



The Club has a few **2009** calendars from **Astronomy** and they are available at our cost of only \$7 each. Please see Ludd to purchase one.

President's Address

On Friday, February 13th there will be a very special meeting of Pomona Valley Amateur Astronomers. PVAA is 40 years old! And we will have a very special speaker. Tony Cook, one of the founding members of our club will speak about the beginnings and early history of PVAA. Tony has worked at Griffith Observatory in Los Angeles for many years and now holds the job title Astronomical Observer. But when he helped start up the Pomona Valley Amateur Astronomers in 1969 he was a student at Claremont High School. It is great that now, 40 years later, he is back to visit and PVAA is still going strong.

Because this is an historic event in the life of Pomona Valley Amateur Astronomers, it will be video recorded and preserved for future members. To facilitate the recording, the meeting will be held in our old meeting room, McAllister Auditorium in Galileo Hall. To get there go down the steps to the patio, past the fountain, through the glass doors and straight ahead into the auditorium.

So come out on Friday evening, meet one of the first PVAA members and learn something new about our club. I look forward to seeing you there. Happy stargazing!

Ron Hoekwater

Palomar Observatory

On Saturday, July 11th at 2:00 PM, the PVAA Club is going on a tour at Palomar. This tour covers the history and current scientific research done at the Palomar Observatory, with special emphasis on the 200-inch Hale Telescope. We will be inside the dome. It is **not heated** and is kept at nighttime temperatures so bring appropriate clothing. The cost is \$5 per person for with tour with a limit of 30 people. Please sign up ahead of time and you may pay at the event.

See Claire Stover to sign up for this event.

Club Events Calendar

- February 13, General Meeting
- February 21, Star Party - Cottonwood Springs, Joshua Tree
- February 24, School Star Party -
Hollyvale Elementary - Victorville
- March 3 and 7, Claremont Class and Star Party with Laura Jaoui
- March 5, Board Meeting
- March 13, General Meeting
- March 21, Star Party - GMARS at Landers with RAS

- April 1 and 4, Claremont Class and Star Party with Laura Jaoui
- April 2, Board Meeting
- April 2 – 5, 100 Hours of Astronomy public outreach.
Details at www.100hoursofastronomy.org
- April 10, General Meeting
- April 25, Star Party – Mojave River Forks Regional Park
- April 30, Board Meeting

- May 1 and 2, Claremont Class and Star Party with Laura Jaoui
- May 8, General Meeting
- May 22 - 25, RTMC
- May 28, Board Meeting

- June 5, General Meeting
- June 20, Mount Wilson Trip - Contact Ron Hoekwater

- July 2, Board Meeting
- July 10, General Meeting
- July 11, Tour of Mt Palomar 2 PM.
- July 18, Star Party Party – Mojave River Forks Regional Park

- August 25, Ontario Library Main Branch, 7 – 9 PM

I Heard It at the American Astronomical Society Winter Meeting

I have just finished attending the American Astronomical Society winter meeting in Long Beach. I'd like to pass on some of the news that came out at the meeting. Naturally this will reflect my own biases about what is and isn't interesting, along with the limitations on what I was able to see.

The first thing to appreciate about the AAS meetings is that they are the biggest meetings of professional astronomers in the country (and possibly in the world). There are well over 2000 people in attendance, and at any given time there may be 8 or 10 different sets of talks going on simultaneously. The topics include things like "Extrasolar Planets and Sub-Stellar Companions", "Evolved Stars, Cataclysmic Variables, Novae, Wolf-Rayet Phenomena", "A Broad Spectrum of Gravitational Waves" and "Chinese Astronomy: Current Status and Future Plans". In addition, there are hundreds of "posters" set up each day on every astronomical topic imaginable, and booths from major observatories (both ground- and space-based), funding agencies, publishers, and equipment makers. It is the place to get a full sense of what is happening in research astronomy, but there is no way you can take it all in.

So in no particular order, here are a few of the most interesting things I heard about at the meeting.

1. We're safe. At least, that's what my old friend Grant Hill from Keck Observatories reported. He looked at the giant binary star system WR 104. This one made the news last year when it was reported that this system appeared to be facing us pole-on (in other word's we're looking right down on one of the rotation poles). If this was true, then when the larger star in the system ends its life (possibly within a few thousand years), it could cause a gamma-ray burst aimed right at us. Such a burst would probably irradiate our part of the galaxy and make our solar system (and the other ones around us) completely uninhabitable.

Fortunately, Grant was able to show that WR 104 is not pointed right at us. He used the Doppler shift (similar to what police radar uses) to determine that speed of the binary, and found that the stars are moving towards and away from us fast enough that they can't be pointed at us. Instead, they are pointed 30-40 degrees away. So WR 104 is somebody else's problem: we don't have to worry about it.

