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Beyond M42: What to look at after you've found all the easy stuff

By Rick Tejera & edited by Terri Finch

Rick was Born and raised in Lon Gyl-land Noo Yawk. He moved to Arizona in 1995. He has worked in the transportation & Logistics industry for (yikes) over 20 years. He has been married for 30 years to Susan and has a Daughter Lindsay who is 18 and (Double Yikes) a senior in High school and looking (Triple Yikes) at Colleges... Other interests outside of astronomy include: Ham Radio (call Sign K7TEJ), geocaching (using billion dollar satellites to find 5 dollars worth of Tupperware in the

desert), and Community theatre (He is the man behind the curtain!)

Beyond M42: Basic Observation Planning

You've observed all the Messier Objects, Now what can I look at? There are plenty of things out there within the reach of moderate telescopes, I'll show you what they are and how to find them. Then we'll explore how to parse them down into observable chunks, and how to record your observations for posterity. §



October Meeting Review

By Terri, Event Coordinator

If you didn't attend this meeting, you missed a fantastic, informative, educational topic. Eric Steinberg did such a wonderful presentation! The topic was Basic Celestial Navigation and the information presented was well organized, quickly delivered, in layman terms which is really nice for those of us who need things at our level, rather than above our heads, and kept the audience's attention through the whole thing. Many, many thanks to Eric for such a well delivered, interesting presentation. After the meeting, many attendees mentioned that they learned a lot from this presentation. Thank you Eric.

President Bruce opened the meeting at 7:30. We had 10 minutes of announcements. Jerry Belcher took a few minutes to talk about the 2014 Astronomy Calendar. He is collecting orders again this year. If you want one, please be sure to get in touch with him and he is ordering them with a \$10

deposit. The cost, he will figure out, after he has the orders placed and finds out how much it is. I think last years' calendar worked out to \$15, but I don't remember exactly. So, set up your order with him. Jerry also announced the All AZ Star Party happening that weekend at Antenna's, and the Thunderbird Park star party happening on the 12th, hosted by SAC. Eric added that the weekend had high winds predicted. Jerry also announced that due to the land where the Rocket Launches are held is being sold off, the launches are currently on hold. Don had an announcement. His printer quit working for him, died, and so we need someone who could take over printing the 8 copies of the newsletter that needed to be mailed out to the members who pay to have their newsletters delivered by the Post Office. This is the reason the postal customers didn't receive their newsletter by mail, on time, for the September and October

issues. Bruce Wurst offered to do the copies. Then I, Terri, announced a few upcoming events for October. We then turned the floor over to Eric.

Many thanks to all who provided snacks for the meeting. The large pretzels were brought by Kraig Nelson last month, not opened, so he asked me to bring them back this month. The popcorn was provided by Sam Insana. Many different cake items were provided by Ed Wurst. And of course, the case of bottled water was provided by President Bruce. Many members renewed their dues for 2014.



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November Upcoming PAS Events

By Terri, Event Coordinator

Nov 2: Estrella Observatory Star Party (private) 6pm Potluck, 7:30pm Star Party. RSVP is with Yves and on the PAS Calendar for this event. Sign up on PerfectPotluck.com & bring your scope!

Nov 2: 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.

Nov 6: "Moon Caves" presented by Dr. James Ashley at PVCC. See article in this issue, page 2 for more details.

Nov 7: 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!

Nov 10: 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.

Nov 14: Tentative PAS Meeting of the Minds. In LS-201. This event is only held if there are enough topics to hold the meeting. If it is held, a notice will go out by email, and it will be a party, so bring a snack to share. Bottled water provided by President Bruce. 7pm to 10pm.

Nov 16: Leonids Meteor Shower Party in Carefree, at Mike's house. Potluck is at 6pm. Bring a main dish to share. Bring a drink to share (no alcohol). This is a Meteor Shower viewing party in a dark sky location. No telescopes will be set up at this event. This is a public event, every welcome. RSVP is required with Mike at Primefactory@q.com.

Nov 19: CTCA of Nov 5. RSVP is with Joe. PAS Star Tour Members Only.

Nov 21: Black Mountain Campus (BMC) Public Star Party 7pm to 10pm. RSVP is required with Terri Events@pasaz.org by Noon on this day. Bring everyone you know! Black Mountain campus of PVCC is located at 60th Street and Carefree Hwy S.W. corner. Awesome dark sky location! The reason I want your RSVP

is in case weather cancels this event. I need to get notice to you by 4pm that day, by email.

Nov 29: Estrella Observatory Comet Party. This event is scheduled but if the comet isn't available, the event may become canceled. Its a potluck, so bring some food to share. Potluck begins at 5:30pm. Viewing is about 6:30pm. This is a private event for PAS Members only.

Nov 30: 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.

Nov 30: Comet Party in Carefree. This is a Public event. RSVP is with Mike Primefactory@q.com. Potluck is at 5pm. Viewing will begin about an hour later. Bring a main dish and a drink to share, no alcohol please. Bring everyone you know! This event is based on the visibility of Comet Ison. If the Comet decides not to be visible on this date, a new date will be chosen for this event. RSVP is required so we can inform you of this change or if the weather cancels the event.

Moon Caves - Nov 6

Info provided by Jenny Weitz & prepared by Terri Finch

Nov 6, 2013 "Moon Caves" presented

by Dr. James Ashley. Free Food, Everyone welcome. Time: 6:30pm to 8:30pm in the KSC Community Room on the PVCC Main

Campus. This is not a PAS event, however, many PAS Members will be attending. ***

PAS Swap Meet at the December Meeting

By Terri, Event Coordinator

Start preparing for the PAS Swap Meet. Dig out those old astronomy items, figure out a starting price, and let's get some stuff sold. I know that if you just leave it

laying around your house, the dust will collect, but the \$\$ will not. So, bring it to the swap meet, sell it off, use the \$\$ you got from the sale to invest in a new eyepiece or

something for your current equipment. The PAS Swap Meet is at the December 5, 2013 PAS Meeting. Let's start thinking about and preparing for this now! ***

Many thanks to My Weather Watchers

By Terri, Event Coordinator

I wish to thank the Weather Watchers of PAS. Without them, some events wouldn't be canceled or held, when the weather is hard to predict. I'd like to thank Alex Vrenious for his colorful weather-re-

ports he sends me, and as often as I request them. I'd like to thank Sam Insana, Don Boyd, Eric Steinberg, and William Finch. This probably means that those folk mentioned above should be sure to attend the

PAS Awards Ceremony in April 2014. Thank you all for your help, especially when the weather is questionable. Keep those forecasts coming in. ***

Fun and adventures with the IRS- Getting PAS 501c3 status

By Don Boyd, PAStimes Editor

It all started in 2012 when Mike came into a meeting all excited to show the officers a letter he had just gotten from his parents about their club almost losing their 501(c)(3) status for not filing an income tax form, and wanting to make sure that we were filing ours. He then went on to say that the IRS had no records of us being a 501(c)(3) corporation. Thus began a nearly yearlong odyssey thru the maze of paperwork and bureaucracy necessary to get that status.

