nightwatch
Newsletter of the Pomona Valley Amateur Astronomers

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

Volume 29 Number 8 ***nightwatch*** **August 2009**

President's Address

Well, here it is August already. The summer is half over. But we still have plenty on our PVAA calendar before autumn arrives. First, we have elections at our August 7th meeting. Be sure to vote. Also it is not too late to nominate more candidates.

We have two scouting / astronomy events coming up. For the umpteenth year (give or take a year) we will be doing "Nature at Night" with the Girl Scouts. Every year we have a great time at this event. This year it will be at Skyland Ranch on Hwy 243 south of Banning in the San Jacinto Mountains. The date is Saturday, August 15th. This is a good site for a star party, away from city lights, so come prepared to have fun. The Scouts provide food and a place to sleep. On Tuesday, August 18th we will be at Mountain View Park in Chino showing the sky to Cub Scouts. Please be there, if you can, with a scope or binoculars by 7:30.

On Wednesday, August 19th we will have our night on the 60-inch at Mount Wilson. This gives those of you who didn't sign up for the first session a second chance.

We are unlikely to get the perfect conditions we were hoping for in June for our August visit, but on the plus side the night will be longer and it is unlikely that weather in August will force us to reschedule again. Another plus is that Jupiter will be just 5 days past opposition making this an excellent time to observe the "king of the planets." Perhaps the new "spot on Jupiter" will still be visible. Uranus and Neptune will both be close to opposition as well. Mars will not be ideally positioned, but it will be observable. Faint Pluto will be in the very crowded constellation of Sagittarius, but we should be able to see it if it can be picked out of all those stars. We will also be able to observe colorful stars, double stars, and bright planetary nebulae. Don't miss out. Sign up at the July and August meetings.

Our club star party for August will be at a site we haven't visited for a few years, Angelus Oaks. We meet at the helipad above the village. Upon entering Angelus Oaks turn left off of Hwy 38 into the little business complex. Continue past the restaurant, post office, and real estate office. Take the dirt road up the hill. Whenever the road forks go to the left. The road will dead end at the helipad. An adventure pass is required to make the Forest Service people happy.

Finally, I'd like to mention that our Griffith Observatory star party was attended by hundreds from the public. Thanks to all who helped to make this a big success.

Ron Hoekwater

Road Trip

On Saturday July 11, the P.V.A.A club went on a tour at Palomar Observatory. We were able to see inside of the 200 inch telescope and how it works. Our tour guide talked about the history and current research of the big telescope. The massive steel beams that holds up the telescope was something to see. The finished dome is 135 feet tall, and 137 feet in diameter. The dome weighs approximately 1,000 tons with plate steel exterior, and aluminum panel interior, they are separated by 4 feet to allow for dome venting. Two 125 ton shutters, cover the opening. It opens at night to let light through the slit and into the dome. The weather was great, in the low 80,s with clear skies.

Jim Bridgewater

Club Events Calendar

August 7, General Meeting - Speaker Greg Lyzenga, Geophysics Professor, Harvey Mudd College on Asteroid Occultations
August 15, Girl Scout Nature at Night - Skyland Ranch
August 18, Cub Scout Star Party - Mountain View Park 7:30 pm
August 19 Rescheduled Mt. Wilson trip
August 22, Star Party - Helipad at Camp Angeles
August 26, Ontario Library Main Branch, 7 – 9 PM
August 27, Board Meeting

September 4, General Meeting - Michael Janssen of JPL on the Juno Mission to Jupiter
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 in Claremont 9 -5
October 24, Star GATE at Townsend Jr. High School in 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, Board Meeting

Demon Star is Guide to Galaxy Cluster

Galaxy clusters are among the most fascinating of celestial wonders to observe. But they can be difficult to see and therefore difficult to find, especially in a modest sized scope. During my most recent visit to Grandview Campground in the White Mountains I observed a galaxy cluster that I would like to tell you about.

In 1958, the astronomer George Abell, who incidentally began his astronomical career as a tour guide at Griffith Observatory, published his catalog of 4000 northern hemisphere galaxy clusters. One of these clusters is Abell 426 located in the constellation Perseus. (This time of year Perseus is best observed in the morning before dawn, but in the winter it can be observed in the evening after twilight ends.)

