



Newsletter of the Pomona Valley Amateur Astronomers

**Pay club dues at the General Meeting
or by mail. \$30 individual / \$40 family.**

Volume 29 Number 9

nightwatch

September 2009

President's Address

In August elections were successfully held. The People's Republic of Pomona Valley Amateur Astronomers reelected the entire slate of candidates in a landslide. This being the case, I am once again your president. Joe Hillberg is Vice President, Bob Akers is Vice President of Facilities, Ludd Trozpek is Treasurer, Claire Stover is Secretary, Jim Bridgewater, Lee Collins, Ray Magdziarz, and John Stover are Board-Members-at-Large. All of us are eager to make this the best year yet for PVAA.

On August 19th we successfully held our Mount Wilson 60-inch observing session. This time the weather cooperated to a much greater degree. The seeing was good, but not great. The temperature was quite comfortable all night. For more information on our visit see Gary Thompson's article in this *Nightwatch* and Matt Wedel's blog at: <http://10minuteastronomy.wordpress.com/2009/08/22/observing-report-mt-wilson/>. Also remember, if you missed out this time, we are returning to Mount Wilson for another Saturday

observing session with 60-inch telescope on June 12, 2010.

Besides elections, the other thing that August brings us every year is membership renewal time. Dues can be paid at the general meeting or mailed to the club's PO box.

The August Ontario Library Star Party was a big success. I believe that it was the best attended of these events that we have ever had, with the exception of the August 2003 close approach of Mars. In fact I think that the 2003 Mars opposition was a factor in the big turnout. That pesky e-mail message is still going around. Will it ever die?

In September we are asking that club members help out with the "Stars Over Paseo Colorado" sidewalk astronomy event in Pasadena. The event will be on multiple evenings, September 11, 12, 18, 19, and 25. Please attend any that you can. Remember the PATS (Pacific Astronomy and Telescope Show) also in Pasadena on the 26th and 27th.

Happy stargazing!

Ron Hoekwater

PVAA Officers and Board

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Mount Wilson Observing

In June we tried to use the [60 inch](#) telescope at the [Mount Wilson Observatory](#), but Nature over-ruled us. The fog came in at 5pm, just for a few minutes, and left. It left us with beautiful clear skies, but it also left us with 99% humidity. They wouldn't even open up the dome. This time Nature was kind, and before we even set foot inside, we could see that the dome was open and waiting for us.

First on the list for the night was the Great Globular Cluster in Hercules – [M13](#). It was almost straight overhead. There were so many stars in the 4 inch eyepiece that you really didn't see the edges of the cluster. It was amazing. While I knew I would see more than my 13.1" Dob, - DARN!

We then all went outside to see a satellite. I had never seen an [Iridium flare](#) before. It was impressive. Tom Mason was the telescope operator for the night. He pointed it out, "About 10 seconds....." Then the satellite started getting brighter. - It went from magnitude around 5.8 to -1. - Just for a few seconds, and then back to normal.

Double DARN! – It was then I knew that this was going to be a GREAT night!

Jupiter lived up to its name. It actually looked like the pictures in the books and magazines. The cloud structure was colorful and clear. The Galilean moons were more than just specks of light. Triple DARN! I tried to take a picture of Jupiter with my hand-held camera, but all I got was an over-exposed disk.

We then looked at M57, the [Ring Nebula](#). You could even see the central star. – Even more DARN! We gave Jupiter a second look. No luck with my camera.

Neptune was nearby, so Tom slewed the scope over to it. Our other host for the night, Shelley Bonus, then moved the ladder in place and made the final adjustments to center the planet in the eyepiece. Neptune, even for the 60 inch, was dim. But in the 60 inch it was unmistakably a planet. That was the first time I ever saw Neptune. DARN times 5! We also checked out Uranus, (another first for me), which was much brighter than Neptune. We did not look at Pluto, as it would look like another star, it is

so dim. Tom said, "I can get you there, but I wouldn't be able to point out which point of light it is in the field of view."