2. We're lucky. For over a decade now astronomers have been finding giant planets (around the size of Jupiter) very close to their stars (as close as or closer than Mercury is to the Sun). The best guess is that these planets formed in their outer solar systems like our giant planets, but they migrated inward due to they way they get pushed and pulled by the disk the planets form in.

This has made a lot of people wonder why Jupiter and Saturn didn't do the same thing, wiping out any potential terrestrial planets like Earth before they could even start forming. Ed Tommes from University of Guelph and some of his colleagues may finally have an answer.

Ed's group worked on detailed models of how giant planets form and migrate (many years ago I did a little work on one of those planet formation models). They looked at a wide range of different possibilities for sizes and types of disks and what sorts of planets would form in each, and they found some interesting trends. When the disks are fairly small there is little chance that any planet bigger than Uranus and Neptune will form: it takes too long and the disks go away too soon. When the disks are really big, giant planets like Jupiter form quickly and then they migrate in close to their stars, chewing up any potential earth-like planets along the way.

But between these two extremes there is a middle ground where Jupiter-sized planets form just before the disk goes away. This leaves the giant planets stuck in the outer solar system where they can't cause much trouble for the inner planets (except throwing the occasional comet their way): in other words, you get a solar system much like ours. So it may be that our solar system formed in this happy middle ground, and it's possible that less than 10% of solar systems are like ours in this regard.

Dave Kary

**PVAA is going to
Mount Wilson
June 20, 2009**

**Contact
Ron Hoekwater
to place your
reservation
909/391-1943**

Get info about Mt. Wilson at <http://www.mtwilson.edu/60in.php>

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We welcomed two newbies to our meeting in January, one who tracked us down online and the other who was referred by a friend. I hope they enjoyed their visit and that we see them again at future events.

We now have a date for our next trip to the 60" telescope at Mt. Wilson. We have reserved the scope on the night of Saturday, June 20, 2009. The cost per member will be \$100 each. If you have been before, you know the excitement of viewing through this huge instrument. If you have never been before, please consider joining us. It is rare to have a chance to look directly at the sky through such a huge telescope and a thrill to be in the dome where such historic discoveries were made. We usually bring some snacks and warm drinks along with plenty of warm clothes, socks and gloves in case it gets a little nippy. Lounge chairs aren't uncommon either, for those who would like a little nap as you wait for your favorite object to rise into view. Since you need to be let out through a locked gate, people don't just come and go throughout the night. There are usually a couple of trips to the gate during the night, though, for those who'd rather leave around midnight or 2 AM-ish – and, of course, there are some diehards who are there to see the sun rise in the east the next morning. Please sign up soon if you are interested, as only 25 people will be allowed in the dome.

And that's not all! Jim Bridgewater has arranged for us to have a daytime tour of the 200" at Mt. Palomar on Saturday, July 11, 2009. It is a tour just for our Club and it starts at 2 PM. The cost for this adventure is only \$5, please sign up at the next meeting – or by emailing nightwatch@pvaa.us to get your name on the list for either trip.

We're all heard the expression – when it rains it pours – and in our current dry winter we're all hoping for some decent rain, as long as it falls outside of our commutes to work and not when we're holding star parties! Well, since we are an Astronomy Club and cloudy weather interferes with our hobby, we have been fortunate to find telescopes raining upon the Club in the last few weeks. The first donation was of a 12.5" Dobsonian from Dan Newman of Mt Baldy who hadn't been using it for the last few years. The second one was a Meade Backpack Observatory donated to the Club by Steve Schultz who won it in a raffle. Both felt the Club could make good use of their equipment and we are pleased that they thought of us.

Saving the best for last, the Club is also the proud recipient of a 1965 Optical Craftsman 10" Newtonian reflector from our very own long term Club member Ray Magdziarz. In pulling some old Club records in preparation for the Club's 40th anniversary in February, I see Ray listed as a member in 1983 but I suspect his Club membership stretches back even further than that. I'm sure that the scope has many miles on it as Ray brought it to numerous star parties and public events over the years. Ray found this large instrument had been getting less use during the last few years as he took to bringing lighter equipment to events and he knew the Club would provide it with a great home. Thank you so much, Ray – and Dan and Steve – for your generous contributions to our Club. We do many public events as well as a new outreach through a member who has asked for help with some City of Claremont astronomy classes coming up this spring so I'm sure the equipment will soon be put to excellent use.

January Featured Speaker

We were treated to a brand new subject at our Club meeting this month. Bill Patton is by day is a Professor and Department Chairman at the Loma Linda University School of Medicine, with their ob-gyn Department. He is by night an amateur astronomer and a member of the Riverside Astronomical Society. One evening the Club solicited future meeting speakers from those in the audience and Bill volunteered to speak on the Physiology of Vision – and after learning about the new subject himself, he put together the presentation he shared with us in January.

