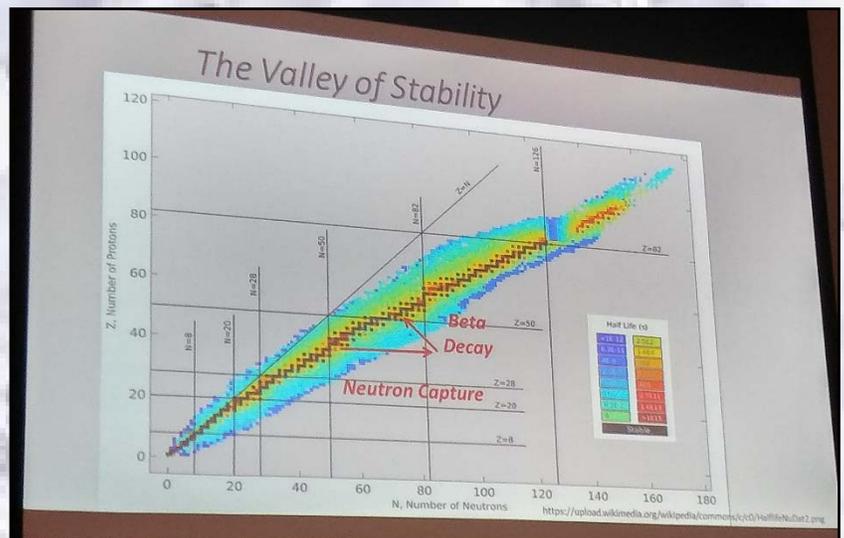
This was created by a mold they made from the meteorite. Matt bought one of the many molds for sale of the meteorite, and let the club check it out during the break. The June 2018 issue of Sky & Telescope has 3 articles on meteorites. Matt also authors the "Binocular Highlight" column for Sky & Telescope every month.

PVAA's very own Steven Sittig was the main speaker of the month. The title of Steve's presentation was "Gold? From Neutron Stars?" – or – "Kilonovae: The Fort Knox of Space!" First, Steve defined what a neutron star was: 10-29 solar mass star that runs out of fuel. A super nova follows and the outer layer gets thrown out into space. The remaining core is 1,000,000,000,000,000 times denser than it was before going nova. (10 to the 15<sup>th</sup> power). – About 200 billion times the gravity of Earth.

When two neutron stars merge, the resulting explosion is what creates the heavy elements – From gold on up the periodic table. The current consensus that is gaining ground is neutron stars, not super novae, created most of the heavy elements in the universe. Several computer simulations show that a super nova does not explain the abundance of heavy elements in the universe. Scientists then looked for other sources and came up with neutron stars. Super novae only create elements up to #40 – Zirconium (Zr) in abundance. Elements are numbered by how many protons they have in their nucleus.

If neutron stars collide at about 10% the speed of light, they can produce 3 times the moon's weight in gold alone, plus a lot of other heavy elements. The resulting collision then creates a black hole, or a bigger neutron star.

So, it looks like a super nova has lost some of its luster, and neutron stars are now king-of-the-hill. – Thanks Steve!



Slide from presentation.