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nightwatch

Newsletter of the Pomona Valley Amateur Astronomers

Amateur astronomers just get better looking . . .

September meeting will be in McAlister Hall. As you enter the Harvey Mudd foyer, turn left,go thru the door, turn right and go all the way down the hall and turn right, and go about 30 yards.

Volume 23 Number 9 ***nightwatch*** **August 2003**

President's Message

Joining a club for amateur astronomers has been one of the best decisions of my life. As a member of PVAA, I have been afforded so many opportunities to enjoy this hobby which I would otherwise surely have missed. Examples are the many interesting guest speakers at the general meetings and the tours of the Big Bear Solar Observatory, Mount Palomar Observatory, and Mount Wilson Observatory in which I have been privileged to participate.

As a child I dreamed of some day having a chance to see the historic instruments of discovery of which I had read so much. To be inside the domes of these great telescopes, close enough to touch them, was a thrill, which I never expected that I would have. But, to actually have the opportunity to observe through the Mount Wilson 60-inch telescope, the first great reflector and the brainchild of George Ellery Hale, was more than I could ever have believed possible. Yet, observe with the 60-inch is exactly what I have been able to do (on multiple occasions) as a member of Pomona Valley Amateur Astronomers. This is the telescope, which at last proved that large mirrored telescopes could be successfully built and put to useful service. It is the telescope which was employed by the likes of E.E. Barnard (superb observer and cataloger of dark nebulae), Eljnar Hertzsprung (Hertzsprung-Russell diagram), Harlow Shapley (director of Harvard Observatory), Walter Adams (director of Mount Wilson Observatory), Harold Babcock (detected Sun's general magnetic field), Milton Humason (red shift / cosmic distance scale), and Edwin Hubble(red shift / cosmic distance scale),

The celestial knowledge that I have gained, the observing lessons that I have learned, the opportunities for astronomical adventure, and the wonderful people that I have met in PVAA have made my club membership one of the most rewarding investments of time and (a paltry amount) of money that I could ever have made. I wish to thank the members of our club (past and present) for having made all of this possible.

Ron Hoekwater

PVAA e-mail

The club would like to have the e-mail addresses of those members interested in being informed of events which occur at times which are not able to be put into the newsletter. Those interested in getting this information, send your e-mail address to Ron Hoekwater at **astro.ron@juno.com**

PVAA Events Calendar

Month	Star Party	General Meeting	Board Meeting
September	**27**	**12**	**5**
October	**25**	**10**	**2**
November	**22**	**7**	**13**
December	**27**	**12**	**4**

August General Meeting

Announcements

We still may have a few spaces on our September 3rd trip to Mt Wilson. If you get this newsletter before the third, call Ludd and check.

Two visitors came to our meeting and joined the Club – Mike Walker and Kristina Richardson. Please make them welcome.

What's Up this month featured the area of the sky around Sagittarius, where the center of our galaxy is located. While the center itself is not much to see and is thought to contain a black hole, the surrounding skies are full of nebula and star clusters. It is a very rewarding area to explore.

Featured Speaker

While our speaker, Bob Mortimer, is a geologist, his interests range far and wide – from the effects of volcanic activity on our weather to amateur solar observing. He spoke to us on the latter topic, sharing some of the challenges and solutions to observing such a large, hot, active object.

One of the difficulties of solar observing is in trying to see the "trees for the forest." So many motions are going on simultaneously on the sun that it is difficult to see any detail in what is being observed. Astronomers deal with this by observing only a small piece of the spectrum. For example – hydrogen alpha is one element present in the sun that is often observed. The spectrum showing this element in the sun takes up 3-4 angstroms (10 to the -10^{th} meters). Even looking at just this single element gives us a view of way too much activity to see any detail so filters are designed to see only a small part of the range of hydrogen alpha. The filters Bob is using range from .1 - .4 angstroms so he can see details by observing just the activity taking place in this small piece of the spectrum.