We spent many hours combing old records trying to ascertain whether we had ever had that status. We found records from when the club was first Incorporated as PAS from the Phoenix Observatory Association, that we were going to file this because the reason we switched from unincorporated POA to incorporated PAS was so the we could be on even footing with the city of Phoenix who we were entering into an agreement with to build an observatory in PV park. We also needed to have 501(c)(3) status so that we could give people who donated to the upkeep and building of the observatory building a tax writeoff. In the end the observatory plans fell thru when Phoenix built an equestrian park in PV park. The bright lights associated with the park precluded its use as a site for an

observatory. As Phoenix had no other dark sky spots available the deal fell thru. It seems that after this happened the leaders of PAS lost interest in applying for 501(c)(3) status and never filed the completed paperwork.

So the next question you are probably asking is, how then did PAS come to think that we had 501(c)(3) status? As near as we can figure, it started when a notice was put on the backpage of PAStimes stating that we were a 501(c)(3) corporation, by the former editor. When asked about this notice, he said he just assumed that we had that status. This was about eight years prior. So based on this notice the webmaster at the time also put it on the website. Shortly after, a member whose church was disbanding, wanted to give his part of the money from the church to us. This money had to go to a 501(c)(3) corporation. We also received a couple of other donations from people who wanted a tax writeoff.

When we discovered that we were not a 501(c)(3) corporation the officers went into action to see how we could rectify the situation. Mike, the treasurer, started putting together the paperwork needed to apply for tax exempt status. We also consulted with a CPA who had experience with doing tax exempt packages. She said we were not

in deep trouble and if the IRS approved our status it would be retroactive to when the club was formed. She also gave us advice as to which category to apply under. She said not to apply as a scientific corporation as the IRS has a different definition as to scientific, and to apply under education. She also said it would be a good idea to change our governing document to Bylaws rather than Constitution. The IRS prefers that name for reasons she did not go into. We also had to make some minor changes to the Articles of Incorporation that were filed with the Arizona Corporation Commission to meet current language required by the IRS.

Mike continued to put together the package with the help of the other officers thru the summer, and we held a meeting to change the constitution to bylaws and to change the Articles of Incorporation.

In early summer we finished the application and sent it to the IRS. In early fall we started getting notices and phone calls from the IRS about additional documents and we found out that we had to publish the new Articles of Incorporation in 3 consecutive editions of a newspaper.. This was done and after a few more phone calls we got a notice that we were being granted 501(c)(3) status. §

Night Sky Training Session June 8

By Terri, Event Coordinator for PAS

It was a warm evening. It started out with winds, not a breeze, but winds while we were enjoying dinner at Mike's house in Carefree. Mike Marron was an awesome host until about midnight, when he fell asleep in the reclining chair, outside while we were doing our event. Then, shortly after, we realized the snoring stopped, and no one could find Mike, so we assumed he went into his house and to bed. In attendance from PAS was: William & Terri Finch, Terry Dancer, Rich Cunningham, Darlene Ahlefeld, Rodney Fong, and Eric & Ora Steinberg. William set up his 10" dob. I was too tired to set up, from the event the night before, but I did keep the event going. I used William's scope to find the objects we were seeking. Terry set up his 8" Dob, and Rick just recently purchased a new Orion 8" Dob. Twins... Thus we see

why I decided not to set up my 8" SCT. We had enough 8" scopes there. Eric didn't bring his scope, as he was exhausted from the night before, as well. Darlene brought Dusty which is a finders scope. She was having trouble with Dusty all night. Eventually she put him away and hung around a little longer, then went home. Rodney is a new member of PAS and is considering which scope to purchase. He brought his binos to this event, but spent most of his time viewing through the three larger scopes. And then we had a guest, Shane Lyon who was there to figure out what scope he might purchase in the future.

Many thanks to Eric for doing a sky tour. I always learn from my peers (Telescope Team) even if I heard it before (such as the night before), Eric still gave more info than the previous presentation and I

learned some new things from listening. This is really what it is all about. Sharing the knowledge, learning from each other, and using that knowledge to enjoy the night sky, all the more. Thank you Eric!

I had brought the PAS Eyepieces. Alex Vrenios donated a set of Televue eyepieces to PAS at the May PAS meeting, and since I knew President Bruce wasn't ready to start loaning them out, since he would be out of town for 2 weeks, I asked to borrow them, to see if they might be something I would invest in, in the future, my own set. So, I brought those with me, and Terry, William, Rick and I shared them around. We were very pleased with the views. Many thanks to Alex for donating them to PAS.

After Darlene and Eric left, it was about midnight, and Shane had to leave due to having to get up early. He kept repeating

(Continued on page 7)

A Review of "Planets" App for Apple iPhone

By Alex Vrenios, PhD

Living in the city can be a downer if you like looking at the night sky through a telescope. Buying a bigger scope can be an even bigger downer if those little fuzzy patches you love to look at don't get any less fuzzy! Fortunately there is hope for us urbanites. Our salvation lies in cultivating an affair with the Moon, planets and even the Sun, through a safe solar filter. The larger planets and their moons can be a lovely sight, especially on a clear and steady night when Mars' surface, Jupiter's bands or Saturn's rings show some interesting detail. Spotting the shadow of a Saturnian moon on its rings, or watching a Jovian moon emerge from behind the planet can bring an otherwise static scene to life. Tracking a distinctive cluster of sunspots (with an appropriate solar filter of course), as it slowly crosses the face of the Sun, slips over the rim out of view and then re-emerges over the opposite rim on the day you predicted it would appear is quite satisfying.

There is plenty to see from the safety and comfort of your own backyard, even through a modestly sized telescope. All you need to know is when and where to look for these bright objects. This review is about a "Planets" app for the iPhone in the iTunes Store, a marvelous little Sun, Moon and planet finder that is educational, informative and a great deal of fun. And it's free!

On the main screen you will find five buttons across the bottom labeled 2D, 3D, Visibility, Globe and Options. Tapping the Options button lets you set your location automatically or manually. And it includes a link to a nine-minute video tutorial pre-

sented by Dana Peters himself. I recommend watching it if you have WIFI or 4G cellular access to the Internet. It also includes a link to a video that explains "Why Pluto is Not a Planet," but I'll try not to let that influence my review.

The 2D and 3D buttons let you select the display mode. 2D mode presents a planisphere-like disc that shows the locations of the planets against either the constellations at night, or a compass face in the daytime, with reference to the four cardinal compass points N, E, S and W. If your device has a built-in compass, pushing the button in the upper left hand corner of the screen allows the disc to rotate as you turn around, making it easy to find a planet at night. 3D mode gives you a look at the planets and constellations from inside the celestial sphere. Pressing that button allows it to rotate in three dimensions, automatically adjusting the sphere to your point of view. If you tip the phone down toward the horizon, a translucent compass face appears, representing a horizon with the cardinal reference points. Tipping it further down lets you view the constellations that are below the horizon, which is useful if you're waiting for something to arise in the east. In 3D mode there is an extra button in the upper right hand corner of the screen that allows you to see the night sky in the Gamma Ray, X-Ray, Hydrogen Alpha, Infrared, Microwave, or Radio Frequency spectrum. Tap it and select an electromagnetic spectrum other than

'Visible' for an unusual look at the night sky.