Abell 426 is a cluster of about 500 members located 250-350 million light-years away, depending on the source you choose. It contains more than a dozen members brighter than magnitude 14. These would potentially all be visible in a 10-inch scope at a good dark sky site. A larger scope would reveal many more.

The brightest member is NGC 1275 (mag. 11.9) a Seyfert galaxy and the second brightest radio source in the sky. Abell 426 is the brightest galaxy cluster in the x-ray band. But, since most of us can't see radio waves or x-rays, how does one find Abell 426?

This is where Algol the "Demon Star" enters the picture. Algol is a magnitude 2.1 star, the second brightest star in Perseus. As a little background, it was the first eclipsing binary star discovered and is associated with the head of Medusa in mythology. Every 2.867 days it drops from a second magnitude to a barely third magnitude star, giving it the reputation of an evil or unlucky star.

But in this case it is a lucky star for us as it lies just to the west of Abell 426. That's right, all you have to do is find Algol, then move your scope 2 degrees east, just slightly north and you will be looking at NGC 1275. NGC 1275 is near the center of Abell 426. See how easy it can be to look at a distant galaxy cluster.

So next time you are at a good dark sky site give Abell 426 a try. It is well worth it.

Ron Hoekwater

PVAA Board

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Vice President ..Joe Hillberg.....909/949-3650
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Directors
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Election Time!

While the current PVAA Officers and Board Members have all agreed to run for re-election please don't feel this slate is a slam dunk. The current board would surely appreciate new talent and ideas and it is fun to help plan the direction for our astronomy club. It you would like to assist in running your club there are many opportunities – both on the Board and off of it. Members are always welcome at all board meetings; feel free to join us to see what running the club is all about. Please nominate yourself or another member if you would like to be considered for a position.

Please bring your ballot to the August 7th meeting to vote.

July Featured Speaker

Club members enjoyed our adaptive optics talk from Professor Phillip Choi of Pomona College since many of us had no more than a rudimentary grasp of how this method of image enhancement actually works. While members had all seen the before and after photos of objects taken with this technique we left the lecture much more informed about the history of image improvement and the technology of AO.

Telescope makers face many challenges as they work to provide us the best possible view of the heavens. Accurately ground mirrors, strong support structures, reduced gravitational deformity, and precise collimation have been key improvements. More distant objects can generally be seen in larger telescopes, yet as the mirrors increase in size, so do the issues with image quality. New types of glass have reduced the effect of temperature variations, and the white mushroom-looking domes common to observatory hilltops shield the instruments from heat and wind.


http://www.bbso.njit.edu/Research/Halpha/ima/midi_img.jpg

Once all these improvements have been made, we are still left with the impact of Earth's atmosphere as it distorts the light coming to us from space. While Hubble and other space instruments can eliminate this problem by placing our "eyes" above the atmosphere, this solution takes vastly more money, not to mention lead time, to place a telescope in orbit rather than on a mountaintop here on Earth. Then along came adaptive optics, which works to correct for the distorting affect of our blanket of air. Interestingly enough, one of first uses of this technology was to help doctors image the inside of the human eye through its mainly clear inner fluid, the vitreous humor. Just as in large optical instruments, imperfections are introduced when viewing our small personal instruments as light travels through the humor from the eye's interior. The same technique – measuring the light wave front aberration and then using deformable mirrors and a computer to rapidly correct for the errors – is also now used in many large telescopes to correct images of stars and galaxies. A guide star of magnitude 12-15 or greater near the object being observed acts as a reference for the AO system so it can measure and correct for atmospheric distortion. The closer the guide star to the target object the more accurate the image. Since stars of this magnitude are relatively uncommon, a laser beam shining from the telescope toward the area of observation excites molecules and atoms in the air and can also be used as a guide.


http://picdumidi.org/science/t%E9l%E9ph%E9rique-H.jpg

While most astronomers' attention is captured by images taken by our Earthbound and orbiting observatories, sometimes the observing equipment itself is just as amazing. We have recently seen many images of the Hubble Space Telescope as it was repaired during a recent space shuttle visit, and those of us participating in recent PVAA field trips have visited both the Mt. Wilson and the Mt. Palomar observatories. As impressive as this equipment was, I have another facility I'd like to share.

