PAStimes

Phoenix Astronomical Society
www.pasaz.org

October 2013
Volume 65 Issue 2

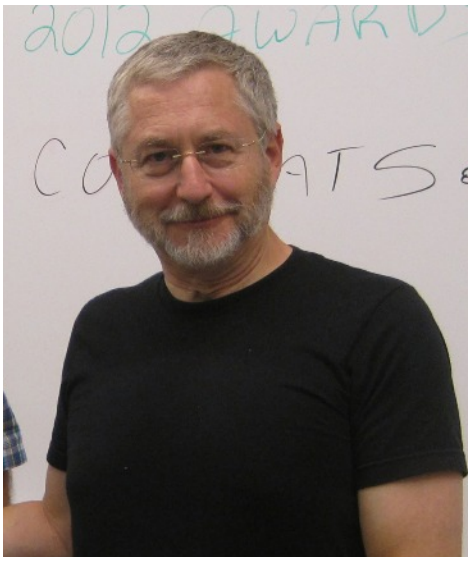
PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

What's Up? The Night Sky & Basic Celestial Mechanics

By Eric Steinberg

"Ecliptic", "Declination", "Precession", "Zodiac", "Azimuth", "Sidereal" …. If you're involved in Astronomy, you've most likely heard some of these words, but might not be totally clear on what they are and how they relate to the way we observe the skies. Why do we see the skies the way we do? How do we map them and find objects to observe? Why do the skies change through the year? Do the skies stay the same or change over the years? Join us at the October 3rd PAS meeting for an interesting lecture by Eric Steinberg called "What's Up? The Night Sky and Basic Celestial Mechanics." You can get answers to these questions and a clearly explained picture of what we see in the heavens and why.

Eric Steinberg is a PAS member and avid astronomer. Fascinated by science and how things work from childhood, he began taking household items apart at the age of 3, and by 6 had begun to figure out how to put them back together again. Eric has a BA in Biology/Pre Med from Rutgers College and an MS in Computer Science from Polytechnic Institute of New York. Especially interested in astronomy, he found the light pollution and heavy tree cover of New York to be frustrating enough to stick to "textbook" observing. On an early winter morning jog after arriving in Arizona, he looked up at the sky and had the sudden powerful feeling of being among long-lost friends – and that it was time to start some real observing. These days, Eric can be seen regularly at star parties or in the deep desert with his automated 22" Dobsonian scope. He lives in North Phoenix with his wife and two cats.



Eric Steinberg, PAS Member. Photo taken by Terri Finch.

September PAS Meeting Review

By Terri, Event Coordinator

We had a great speaker line-up for the September PAS meeting. We opened the meeting very briefly, in fact, it was so brief, we started about 7:35pm with the first Guest Speaker.

Earl DeLong did a fantastic presentation on the Perseids Meteor Shower. It was intended for another event but never got to be used, so I asked him to present it at the PAS Meeting. And it was awesome! Very informative, with some humor, and very well organized. Thank you Earl!

Then we had Alex Vrenios who brought a DVD "Magnificent Desolation: Walking on the Moon." Alex writes: "This is a light hearted look at the Apollo Moon landings narrated by Tom Hanks. It runs 40 minutes." This was very enjoyable, informative, and interesting. Thank you Alex!

And for the final speaker of the night, we had Neil Christianson with 3 mini presentations on video of "What the Ancients Taught." This version had more religious discussion than most of us would have liked, however, it was very interesting. Thank you Neil!

The meeting closed at about 9:40pm, but some of us stuck around in the room until 11pm to discuss things and catch up after a long summer away from our PAS friends. See you at the next meeting on Oct 3.§

"Perseids Meteor Shower" by Earl Delong, PAS Member

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October PAS Events

By Terri, Event Coordinator, RVSP to: Events@pasaz.org

Oct 1: CTCA (Private) 7pm to 9pm. RSVP with Joe. PAStimes Star Tour Members only.

Oct 3: PAS Meeting 7pm to 10pm PVCC Main Campus LS-201. Bring a snack to share. Water provided by President Bruce. Bring a friend! Everyone welcome!

Oct 5: Estrella Observatory Star Party (private) 4:30pm Potluck, 6:30pm Star Party. RSVP is with Yves and on the PAS Calendar for this event. Sign up on PerfectPotluck.com & bring your scope!

Oct 5: Dark Sky Antenna's Star Party (Private) Event begins at sundown and goes to dawn. RSVP is with Eric for this event. Bring your own everything.

Oct 11: School Star Party, see PAS online calendar for details.

Oct 12: Astronomy Day at Mike's in Carefree. Potluck at 5pm, observing at 7pm to whenever. Open to everyone. RSVP is required with Mike. See website for more details. It is also International Observe the Moon Night, so bring your binoculars & observe the Moon with PAS.

Oct 13: Bookmans FREE Telescope Workshop. 3:30-5:30pm. Please RSVP Events@pasaz.org by noon the day of the event. Bring something to take notes with, your telescope, accessories, questions. RSVP is required. When you RSVP, leave your name, and the make and model of the telescope you need assistance with.

Oct 15: CTCA Back up date for Oct 1.

Oct 17: Free Telescope Workshop and public Star Party at PVCC main Campus - 32nd Street & Union Hills- 7pm to 10pm. RSVP is required with Terri Events@pasaz.org. When you RSVP - leave number in your party and make & model of the scope you are seeking help with. This is also a good class to attend to get ideas on what type of scope you should purchase. RSVP for the Workshop, the Star Party or both.

Oct 19: (Private) Movie: Europa Report at Eric's home in N. Scottsdale. Seating is limited. RSVP is on the PAS website or through Terri Events@pasaz.org. Snacks will be provided by Eric, with a donation of $1 per attendee. Movie starts at 7pm. Read about this event in the PAS Calendar online to be sure you know what to expect. PAS Members only.

Oct 22: Orionids Meteor Shower Peak - a meteor shower can be seen from 5 days before to 5 days after the Peak date. Enjoy the **view.**

Oct 24: Black Mountain Campus (BMC) Public Star Party 7pm to 10pm. RSVP is with Terri. Bring everyone you know! Black Mountain campus of PVCC is located at 60th Street and Carefree Hwy, S.W. corner. Awesome dark sky location!

Oct 26: Mike's Halloween party (Private - PAS Members only). Potluck is at 5pm. 6pm for the Star Party to being. Halloween Costume Contest voting will be at 7:30pm - come dressed to win!

See more details on this event in "Five Upcoming Events to Plan For" article in this issue.

Oct 30: ASU West star party. This is not a PAS event but PAS assists at this event every year, 2 times a year. RSVP is with Paul, so check the PAS Calendar to RSVP. Drop an email with Terri if you plan to attend, just so she knows how many scopes and vehicles we have to accommodate up on the hill. Event is from 7pm to 9pm. This event is very worth your time and we always have a great crowd in attendance.§

Many Many Thanks to Eric!!!