The Visibility button presents a set of horizontal 'time' bars, one each for the Sun, Moon and planets. Noon is in the middle, Midnight is at both ends and a vertical red line shows the current time of day. A 'visible' stripe inside each bar shows when each object may be viewed from your current location. Tapping on an object's icon (to the right of each bar) presents a screen with detailed information about that object: radius, mass, orbital period, etc.

I found the Globe display most interesting. It shows a rotating Earth in light and shadow. Drag the globe around to a location of interest and use pinch/zoom to see more surface detail. Tapping the button in the upper right hand corner allows you to switch to a view of the Moon or any of the other planets.

The primary benefit, of course, is to locate a planet in the night sky, assuming that it is visible. You can also use the Options screen to change the date, time or location to help you make a list of objects to see at some future star party. Or you can set the time and date to the morning of April 30, 2013, for example, just to see how the planets were aligned. Another use might be to see what some interesting object you just spotted in your scope might look like through a radio telescope!

This is a really cool app with lots of hidden value. The more I fiddled with it the more interesting it became. Do watch the tutorial video. It explains a lot of subtle features, making the experience even more fun. Highly recommended.

At the November Meeting

By Terri, Event Coordinator

3) Year in Space Calendars. We have 4 calendars of the goal of 10 calendars on order so far. If you want a Year in Space Wall or Desk Calendar, bring \$12 in cash and give it to me, as I will be putting the order in shortly after the November PAS Meeting.

4) Snacks - bring a snack to share. The more snacks, the more fun we seem to have at the meetings.

Water is provided by President Bruce.

5) PAS Membership Renewals - PAS collects the dues for the PAS Year of Jan to Dec, and we start collecting them for the

next year, in September. So, if you haven't already paid your renewal for your membership, you might want to take care of that at this meeting. The deadline to get your renewals in for the next year is Jan 31, 2014. However, waiting that long just makes it more work for Mike and I to get the roster updates, and keep you on the PASaz.org site. So, if you can, come to the meeting and take care of your 2014 dues before the deadline. Thanks so much.

We hope to see you at our next meeting. We have an awesome speaker with a topic we all should hear about. See you there!

A few things are happening at the November PAS meeting.

1) Magazine and Book Swap. Bring a book or magazine, and swap from the pile sitting at the back of the room next to the handouts. Keep these reading materials as Astronomy, Rocketry or other related topics.

2) Bring your old Newsletters, that you printed or received and no longer want, and leave them on the back table. I will use them as handouts at events, to get our web address & events into the hands of the public. Scratch out your name on the mailing label.

SkEye App for Android

By James Coleman

I'm a newbie at all of this so I'm sure wiser heads may disagree but I just found a great Android astronomy app called "SkEye" (note the spelling). The good news starts with its being free. After that, you'll notice that the app doesn't require any special/intrusive phone permissions. It will keep your phone from snoozing while in use and it plugs into your GPS and that's it. When launched, it will ask you to identify your current position and it will assist by using either a GPS signal or your network

coordinates, which should result in a looser fix.

The star map is sharp and contrasty and flows quickly and fluidly on my HTC EVO 4G LTE. The "Tips" button on the upper right is good for, well, tips on how to use the app. Below "Tips" are "+" and "-" buttons that let you zoom the star map as necessary. The three-dot Android "preferences" button opens a panel that lets you search, change locations, select color

themes (including "night red") and change settings. Not bad for a free app.

Features: Time machine : Jump to any date in past or future, Real time Alt-Azimuth and Equatorial coordinates, Messier objects, mini-NGC catalog (subset of ~180 bright objects), Solar system objects including all 8 planets and the 4 Galilean moons, Night Mode, Search, with a guiding arrow, Alt-Azimuth, Equatorial grid
<https://play.google.com/store/apps/d...ip.skye&hl=en> ***

MonteVista June 7

By Terri, Event Coordinator

It was a hot, sticky night. We found the subdivision called MonteVista and arrived to find out we had to pull down into the park, from the street, to unload. I'm glad we had that access. So, we pulled our 3 cars down there, and unload and set up our scopes on the Basketball courts. The temperature might have been cooler if we weren't on the hot basketball court, but because we were, some of us were having wavy planet problems. The attendees didn't seem to notice.

In attendance at this event, from PAS was Eric & Ora Steinberg, William & Terri

Finch, and Don Boyd. 4 Scopes were provided for this event. Eric had his 22" scope and was the center of attention.

William had his 10", I had my 8" and Don had his 6" and Don had most of the crowd, most of the night, when they weren't looking through Eric's scope. I did a little Q & A, as there were only about 5 kids in attendance. There were about 30 of the 90 RSVP's Cathy LaTona had gotten for this event. Many thanks to Cathy for having us at this awesome event. I wish the turnout could have been more, but the heat that night was really tiring. Cathy had provided

snacks & cupcakes, drinks and toys for the kids for the 90 people she anticipated in attendance.

I wish to thank Fred for putting me in touch with Cathy. And I'd like to thank my Telescope Team for all they did that night to make the night that much better for everyone.

I showed Saturn, Ring Nebula & Albe-rio. The skies were totally clear of clouds, but the waviness of the heat coming up from the Basketball Court made some of our views, very unclear. We hope to do more events for this location in the future. ***

Star Party in N. Scottsdale May 18

Attendance was Albert Tucker & Eric Steinberg

Albert writes: We started the event for Jackie's 90th Birthday by showing the guests views of the moon while the sun was setting. Saturn was visible and became clear as the view became steadier. We did the big picture on one scope and a close up on the other scope to show the guests more perspective on views.

I found that the alignment changed and required a quick realignment. This problem reoccurred several times which is very unusual, since the week before, the alignment was spot on for the entire evening. The next day I set up the CGE mount and ran a series of tests that showed no problems. The only thing that was different is the backyard was beautifully landscaped and had plenty of decorative rock cover. The CGE is a heavy mount plus the 30 lbs. of counterweights

may have worked its way through the gravel. Something to consider for setting up at future events with similar ground cover, maybe some metal plates for the tripod?

As the evening continued we worked views as allowed by the moonlight, with the more popular bright globular clusters being the most popular.

Also switching back to Saturn from time to time allowed us to show the improvement in views as the night progressed.

One occasion as I was aligning on Polaris again, several of the guests noted the bright streak in the sky about 8:30 PM to the NNE of our location. A fleeting glimpse was all I could catch of the streak which may have been a satellite.

We enjoyed the music from a graduation party occurring next door to Laurie's home and the guests included College Students with some astronomy related backgrounds.