We saw the [Blue Racquetball](#) (NGC 6572), and the [Blue Snowball](#). (NGC 7662) Both are Planetary Nebula. They look similar, but like people, they have their own face. (Which DARN! is this?) I had never even heard of them before, much less viewed them. – And in color! Speaking of nebulas, we also saw the [Saturn Nebula](#). (NGC 7009) (Again a first for me.) By then the original group of 20 dwindled down to 8, which lasted the rest of the night. Someone was heard to say "Gee, there are only 8 of us left! – While another was heard to say" "Gee, What a SHAME..."

We also gazed at the comet [22P/Kopff](#). The comet was very dim and required patience and averted vision. I actually missed this view, as I went out to my car to get my binoculars. Fortunately I have seen another comet before with my naked eyes and with binoculars.

What night would be complete without looking at the [Andromeda Galaxy](#)? The 60 inch has a narrow field of view, so we just saw the central disk. It was BRIGHT! – Unlike the Hercules Cluster, Andromeda is too far away to make out individual stars in the eyepiece. No wonder it took them a while to discover it was not in the Milky Way.

We finished our Deep Sky Object viewing with our friend, the [Orion Nebula](#). (M42) The 60 inch showed astonishing detail in the no longer dark sky. It was very low on the horizon, and great care had to be taken to make sure the telescope and its cables did not hit the working platform on the dome. Two guests of the group helped Tom guide the scope into place without hitting anything.

We ended the night with a look at Mars. It was big enough to see different shades of red. Still, along with everything else I saw tonight, it was the best view of it I had ever seen.

To sum it up: DARN times DARN! – If you haven't ever gone, sign up for the next one, - I'm going again.

Gary Thompson

August Star Party

For our August star party PVAA returned to a site that we have not visited for several years, Angelus Oaks. The star party site is a hilltop above the village which has cleared and leveled for use as an emergency helipad. In the past the dirt road leading up to the site has sometimes been pretty rough. This time it was obvious that the Forest Service had been doing some work as both the road and the helipad were in the best shape that I have ever seen them.

When I arrived at the site Joe Hillberg, Gary Thompson, and Gary's son Matthew were already there. A little while later Bill Vaskis drove in. As it wasn't dark yet, first up was the crescent Moon. Then, after a little searching Gary found Mercury low in

the western twilight. We all took a peek. Jupiter emerged from behind the hill after a bit. As it became fully dark we started looking at some of the usual deep sky objects, the Ring, Dumbbell, M 31, etc.

The elevation at Angelus Oaks is nearly 6,000 feet. The sky is comparable to Cow Canyon Saddle. Angelus Oaks is a little better to the south and to the west. The temperature this time of year is quite comfortable at night.

Somewhat after midnight we all packed up and headed home. Angelus Oaks is about an hour's drive from Claremont. That is perhaps its biggest plus as an observing site. We may be trying this site again next year.

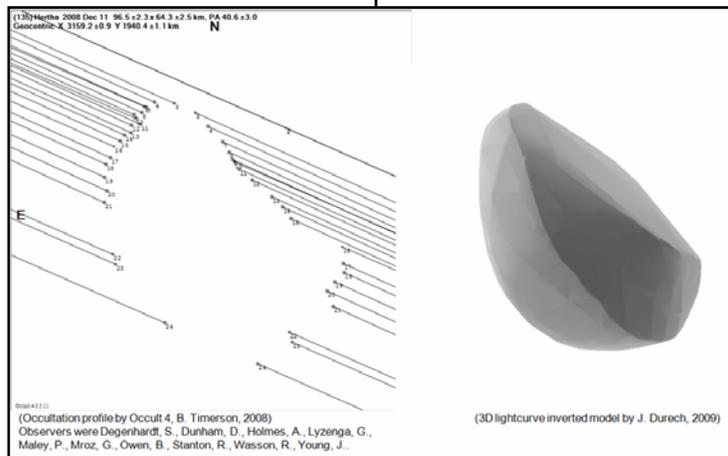
Ron Hoekwater

August Featured Speaker

At the last general meeting, Greg Lyzenga gave an interesting lecture on amateur asteroid occultation observation. As an asteroid passes in front of a star, observers in different parts of the world can record the precise number of seconds it takes to pass. Afterwards, all the observations can be combined to figure out the approximate size and shape of the occulting asteroid.

