Newsletter of the Pomona Valley Amateur Astronomers

The stars don't look bigger, but they do look brighter. ***Sally Ride***

Volume 35 Number 5 ***nightwatch*** **May 2015**

President's Message

Lots of news this time!

On the evening of Sunday, September 13, the club will be observing with the historic 100-inch Hooker telescope on Mount Wilson. The cost is $390 per person. We still have a few spots left - if you are interested, please see Ron Hoekwater at the general meeting to sign up.

Speaking of Mt. Wilson, several club members paid for the visit to the 60-inch telescope last fall that got clouded out. If you want to leave that money with the club to cover our next trip to observe with the 60-inch telescope (which will be sometime in 2016), that's fine, but refunds are also available. Please let Gary Thompson or me know if you'd like a refund.

Gary also has an offer from the Astronomical League for discounted eclipse glasses. Normally eclipse glasses cost $1-5 per pair, but if we buy in bulk from the Astronomical League we can get them for about $0.35 per pair. Gary will have more information about this at the general meeting.

The Tessman Planetarium at Santa Ana College is back up and running after an extensive renovation and update. Shows include "How Rare is Earth?", "What Color is Your Planet?", "Can You See in the Dark?", and "A Tour of Our Solar System". Tickets are $6.00 on weekdays and $7.00 on Saturdays. Please visit the planetarium website at http://www.sac.edu/planetarium or call (714) 564-6356 for more information.

Just in time for the start of our fiscal year, the club has its own bank account again, so you can make checks out to the Pomona Valley Amateur Astronomers or PVAA for short, and we'll be able to cash them.

Instead of having a speaker for our general meeting this July, we're going to have short talks from club members. They don't have to be fancy! Bring in a few slides, some photos to pass around, your favorite telescope, or a piece of astro memorabilia and talk to us for 5 or 10 minutes. I'll be going around at the meeting twisting arm--er, soliciting volunteers.

Don't forget to join the PVAA Facebook group! We're using it to announce star parties, club outreach events, and upcoming speakers, and to coordinate carpools to club events. The more people sign up, the better it works. Here's the link:

https://www.facebook.com/groups/1378161432440156/

Our speaker this month is Eric Grosfils, Professor of Planetary Geology at Pomona College. His talk will be "A Few Fresh Looks at Our Old Familiar Moon", and it will cover cratering, lunar volcanology, new data from the Lunar Reconnaissance Orbiter, and the lunar landing sites. I hope to see you there.

Matt Wedel

PVAA Officers and Board

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Star Party on Mount Baldy

Last Saturday a bunch of us from the PVAA, plus a few folks from neighboring clubs, got together at Cow Canyon Saddle on Mount Baldy for the monthly PVAA star party. In the early part of the evening I split my time between socializing, looking through other people's scopes, and helping my son London with a few things, although he is pretty independent with his 4.5-inch Dobsonian. He found the Orion Nebula, the Pleiades, and the Beehive (M44) all by himself, and the open cluster M41 and the galaxy pair M81/M82 with just a little help from me. I also got nice views of Jupiter through several scopes, and visitor Brandon Finnegan treated me to great views of the Sombrero Galaxy (M104) and the triple star Beta Monoceros in his XT8.

At around 10:00 I left to run London home, but I was back on the mountain by 11:00. After that, my own scope sat mostly neglected while I cadged looks off everyone else. I spent a lot of time, close to four hours, observing with Ed Grobel and Patty Morrison and their C6 SCT. I probably missed a few things, but a mostly-complete list of objects we looked at includes Comet Lovejoy – still surprisingly bright as it heads north out of the solar system – Jupiter, Saturn, M13, M5, M57, M81/M82, NGC 6543, the Leo Triplet, Epsilon Lyrae, Albireo, Polaris, M51 and NGC 5195, M4, M27, Brocchi's Coathanger (in the finderscope of London's XT4.5), Saturn again, Jupiter again, NGC 4565, and Saturn yet again to conclude.