Eric writes: On May 18th, two members of PAS provided a private start party at the Scottsdale home of Laura LaPat-Polas-ko and her husband in honor of her mother's 90th birthday. Although the setup location was slightly awkward, the view of the sky it provided turned out to be quite workable, allowing us to give a basic sky tour and to show the Moon, Saturn, M3, M13, Polaris, Mizar and the Ghost of Jupiter. About a dozen family members and friends attended, providing a highly appreciative audience. Seeing and transparency were around 8/8. ***

CTCA June 4

CTCA/PAS Event Tuesday June 4th, 2013 Report by Joseph T Collins, Cancer-Fighter @ CTCA WRMC & PAS Member PAS Attendees: Mike Marron, Ofelia Waters, Don Boyd, Joe & Renee Collins. We had a combined total of fourteen 'customers': CTCA patients, care-givers, and family members, nine downstairs in Ricardo's Café to view Mike's meteorite display and five upstairs on the 5th floor garden terrace for Saturn and stargazing with Don and Joe. There was a 'mix-up' with the CTCA on-site publicity and calendar this time; consequently, we had less attendance than last month. The night was moonless with minimal haze and wind. The evening weather was tee-shirt friendly and comfortable for attendees.

Mike Marron primefactory@q.com: Hands-on meteorite display in Ricardo's Café From 5:30pm to about 9pm. I chatted with nine customers about the back-stories around the meteorites of interest to them, how I came upon my collection, and how the nickel for most U.S. and Canadian currency prior to 1952 came from two mines which had meteorites as their mineral source. Joe created a new flyer that we handed out tonight: one side has general info on meteorites; the obverse has a list of meteor showers with their associated comets and a table of NEOs and recent/upcoming flybys. Ofelia was my helpful interpreter.

Don Boyd azphotog@gmail.com: From 6pm to about 7:15pm, I did solar viewing; there was a large cluster of sunspots at about the 11 o'clock position (AR1764) and a couple of smaller ones at about 9 o'clock (AR1762). I had no visitors for solar, as it was not advertised. During the SkyTour portion of the event, I viewed Saturn at high magnification (Barlowed for 240X), the Stargate cluster (asterism), the Beehive open cluster and the Sailboat asterism.

Joe Collins jcollins79@cox.net: Don and I ran the SkyTour portion of the event from 8:30pm until 11pm. Even though we could see Venus and Mercury shortly after sunset, I focused most of the time showing patients and caregivers views of Saturn and its moons and double stars. Even though it was a moonless clear night, most DSOs were fuzzy. Two striking things I saw tonight: an interesting Pleiades-like 'halo' around Cor Caroli (and confirmed with Don) and a beautiful open cluster M23. Here is the exhaustive list of celestial objects I looked at tonight: Planets: Venus, Mercury, and Saturn and its moons: Titan, Dione, Rhea, and Tethys. I looked at multiple star systems, nearby DSOs and Messier objects during the SkyTour in this order: Algieba, 19-Lyncis, iota-Cancri, Bodes' Nebula (M82), M81, Polaris, Castor, 'Ghost o' Jupiter' Pneb, Beehive Cluster (M44), 54-Leo, Algorab, 24-Com, 35-com, Stargate cluster, Sombrero galaxy, Porrima, Cor Caroli, Black-Eye galaxy, M83, Mizar, M3, K-Bootes, Eta-Bootes, M5, 8-Serpens, Graffias, M80, M4, M10, M62, M19, Rasalgethi, M92, M9, Nu-Draconis, M23 open cluster, 'Cat's Eye' Pneb, M57 Ring Pneb. Unfortunately, due to the low customer turnout, I was only able to share a fifth of what I viewed with customers, but I was able to talk with two caregivers at length. Renee talked with several caregivers and patients during the event.

Acknowledgements- Thanks goes to Jennifer Kehren who provided plenty of copies of our handouts and meal tickets. Thanks to Scott Wellman and Blas Ruiz for advertising for our event during the new patients connection meeting. Thanks to Ofelia Waters and Renee Collins for volunteering. Also, thanks to Steve Palmer who dropped by at the very end of the event to help breakdown.

Next time- We (PAS AZ) are looking forward to coming out again next month on Tuesday July 16th. We will be watching the

weather closely as we get closer to monsoon season.

Some helpful Java Scripts from Sky & Telescope (and Internet links from other sources):

http://www.skyandtelescope.com/obse_rving/objects/javascript/moon_phases

Moon Phases on any date

http://www.skyandtelescope.com/obse_rving/objects/javascript/jupiter# Jupiter and Galilean moons simulator

Galilean moons simulator

http://www.skyandtelescope.com/obse_rving/objects/javascript/saturn_moons Saturn & its moons simulator

Saturn & its moons simulator

http://www.skyandtelescope.com/obse_rving/almanac/almanacCustom?latitude=42.383&longitude=71.133&tzone=7&UTdate=now&UTtime=now# Moon & Planets Almanac

Moon & Planets Almanac

http://www.skyandtelescope.com/obse_rving/objects/javascript/mars Mars surface profiler

Mars surface profiler

<http://skychart.skyandtelescope.com/skychart.php> Interactive Sky/Star Chart

http://www.skyandtelescope.com/obse_rving/objects/javascript/satellite_tracker/satelliteChooser ISS/HST/STS Satellite tracker

http://www.skyandtelescope.com/obse_rving/objects/javascript/3304091.html Jupiter Red Spot transit Calculator

http://www.skyandtelescope.com/scop_eocalc Telescope Attribute Calculator

<http://www.lunasociety.org/atlas/> Full Moon Atlas by grid zones

<http://earthsky.org/tonight> A beginner's website showing what is up tonight

http://www.skyandtelescope.com/obse_rving/atagance An intermediate website with a weekly update on celestial events

<http://tonightssky.com/> A website for amateur astronomers to plan a viewing list of celestial objects for a given place and time ***

How Bright Is That Planet?

By Leah Sapir

Venus is by far the brightest planet, often shining like a beacon, or resembling a plane coming in for a landing. Its magnitude varies from -4 to -4.5.

(Note: On the magnitude scale, lower numbers are brighter, and negative numbers are VERY bright. In this list, I am rounding off the values for convenience and clarity.)

Jupiter runs a close second, with mag-

nitude varying from -1.5 to -3. Saturn's magnitude varies from +1.5 to 0. Mars is +1.5 to -2. (Very occasionally, when Mars is at one of its closer oppositions, as in August 2003, it can be almost -3. But this is rare, happens once in 15-17 years.) Mercury - in practical terms (when Mercury is actually visible), its magnitude varies approximately from +2 to -1. (The "official"

magnitude has a wider range, but for unknown reasons, these "official" numbers include times when Mercury isn't really visible.) However, since Mercury is always so close to the horizon, its actual visibility is dimmed by the atmosphere.

For comparison, Sirius is -1.4 mag, Rigel is +0.2, Vega is +0.1, and Deneb is +1.3.

Night Sky Training Session June 8

(Continued from page 3)

this, but not leaving. I don't blame him. Who wants to go home to have to get up at 4am? So, finally, he left (I hope he got enough sleep).