If you enjoy bike riding, perhaps you have enjoyed watching the Tour de France, which ran from July 4th – July 26th. During stage 9 of the 21 days of racing the riders climbed through the Pyrenees. Atop one of the mountains at a height of 9,439 feet is one of the most dramatic observatory settings I've ever seen, the Pic du Midi Observatory. Construction began with a modest weather station in 1873 and 5 years later the observatory was begun. An 8 meter dome, the Baillaud cupola, was finished 30 years later in 1908. Much of the materials were transported to the mountaintop by mule, just like was done at Mt. Wilson. When the bike race helicopters flew by they provided a stunning panoramic view, and made our family wonder how in the world scientists reached the telescopes on the top of such a steep mountain. The answer is an aerial tramway which has been used since 1952 and ferries people and equipment up the slopes. The ride takes only 15 minutes - talk about an exciting commute to work! There is even a tie in with the 40th anniversary of the first moon landing, as the Observatory assisted in precise mapping of the lunar surface in preparation for the Apollo missions. And here's a link to a video of some views of and from the mountain. You are on your own to translate the French language slides but the pictures are well-worth watching in any language.

http://www.dailymotion.com/video/x90br1_grands-sites-de-midipyrenees-pic-du_travel

Claire Stover

References:

http://en.wikipedia.org/wiki/Adaptive_optics

http://cfao.ucolick.org/

http://www.eso.org/projects/aot/

http://en.wikipedia.org/wiki/Pic_du_Midi_de_Bigorre

http://www.picdumidi.com/web/en/151-history.php

What's Up - A Scorpion's Head & Cosmic Changes

An ancient pre-telescopic belief that the cosmic sky was unchanging is far from true. Consider the star Delta Scorpii or Dschubba (forehead) in Scorpius the scorpion. In the last few years it has unpredictably changed from 2nd magnitude to 1st magnitude.

Dschubba is a hot giant star rotating rapidly and occasionally flinging flaming mass from its equator. It's accompanied by a companion that orbits as close as our planet Mercury. It addition it has another companion with a highly eccentric orbit that brings it near its giant primary every ten years. It's no wonder that such an weird system is experiencing a full magnitude flare up in brightness.

Scorpius, with its hook-shape and its two "stinger" stars (also called "cat's eyes") is one of our brighter constellations. It's seen to be in an ongoing battle with that other bright constellation Orion. Legend has it that the two battled so long that they were banished to opposite ends of the sky where they would never see each other. At Scorpius' heart is the 1st magnitude red giant Antares, named the anti-Ares as it is easily mistaken for the red planet Mars. Near Antares is an easy-to-find close globular cluster, M4. It's is one of a large number of globular clusters that are gathered near the galactic center. Here's an open cluster M7, which is so bright it was mentioned by a classic pre-telescopic astronomer, Ptolemy. The greater galactic center area is rich not only with globular clusters, but with open clusters, double stars, and huge gaseous emission nebulae.

Slow cosmic changes have been observed over the years in the gaseous cloud formations of Scorpius' neighboring Trifid (M20) and Lagoon (M8) nebulae.

But it was in 1604 that the most explosive of cosmic changes happened nearby in the constellation of Ophiuchus (the serpent bearer or doctor). It was then that pioneer astronomer Johannes Kepler spotted the sudden appearance of a dazzling new star. He had to invent a new word, nova (meaning new) to describe this obvious proof that the cosmos was constantly changing. Kepler could only wonder if maybe these nova stars flared up unobserved all the time. But no supernova in our galaxy have appeared since 1604.

The subject of change is also relevant to the shifting procession of the Earth's wobbling axis. Through the centuries it has altered the position of the ecliptic path of the Sun as it passes through the astrological Zodiac. Astrology operates as if it only passed through twelve signs or constellations. But today it has changed to pass through a thirteenth, Ophiuchus. People born under Ophiuchus could be doctors with snake-oil cures. How sad that antiquated astrology hasn't kept up with changes in the cosmic order.

Another example of striking changes, at least in the daily cosmic order, is the recent total solar eclipse of July 22. A long (maximum totality of over 6 minutes) eclipse it was probably seen by more people than any other eclipse in history.