By Terri, Event Coordinator

Two weeks before our October meeting, our scheduled Guest Speaker, Rick, emails me to say that he forgot all about doing this presentation, due to computer issues, and all my emails to him were going in the Spam folder of his email account. Thus, he is unable to keep his commitment. I sent out an emergency email asking if anyone can prepare a presentation for the Oct 3 meeting and Eric volunteered to move his November presentation to Oct 3. I thank him so very, very much. Mike also offered but as Mike was still in Michigan at the time, I didn't think he'd have time to prepare for the presentation, so I declined his offer and went with Eric. Rick said he can take Nov 7. He said another engagement took him from doing the presentation on Oct 3. He sent many apologies for the short notice. Thanks again Eric! §

What did the astronaut fix for dinner?
An unidentified, frying object!

A spiral galaxy walks into a bar. The bartender says, "Sorry, buddy! You're barred!"

Why did the dog star not laugh at that last joke? Because he was too Sirius!

Grand Canyon Star Party June 2013

By Sam Insana, PAS member

The Annual Grand Canyon Star Party was held at both the North and South Rims June 8 through June 15, 2013. Vera, Frank, and Sam Insana attended the North Rim star party. There were a dozen telescopes ranging from 4 inch refractors to 8 inch SCTs to 10 inch Newtonian Reflectors to 20 inch Dobsonians. Every night there was an astronomy presentation at 7 pm and then viewing at 8 pm until midnight. The presentations were on various topics like astrophotography, what is up in the night sky to see, history of the moon, the complex nature of the sun, and objects of the universe.

There were about 50 to 100 members of the public attending the lectures which were in a large meeting room. Over 100 attended the star parties which highlighted Saturn, double stars, single stars, and globular clusters. The amateur astronomers were mostly from SAC but there were others from around Arizona and a few from other states.

The main problem was that the scopes were set up on the balcony of the North Rim Lodge which blocked the Northern and Western views. Also, there were a few lights that made the sky not as dark as it could have been. There were 4 telescopes set up about 10 miles north at the Kaibab Lodge. They had darker skies and 360 degree views. We saw some good deep sky objects in that area.

Frank, Vera and I set up our 8 inch Newtonian reflector in a meadow about 27 miles north of the North Rim and about 18 miles south of Jacob Lake. We had 360 degree views and Bortle 1, the darkest sky. The milky way knocked our socks off. We also saw deep sky objects like M51 the whirlpool galaxy and could see the spiral arms. We also enjoyed M13 globular cluster, M57 ring nebula, M104 Sombrero galaxy, M31 Andromeda galaxy M 81 & 82 and many other old favorites. We also saw 9 new deep sky objects I was never able to find or see in the Valley. Some were the Black Eye Galaxy, some edge on galaxies, and some spiral galaxies I never saw before. We found Messier, NGC's and Caldwell objects.

The Veil Nebula was the best of the 9 new objects I was able to view.

The views through my 8 inch were so bright that I was able to double the power. For example, in the valley I can view M57 the ring nebula with 70 power but in the Bortle 1 area I was able to use 140 power. Thus, anyone with small or medium scopes need to try viewing in a Bortle 1 area to really get a large crisp view of the deep sky objects. You will feel you are viewing through a 16 inch scope in the Cave Creek or Carefree area of the Valley. There were 5 deer in the meadow when we set up our scope, and we saw about 90 Bison in an adjacent meadow the next afternoon. I also found a new life list bird in the Jacob Lake area, a red crossbill. The weather was great, lows in the 40's and highs in the 80's with 0 to 10% cloud cover, and 0 to 5mph winds in the meadows. However, at the North Rim Lodge Balcony they had 10 to 40 mile per hours winds.

Frank phoned me on Wed night June 12 and said there were about 40 to 48 telescopes at the South Rim. They viewed from the parking lot of the Visitor Center and had the lights off so their skies were reasonably dark. The Tucson Astronomy Club made up a lot of the amateur astronomers though there some from other parts of Arizona and other states.

January 1, 2014, will begin sign up for taking part in the Grand Canyon Star Party for next year. You can go to SAC's website for the North Rim. You need to volunteer for at least 4 nights and you get free camping and a free tee shirt. If you volunteer make sure you save a few nights for the meadows about 25 miles north of the lodge since that will be a Bortle 1 experience of a lifetime.§

Winking for Neil on InOMN Oct 12, 2013

Borrowed from http://observethemoonnight.org/getInvolved/register_event.cfm

This year's International Observe the Moon Night (InOMN) event is dedicated to the memory of astronaut Neil Armstrong. To honor the wishes of the Armstrong family, participants at InOMN event sites across the world are encouraged to wink at the Moon. Event hosts are strongly encouraged to capture images of their guests winking at the Moon. A Flickr group page has been set up as a central repository for these images. The name of this Flickr group is "Wink for Neil — InOMN 2012." We ask event hosts to submit pictures of their guests at Flickr. When submitting your images, please include your location, how many people are in the picture, and the name of the person who took the picture. Learn more about Neil Armstrong, visit the site listed above, and click on the two links provided there. http://www.flickr.com/groups/wink4neil/§

InOMN at Mike's Oct 12 - a Public Event

By Terri, Event Coordinator

This year, for InOMN on Oct 12, we are holding the event at Mike's home in carefree. It is also Astronomy Day and Winking for Neil night. This is a public event. Everyone is welcome. Potluck begins at 5pm. Please bring main dish and drinks to share & sign up in Perfect Potluck so we don't have too many duplicate items brought. Sunset for this night is at 6pm. Star Gazing begins about 7pm. Moon is 1 day past 1st Quarter phase.

For the Public, this event is at a Member's home. To attend, RSVP is required with Terri at Events@pasaz.org. When you RSVP, mention if you are attending the potluck and try to be on time, as the potluck begins right at 5pm. If you are not attending the potluck, then you may start arriving about 6:30, however, parking is limited. When you RSVP with Terri, she will send you the map and directions to Mike's home, the parking map and additional details about the event. No alcohol, please. We hope to see you there!§

What kind of light goes around the earth?
A sattel-lite!

What kinds of songs do planets sing?
Nep-tunes!

Five Upcoming Events to Plan For

By Terri, Event Coordinator

We have 5 exciting events coming up that I think everyone should start planning for right now!

1) Eric is opening his home and his big screen tv for PAS Members only to attend a showing of Europa Report. This movie is about 1.5 hours long and will begin promptly at 7pm. Seating is limited to exactly 12 PAS Members. RSVP early to attend. Please do not bring snacks, as snacks will be provided and a case of water will be provided by President Bruce. A $1 donation per attendee is requested to provide the snacks at this event. Arrive early for the best seating. This event happens on Oct 19.

2) Mike's Halloween Party is on Oct 26. We are having a costume contest. We will be having a silent judging as to who wins the costume contest. Everyone attending can vote. Those in costume can compete. This is also a potluck so bring a main dish to share and sign up on the Perfect Potluck.com site so we can be sure to avoid duplicate dishes. This is also a star party, so bring your scope and let's have a great viewing event. The moon will be at 3rd quarter and not in the sky this evening. Viewing can begin around 6pm to catch Venus, Saturn and Mercury before they set. This is a Dark Sky PAS Members only event. Only immediate family members are to attend this event. Bring your whole family. Bring a Halloween type move it share, please keep it clean as kids may be attending - no R rated movies, please. We will enjoy dinner at 6pm and then do the costume contest about 7:30, followed by observing while the night is young. Some may wish to retire indoors early and watch the movie the group agrees to. What costume will you be seen in, this year? See you there! Darlene won last year's costume contest.