Another challenge in solar observing is to make sure the filters select only for the desired wavelength. Light is selected or rejected by the filter based on the spacing between the elements of the filter. Therefore, only light entering exactly perpendicular to the filter "sees" the desired spacing between the elements and is transmitted through. If light reaches the filter at an angle, the distance between the elements of the filter will be different and the light won't be seen. A different wavelength will be transmitted instead when it encounters this different spacing in the filter.

The problem, then, is to ensure that only parallel light, that is perpendicular to the filter, reached the filter. Due to the expense of these solar filters they are placed near the smaller eyepiece of the telescope rather than where the light first enters the scope. The light is made parallel by first passing it through a Barlow lens and then through a negative (concave) lens. The resulting light enters the filter in a perpendicular beam that is then correctly filtered for the selected wavelength of light. Our thanks to Bob for making a complex subject understandable, as many of us stretched back in time to high school and college Physics classes to recall the behavior of light.

Claire Stover

PVAA 24 HR. Hotline.
Get the latest news on the star party, club meetings, special events and astronomy happenings.call **909/596-7274**

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PVAA Observes Mars Through 60-Inch Telescope

On September 3, 2003, PVAA members enjoyed a rare and wonderful opportunity to observe Mars through the historic 60-inch telescope on Mount Wilson, during one of the best ever oppositions of the red planet. (Opposition is when Earth, in its orbit, catches up with Mars in its orbit, such that, as viewed from above the plane of the solar system, all three bodies are temporarily on a single line. At opposition Mars is opposite the Sun in Earth's sky.) Mars comes to opposition approximately every 26 months and close oppositions occur every 15 or 17 years. However, the closest oppositions have, for observers, often turned out to be the worst due to planet wide dust storms, which obscure all surface features. This is because when Mars is at its closest to Earth, it is at its closest to the Sun as well. More energy is being put into the weather system.

25 PVAA members (the maximum number of guests allowed in the dome) signed up in advance. Some were brand new members making their first trip up to Mount Wilson. Others were long time members that, having made numerous trips to the location of the discovery of the speed of light and the expansion of the universe, couldn't resist the offer of a night at the eyepiece of the 60-inch telescope, trained on Mars. (Although Los Angeles keeps it from ever being a truly dark sky site anymore, Mount Wilson has some of the steadiest and most consistently good seeing of anywhere in the world.)

Nearly 100 years old, the 60-inch telescope is a marvel of early 20th century engineering and the second of the four great telescopes built through the efforts of George Ellery Hale. The others are the 40-inch refractor at Yerkes Observatory, the 100-inch "Hooker" telescope at Mount Wilson Observatory, and the 200-inch "Hale" telescope at Mount Palomar Observatory. At the bent Cassegrain focus, the F/30 60-inch telescope is a superb instrument for planetary observing.

In addition to Mars it was hoped that we could get in some lunar observing. Unfortunately, this time of year the first quarter moon was too low in the southern sky for viewing. Mars would not be high enough to start viewing until about 11:00. So, we started off by looking at a double star, Alpha Herculis which looked somewhat like a fainter, closer Albireo. The great globular cluster in Hercules, M13 was spectacular. It filled the entire field of the eyepiece. And the cat's eye nebula was quite a treat in the 60-inch.

We were a diverse group with a wide age range among the PVAA observers. Claire's daughter, Lucy was the youngest at 12 years of age and some were in their 70's. But whether young or not so young, all had a good time. All 25 people that signed up for the outing were in attendance with Bill Vaskis and Ken Allen the last to arrive at about 9:30. It was great that everyone was able to make it, as this was a night not to be missed. PVAA provided snacks and beverages, paid for out of the funds from the attendees.