This is an accessible pastime, as it can be done with as little as a small telescope and an accurate clock. Such a simple method yields surprising results – in 1977 occultation timing observed the asteroid Hebe's satellite before Hubble images proved such an arrangement was even possible, and the silhouettes it produces can determine an asteroid's shape with 200 times the resolution of the Keck telescope. However, recent technological advances have made asteroid occultation observation far more accurate and accessible.

Asteroids have not always been so easy to observe, as they have only recently been easy to find. The first asteroid Ceres was discovered accidentally in 1801 by the director of the Palermo observatory in Sicily, Giuseppe Piazzi. He noticed what looked like a new star while observing in Taurus, which he tracked over several nights. When his colleague Carl Gauss calculated that the object orbited between Mars and Jupiter it was classified as a new planet, which it remained until the 1860s. Over the next 6 years Pallas, Juno, and Vesta were discovered using a similar method of visually finding the object and tracking its progress through the sky. The next advancement in asteroid discovery came with the development of astrophotography. Asteroids would appear as short streaks on long exposure photographs, or as a dot floating above the background stars



when two images taken about an hour apart were viewed through a stereoscope. Today, computerized observatories and satellites run an automated search of the sky, discovering as many as 38 thousand objects in a year. This same technology has made predicting the orbits far more accurate, making the chances of observing an occultation where it is predicted very likely, especially in comparison to the continent-sized margins of error given by previous prediction methods. Websites such as www.asteroidoccultation.com make this data accessible to anyone.

Hardware advances like the CCD camera, an inexpensive way to eliminate observer error, have also made asteroid occultations more accurate. Combined with the GPS time inserter, which puts an accurate time stamp on every frame of the resulting video, observations can be recorded with far higher accuracy. Scotty Degenhart has taken his equipment to extreme heights, constructing small portable observing stations out of inexpensive finder scopes, which can record the occultation from many places at once. Originally starting with 7 scopes, he continues to expand his operations and travel the

world, collecting occultation data and stories about airport security and local law enforcement.

The internet and the free software it makes accessible have been influential to the advances in occultation data processing and assembly. Limovie measures the light output of the star in every frame, which further eliminates observer error, and has helped discover some previously unknown binary stars. Occult Watcher has a feature that combines weather and occultation predictions to give a likelihood of observing the event at a particular site, as well as a database to assemble, process, and view data as it comes in from amateur astronomers around the world. Other resources include information and past occultation results at

<http://www.asteroidoccultation.com/observations>,

the IOTA manual for occultation observing at

<http://www.poyntsource.com/IOTAManual>,

and the IOTA discussion and news forum at

<http://tech.groups.yahoo.com/group/IOTAoccultations>.

Our speaker can also be reached at lysinger@hmc.edu, and would be happy to answer any questions you may have, and eager to recruit you into the growing field of asteroid occultation observation.

Lucy Stover



What's Up - A Tea Party & Blue Stragglers

There's a "tea party" at the center of our galaxy. In Sagittarius (the archer) observers have long seen a teapot, a tea spoon, and a milk dipper. In addition, there's a centaur at the galactic center. Sagittarius is often depicted (especially by astrologers) as a centaur drawing back his bow. And there's another centaur constellation (Centaurus) not so far away. Why two centaurs near the galactic center? Only long dead middle eastern star watchers know for sure.

But Sagittarius' eight brightest stars do look more like a polite teapot than a warlike archer. The milk dipper is seen where the handle part appears upside down, as it does in the southern hemisphere. There the milk dipper appears to be dipping into the Milky Way as it streams past. The tea spoon is what appears as a Robin Hood like feathered hat in the archer form.

Nevertheless, bow names are firmly established in three bow stars. Here's the archer's only first magnitude star, Kaus Australis (south bow). Moving north are Kaus Media (middle bow) and Kaus Borealis (north bow). Pointing toward the galactic center is Alnasl (arrow point). Back in the handle is Ascella (the armpit). Here is the second brightest star, Nunki. An ancient Sumarian name, the oldest continuously used star name. It's so old no one knows what it means anymore.