3) December PAS Meeting is the PAS Swap Meet. Do you have items to sell, swap, trade, or plan to purchase? Check out the deals at the PAS Swap Meet. The date of this event is at the December 5 PAS Meeting. Everyone is welcome. And to prepare for this event, get some extra exposure for your FOR SALE items, send a list of what you will be selling, so that I can include it in the article about this event, in the December issue. The deadline to get your For Sale list to me, is Nov 15. I'd love to include your items for sale. Remember, we do this as a silent auction. You bring your items, grab a paper and pencil, and on the paper, provide a description of the item for sale, the accessories that go with it, and your starting bid. Then, during the December Meeting, attendees walk around, see items for sale, put their bid on the page with their Initials, or first name and last initial, and then at the close of the meeting, the swapping begins and concludes. Highest bidder gets the item. This is a great way to sell of the astronomical stuff you no longer want or need. And if your item doesn't sell, send me the info needed to sell it in an ad in the Newsletter, with photos. I will create the ad, and help you sell your items. PAS Members can post as many ads as they like, for free. Non Members are asked to donate $2+ to PAS for the help in selling their equipment. We hope to have a super Swap Meet this December. Start planning for it now.

4) Music Jam at Mike's. The date of this event is Dec 21 and the potluck starts at 5:30pm. To prepare for this event, an RSVP is Required with Terri at Events@pasaz.org. Why? When you RSVP, mention the musical instrument you wish to bring along to play at the PAS Jam. At the December PAS Meeting, pick up your music from Ed Wurst. You must have RSVP'd with Terri prior to the November PAS Meeting in order to have music waiting for you at the December PAS Meeting. PAS Members and their immediate families are welcome. If you invite other musicians, be sure they attend the December PAS Meeting to get a copy of the music we will be playing, to practice on prior to the Jam. Then, after the Jam, return the music to Ed Wurst, so he can update it for the next PAS Jam. That is why we need an RSVP, to be sure you get a copy of the music and you can familiarize yourself with what could be played at this Jam. We'd love to have you attend. RSVP today!

5) PAS Social. This year we are at Chris's home in Goodyear. The date of this event is Jan 18 and the event starts at 4pm. 3pm is set up for those who wish to arrive early and assist me in getting everything ready. 4pm to 5pm is socializing. 5pm is dinner, we will start on time this year. Then we have the Yearly Dart Game, and the PAS White Dwarf Game. I'm looking for other activities for this event. I also need door prizes. They are so much appreciated. Please, tell me you are doing this, and then bring as many wrapped door prizes as you can, to the party. The idea is to award a bunch of people with cool things in the door prizes. Remember, your door prizes do not have to be astronomy related, just something you have available to wrap up and give away as a donation to this event.

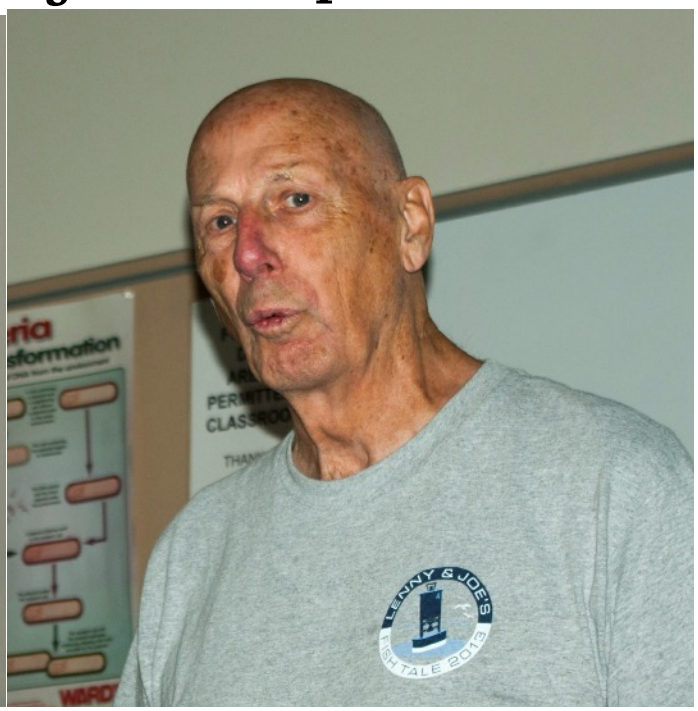
A quick reminder about the PAS White Dwarf Game. This game is set up like a White Elephant game except that in the case of White Elephant, you usually do not want the gift. But in the case of the PAS White Dwarf game, the item must be astronomy related or useful to an astronomer, and be a cost of around $20. A gift is required, wrapped, disguised, in order to play the game. The whole idea is to start a stealing frenzie. Make your gift look awesome, interesting, and be something that you would want to win at this game. Meaning, if you were wrapping an eyepiece, that might be something you have an extra of in your collection, and you'd want to receive an eyepiece, if one was being provided for this game. Astronomy related and useful, please. Flashlights are great, especially red filtered lights, astronomy games, astronomy t shirts, eyepiece filters, other astronomy accessories. These are all ideas of what you could wrap up for this game. Each person playing must provide a gift to play the game. Those who are not playing the game will be outside the circle, bring a camera, take photos for me, so i can post them in the PAS Photo Gallery (with proper photo credits) Album for this event. Closer to the event, an email with more details will be posted to you. Watch for it so you know what to do to be involved in this event. We hope to see you there! §

How does the moon cut his hair? Eclipse it!

What kinds of cartoons do aliens watch? Looner-tunes!

September PAS Meeting Guest Speakers

Magnificent Desolation: Walking on the Moon." provided by Alex Vrenios, PAS Member



"What the Ancient's Taught" by Neil Christianson

2014 Year in Space Calendar orders

By Terri, Event Coordinator

Take a look at these awesome calendars. I love both of the styles. Last year, I ordered the large wall calendar and it is amazing. Previous years, I had the desk calendar. Both are a great addition to information about astronomy, keeping track of your upcoming events and life, and just great photos to enjoy. If you plan on ordering a Year in Space Calendar this year, put your order in with Terri. Be sure to let me know which style calendar you would like. I will be collecting the monies for the 2014 calendars at the October & November PAS meetings. I will put the order in shortly after that, so that we can receive our calendars by the December PAS meeting, in time for giving as gifts, or for ourselves. Here's the link to have a preview of what's in the 2014 calendars: http://yearinspace.com/. 1 copy of these calendars is $13. 2-9 copies is $12 and 10+ copies is $11 each. My goal is to get 10+ calendars ordered as a group so that we can save some money on the calendars. We could get them for $10 if we can get 36+ copies ordered, but we haven't reached that goal at all in the past years we have been ordering this calendar. So, if you want one or more, in cash, bring me $12/calendar. If we get to 10 copies ordered, I will refund you $1. See me at the October and November meetings to order your calendars and be sure to check out the webpage to see how wonderful these calendars are. Thanks for your order. §

Telescope Workshop Sept 12

By Terri, Event Coordinator

It was a very nice evening to hold a telescope workshop at PVCC. The weather was clear, calm, muggy, but a pleasant temperature. Jenny Weitz was there with her baby, now 4 months old, Dillon. I wish to thank the PAS Members who joined me in doing this event: William Finch, Rodney Fong, Don Boyd, Eric Steinberg. Without them, this event would not have been so successful. We had several RSVP's for this event. James & Nancy brought their Celestron Omni XLT 150. Michelle & Mark brought their Celestron Nextar 6SE, and Heather and Devon brought their scope. One of Jenny's students, Jennifer, signed up to attend the star party portion of this event but was called away by her mom, so she didn't stick around. We didn't do a star party portion of this event. The night flowed so quickly with the three attending scopes, that there was no time to pull out one of PVCC's 6" dobs and show anything to anyone. It was a very successful event. I really appreciate the help of the PAS Members. PAS would like to welcome 2 new PAS Members: Jim & Nancy joined, and Michelle & Mark did as well. Welcome to PAS! We hope to see a lot more of them, through the PAS year.