For me, the best views of the night were of globular clusters and Saturn. There was a stretch around 11:30 when most of us still on the field went a little glob-mad. I looked at M13 through both of the C6 SCTs on the field and through Gary's 8-inch Dob, and it showed a lot of resolution in all of those scopes. Seeing was very good Saturday night and Saturn was just stunning. The disk of the planet showed salmon-colored bands, and we could make out the Cassini Division, the shadow of the rings on the planet, and the shadow of the planet on the rings, all so dark and crisp they looked inked in.

After Ed and Patty packed up about 3:00 AM, I wussed out and crawled in the Mazda for a couple of hours of sleep. I had a couple of quick peeks with the XT4.5 after I got up, but by then the sky was starting to get bright. My friend Terry Nakazono had pushed right through with only a half hour catnap earlier in the evening, adding 7 or 8 new objects to his tally, which now includes over 1000 unique deep-sky objects. As dawn broke, we packed up and went down the hill for breakfast. All in all, a great time.

Matt Wedel

"A Few Fresh Looks at our Old Familiar Moon."

Dr. Grosfils will provide a basic overview of lunar geology (i.e., age, divisions, impact cratering), then look at details of the impact process drawing on some stunning LRO imagery. Next he will discuss our revisions to lunar volcanology from new gravity/ topography data, and finally bring us back full circle for fun with some looks at the landing sites.

Club Events Calendar

May 1, 2015, General meeting
Our speaker Friday is Eric Grosfils,
Professor of Planetary Geology at Pomona College.

May 21-25, 2015, RTMC
No scheduled Star Party.
May 28, 2015, Board meeting, 6:15

June 5, 2015, General meeting
June 13, 2015, Star Party, Angeles Oaks and
June 12-14, 2015 Joint Star Party with RAS at Grandview Campground

July 17-19, 2015 Joint Star Party with RAS at GMARS
July 23, 2015, Board meeting, 6:15
July 31, 2015, General meeting

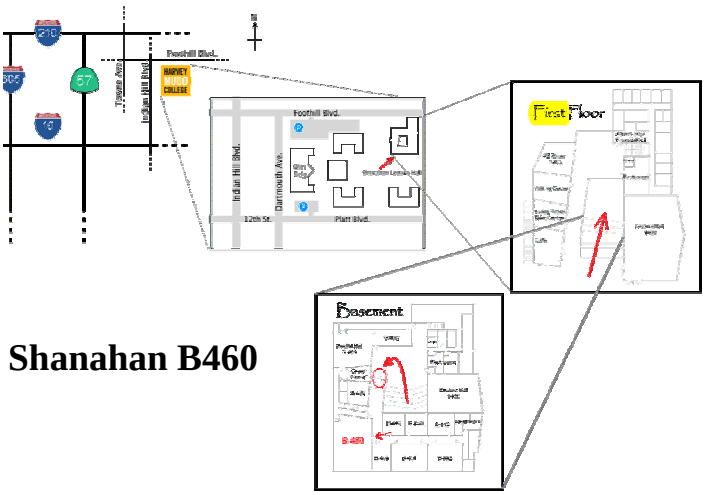
August 14-16, 2015, Joint Star Party with RAS at GMARS
August 20, 2015, Board meeting, 6:15
August 28, 2015, General meeting

September 13, 2015, Annual Mt. Wilson Telescope viewing
Sept 11-13, 2015, Joint Star Party with RAS at GMARS
September 17, 2015, Board meeting, 6:15
September 25, 2015, General meeting

Oct. 9-11, 2015, Joint Star Party with RAS at GMARS
October 22, 2015, Board meeting 6:15
October 30, 2015, General meeting

Nov. 5-8, 2015, Joint Star Party with RAS, Night Fall at Borrego Springs
November 12, 2015, Board meeting, 6:15
November 20, 2015, General meeting

December 3, 2015, Board meeting, 6:15
December 11, 2015, Holiday Party, Sizzlin' Skillets 7:00pm



Shanahan B460

NO !
This is not your eyes going buggy!