Then the telescope was redirected to the featured object of the night. Mars was great! And the seeing improved as the night went on. By 1:00 AM I was seeing detail on the planet that I had never seen before. The South polar ice cap was showing us hints of the intricate formations that one can see in the Mars Global Surveyor / Mars Orbiter Camera image taken in 2002. (See: http://www.msss.com/mars_images/moc/4_27_00_spcap/) Jeff Felton believes that we were seeing Valles Marineris, the "Grand Canyon" of Mars. (See: http://www.msss.com/mars_images/moc/themes/MARINERIS.html) Both Kristina Richardson and Jeff Felton made drawings of Mars as they each saw it. And there was a lot to draw! We could even see Mars' two natural satellites, Phobos and Deimos. For many of us, this was the first time seeing the moons of Mars.

Later we looked at the Ring Nebula (M 57) and the Little Dumbbell (M 76). As morning approached, Saturn rose into view. What a great way to end the night. The rings of Saturn (a favorite among experienced and novice observers alike) were a sight to behold and one could actually make out the disk of Titan.

A substantial portion of our number stayed until the morning twilight, even though some of us had to work in the morning. The objects observed were that captivating. Almost immediately upon leaving the observatory grounds, we were wondering how soon we could return to the magical dome that houses the majestic and venerable 60-inch telescope on top of Mount Wilson.

Ron Hoekwater

Bob Stephens to Speak at September Meeting

The speaker at our September 12th general meeting will be Bob Stephens. Bob is a member of the Riverside Astronomical Society and is one of the people principally responsible for bringing us Astronomy Expo (the Riverside Telescope Makers Conference) every year. Bob is an avid amateur astronomer and has

spoken to PVAA several times. He has done variable star observing, and extensive CCD imaging to determining asteroid and variable star rotational periods. He has traveled to Mexico, Bolivia, India, Asia Minor, Africa and Australia to observe solar eclipses. In 1997 he was chosen to receive the G. Bruce Blair Award from the Western Amateur Astronomers for his years of contribution to amateur astronomy. In 2002, Asteroid 1998 FA3 was named (39890) Bobstephens.

Bob will be speaking about the observatories of Arizona.

August Star Parties

We took advantage of Mars' close approach and have held a couple of sky watching events lately. On August 21st we were at the Ontario Public Library. We gave four planetarium shows for 20-30 people each using Star Lab – a portable, inflatable igloo-shaped room you crawl inside to observe stars projected on the ceiling. Turning up the stars inside never failed to produce oohs and ahs from the mostly under 10 audience. I covered the Big Dipper, North Star, and Milky Way along with the difference between planets, stars, and galaxies. After the indoor show, they went outside where Joe Hillberg, Lee Collins, Ron, and Chris Hoekwater had telescopes set up. Frank Busutil was there too, with sky object photos and video he had taken. While we have certainly observed under darker skies, the public was impressed with views of objects they'd never seen before through a telescope – Alberio, the Ring Nebula, and Mars.

Then, on August 28th, we put on our show again at the Barnes and Noble in Rancho Cucamonga. This time we drew a crowd of several hundred plus scopes from Paul and Leah Benadum and Mike, along with Joe, Ron, and Frank. Roy Schmidt assisted with tales about early Mars observers and the theories they had for what they saw. The sight of telescopes out only one day after all the opposition publicity had not only Bookstore and Starbucks patrons stopping by but both walking and driving passersby joined the lines to view at the telescopes. Several expressed interest in our Club and all appreciated our educational outreach as well as the telescope viewing. Keep an eye out for new faces at our meetings. I think we are connecting with more people interested in learning about our hobby and who may join us again in the future.

Claire Stover

STAR PARTY

The September 27th star party will be at **Cow Canyon Saddle.** To get there, go up Mt. Baldy Road just into Mt. Baldy Village, and turn left to Glendora Ridge Road and go up until the road levels out. Parking and the star party will be in a large open area on the right.

August Star Party

Nearly a year after the fire, the Glendora Ridge Road has reopened, allowing access to our closest star party site, Cow Canyon Saddle. Considering its proximity to the city, Cow Canyon Saddle can be surprising dark when the conditions are right. All that is required is a fog or low clouds in the valley below. In August neither fog or nor low clouds are a likely prospect, but as we went mainly to observe Mars at its closest opposition in thousands of years, this did not matter. Nearly at magnitude –3, Mars would be plenty bright enough to see.