But before he did, the class turned to some great objects in Sagittarius and Scorpius. Both of these constellations were above the horizon, the sky glow wasn't that bad in that direction more to the East of it, and no clouds anywhere to be seen. So, the 3 scopes did some serious slewing around that area. We found a bunch of objects we couldn't identify, but then I pulled out a star chart and used William's Telrad to figure out where in the sky we were. We saw the Eagle Nebula, Trifid Nebula, Lagoon Nebula, Ring Nebula - it was a Nebulous night. We also saw Saturn, M13, and some other M #'s I don't recall. It was a busy night, with plenty to see and do, with awesome company (Rick, William and Terry) and decent temperatures to make the viewing pleasant. As the group thinned out, the rest of us went in for a night snack. Then we came back out to do more viewing. The party broke up about 3:30am. I'm looking forward to the next event!

Darlene writes: Rodney and I have to be watched carefully. We had more fun with my table than is probably lawful! The

table has JUST been replaced, better luck next event. I had Dusty (jittery 70mm refractor on light-weight tripod) with me this time and she just doesn't compare to big sister Yvaine. Dusty needs a new home before I cannibalize her for eyepieces and backpack..... I did see Saturn, an almost oblong blur if I used my imagination, and that was when I could figure out how to keep the silly thing in the field with the right jerky adjustment. Gave up on her but did see numerous messiers on the bigger badder scopes, and had a good time with Starry Night. Even identified black swan nebula for someone (who?) who saw it under the eagle nebula. Laptop still had 34 minutes to go before I started pumpkinizing at 11:00. Lost a pearl earring on the palace steps, maybe Mike found it.....

Rick writes: The evening started out with a potluck, where the secret of my "Ancient Family Secret" scallop potato recipe was revealed. Then we all went outside to view the sunset and to get setup for the evening. I spent some time before Eric started his presentation talking with Shane explaining the differences between magnification and light gathering ability for different sized telescopes and other topics. William, Terry, Terri, Darlene, and Eric

also help answer questions as we went along, making this a communal collaboration in sharing our knowledge.

After Eric had concluded his excellent presentation everyone aimed their telescopes at Saturn. Everyone took turns passing the PAS TeleVue plossl 40mm to 7.4mm set eyepieces between each telescope to compare and contrast each one. Some Russell Optics, Orion DeepView, Orion Q70, Orion Shorty Barlow, and my new TeleVue 2x Barlow were also tried in various combinations, all viewing Saturn, its moons, and the Cassini division.

Next, as part of the training session we all tried to find various objects, with all telescopes training on the same object at the same time. Among the sites viewed were the Ring Nebula, Eagle Nebula, Perseus Double, ET, Andromeda Galaxy, M55, M4, and others. I should also note that more meteorites were seen by everyone this evening then during some of the nights where meteorite showers were supposed to be spectacular. This excellent educational evening concluded at 3:45 AM

Don writes: I showed and viewed these objects: Venus, M4 (the beehive), Stargate, and the Sailboat. ***

Photos for PAS online Photo Gallery

By Terri, Event Coordinator and photo gallery manager

Several PAS members have mentioned that they caught some cool astronomy photos of stuff in the sky that they'd like to share.

We have the PAS Photo Gallery online. I would love to post your photos to the gallery. If there are a lot of them, put them on a CD, but if you are talking 5-10 photos, just send them to me by email.

I will make a photo album that is your album, and if you give me the date and possibly a small bit of info about the photo, how it was taken, with what equipment, and

other details, I'll include it in the caption that we can add to photo in the photo Gallery.

Terry Dancer will be sending over photos for this purpose. And I hear Darlene Ahlefeld may have caught an image of Comet Panstarrs. Next comet coming our way is Comet Ison. Send me your photos!

Send them my way. I'll make your album and as you send more photos over, I'll put them in there. Just remember, it is more interested to look at a photo that has a

caption, especially the date it was taken and what it is, than just to have a photo. So, send them over with some details to include.

All photos are welcome as long as they are Astronomical in nature. Including photos of you with your telescope, if you want, or you at an event for PAS. Just some suggestions. It's your album, send them my way and I'll post them. Let's make our photo gallery is that much more interesting with your photos in it! ***

Bookmans Telescope Workshop June 23

By Terri, Event Coordinator for PAS

It was a lovely day to have a Telescope Workshop. No RSVP's but we had a great discussion with the following PAS members in attendance: William & Terri Finch, Don Boyd, Earl DeLong & Rodney Fong.

The 2 hours went by quickly as we talked about all sorts of things among ourselves, from telescopes to eyepieces, the Event earlier in the month, filters, upcoming events, and more. Many thanks to those

PAS members who attended and helped out. We look forward to the next Telescope Workshop. ***



Arizona Sky

Leah Sapir

The second half of the year is great for meteor showers: the Perseids in August, Orionids in October, Leonids in November, Geminids in December. Even though there are meteor showers year-round, these are “the best and the brightest”.

Each meteor shower is named after its “radiant” – the constellation that the meteors appear to radiate from. But of course the constellations are really in the distant background, and the meteors are nearby bits of space dust that are burning up as they fall through our atmosphere.

Before the 19th century, meteors were believed to be an atmospheric phenomenon, like lightning. However, astronomers who observed meteor showers and mapped the source of the particles, realized that meteor showers occur when Earth crosses dusty areas of space, particularly dust trails left by comets.

For example, the Perseids, on Aug 11-12, are the remains of Comet 109P/Swift-Tuttle. The Leonids (Nov 17-18) come from comet 55P/Tempel-Tuttle; the Aquarids (May 5-6) and Orionids (Oct 20-21) are leftover bits of Halley’s comet. The Geminids (Dec 13-14) are associated with an asteroid instead: some of the Geminid fragments have the same orbit as the asteroid 3200 Phaethon. But this is a mystery, because unlike a comet, an asteroid doesn’t leave a trail of debris that could produce a meteor shower. Apparently, this asteroid does eject bits of material when it is closest to the Sun, due to the Sun heating its surface. Phaethon’s elliptical orbit brings it as close as 13 million miles from the Sun’s surface, less than half the distance of Mercury. But these bits of ejected matter amount to just 0.01% of the mass of the Geminid debris, and this is not enough to account for most of it.

When talking about “meteors”, we need to distinguish between “meteoroids”, “meteors”, and “meteorites”. A bit of space dust entering the Earth’s atmosphere is a meteoroid; the streak of light that we see when the meteoroid falls through the atmosphere, and glows with heat from the friction, is a meteor; and if the meteoroid was

large enough for anything to be left to reach the ground, that part is a meteorite. (Of course, we shouldn’t forget about “meteor-wrongs”. These are terrestrial stones that resemble meteorites, but aren’t.)

Many meteorites have been found in Antarctica. Although meteorites fall all over the globe, in Antarctica they are easier to find because the ground is covered with a layer of snow and ice two miles thick. Therefore any surface rocks must have come from the sky. Moreover, the dark-colored surface rocks stand out on the white surface. The motion of the ice sheet, and evaporation of the ice, cause embedded meteorites to accumulate in some locations, such as near mountains.

Another good place to look for meteorites is in deserts, where the dark meteorites stand out against the light-colored sand.