I pass along this image I made at the end of the recent lunar eclipse. It is a composite of three photos taken a minute or so apart that I stacked in Photoshop. Maybe not the best ever, but when it appeared it was going to set near the microwave tower in the wilderness park, I moved a little and set up the tripod to do this.

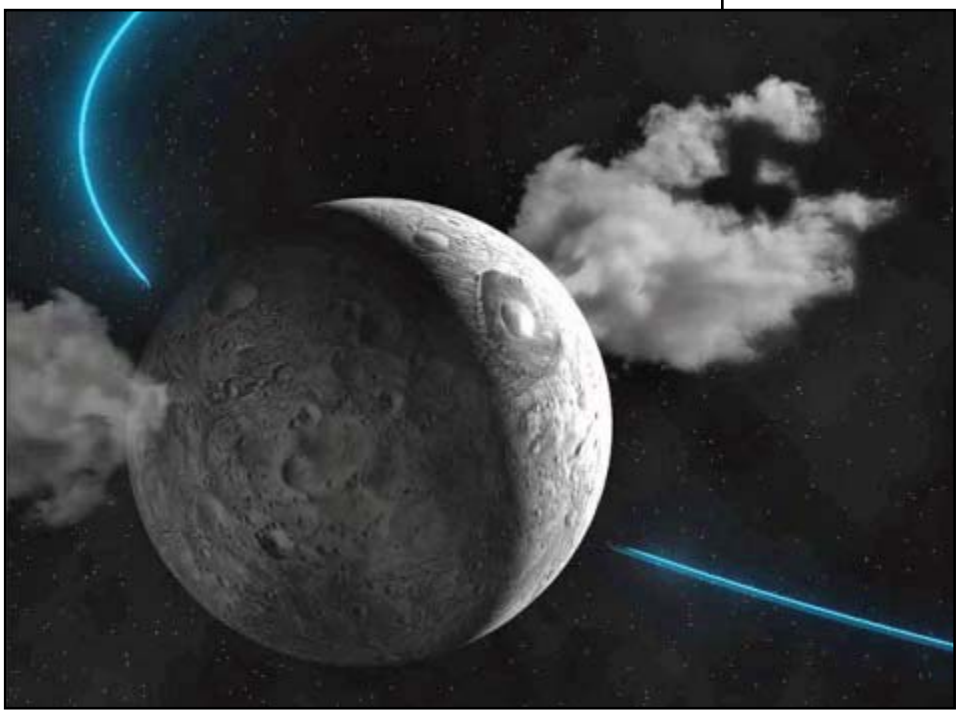
Ludd Trozpek

What's Up? - Dwarf Planet Of Cereal

That's Ceres, or the dwarf planet named after the Goddess of Cereal. It's currently being orbited and studied by the Dawn probe. Dawn is the only space craft to visit two previously unexplored (minor) planets. Those would be Vesta (362 miles in diameter) and Ceres (590 miles in diameter). The two together, along with the third largest called Pallas (338 miles diameter), make up almost half of the matter in the Asteroid Belt.

Ceres is center stage now with its startlingly white bright spot and several other off white spots. Ceres has a rocky core covered with a thick body of icy water detected in 2014 by the ESU. It's then layered over with an outer crust of rock. So the white spots are where impact craters have penetrated the dark crust to reveal shiny ice. The question is are these salty ice spots kept fresh by geyser-like cryovolcanic eruptions? (pictured)

Ceres was discovered by Giuseppe Piazzi of the Academy of Palermo, Sicily in January 1st 1801 (1-1-1). He named it after his beloved Roman goddess of Sicilian grains, Ceres. This began a tradition of naming asteroids after classic female goddesses. Piazzi was one of an international group called the "celestial police" who were determined to find a planet between Mars and Jupiter. According to a theoretical planet spacing rule called the "Titus-Bode Law" there should be one in that area. Instead they found an "belt" of countless small objects which they named asteroids (star-like objects) because they couldn't be resolved into visible spheres. This Asteroid Belt isn't made up of dangerously close rocks that have to be dodged through as in a "Star Wars" like movie. Instead asteroids are widely spread out, but do tend to bunch into "family" groups. This fact has allowed many space craft to pass through without colliding with so much as a speck. The reason for this fragmentation of planet forming materials is thought to be a gravitational "tug of war" between giant Jupiter and the Sun.