Sweeping across much of Asia, the shadow of the Moon blocking out the Sun brought out a variety of superstitious reactions. Especially in rural areas many traditions held the eclipse to be either very good or very bad.

Some villagers felt viewing it would improve their fate in the afterlife. But most felt a sudden shadow of darkness could only be a bad omen. Many discouraged food preparation or marriage during the eclipse day. Pregnant women were urged to retreat to a darkened room and pray for the health of the unborn child. Many performed religious rituals during this shadowy change in sunlight. Astronomers, of course, traveled far to see the awe-inspiring totality as it moved across India, Nepal, Burma, Bangladesh, Bhutan, China, Japan, and the Pacific Ocean.

Another totally unexpected cosmic change occurred during July when (what was probably) a small asteroid, impacted the planet Jupiter. First spotted by an amateur Australian astronomer, it gave professionals a chance to test the recently serviced Hubble telescope. The resulting photos show a sea-sized burnt black hole in Jupiter's colorfully clouded surface. Another proof that cosmic changes are ongoing and can occur in an instant.

Lee Collins

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 or RAS on September 18-19 or 25-26.

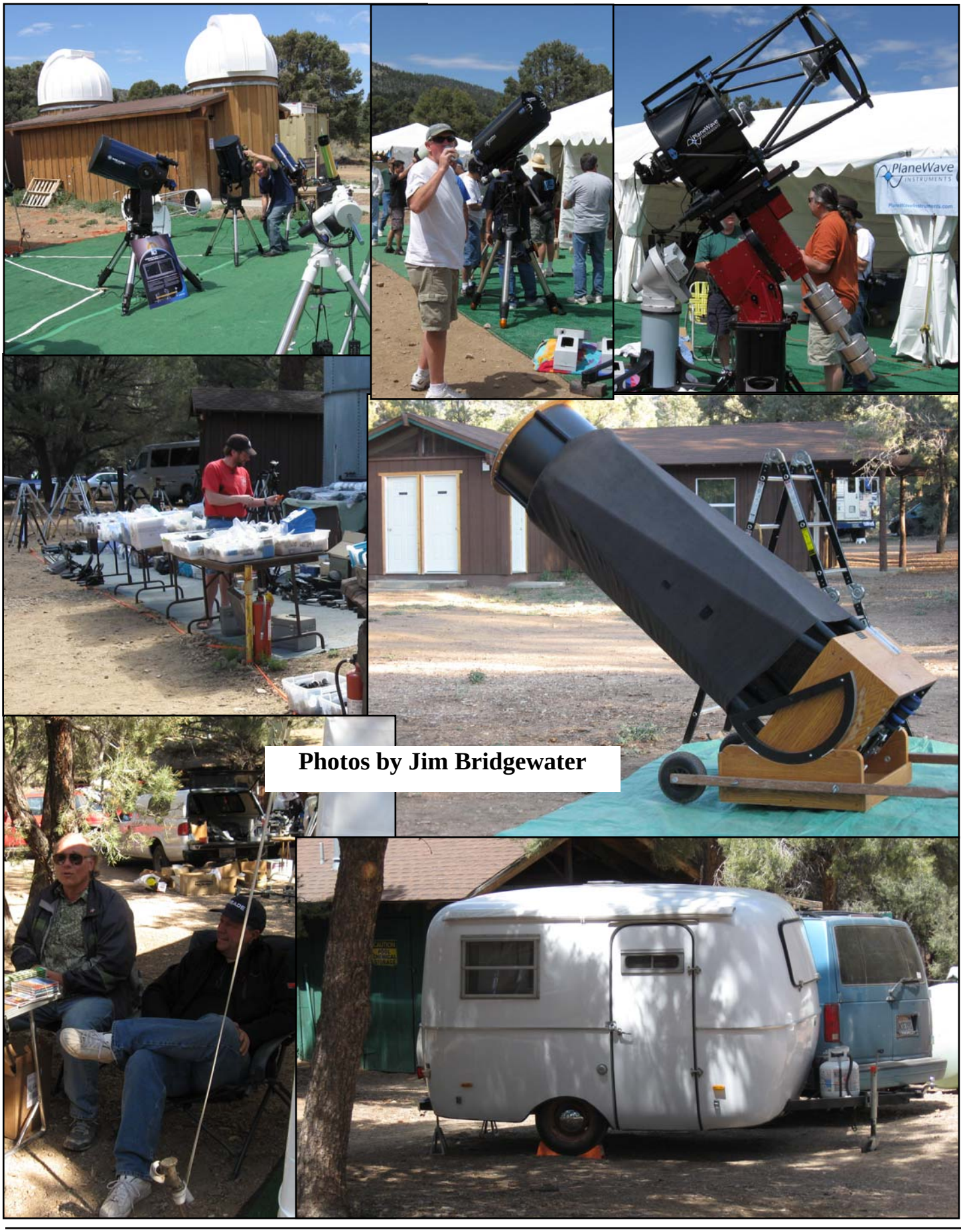
Can't decide if you want to observe thru the 60-inch at Mount Wilson?