Nunki (Sigma Sagittarii) is one of the hottest of stars, and radiates much of its light in the invisible ultraviolet. It 3300 times more luminous and rotates at a speed 100 times faster than our Sun. It's a star in the stellar fast lane. But brighter Kaus Australis (Epsilon Sagittarii) is an fine binary star.

Notice that the labeling of stars in a constellation as alpha, beta, etc in order of brightness isn't true in Sagittarius. Alpha and Beta are dimmer stars down in the archer's feet, although Beta is a nice double.

Sagittarius is the southernmost of zodiacal constellations, and contains 15 Messier objects. Many of these are globular clusters called "heaps of diamonds sprinkled on black velvet cloth." Globular clusters are at least 10,000 million years old, as old as the known universe itself. Most of their stars are equally old, except for bright blue stars called "blue stragglers." It is thought that they "straggle behind" in stellar evolution because they are close binaries in which renewing mass has been transferred from one to the other or stars that have merged together in violent collisions that must be common in crowded globular clusters.

The brightest of 21 globular cluster in Sagittarius is M22. But the most well known deep sky objects in Sagittarius are four huge gas emission clouds.

This group of nebulas most commonly featured on calendars and magazine covers, includes M8 (Lagoon Nebula) with its star cluster visible to the unaided eye. Nearby is M20 with its three flowery segments. Further north is M17, which is either called the Omega, the Horseshoe, or the Swan Nebula depending on the light gathering abilities of your telescope. Up on the border with Serpens (the serpent) is M16, the Eagle Nebula. Here lie the famous dark columns of gas and dust called the Pillars of Creation. Creation because new stars are visibly being born in this area. But they're not really pillars if you turn the photograph upside down, rather creepy fingers of nebulosity.

To the south of Sagittarius are the small constellations of

curvaceous Corona Australis (the southern crown) and the incestuously conceived Telescopium (the telescope) and its neighbor Microscopium (the microscope).

On the west side near Capricorn (the goat) two deep space objects lie close together. One is a 10th magnitude planetary nebula, NGC 6818, the Little Gem. Larger telescopes will reveal an oval shell within a shell. The other is Barnard's Galaxy, the closest of our Local Galactic Group. It's not a huge spiral but a small barred irregular at 9th magnitude. Dramatically, it was the first galaxy to have its distance determined (in 1925) by Edwin Hubble by means of Cepheid variables. Hubble proved the concept that it was far outside our Milky Way Galaxy, then did the same with the further Andromeda and the Triangulum Galaxies.

Barnard's Galaxy (NGC 6822) was discovered in 1881 by E. E. Barnard (1857-1923). Born into an impoverished family, Barnard prospered when he won a contest to discover comets. With his 5 inch amateur telescope he found eight and landed a college scholarship and a job at Lick Observatory. There in 1892 he discovered a new moon of Jupiter, Amalthea, the first to be discovered since Galileo in 1609. Next he went to Yerkes Observatory and demonstrated that dark "empty" regions of the sky were really dark clouds of gas and dust. He built up a catalog of 366 dark nebulae which included the famous Horsehead Nebula. In 1916 he discovered Barnard's Star (in Ophiuchus), the star with the greatest proper motion. This is largely because its only 6 light years away, the closest star to our Sun after Alpha Centauri (4.2 ly). It's a small faint red dwarf star, glowing at a dim 9th magnitude. Barnard also discovered Barnard's Loop, an enormous emission cloud which may be a supernova remnant. Features on the Moon, Mars, and Ganymede are named after him. Barnard once called astronomer Percival Lowell "delusional" because of Lowell's belief that Mars was inhabited by canal-building alien beings. Or maybe it was because Lowell had come from a fabulously wealthy family while Barnard had risen from grinding poverty.

But these are only a few of the tasty teacups of information served up by Sagittarius, the centaur-archer-teapot constellation at the center of the galaxy.