Michelle writes: Terri, Just wanted to say thanks for the telescope training. Everyone was so friendly and helpful. I've been reading a lot about astronomy but it was so nice to have people that could answer questions and give advice. Thanks again! Michelle

James writes: Terri, Don was an amazing teacher. Patient, knowledgeable... We learned SO MUCH. We had no idea we were so lost in the woods with this thing! Thank you, Don! I took an infra-red photo of Don assisting Nancy. Use as you will. Thanks, again and see you next time.§

Black Mountain Campus Star Party May 9

By Terri, Event Coordinator

It was an awesome temperature, all night, for this event. And the skies were cooperative until about 9:15pm. I had about 200 RSVP's, and Loretta Mondragon had a class RSVP, but we didn't see that many. I asked around and it was agreed that we saw about 35 in attendance from the Public.

Attending from PAS were: William & Terri Finch, Darren Johnson, Earl DeLong, Kraig Nelson without a scope, Sam & Vera Insana, Don Boyd, Eric & Ora Steinberg, Mike Marron, Bob Ewing and Albert Tucker.

The evening began with the Finches arriving later than planned but it was perfect timing. Albert had gotten there first and saved a table for the group by Bad Donkey. Dinner was awesome. William and I had a pizza, Albert had a sandwich, Sam & Vera had a sandwich, and Eric had a sandwich. Mike showed up as we were getting ready to head out the door. And outside the door, we met up with Bob Ewing who was headed in for dinner and who received his NSN Award and Pin from me.

We moved our vehicle into position, and as we got ready to unload, Loretta Mondragon drifted by and picked up her NSN Award and Pin from me. Thanks to Dione for hooking us up. Dione is one of the wonderful gals at PVCC BMC who does the admissions. She was also at the event on Apr 26 for the PVCC Fund raiser (read about it in this issue).

The evening progressed slowly at first. Hardly anyone was there at 7pm, but then a group trickled in, and several of the RSVP's showed up. I'd like to thank Paul F. for attending and Rodney Fang, who attended the May 5 Bookmans Telescope Workshop. Both of them kept us thinking with all their questions leading to the purchase of a telescope, but we were glad to answer their questions. It was a very pleasant night. I appreciate my Telescope Team. Many thanks to Kevin, the security guard who turns off and on the lights, and who viewed through our telescopes this time and when he said he needed to turn on the lights at 9:45, actually gave us about 10 more minutes before taking away our dark skies. Thank you! And thanks to Loretta for doing a super job advertising this event, this time, and posting signs around the campus. Our next event at BMC is Oct 24, 2013. We hope to see you there!

Bob Ewing writes: Thanks for another fun night!! Nice to see everyone!! :-) And thank you for the nice certificate and pin. That was very thoughtful of you. Best wishes!!

Paul Laup writes: I enjoyed the Public Star Party May 9. The later sunset plus arriving earlier than I expected gave me time to talk to the people that brought their scopes about their equipment. I enjoyed seeing the objects that the people were observing.§

Cuttin' Edge Observatory Star Party May 11

By Earl DeLong

On May 11, 2013 Chris opened his observatory in Mayer, AZ to PAS members. In attendance were Darren Johnson, Albert Tucker and myself. This was the first time I was going to observe under Arizona desert dark skies and I was looking forward to the evening.

And what an amazing evening it was. The views through my 10 inch dobsonian did not disappoint me. I was also impressed with the 2 inch Oxygen III filter I purchased. This accessory was well worth the money. Chris Johnson and I stayed up all night. Darren and Albert gave up around 2:30 am.

My favorite views of the evening were galaxies M51 and NGC 4565. The spiral arms in M51 were very obvious along with the dust lane in NGC 4565. I was also able to view the Antennae galaxies in Corvus. With averted vision, I could tell there were two galaxies very close together. These galaxies are actually interacting.

I also enjoyed views of the emission nebulae (M8, M20, and M17) in Sagittarius. The amount of nebula I could view using the 2 inch Oxygen III filter was breathtaking. I had never experienced a view like this before. I was also able to view the North American nebula for the first time. Impressive. And of course all parts of the Veil Nebula in Cygnus were remarkable, showing a lot of detail.

Thanks again to Chris for opening his observatory to us. I eagerly look forward to my next visit.§

Bookmans Telescope Workshop June 2

By Terri, Event Coordinator

At this Bookmans Telescope Workshop, we had quite a collection of scopes attending. In attendance from PAS was William Finch, Terri Finch, Don Boyd and new member Rodney Fong. We had 4 RSVP's of Jerry Thompson with a 10" Orion Dob, his wife, Jaime & 2 kids, John Woehrle with a 10" Meade LX200 older scope and his friend John with an 8" Newtonian. Kirk Perkins brought his ETX 105 with his Son in attendance, and Ron Gray stopped by to ask questions but soon vanished.

The afternoon was very busy. With 4 scopes set up, questions all over the place, and the 4 of PAS Members trying to help everyone equally, it was a very successful event. Many thanks to Rodney for attending not only to learn more about telescopes, but also, he was a great help at this event. Don was culminating several scopes, and William was answering all sorts of questions. We were so busy, the drink I had, that we picked up for the event (as we always bring a drink to this event) was hardly touched. We were too busy with talking and helping, the drink waited until the end of the event for me to finish it. That usually doesn't happen at these events, but the people there were so into astronomy, it made the event that much more fun. The two John's came down from Parker to be at this event. We invited them to other events. And we discussed doing an event in Parker, with a potluck. More details on that idea, may be in the works. Many thanks to the PAS Telescope Team and the next event like this will be June 30. See you there!

Jaime writes: Thank you, it was a pleasure.§

How to hunt for your very own supernova!

By Dr. Ethan Siegel

In our day-to-day lives, stars seem like the most fixed and unchanging of all the night sky objects. Shining relentlessly and constantly for billions of years, it's only the long-term motion of these individual nuclear furnaces and our own motion through the cosmos that results in the most minute, barely-perceptible changes.