There are a few spaces available for August 19th

Contact Ron Hoekwater for details

Presale PATS Tickets

Tickets are available for $15 for the second annual Pacific Astronomy and Telescope Show on September 26th & 27th. They are good for either day and will be $20 at the door. Contact Ludd before you go.



Photos by Jim Bridgewater

Photos by Jim Bridgewater

Photos by Jay Master

Mount Palomar Tour
July 11, 2009

Santa Fe Dam
Recreation Area
Star Party July 31, 2009

Photos by Ron Hoekwater

Ray Magdziarz with his Optical Craftsman 10 inch Telescope

Photos by Ludd Trozpek

PACIFIC ASTRONOMY AND TELESCOPE SHOW

PASADENA CONVENTION CENTER
September 26-27, 2009

ELECTION OF PVAA OFFICERS

Rules for voting

Once again it's election time for the Pomona Valley Amateur Astronomers**.** The board asks that you mark your ballot in the prescribed manner so that it might be counted. Your ballot is important as it will help decide the next slate of officers. Select the nominee of your choice by marking an "**X**" in the appropriate box, and on unapposed nominees mark each office with an "**X**" in the yes box to elect the nominee or a n "**X**" in the no box to reject the nominee. Remember every ballot carries the same weight in this election.

Please follow the rules accordingly so that your ballot is validated and counted in the election. Ballots will be distributed in the August newsletter to the membership eligible to vote (according to paid dues). Additional ballots can be obtained at the general meeting in August. In the event that a member submits more than one ballot, the last ballot received by the treasurer prior to "closing of the polls" will be counted with all previous ballots being destroyed. Any ballots submitted at the August meeting will supercede any mailed ballots with the mailed ballots being destroyed prior to counting.
Each ballot must be returned to the treasurer of the P.V.A.A. either by mail (as described below) or by personal delivery at the August meeting. Nothing is to be written on the ballot other than selection markings.
Do not sign the ballot or add any additional notes or comments or the ballot will be declared invalid.

Ballots returned by mail must be sent to: P.V.A.A.

Attention treasurer
P.O. Box 162
Upland Ca 91785

Official ballot of the Pomona Valley Amateur Astronomers for the term of officers 2009-2010

		YES	NO
President	Shall Ron Hoekwater be elected President of the P.V.A.A.—	☐	☐
Vice President	Shall Joe Hillberg be elected Vice President of the P.V.A.A—	☐	☐
Secretary	Shall Claire Stover be elected Secretary of the P.V.A.A.——	☐	☐
Treasurer	Shall Ludd Trozpek be elected Treasurer of the P.V.A.A.——	☐	☐
V P Facilities	Shall Bob Akers be elected V P of Facilities————————	☐	☐
Board members at large serving a two year term			
	Shall Jim Bridgewater be elected as a board member at large	☐	☐
	Shall John Stover be elected as a board member at large ——	☐	☐

PVAA Membership Renewal for September 1, 2009 to August 31, 2010

_____ $30 - Individual Membership
_____ $40 – Family Membership
_____ $12 – Student Under age 18 Membership

Name: _____
Email address for Newsletter delivery:_____
Address: _____
City: _____ State: ____ Zip:_____

Please send check payable to PVAA to:

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Thank you for your continued membership!