Lee Collins



PVAA members Paul and Leah Benadum moved to Sequim, WA in 2004. On June 18th, 2009, Leah Benadum passed away after a lengthy illness. She'd had bouts of rheumatoid arthritis and osteoporosis the past couple of years. Most recently she developed a staph infection that got into her bloodstream which was exacerbated by a compromised immune system (from several of her medications). She really enjoyed the times she and Paul shared with the PVAA and the members. A memorial was held here in Sequim on August 3rd.



Club Events Calendar

- September 4, General Meeting - Michael Janssen of JPL on the Juno Mission to Jupiter**
September 11 - 12, Sidewalk Astronomy
 Paseo Colorado, Pasadena
September 19, Star Party – Landers
September 24, Board Meeting
September 26 - 27, Second Annual PATS, Pasadena
<http://www.rtmcastronomyexpo.org/PATS.htm>
October 2, General Meeting
October 17, Star Party Cottonwood Springs
October 22, Board Meeting
October 24, Solar Star Party - Village Venture - Claremont 9 -5
October 24, Star GATE at Townsend Jr. High School, Chino
October 26, Monday – Orange County Braille Institute
October 28, Ontario Library Main Branch, 7 – 9 PM
- November 6, General Meeting**
November 11 – 15, Nightfall -
<http://www.rtmcastronomyexpo.org/nightfall.htm>
November 14, Star Party – Mecca Beach at Salton Sea
November 19, Board Meeting
- December 11, Friday – Holiday Party**
December 12, Star Party – Claremont Hills Wilderness Park
December 17, Board Meeting
- January 9, Star Party – Mecca Beach**
January 19, Main Branch, Ontario Library, 7 – 9 PM
January 21, Board Meeting
January 29, General Meeting
- February 13, Star Party – Death Valley**
February 18, 2010, Thursday – Board Meeting
February 26, 2010, Friday – General Meeting
- March 13, 2010, Saturday – Star Party**
March 18, 2010, Thursday – Board Meeting
March 26, 2010, Friday – General Meeting
- April 10, 2010, Saturday – Star Party**
April 15, 2010, Thursday – Board Meeting
April 23, 2010, Friday – General Meeting
- May 6, 2010, Thursday – Board Meeting**
May 12 - 16, 2010, Saturday – RTMC
May 21, 2010, Friday – General Meeting
- June 12, 2010, Saturday – Star Party**
June 17, 2010, Thursday – Board Meeting
June 25, 2010, Friday – General Meeting

Presale PATS Tickets

Tickets are available for \$15 for September 26th & 27th. They are good for either day and will be \$20 at the door. Contact Ludd before you go.



PACIFIC ASTRONOMY AND TELESCOPE SHOW

PASADENA CONVENTION CENTER
 September 26-27, 2009

Astro Outreach

The Riverside Astronomical Society (RAS) has been invited to do "Sidewalk Astronomy" at the Paseo Colorado Mall in Pasadena on Friday and Saturday nights the few weeks before PATS. In turn they have asked for our help with this public outreach by bringing our telescopes and "do what we do". Paseo Colorado has been working with some other local organizations (JPL, etc) to participate in this effort. Paseo Colorado is the mall of stores and restaurants that runs north of the Pasadena Convention Center. Join the PVAA September 11&12

Thanks for your donation!

In early July, Club star party organizer Craig Matthews donated three Celestron 10 x 50 binocular/green laser/red light sets to the Club. We've brought them to several events, including a Girl Scout summer camp near Idyllwild. At a public campout at the Santa Fe Dam, they were used by many. They are popular with people who are waiting in line to view at a telescope. People are surprised at how much can be seen through a small pair of binoculars with a little help from PVAA members. They have proven well worth bringing along to our public events. Please let us know if you'd like to use them yourself at one of our star parties.

Greetings Old Friends

Got to go to China for the Eclipse and it was great. With most of Asia clouded we got the clouds to thin out for a while and saw the most beautiful double diamond ring on 3rd contact. Ron Royer was with us and here's a few of his shots put together to make a short movie of the fabulous 3rd contact. Enjoy! I was with Joel Harris's tour and we had a great trip all the way.

Billie Chandler



Photos by
Melinda Myers



Photos by
Mathew Wedel



Photos by
Ron Hoekwater