Unless, that is, you're talking about a star reaching the end of its life. A star like our Sun will burn through all the hydrogen in its core after approximately 10 billion years, after which the core contracts and heats up, and the heavier element helium begins to fuse. About a quarter of all stars are massive enough that they'll reach this giant stage, but the *most* massive ones -- only about 0.1% of all stars -- will continue to fuse leaner elements past carbon, oxygen, neon, magnesium, silicon, sulphur and all the way up to iron, cobalt, and, nickel in their core. For the rare ultra-massive stars that make it this far, their cores become so massive that they're unstable against gravitational collapse. When they run out of fuel, the core implodes.

The inrushing matter approaches the center of the star, then rebounds and bounces outwards, creating a shockwave that eventually causes what we see as a core-collapse supernova, the most common type of supernova in the Universe! These occur only a few times a century in most galaxies, but because it's the most massive, hottest, shortest-lived stars that create these core-collapse supernovae, we can increase our odds of finding one by watching the most actively star-forming galaxies very closely. Want to maximize your chances of finding one for yourself? Here's how.

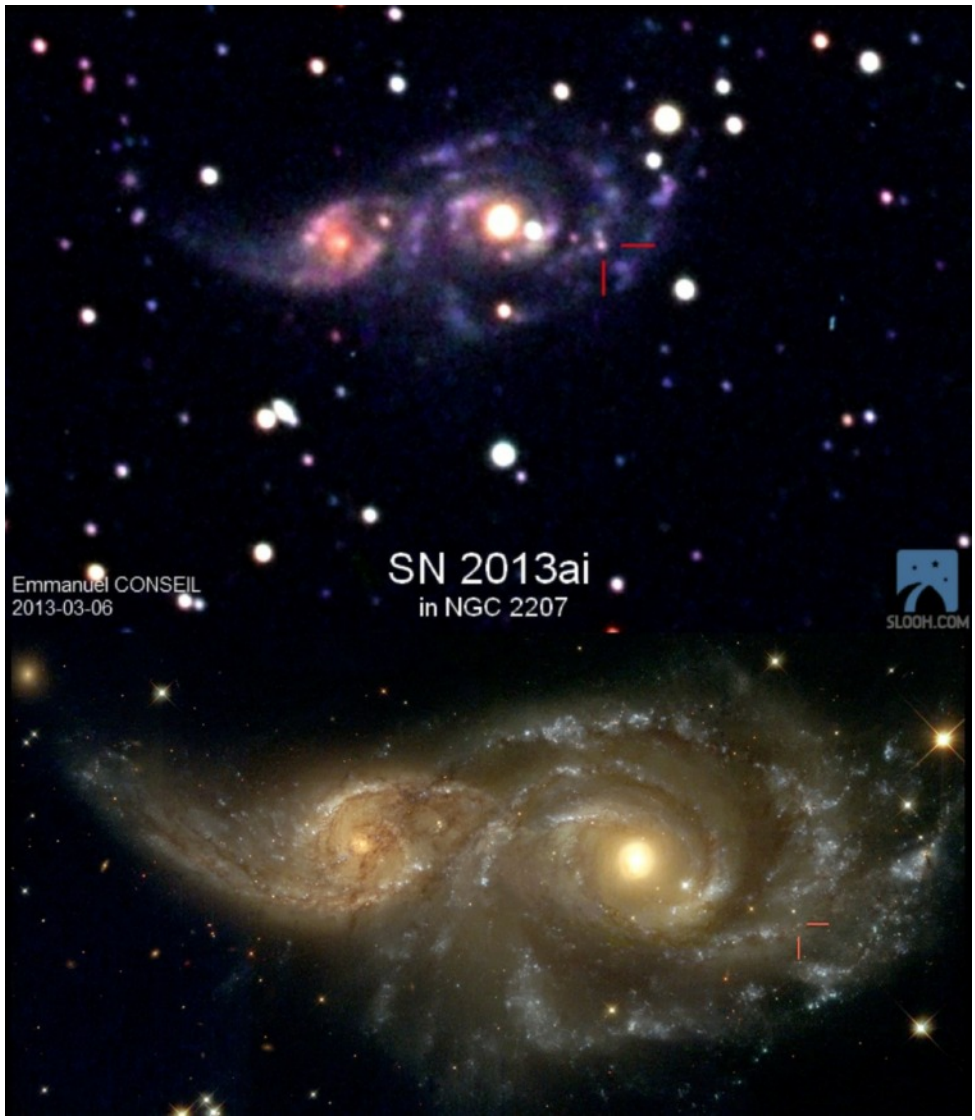
Pick a galaxy in the process of a major merger, and get to know it. Learn where the foreground stars are, where the apparent bright spots are, what its distinctive features are. If a supernova occurs, it will appear first as a barely perceptible bright spot that wasn't there before, and it will quickly brighten over a few nights. If you find what appears to be a "new star" in one of these galaxies and it checks out, report it *immediately*; you just might have discovered a new supernova!

This is one of the few cutting-edge astronomical discoveries well-suited to amateurs; Australian Robert Evans holds the all-time record with 42 (and counting) original supernova discoveries. If you ever find one for yourself, you'll have seen an exploding star whose light traveled millions of light-years across the Universe right to you, and you'll be the *very first* person who's ever seen it!

SN 2013ai, via its discoverer, Emmanuel Conseil, taken with the Slooh.com robotic telescope just a few days after its emergence in NGC 2207 (top); NASA, ESA and the Hubble Heritage Team (STScI) of the same interacting galaxies prior to the supernova (bottom).

Read more about the evolution and ultimate fate of the stars in our universe: http://science.nasa.gov/astrophysics/focus-areas/how-do-stars-form-and-evolve/.

While you are out looking for supernovas, kids can have a blast finding constellations using the Space Place star finder: http://spaceplace.nasa.gov/starfinder/.



Ads in PAStimes

Scope for Sale: Parks PRT-813 Refractor Telescope; 900mm focal length, 80mm objective diameter. Very good condition, gently used. $500 or best offer. Located in Ahwatukee. Local pick up ONLY. If interested call Paul at 480-993 5313, or e-mail to Pagloh@msn.com A photo of this scope can be found in the PDF ad at this link: http://www.pasaz.org/forums/downloads.php?do=file&id=214

Star Party in N. Scottsdale May 11

By Terri, Event Coordinator

What an awesome event. Scott is an awesome host to his star parties. In attendance from PAS was Eric Steinberg & Ora, William Finch, Terri Finch, Don Boyd, Bruce Wurst & Mike Marron. Dennis Young from Sedona also joined us. Scott and his son Blake were awesome hosts for this party. He had a turnout of about 40 friends. He ordered pizza from NYPD and we totally enjoyed it. The evening was fantastic. It was very warm in the sun, when we started the event about 5:30, so we could show the setting sun. Venus snuck down to the horizon a little too soon to catch it. Bruce and I had the moon and Jupiter for a while. I heard William find Saturn, and so I told Bruce to take Saturn. I stayed on Jupiter until it was set enough it was too blurry to see very well. After Saturn, the evening became dark and we were on so many really awesome objects. The temperatures stayed just warm enough to be comfortable through the night. We closed up the event about 11:45pm. Many times, we looked through each others scopes. Don found the StarGate Cluster. William had the Ring Nebula & Hercules Globular cluster. Dennis was on the other side of the fountain, so I don't know what he had, but he had a ton of stories to tell with his objects. Eric & Ora found the Cats Eye Nebula for me, and I got to see Omega Centauri. Scott seemed to be totally enjoying the event. I love doing these parties for Scott. He is an awesome host, very interested in viewing and learning, and a pleasure to be around. Thank you Scott, for having us at your party.