Interestingly, Piazzi was a Catholic priest by day who considered his nightly astronomy to be "divinely inspired". Astronomical and religious relations had improved considerably since Galileo's day. Piazzi was a pioneer star chart maker. He got his own asteroid numbered 1000 Piazzia.

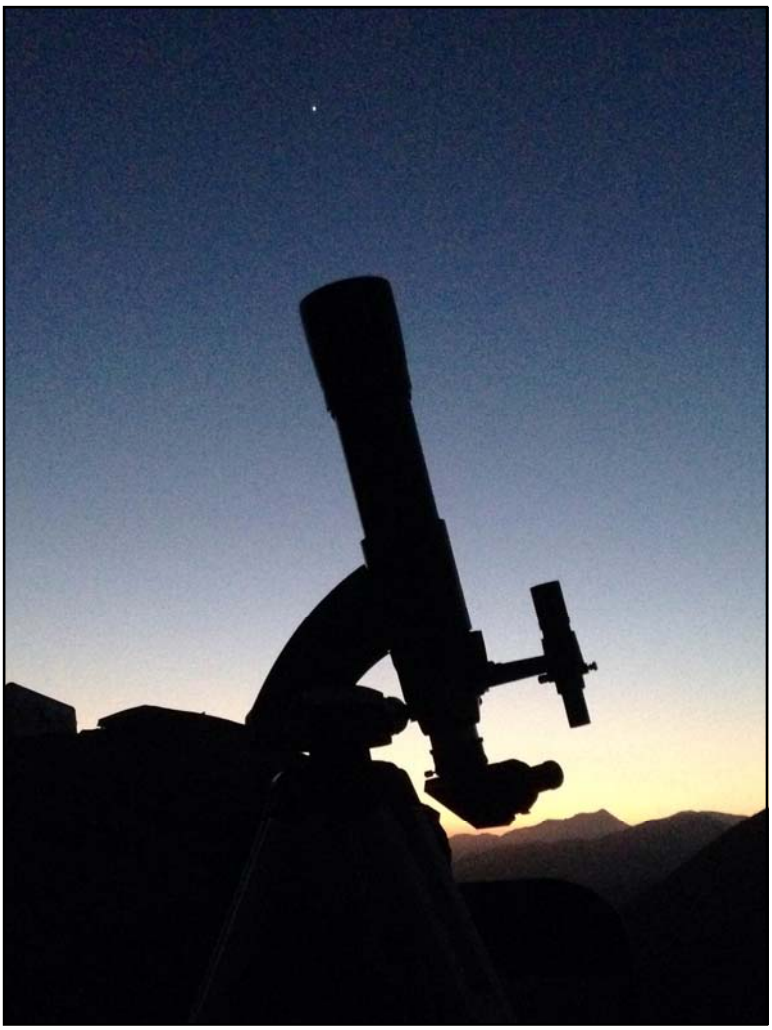
At first Ceres was hailed as a bold new planet, perhaps as large as Mars, and even given a planetary symbol (a harvester's sickle). But then as other smaller and smaller objects were discovered it was demoted to largest of the asteroids. Ceres does make up a third of all asteroid belt material, and is the only one large enough to form a round planet like sphere. Consequently in 2006, when Pluto was demoted from planet to dwarf planet, Ceres was promoted to dwarf planet status.