Many tons of meteoroid material enter Earth’s atmosphere every day, but most are just grains of dust, only a few mg each, or small pebbles. Meteors that overtake the Earth enter the atmosphere at around 6 miles per sec (=21,000 mph), while those that enter head-on can travel as fast as 45 miles per sec (=160,000 mph). The speed is a combination of the meteoroid’s speed in its orbit; the Earth’s speed; and the Earth’s gravity drawing it in. (For comparison, the speed of a bullet is 2000 mph, and the speed of sound is 768 mph.)

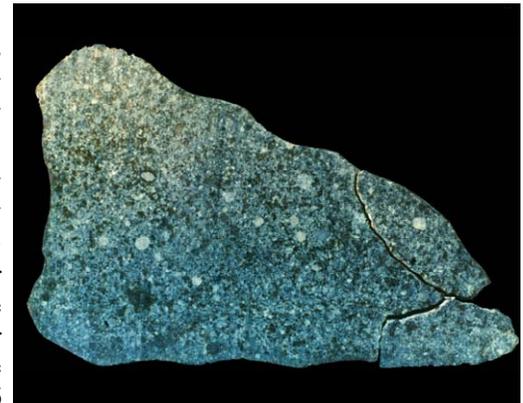
As the meteoroid falls through the atmosphere, friction with the atmosphere heats it to over 1100 C (2000 F), causing it to vaporize. At the same time, collisions between the meteoroid and the air molecules ionize the air molecules. The meteor trail that we see, which forms at an altitude of 30-60 miles above the Earth, is a combined result of the glowing vaporized meteoroid material and ionized air molecules.

Of course, larger meteors shine brighter. The brightest meteors (mag -3 or higher, brighter than any planet) are called fireballs; the ones that are brighter than -14 are classified as bolides. They are often the result of very large (boulder-size) meteoroids. Bolides can often make audible sounds or explode.

The friction with the atmosphere quickly slows most of the meteoroids to about 100 mph. Although most meteoroids burn up or vaporize in the atmosphere be-



Iron meteorite found in Barringer Meteor Crater, Arizona (Picture credit: NASA)



Stony meteorite found in Antarctica (Picture credit: NASA)



Meteorite from the Moon, found in Antarctica: composition similar to lunar rocks. (Picture credit: Lunar and Planetary Institute)



Meteorite from Mars: black patches contain gases similar to Mars atmosphere. (Picture credit: NASA)



Arizona Sky

fore they reach the Earth, the smallest dust-like grains, called micrometeoroids, do not burn up because the air resistance slows them down, and they then float slowly to Earth. If you'd like to have a meteorite of your very own – or a bunch of them – without travelling to Antarctica, you can collect some micrometeorites in your own backyard. All you need is a large bowl of water and a magnet. Instructions here: <http://tinyurl.com/q75y28j>.

On the other hand, larger meteoroids might not burn up completely, and the remaining fragments can reach the Earth as meteorites.

The very largest meteoroids (more than a few hundred tons) are not slowed down by the atmosphere, and can produce a crater when they crash into the Earth. For example, Meteor Crater in northern Arizona was produced by an iron meteor about 100-150 ft in diameter, that hit the Earth about 50,000 years ago. The crater is about 4000 ft in diameter and 650 ft deep. There are over 120 known meteor impact craters worldwide.

In 1908 a meteor exploded over Siberia, near Tunguska. The meteor was about 200 ft in diameter and might have been composed of several pieces. It did not reach the ground or form a crater, but it flattened trees in an area 30 miles wide, and the explosion was heard as far away as London.

Around 65 million years ago, the impact of a comet or small asteroid (a few miles in diameter) was probably the cause of the extinction of the dinosaurs. It produced a crater about 120 miles across, which is now buried beneath the jungle in the Yucatan Peninsula of Mexico.

Since we don't want to go the way of the dinosaurs, today there are many projects – both professional and amateur – for tracking asteroids that might hit the Earth. There are at least 1000 known near-Earth asteroids larger than ½ mile in diameter; on the average, one of them could hit the Earth about once in a million years.

There is no record of a person being killed by a falling meteorite, but a woman was injured by an 8-lb meteorite in Alabama in 1954, and a dog was killed by a meteorite in Egypt in 1911.

On any night, even without a meteor shower, we can usually see a few random meteors in a dark sky. While meteor showers are mostly grains of dust left behind by

comets, most of the meteorites found on Earth (around 99.8%) originate from asteroids; some are from comets, the Moon, or Mars. The composition of a meteorite shows where it came from. For example, several meteorites that were found in Antarctica seem to be from Mars, because gases trapped in these meteorites have the same composition as the Martian atmosphere.

The major categories of meteorites are: iron, stony iron, and stony. Iron meteorites are composed mostly of iron and nickel (usually 90% iron and 10% nickel, although the nickel content can vary from 5% to 25%). They are similar to M-type asteroids, which are made of pure nickel-iron. They often have a pitted surface. About 6% of meteorites are iron meteorites.

Stony iron meteorites are composed of a 50-50 mixture of iron and stone, like S-type asteroids (which are composed of iron- and magnesium silicates, along with nickel-iron metal). Usually the silicate crystals are embedded in an iron matrix.

Stony meteorites include chondrites, carbonaceous chondrites, and achondrites. These meteorites often have a smooth surface after their passage through the atmosphere.

Chondrites are similar in composition to the mantle and crust of terrestrial planets, and may have been formed from the material of the early solar system. They sometimes contain "chondrules", which are round grains of specific minerals about 1 mm in diameter. Most meteorites (about 80%) are of this type.

Carbonaceous chondrites are similar in composition to the non-gaseous components of the Sun. These contain carbon compounds, and are similar to type C asteroids, which are composed of carbon compounds, clay and silicate rocks. Only about 5% of chondrites are carbonaceous.

Achondrites are stony meteorites that don't have chondrules. Their composition is similar to terrestrial basalts. About 8% of meteorites are achondrites. Meteorites that originated on the Moon, Mars, or Vesta are of this type.

Stony meteoroids are more common than metal, but as meteorites it is easier to find and identify the metallic ones, since it



*A Bird's-Eye View of Barringer Meteor Crater, Arizona
(Picture credit: U.S. Geological Survey)*

is not usual to see chunks of metal sitting around on the ground. Meteorites can resemble ordinary Earth rocks, or they may appear "burnt". Their surface can be rough or smooth. Their size can be anywhere from sand-grain size to large boulders. The largest known meteorite is the Hoba meteorite, which was found in Namibia, Africa, and weighs 60 tons. It is made mostly of iron. The largest stony meteorite weighs 1.7 tons, and fell in China in 1976.

This month the Leonid meteor shower will reach its peak on the nights of November 16-17 and 17-18, but a full moon will make it difficult to see any but the brightest meteors.

In the meantime, Venus will be visible in the west after sunset, setting around 8 pm throughout November. Through a telescope we can see that it is in its half-phase, visible as semi-circle.

Uranus and Neptune will be high in the southeast at sunset. Neptune sets at 1:30 am at the beginning of November, and 11:30 at the end of the month. Uranus sets about three hours later.

Jupiter is rising earlier, and starting to grace our evening sky. It rises at 10 pm at the beginning of November, and 8 pm at the end of the month. Mars is still a morning star, but rising earlier – around 2 am.