The first topic Bill covered with us concerned the anatomy of the eye. The eyeball itself is filled with a gel-like substance called the vitreous humor. Within this gel are objects called floaters: remnants of cells, deposits created through changes in the eye over time, or simply leftover substances from our embryonic days. Floaters can appear as spots or threads in our field of view. Many in the audience were pleased to hear that aging can reduce the impact of these objects as impediments to our view of the night sky. As we get older, the humor becomes less dense and more liquid, allowing the floaters to settle to the bottom of the eyeball and out of our field of view. So if you have been bothered by these objects in the past, as long as you keep the rockin'and rollin' of your head under control while you are observing, you may find over time that they become less of an issue for you.

Another interesting subject was the origin of the phrase "seeing stars." While we do that all the time at our Club star parties, this phrase refers to people who see light without photons entering the eye. Far from the magic it appears to be, phosphenes are the perception of light without light entering the eye. They can be caused by mechanical, magnetic, or electrical stimulation of the retina or the visual cortex – the part of the brain at the back of our heads, which processes our vision.

One of the ways we can experience this phenomenon is for the visual cortex to receive mechanical stimulation – in other words, if you are hit in the back of the head! Rubbing ones eyes, heavy coughing, or sneezing are other common actions that can result in seeing stars. People who have been in the dark for a long period of time as well as those under the influence of drugs commonly see phosphenes as well.

All in all, I think we prefer the telescope method of stellar viewing! Thank so much, Bill for an interesting lecture on our vision and the many things which affect it.

Claire Stover

References:

<http://www.mtwilson.edu/>
<http://www.astro.caltech.edu/palomar/>
http://en.wikipedia.org/wiki/Vitreous_humour
<http://en.wikipedia.org/wiki/Floaters>
http://en.wikipedia.org/wiki/Seeing_stars
http://en.wikipedia.org/wiki/Entoptic_phenomenon

What's Up? A Mysterious Moon Madness

Many claim to have been driven mad, or loony, by the full moon. It's always a time of increased crime and moonstruck lovers. A time when mysterious shape shifting werewolves howl and vampires fly.

This full moon has many madly colorful forms. There's a rare blue moon when two full moons occur in the same month. The word month comes from the moon's cycle, and I won't even mention the mystery of female menses. The true blood moon comes at lunar eclipse. It's caused by sunlight bleeding red through earth's atmosphere, coloring its own shadow. A green cheese moon tells of a time when it was compared to an unripe (or green) circle of cheese covered with blotches. A "shine on" harvest moon comes when a full moon rises at the same time the sun sinks and extends valuable harvesting time. A golden moon is a considered a hunter's lucky moon.

The orange coloration occurs as the full moon rises, like the sun, through a thicker atmosphere. On the horizon it can be optically flattened like the sun, but most remarkable of all is its apparent magnitude as it rises over familiar hills. It's the rising "moon hits your eye like a big pizza pie" effect. Then, when it gets higher in the sky, it seems so much smaller. It's nothing new, Aristotle wrote of it in 350 B.C., but it's an illusion. That can be tested by holding an object at arms length over the rising moon and then again when it gets overhead. Unbelievably, they're the same size!

So if it's not a real physical effect, it must be psychological. The most logical answer is that the rising moon is compared to the size of large distant mountains on the horizon. But when it's overhead there's nothing to compare it with as it floats alone on a sea of black velvet. I've often thought that the rising moon is like a large, glowing golden eye appearing on the horizon. It gets our instinctive attention; it could be a big predator coming to attack us.

As a child I felt the moon held mysteries when I saw a calendar drawing of a half moon referred to as a quarter moon. Before I went mad, I discovered it meant the moon was a quarter of the way through its monthly cycle. Another loony term is often applied to the new crescent moon when it said to "hold the old moon in its arms." The dark "old moon" is illuminated by reflected earth light. But no earth shine ever falls on the back of the moon, which used to be called the "dark side of the moon." This term, like "darkest Africa", meant we didn't know what was there. Of course, the moon is a ball floating in space and exactly half of it is always illuminated. The confusion comes because the moon is "gravity locked," it spins around but always keeps the same face toward the earth.

Just watch all its craggy features rotate beneath the sun's

light: the man in the moon face, the rabbit and the frog. You can see the shadows sweep over its cratered surface swallowing up romantically named dark lava plains called maria (seas) because they were once thought to be seas. There's the Sea of Crisis, the Lake of Fear, the Bay of Rainbows, the Marsh of Dreams, the Ocean of Storms, and the Sea of Tranquillity where man first landed in 1969.

The dark side was illuminated in 1959 when a Russian orbiter circled around to photograph and name its darkest plain the Sea of Moscow. However American Apollo astronauts were the first to personally view the far side in 1968 and did their own naming of features. For a dramatization, don't listen to Pink Floyd's album Dark Side Of The Moon, but watch the movie Apollo 13 (1995).