Scott writes: Thank you. All of you. It was such a wonderful event. I appreciate all your expertise and patience.§

Virtual Star Party Training Session in Goodyear May 26

By Terri, Event Coordinator

We had a blast at this event. When William Finch and I arrived, Chet Schuler was already there. Chris Johnson, the host of the party and the owner of the awesome home, was working out how to make room in rearranging the dining room to accommodate the number of laptops attending today's event. Many thanks to Chris & Tiffany Johnson for being awesome hosts to this event!

So, we got there and helped arrange the dining room table to accommodate the rest of the class members. In attendance, aside from the list above was Darren Johnson, Albert Tucker and Don Boyd. Photos were taken of this event, so watch for them in the PAS Photo Gallery.

We began with everyone plugging in their laptops, and downloading and opening a few files for use during this event. Some of us had trouble connecting to the wifi, but we finally got all of us connected. Before we knew it, having arrived at 2pm, it was already 3:30pm. We started with access to Chris's astrophoto files on his network. We talked about PixInsight and The Sky X and CCD Calc. Then we did some in depth stuff with the tutorials of PixInsight. After going through a few tutorials, we got hungry and ordered pizza from Papa Johns. There was a bit of trouble in getting the order to go through, but it did, and 4 pizzas arrived. Boy, were we hungry. After food, we went back to learning PixInsight, going through the tutorials with the guidance of Chris, who has been through it previously and was very helpful and informative. It made it more fun having Chris review what we just saw in the tutorials, and walk us through it slowly, to show guide us. Very nicely done.

The party broke up about 1am. Chet was first to leave, followed by Albert and Darren. Don, William and I stuck around after we packed up and helped Chris put the dining room back together, to chat until 3am. Chris is really an amazing person. I wish to thank Chris, so much for all he did for us at this event. We look forward to another one, soon.

Night Sky Training Session June 1

By Terri Finch & Various Attendees

Attendees to this event were: Eric & Ora Steinberg, Sam Insana, William & Terri Finch, Don Boyd, Darren Johnson, Terry Dancer, Kevin Harcey, Mike Marron (Host of the party), Albert Tucker, & Darlene Ahlefeld. Ora brought a guest. And a new member joined this evening, Rodney Fong.

The class was made up of PAS Members with scopes and they were William, Terri, Don, Darren, Sam, Eric, Terry, Kevin, Albert & Darlene. Albert brought binoculars in a mount over a chair, set up. Really cool. Kevin brought his mini scope. Darlene had 2 scopes with her so she could learn to use the new 2nd scope. The rest of the attendees each had 1 scope they were using.

It started with a wonderful potluck. The food variety was awesome! Thanks to all who brought food to share. After food, we set up our equipment and while it was still dusk, those who were already set up, helped those who needed help in setting up. Then, Sam did a presentation on using Setting Circles, and Right Ascension & Declination. His presentation was very helpful. Thank you so much Sam. Everyone learned from the presentation. Then, being as I didn't have my scope ready yet, Eric did a presentation on how to use the Telrad reflex sight. So, several members of the group gathered around to watch Eric's presentation. Finally, I got my scope set up, which in the end, did pay off, since I didn't have to chase any objects through the night. Thanks to all, for your patience while i got set up.

Then we began the Night Sky Training Session. The idea was to show star hopping, and other means of getting to the objects. We chose a brighter object to start with, M13. And we were on M13 for about 1.5 hours, during which time, Eric and Sam showed many other objects while they waited for the class to continue. What we did do, was make sure that everyone who had a scope that could see M13, was able to find it. Then, we did the fun stuff. Using all sorts of different eyepieces and some filters, we shared eyepieces through between the scopes, we viewed M13 through the different scopes, we just had a great hour

(Continued on page 10)

A Review of "Moon Atlas" App for Apple iPhone

By Alex Vrenios, PhD, August 2013

My older brother bought me a 3-inch Newtonian telescope with a polished metal mirror and a less than sturdy tripod for my twelfth birthday, and helped me set it up on the sidewalk in front of our house. After focusing briefly on a nearby street lamp, the very first celestial body I saw was the Moon. Even upside down in a 3-inch, the Moon was a glorious sight. It was easy to find and didn't suffer from light pollution.

Horsham Online "Limited Moon Atlas" app for the iPhone presents a map of the Moon as viewed from your current location on Earth. (Your location should be defined before you start using the app). If you go to Settings, the rightmost of the bottom buttons, and tap Location, you can then just tap the "Locate Me" button. This fills in all the blanks, including date and time. It's even smart enough to set daylight savings OFF here in Arizona. Alternatively, there are two manual Location setting options. You can try to position crosshairs on a tiny world map or you can select the name of the city you're in from a list. The Locate Me button is by far the best choice.

The Settings screen has three groups of buttons: About and Help on top (self-explanatory), Date, Time and Location in the middle (described above), and Nightlight and Real-Time Updates at the bottom. Nightlight changes to a red display to preserve your night vision, though I doubt there was ever a lunar observing session where I actually acquired any. (Maybe this feature is more for the person observing next to you?) Real-Time Updates makes updates to the MoonÕs terminator position in real time.

The other four buttons along the bottom of the screen (other than Settings) are Map, Phase, Libration, and Search. Map presents, not surprisingly, a map of the Moon. The current date and time are displayed at the top, above the map, and UTC time is displayed below. There are also four display-option buttons, one in each of the four corners of the map screen.

The upper left option button toggles between a globe icon with a continent and a globe on a stand. Continent mode allows you to drag the Moon around the screen, keeping the Earth-facing side toward you. Stand mode allows you to explore the entire Moon's surface. Both allow you to drag it around, centering on a lunar feature of interest, and to pinch/zoom the view to a desired level of magnification.

The upper right option button toggles between a half-filled and a filled circle icon. Half-filled mode shows the MoonÕs current phase. Filled mode lights the entire Earth-facing side, in case you want to see whatÕs in darkness, west of the terminator.

The lower left option button toggles the Moon map display mode through grid-and-feature names, grid only, names only, and nothing but the Moon's surface (neither grid lines nor feature names).

The lower right option button toggles through north up, south up, and each of these as inverted views, to conveniently match whatever image you see through your telescope.

I use an erecting prism on my telescope to match binocular and naked eye views. For me, the upper left option button is in continent mode, upper right is half filled, lower left has both grid and feature names, and lower right shows N, for north up. If I happen to see a part of something interesting on the terminator, I may toggle to full circle mode just to see what it is.

The next button along the bottom of the screen is labeled Phase. This shows you the current phase of the Moon. If you swipe the screen right it shows the phases backward in time, a day at a time. Swipe left for a day at a time into the future. This is a good way to find out when a particular feature will be at lunar sunrise or sunset.