Saturn is starting to return to our morning sky, and will be visible before dawn, at around 6 am, after November 20. Mercury is also a morning star, present in the dawn twilight for most of the month. It will be slightly visible in a dark sky from around November 15 to 20, at around 6 am.

Join us next time when we continue to explore the Arizona sky. And in the meantime, wishing you clear skies and happy observing!

Mike's Lecture Series June 22

By Terri, Event Coordinator

It was a very wonderful night for a Lecture, presented by Mike Marron at his home in Carefree. We gathered for a potluck, and ate some wonderful foods. In attendance from PAS was: Darren Johnson, William & Terri Finch, Don Boyd, Sam Insana, Darlene Ahlefeld, Bob Senzer, Rodney Fong, Eric & Ora Steinman, Kevin Harcey and we had a guest of Pat Leonard.

The potluck started at 6pm. We had planned to start at 5:30 but hardly anyone had arrived, so we waited until 6pm. As

William and I arrived, Mike's Joe was leaving. I helped Mike setup for the potluck, and Pat arrived. So, we ate and then, we were ready to start the lecture, but it wasn't 7pm, and since we set a start time for the lecture to begin at 7pm, I didn't want anyone arriving late to miss the beginning of the lecture.

Mike took over.... did a great job of "Killer Asteroids." This presentation was similar to last time but had a bunch of really awesome new stuff added. The lecture lasted 2.5 hours. Then, some of us went back

for more food. A weird movie was chosen to watch, so we all watched it (those of us who stayed for the movie). When the second movie was started, William & I moved into the kitchen area, I helped clean up, and about an hour later, we left at 11:30pm. I think that is the earliest we have ever left Mike's house at the end of an event. It was a great evening, great friends, and a wonderful lecture with a lot of participating questions for Mike to answer. Thank you Mike, for an awesome evening! We look forward to the next Lecture in the Series. ***

Bookmans World UFO Day July 2

By Terri, Event Coordinator

Katy Spratt invited PAS to Bookmans to do World UFO Day. It started out as that, but eventually turned into a discussion about Telescopes & Meteorites. In attendance from PAS were: William Finch with his 10" Dob, Terri Finch with her 8" SCT & Astroscan, Don Boyd with his 6" Newton, and Kevin Harcey with his 4" scope. Mike Marron brought meteorites & Ofelia Waters attended to help out. Rodney Fong was

there assisting, too. Photos of this event are in the PAS Photo Gallery.

We set up telescopes & meteorites indoors, for display and to be able to talk about the different scopes. Katy walked around Bookmans drawing a crowd to our display area. We were scheduled from 7pm to 8:30, and we were busy the whole time. It was a great event. Many thanks to Katy

and the PAS Team.

Katy writes: I just wanted to send a big THANK YOU to PAS for a wonderful event. I had a great time talking with you (Terri), William, Mike and the other members - as did all of the Bookmans customers. I'm really looking forward to working with you again. Let's meet up sometime soon and and talk about ideas. ***

Bookmans Features PAS

By Terri, Event Coordinator

Many thanks to Katy Spratt, our contact at Bookmans. She did a write up review of the World UFO Day on July 2, that several PAS Members were involved in. See above article. If you would like to read

about PAS on the Bookmans website, please visit this link: <http://bookmans.com/content/community-partnerprofile-phoenix-astronomical-society>. The photos that were taken that day will

be in the PAS Photo Gallery for your viewing pleasure, and Katy has her photos posted to the Bookmans site. It was a very successful event and we thank Katy for having us there for this event. ***

Mike's Fireworks Party in Carefree July 4

By Terri Finch

Many thanks to Mike for hosting this party. The party began with a potluck at 6:30. We started the potluck right on time, as many of the attendees were hungry by then. In attendance was: William & Terri Finch, Darlene Ahlefeld, Don Boyd, Rodney Fong, Sam Insana, and Eric, Noam & Ora Steinberg. Darlene brought a Mac & Cheese dish, Eric supplied Salami & Cheese. Ora made some great chocolate Cheese Cake, Sam brought Church's Chicken, Organic Mango Lemonade, and Frozen Fruit Bars to enjoy during the fireworks, William & Terri brought Sardella's Pizza. The food was great, the people were great.

We had one interesting thing happen that night. Earlier in the day, Mike's A/C died, so he had set up fans to move the air so we were more comfortable.

So, we ate, then we watched the first half of the movie Serenity. We stopped when the Fireworks were about to begin, around 9pm. We all took a chair out to the observing location, at the end of Mike's driveway, and drinks. Sam shared his Fruit Bars and we enjoyed about 20 minutes of Fireworks. The Fireworks were disappointing, in length, this year, as they were very short, but they were good and the Smiley Face at the end was interesting. Mike said

the Fireworks the day before, on July 3rd, were at least an hour long, so next year, we are doing this on July 3rd to get the better Fireworks show. After the fireworks, we settled in for the rest of the Movie. About 10:30, the party broke up, with many going home. Rodney, Don, William and I stuck around to chat with Mike. About midnight, some more went home and finally, Don, William and I left about 2am. It was a good party. Thank you Mike, for hosting it. We look forward to next year's Fireworks party at your home! ***

Indoor / Outdoor Astronomy Event at PVCC Sept 26

by Terri, Event Coordinator

This evening started with the warning of a Haboob headed our way, towards Phoenix coming up from the S.E. So, Eric & I monitored the weather and then decided the evening would be good viewing. We met at PVCC G-147 at about 7pm. The class in the room let out and we went in to set up. Attending from PAS was William & Terri Finch, Eric & Ora Stenberg, Rick Cunningham with his 8" Dob, and Rodney Fong. We had a new PAS member attend-

ing Paul Facuna, who brought his Nextar 102GT for help during the Telescope Workshop part of this event. We also had 3 students of the Astronomy Class attend, Julia N, Adrienne F, and Matthew. Outdoors, we had Rick with his scope. Indoors, to start, we had Paul with William & Eric getting Paul's scope all lined up. Also indoors we had me doing demos. I had a Moon demo, I had a Earth Moon demo showing the rotation of the Moon around

Earth and talking about the phases of the Moon and I had the Constellation Tubes. We also had the PAS handouts on a table. After about an hour, Eric suggested we take Paul's scope outside to try to align it for him and set it up, etc. So, they did that and it was a very successful evening. Many thanks to Eric, Rick, Rodney, & William for helping to make this event a success. We look forward to the next Indoor/Outdoor event in the Spring 2014.

Estrella Observatory July 6

By Terri, Event Coordinator

The Estrella Observatory star party was very good. It was hot, humid, but we had 2 scopes set up. Rick Cunningham brought his new 8" dob. Prior to arriving at Estrella, Terri Finch & Rick conversed about her bringing her eyepieces to the event, for Rick to use. So, William Finch & Terri brought their table, tablecloth, eyepieces, lasers, etc... for use at the event, and Rick provided the scope, for which we had a blast viewing through. Also in attendance from PAS was Rodney Fong, Alex Vrenios, Chris Johnson, Darren Johnson, & Tim Besch (hadn't seen him in a long time at the PAS events).