When I arrived at "the Saddle" Jeff Felton, Larry Pall, Rick Ault, and my brother Chris were already there. (If I forgot anyone, I apologize.) I selected a spot that appeared reasonably level and set up the Starsplitter. Soon it was dark. Until about midnight, there was a steady stream of the interested public at every telescope. The seeing wasn't that good until after midnight anyway. After the crowds died down, on cue the atmosphere really steadied up. From about midnight until nearly 3:00 AM Mars was the center of attraction. A little before 3:00 some clouds rolled through. When Mars reemerged the seeing was greatly deteriorated. I decided to pack up and catch a few hours sleep. (That is a great thing about Cow Canyon Saddle. It is only about 30 minutes from home.)

Mars was so good from this site, above Baldy Village, that on Tuesday night several of us (including Ludd Trozpek and Bob Akers) returned for more. Again the public thronged. This time we met some employees of the Claremont Colleges. (Alper Ates had informed them that we would be there.) The seeing was about like Saturday night and once again, we all had a great time.

Our next star party is September 27th and again it will be at Cow Canyon Saddle. I hope many of you will be there. ***Ron Hoekwater***

Planetarium Shows at Pomona College

Beginning in October, on the 2nd Tuesday of the month during the school year, the Millikan Hall planetarium will be giving shows on various astronomical subjects. The planetarium is equipped with a new star projector, and multimedia prjectors. Bryan Penprase, professor of astronomy at Pomona College will make the presentations.

The talks will begin at 8 PM. If weather permits, the Bracket observatory will be available for viewing after the talks.

Member and (non member) Opinion Poll

The results of the following opinion poll will be published in the next newsletter. You can mail your vote to:

PVAA
P.O. Box 162
Upland, CA 91785

Or, you can bring it to the next meeting. If you forget to bring it, don't worry; it will be handed out at the meeting for those who wish to wait. Please vote only once and you may make copies for any others that you know that may want to vote. The more the merrier.

Question: Do you believe that there is life in any form in the universe other than on earth?

- **Absolutely. I am certain of it. What a stupid question.**
- **Likely. I am not certain but think that it is probable.**
- **Possible. I think that there is a 50/50 chance of it.**
- **Not likely. I am not certain but think it is not probable.**
- **Absolutely not. No way. What a stupid question.**

Comments:

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Name (Optional): _____

Also, if you have a favorite star party site or would like to suggest one, please give a description here.

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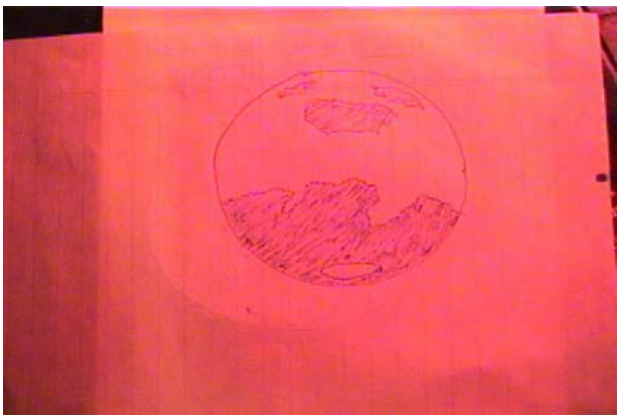
The PVAA at Mount Wilson on September 3rd,

The truss tube of the 60 inch reflector



A sketch of Mars, done by Kristina Richardson

Mars above one of the domes at Mount Wilson

Two photos of the PVAA group at twilight listening to the docent telling all kinds of stories regarding the telescope

A list of the objects observed with the 60 inch.

Double star,Alpha Herculis
The core of M13, globular cluster
Cat's Eye Nebula
Mars
Ring Nebula M57
The Small Dumbell nebula M76
Double star Gamma Andromeda
Spiral Galaxy M77
Saturn