Libration is the next bottom button. It shows only an oval, annotated with the days of the month on an 18x18 degree grid, depicting which part of the Earth-side view is tipped toward us on each day. Find the day of the month on the oval and the grid will reveal how far forward or back the N-S view is tipped, and how far left or right the E-W view is tipped. Again, swipe right or left to get libration data for a month forward or backward in time. This is good for finding out when a feature that normally lies just beyond the rim will be visible.

One might expect the last bottom button, labeled Search, to present a text box. Instead, it displays a screen with a list of each of the feature types: Catena, Crater, Dorsa, etc., including All, in case you don't know the name of the type of feature you're searching for. Tapping one of the types gets you to a list of names of the features of that type, each of which has a link to an information screen. At the bottom of the information screen is a button labeled "Show on Map," which takes you to directly to that feature. As a bonus, the "search type spacecraft" gets you all the Apollo, Luna and other landers, with a link to their location on the lunar surface.

Finally, tapping one of the map's surface features brings up the same information you would get from the Search screen. I've actually been asked how long the straight wall is by a viewer at a star party. The app says it's 41.6 miles long, which, for comparison, is about a fifth the length of our Mogollon Rim.

This app sells on iTunes for $5.99. In my opinion, it's worth every penny. It runs on my iPhone 4 and iPad 2 (running iOS 6.1.3), and on my new iMac (OS X 10.8.4). If you are working on any of the 100-feature Lunar Observer awards, interested in the U.S., Russian and other landing sites, or simply enchanted by the stark lunar landscape, this app is for you. I highly recommend it! §

Upcoming School Events for 2013/2014

By Terri, Event Coordinator

Many of the schools from last school year, have contacted PAS to do another star party for them. I wish to mention a few dates, so that if you wish to RSVP for these events, you can choose to do so. The document to track all the school events is located at this link:

http://www.pasaz.org/forums/downloads.php?do=file&id=111

Sara Pearson has asked us to do her school event on Nov 8, 2013. She is now at Morris K Udall School. Christina Johnson has asked us to do Tumbleweed Elementary again, and that event is on Apr 25, 2014. Mark Thornton, new teacher taking over planning events with PAS is at Orangewood school and wants us on Mar 7, 2014. Mark these on your calendar. Go RSVP your attendance now. Use the above link to get there quicker. Thank you all for participating in the School Events. These schools have agreed to our terms. §

Night Sky Training Session June 1

(Continued from page 8)

and a half with M13. I totally really enjoyed that. The eyepiece swapping was awesome! And everyone learned where to find M13. Then, the clouds came over. About the time the clouds took over, which was about 11pm, A few members were turning into Pumpkins - meaning it was their bedtime. So Darlene packed up and left. Eric followed her, and when Eric left, we waited for the clouds to leave with him, as they usually do. That didn't seem to work as well this time, and the clouds just kept hanging on, so a group of us sat around and talked, which was very nice. Sometimes, a group like ours doesn't get to talk much between members due to rushing to find the next object. So, we waited and waited, and it didn't' look like it would clear up so, Darren packed up, Albert & Kevin packed up. The extra folk not in the class seemed to have left. And it was down to the hard core group. 1am we gave up and it was Don, William and me left to pack up. So, we did our pack up, and by that time i was starving, so we went inside, enjoyed a second dinner, and then left about 3:30am. Don left before us. Kevin left when we left. Mike was passing out by this time.

Overall, even though the clouds took over, the 1.5 hours we had with M13 were spectacular. I totally want to do this event again, with other objects. Many thanks to those who helped locate M13. Sam had an awesome book with Telrad circles showing where M13 was in the night sky, and Wiliam and I had gotten some new green lasers, and were able to point it out, very well.

Thanks to everyone who brought food, and who donated their $1 per person attending the class, to Mike for the next event's needs of paper products. Next event is June 8th. Let's see everyone there!

Eric writes: In spite of (once again) holding an event during the only six hours of cloud cover in two weeks, we had a very successful evening. After a particularly good potluck supper and scope setup, Sam gave an excellent demo of the practical use of mechanical setting circles, explaining how they work and nailing several objects on the first try. After that Eric demonstrated use of the Telrad and basic star-hopping techniques. Finally, Terri designated a couple of objects (M13 and then Saturn) that everyone could practice locating, and then compare views through the various scopes. It seemed like quite a few people were able to pick up good pointers on observing techniques. Working around the clouds, this writer showed Saturn, M13, M92, IC4665, M81, M82, M51, Mizar, M57, the large and small Magellanic Clouds and Alberio*. Seeing and transparency were around 6/8. And thanks, as always for Mike's gracious hosting of the event.

*Which one in this list is not like the others?

Darlene writes: June 1 nsts, I came loaded for all kinds of activity. Along with 4.5" Yvaine I introduced Dusty, 70mm (2.75" for those of us metrically challenged) refractor scope on a tripod in its own backpack, Yvaine's little sister, ala Stardust movie. Got both scopes set up on table and ground, then both on table which seemed to work best. Found Venus, then Mercury and Jupiter. Beautiful in straight line conjunction(?). With some laser help from Terry (?) Yvaine closed in on a fuzzy spot 13 billion light years away known as Hercules Globular Cluster. Dusty left her finder scope at home so she didn't have a clue but she saw a lot of "stardust" in spite of it. Sorry Eric, longitude and latitude are still Greek to me but I'll keep trying..... See y'all next time, Dar, Yvaine and Dusty.

Desert Botanical Gardens May 18

By Terri, Event Coordinator for PAS

It was a slightly windy start to our evening. We arrived and our contact, Emily Morris was there talking to the Volunteers of DBG about waiting to set up because of the Wedding Ceremony and Reception that was happening at DBG and that they would be walking through the area we are setting up in. So, we waited a little while. The wind died down about the time the event started at 7:30pm.

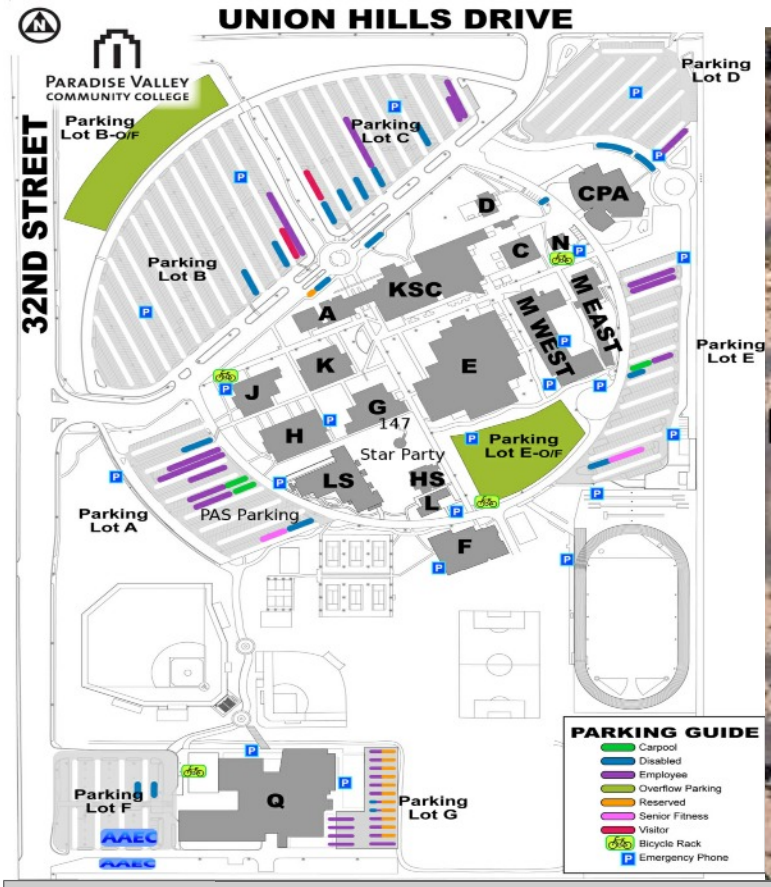
But then, we moved our equipment to the Boojam Tree area. The tables and chairs were already there. Before Emily caught up to me at the location, I asked the set up crew to set the tables the way I thought Emily would want them, and the way I preferred they would be for the night. William Finch, Don Boyd and MIke Marron joined me at this event. William and Don set up their scopes. I designated a table for Mike to have. Of course, through the night, he had the biggest crowd, like usual. Emily showed up and rearranged the tables, but kept them away from the observing area, which is what I was hoping for. Thanks Emily!