The formerly dark side, now the far side, has relatively few dusky lava plains compared to the near side. This could be because earth's gravity pulled them in our direction back when the moon was molten. A young, molten moon was much closer to the earth. Geologic studies made by Apollo astronauts show that the moon is made of the same material as the earth. When our solar system was still forming it was torn out of the earth in a collision with an object as large as Mars.

Which brings us to the effect of the moon's gravity on earth's watery seas. In a mad dance a dry revolving moon pulls jealously at the earth's fluid seas. Twice a day tides rise and fall to the moon's gravitational call. Most maddingly the seas on the opposite side of the earth also rise as the moon's gravity pulls the earth's gravity away from them. When sun and moon combine their gravity they cause extremely high "spring tides." Also the flood and ebb of tidal currents is strongly effected by the shape of seacoasts. In funnel shaped bays like the Bay of Fundy in Canada the tidal differences can be as much as 50 feet. One can even argue that all life on earth started in tide pools created by the moon's gravity. We could all owe our existence to the moon.

The latest moon news is a successful orbiting lunar probe and impact lander, called Chandrayaan launched by India. Now India joins economically emerging Asian countries China and Japan in launching successful moon exploration programs. The Chandrayaan impact lander went down near the moon's south pole making India the fourth country to place its flag on the lunar surface. The Chinese craft orbited the moon playing patriotic songs like "My Beloved Motherland" but didn't attempt any surface touchdown.

The Indian polar impact in Shackleton Crater was important because the floor of this crater is always hidden from the heat of sunlight and could contain water ice brought by comets. The discovery of the existence of surface or sub-surface water ice could make a permanently inhabited moon base possible. The Japanese mission in 2007 took the first high definition television (HDTV) moving images that detailed new surface structures.

Rather than being simply being proud imitations of past explorations by Russians and Americans these Asian explorations contain new sophisticated instruments for probing the moon's many maddening mysteries.

Lee Collins

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Mecca Beach Star Party

There's something odd about departing for a star party in a light rain. One hundred miles to the east the forecast was for sunny skies. A mid-afternoon call to the ranger confirmed the forecast, but there was still something odd, something a little out of place about driving off in a light rain. But that's what we did.

Ron said that he and Laura were hoping to leave by midmorning and should already have a space picked out by the time we got there. My friend Frank and I left around 3:30 pm, hoping that with a short dinner stop we could arrive by dusk. The traffic was light and the clouds, as if held back by a giant hand, refused to cross over Banning Pass into the desert. With a little help from our GPS, we found the Mecca Beach campground and Ron and Laura right on time, just as the light faded over the mountains on the western side of the Salton Sea. As we set up our scopes, the sky was clear and the air was still and we could hear the water lapping at the shore not more than 50 feet away. I'm not sure what the area looks like in the daytime, but it was pretty at night with the distant shore lights reflecting off the lake and a myriad of birds flitting in and out of the shadows.

Ron brought his 22" Dobsonian and I brought my 12" Dobsonian and a 100mm refractor. This was my first time under dark skies with the refractor so we spent the first couple of hours visiting the showpieces objects such as the Great Nebula in Orion, the Andromeda Galaxy, the open clusters M36, M37, and M38 in Auriga, the double cluster, and a selection of bright planetary nebulae. Ron treated us to some very nice views of a variety of objects, from showpiece objects to very faint and

oddly-shaped galaxies. A while later I set up the 12" Dobsonian, and it was fun to compare the views through the three scopes, noting the strengths of each configuration. Of course it's always a treat to have a 22" mirror to catch photons – not many weaknesses there!

There were few other campers around so we spent most of the evening with just the four of us, enjoying nice views, good conversation, and a beautiful evening by the lake. By 10:00 pm, it was time for Frank and me to pack up and head home. Again the traffic was light and the clouds were still waiting for us at the pass. We arrived home around midnight and unpacked in a light rain, seemingly much further than the 100 miles we just drove from the nice clear skies by the sea.

Craig Matthews

email from Dan Newman of Mt Baldy - also see page 3

I'm an amateur astronomer up in Baldy Village. Did you know you can get a clear sky Cow Canyon Saddle forecast from:

<http://cleardarksky.com/c/CwSddlCAkey.html?1>

Additionally, I maintain a simple set of weather readings at

<http://mtbaldy.us/weather/>

which also includes the clear sky forecast for the saddle.

Normal to low pressure generally means good seeing as long as there are no clouds. As I'm sure you know, we tend to get pretty nasty inversion layers when the pressure is above norm.

Clear skies,
Dan Newman

Venus, Jupiter and The Moon
Taken by Raymond Magdziarz
Dec. 1, 2008 at 5:23 PM