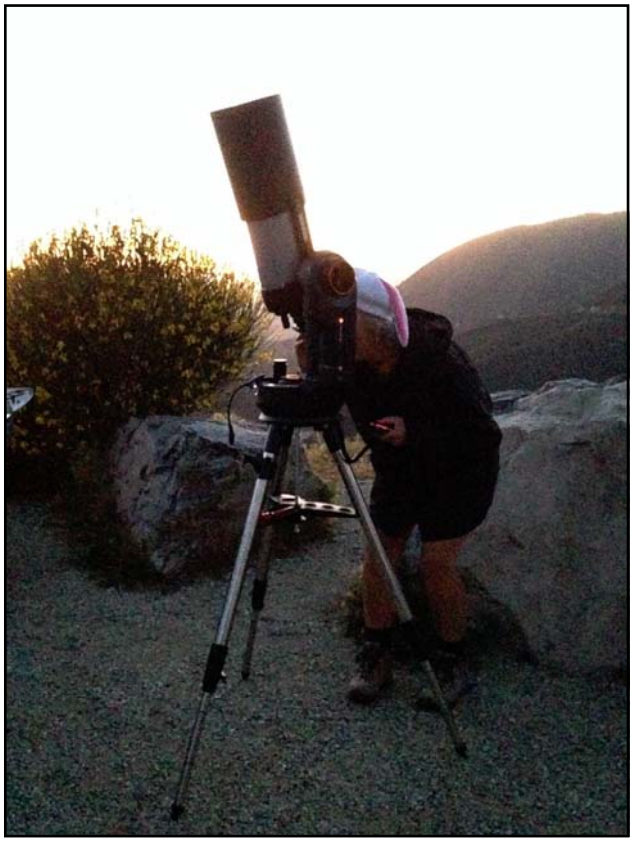
As the first and largest of the asteroids it is often called 1 Ceres. In 1802 Heinrich Olbers discovered a second asteroid he numbered 2 Pallas (Athena Goddess of Wisdom). Next (in 1804) Karl Harding, found a highly reflective body he named after a most important goddess, 3 Juno (wife of Jupiter, daughter of Saturn, Mother of Mars). Unfortunately Juno was a bright illusion proving to be a modest 149 miles in diameter. These pretentious names weren't delivering desired planet sized objects. Then in 1807 Heindrich Olbers, with the help of Carl Friedrich Gauss, found 4 Vesta (Goddess of The Hearth). Vesta of course was photographed and orbited in 2011 by the Dawn probe. But at 323 miles in diameter it's the third largest, making the numbering system in order of discovery just that and not a rating of size. However numbering asteroids in their order of discovery continues up to the present, it's now in the hundreds of thousands.

Heinrich Olbers was a doctor by day. He had a diagnostic theory that the larger asteroids were part of a Mars sized planet that had exploded. He got his asteroid, 1002 Olbersia. His companion, Carl Friedrich Gauss, was a mathematical genius who plotted the orbits of newly discovered asteroids. He's remembered by Gauss' laws of magnetism and its Gaussmeter. He got his asteroid, 1001 Gaussia.

After a first flurry of asteroid discovery (1801-1807) the Thirty Years War in Europe violently disrupted astronomy until 1845 when a small (73 miles in diameter) asteroid was discovered, 5 Astraea (Goddess of Starry Justice). In five years five more asteroids were spotted and numbered. Ironically, number 10 Hygeia (Goddess of Clean Health) proved to be the fourth largest of all asteroids at 250 miles in diameter. So much for a numbering that assumed the largest would be discovered first. An unraveling of Asteroid Belt mysteries has only just begun.

Lee Collins





Patty Morrison

Star party up at
Cow Canyon Saddle on Mount Baldy

from left to right:
Cori Charles - London Wedel - Gary Thompson - Rob Record (RAS) - Terrry Nakazono (LAAS)

Photos by Matt Wedel

Kassandra and Kevin Garcia

Is the Most Massive Star Still Alive?