Once set up, the 25 patrons of DBG started to show up. Emily told them what to expect in the way of the table set up for making craters in flour, the Make a Constellation table, and she mentioned Mike with his meteorites. I came along and asked that no one touch the telescopes, and told them to look through the two scopes set up that are on the Moon, at that time. The MOon stayed the main objects for a while and then Don and William through they saw Jupiter. With how hazy it was to the West, they put it on the object, said it was Jupiter but it wasn't a great view, and then saw that Saturn was available. So, swinging to the East, they showed Saturn. Then, someone asked what the bright object was to the West. We all thought it was Sirius, but William got this urge to put his scope on it and it was Jupiter. So the first object that was seen, in very poor viewing conditions, was actually Venus, before it set. So, then they both showed Jupiter for a while. About this time, it was dark enough to do a night sky tour, so I was asked to do that. I showed the Big Dipper, talked about other names for it, talked about how it is a Great Bear in the sky, and showed how the tail leads to the Little Dipper. Had a talk about how it is a bear, and the importance of the North Star, and showed how the North Star is not the brightest star in the night sky. I also showed Arcturus, and was going to show Spica but that would have been a weird twist to everyone's neck, who was sitting down for this night sky tour. Then I showed Leo and about that time, Emily picked up on the fact that there was too much haze in the sky, so she took over with a story book. While she did the story book, William and Don conversed with a few of the adults about how telescopes work. Then, they showed the Moon, Hercules Globular Cluster and the Beehive Cluster before the evening came to a close.

The weather was good. No clouds, but it was breezy, and the temperatures were decent. It was a great event. Can't wait to do the next one! Many thanks to Emily for having us at DBG. Photos of this event will be posted to the PAS Photo Gallery soon.§

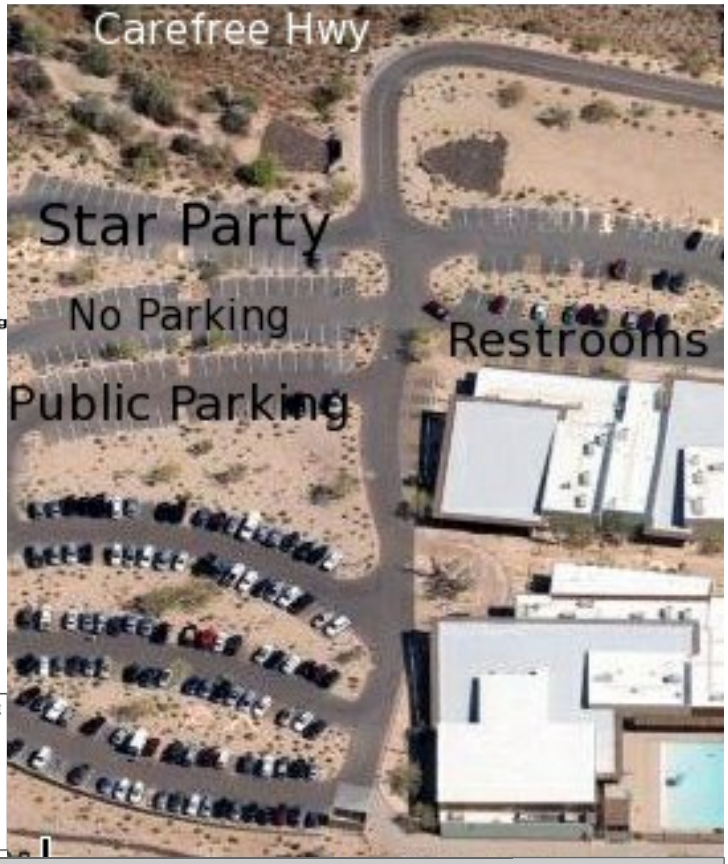
Map of PVCC Main Location

18401 N. 32nd Street | Phoenix, AZ 85032



Map of PVCC Black Mountain

34250 N. 60th Street | Scottsdale, AZ 85266



October 2013

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 CTCA (Private)	2	3	4 PAS Meeting	5 Estrella Obs/ Antenna's
6	7	8	9	10	11 School Star Party (Private)	12 Public Star Party in Carefree
13 Telescope Work-shop	14	15 CTCA Back up date (Private)	16	17 Telescope Work-shop	18	19 "Europa Report" (Private)
20	21	22 Orionids Meteor Shower Peak	23	24 Public Star Party at BMC	25	26 Halloween Party (Private)
27	28	29	30 ASU West Public Star Party	31		

Don Boyd
PAStimes Editor
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To:

2013/2014 PAS GUEST SPEAKER LINE-UP

By Terri, Event Coordinator, Events@pasaz.org

Do you have an idea for a Guest Speaker? Email me the details.

Nov 7: Rick Tejera "Beyond M42 (what to look at after you've found all the easy stuff)"
Dec 5: Astronomy Swap Meet: Earl DeLong "Chemistry of the Cosmos"
Jan 2: Speaker: TBA ***

PAS is incorporated in the state of Arizona as a non-profit, scientific and educational 501(c)(3) organization. Our newsletter PAStimes is published monthly from September to May and distributed by US PS and the Internet. All Issues are available for download on our website www.pasaz.org

What's Up For October?

By Rod Sutter, PAS Past President

Planets

Name	Date	Rise	Set
Mercury	10-15-13	08:35	18:49
Venus	10-15-13	10:24	20:08
Mars	10-15-09	02:26	15:38
Jupiter	10-15-13	23:09	13:19
Saturn	10-15-13	08:03	18:56
Uranus	**10-15-13**	**17:16**	**05:41**
Neptune	**10-15-13**	**15:36**	**02:45**
Pluto	10-15-13	12:22	22:35

All Times Arizona Time

October 15 2013

Sunrise: 06:32
Sunset: 17:54


New: October 4


Q1: October 11


Full: October 18


Q3: October 26