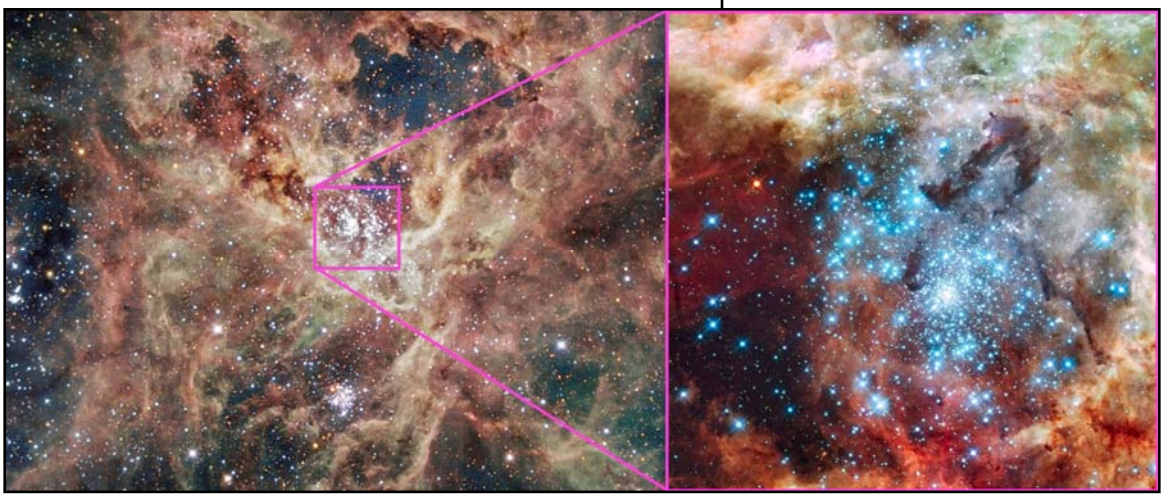
The brilliant specks of light twinkling in the night sky, with more and more visible under darker skies and with larger telescope apertures, each have their own story to tell. In general, a star's color correlates very well with its mass and its total lifetime, with the bluest stars representing the hottest, most massive and shortest-lived stars in the universe. Even though they contain the most fuel overall, their cores achieve incredibly high temperatures, meaning they burn through their fuel the fastest, in only a few million years instead of roughly ten billion like our sun.

Because of this, it's only the youngest of all star clusters that contain the hottest, bluest stars, and so if we want to find the most massive stars in the universe, we have to look to the largest regions of space that are actively forming them right now. In our local group of galaxies, that region doesn't belong to the giants, the Milky Way or Andromeda, but to the Large Magellanic Cloud (LMC), a small, satellite galaxy (and fourth-largest in the local group) located 170,000 light years distant.

Despite containing only one percent of the mass of our galaxy, the LMC contains the Tarantula Nebula (30 Doradus), a star-forming nebula approximately 1,000 light years in size, or roughly seven percent of the galaxy itself. You'll have to be south of the Tropic of Cancer to observe it, but if you can locate it, its center contains the super star cluster NGC 2070, holding more than 500,000 unique stars, including many hundreds of spectacular, bright blue ones. With a maximum age of two million years, the stars in this cluster are some of the youngest and most massive ever found.

At the center of NGC 2070 is a very compact concentration of stars known as R136, which is responsible for most of the light illuminating the entire Tarantula Nebula. Consisting of no less than 72 O-class and Wolf-Rayet stars within just 20 arc seconds of one another, the most massive is R136a1, with 260 times the sun's mass and a luminosity that outshines us by a factor of seven million. Since the light has to travel 170,000 light years to reach us, it's quite possible that this star has already died in a spectacular supernova, and might not even exist any longer! The next time you get a good glimpse of the southern skies, look for the most massive star in the universe, and ponder that it might not even still be alive.

Dr. Ethan Siegel



Images credit: ESO/IDA/Danish 1.5 m/R. Gendler, C. C. Thöne, C. Féron, and J.-E. Ovaldsen (L), of the giant star-forming Tarantula Nebula in the Large Magellanic Cloud; NASA, ESA, and E. Sabbi (ESA/STScI), with acknowledgment to R. O'Connell (University of Virginia) and the Wide Field Camera 3 Science Oversight Committee (R), of the central merging star cluster NGC 2070, containing the enormous R136a1 at the center.

Lightning-snap!

We usually only see lightning when it travels from a cloud to the ground, but before that happens, there might be lots of in-cloud and cloud-to-cloud lightning. What are these? How can we monitor this activity and learn more about violent storms? Find out in a new SciJinks in a Snap Video!

http://scijinks.gov/lightning-snap