The potluck was awesome. I don't

know who brought what but I do know that Yves provided the sushi. Wow, what a treat! William & Terri provided Pizza from Papa Johns, which was a great hit, as it was like Ninja Pizza - disappeared quickly without a trace.

So, when 6:30 came, Yves was out shopping for the potluck, so Darren set up his brand new, First light this night, 11" telescope. Rick set up his scope, and Terri set up the eyepiece / accessories table. Then about 8pm we ate, and ate, and it was soooo good.

About 9pm or so, we all went outside to view. We had great viewing, hot temperatures, and awesome people until about

10:30 When the clouds decided to take over the sky. Around that time, Yves guests left. At first, the clouds hung around to the East, but after a while, they looked threatening, and so Darren decided about 11pm to pack it in. We also decided that was a great idea, rather than be caught in a downpour. Rick, William and I went back into the house to thank Yves for a great event and then went home.

Many thanks to Darren and Rick for bringing their scopes. Many thanks to Yves for hosting the party and for the sushi! We look forward to the next events: Aug 3, Sept 7, Oct 5, Dec 1, & the Comet party on Dec 29. ***

Mike's Lecture Series #3 July 27

By Terri, Event Coordinator

It was a very interesting night with great food and a great turnout for the audience for Mike's Lecture #3. The topic was "Quantum Springs." This lecture was a bit over our heads but it was entertaining and Mike wanted to practice this lecture on us. In attendance from PAS was: Kevin Harcy, Darlene Ahlefeld, William and Terri Finch, Rodney Fong, Don Boyd, Eric & Ora Stenberg. From the public we had Tom and Deborah Roach.

For food we had a Taco Salad brought

by Kevin, Cake by Rodney, Darlene brought Mac & cheese, Ora had lasagna, Don also brought lasagna for which there wasn't any left after a while. William & Terri brought pizza, Deborah brought a parfait which disappeared quickly, and Eric brought his favorite Salami & Cheese. The food was great.

The lecture began on time. Mike was eager to do the lecture early but I kept him on schedule incase some of the other people who had RSVP'd, were planning to show

up closer to 7pm. They didn't, so we started at 7pm. Mike's Joe came over and enjoyed some food during the lecture. The lecture ended about 9:30 with some of us amazed at the info Mike knows about Quantum Spring Theory. After the lecture it was planned to have a movie, but mostly everyone left so we hung out for a bit chatting with Mike, until Mike was too tired to stay awake and then everyone left. It was a great lecture, great people in attendance. We look forward to the last in the Lecture Series, happening on Aug 24. See you there! ***

Guest Speaker Lineup

The back page of the Newsletter is where you look to find out who the next few guest speakers will be and what topics they will be sharing. It looks like our Guest Speaker list is lacking. I could use some suggestions. I really would love to fill in all of 2014, before 2013 ends. I did that last

year, planned a year ahead of speakers. But, for some reason, I haven't been able to plug any speakers in for the 2014 Speaker List. So, if you know of anyone who would be willing to do a 1 hr to 1.5 hour presentation to the club on a topic of astronomy, let me know. Send me their email address and I

will try to get them for a speaker. I'd love to hear from some new speakers. We love our return speakers, but to have some new ones this coming year, would be fantastic. So, let me know who you know, who would like to be our guest speaker. Thanks so much for your help.

Mike's Lecture #2 July 13

By Terri, Event Coordinator

It was a very interesting evening. It started with so many clouds in the forecast, no one brought their scope. This was to be a Potluck, Lecture and then Star Party. However, the evening was awesome without the Star Party and the clouds took over and stayed the whole night.

In attendance was Darlene Ahlefeld, William & Terri Finch, Don Boyd, Rodney Fong, Sam & Frank Insana, Kevin Harcey, Mike Marron (Host), Eric Steinberg, a guest Greta Young & Mike's Joe (I forget his last name). The food was great. Pizza & Pop brought by the Finches, a great dish of mac & cheese brought by Darlene, Rodney provided dessert and for the movie - Popcorn, Zucchini Parmesan Pasta brought by Greta and more. We ate until we were full, then, due to Mike not having a working laptop, Don offered his. However, we found out that Don didn't have Power Point

on his laptop, so it was a good thing I had mine with me. My netbook is slow, but better than no laptop at all.

So, 7:20, after a few technical difficulties, the Lecture began. The lecture went to about 9pm. After the lecture concluded, several folk departed for the night. William had brought his Android TV hookup to try to get Netflix to work on Mike's TV, but Mike's internet connection was too slow to allow access to Netflix, so we gave up on it and picked a movie. Those of us who stayed, enjoyed the popcorn and movie "Alice in Wonderland" with Johnny Depp. When the movie concluded, several more members departed with their tummies full of popcorn (Many thanks to Rodney for the popcorn), and then it was down to Don, Kevin, William & Terri. We hung around until 1am and then departed.

Many thanks to Greta for joining us and bringing a delicious dish. Many thanks to Mike for hosting the event. The lecture was "Upcoming Astronomical Disasters" and it was different than last time, many differences and interesting. Very good lecture. You won't want to miss the next 2 Lectures on July 27 & Aug 24. See you there!

Greta writes: I had a great time at my first public lecture with PAS. I learned a lot about the different types of disasters that are expected to affect us in the astronomically-near-future -- certainly makes me appreciate being alive in the here & now! It was a pleasure meeting the PAS members and enjoying the potluck together. Everyone was very friendly and welcoming, and I'm looking forward to future lectures and events! ***

Bookman's Telescope Workshop July 14

By Terri, Event Coordinator

It was a very cloudy day. In attendance from PAS were William & Terri Finch, Don Boyd, Rick Cunningham, & Rodney Fong. We had 2 RSVP's. 1 showed up: Steve Stewart with his ETX 125EC. Don and Rodney helped him with his scope, and as he left, I found out a phone call came to my phone, so I listened to it, and told Deb-

orah & Tom to come over to Bookmans. They brought their Celestron Astro Master 130 and everyone helped them with it.

It was a very successful event. We totally enjoyed it and while there were no RSVP's present, Rick, William, & Don went to the Astronomy section of Book-

mans to look for books. They didn't find any this time. Then, they returned and we had some great conversation about telescopes, accessories, etc. Many thanks to Rick, Rodney, Don and William for all their help with this event. We look forward to the next one. ***

CTCA July 30

By Albert Tucker

The July 30, 2013 CTCA event went well, and our NSTS helped. Luckily I had my laptop with Starry Nignt Pro running and could identify objects to help tracking. As usual, GPS signals are not available on the roof of the CTCA building. Magnetic

interference also negates any use of a compass, so star alignment is required. Light pollution was at an all time high with construction lights next to CTCA. Saturn was the finest object to view with my pollution penetrator TAK and special filter. The CT-

CA entertainment coordinator did his best to direct traffic up my way but because of the heat and competition from a girls with guitars performance traffic was minimal. The cafeteria was serving baked tuna and had carrot cake so I was set. ***

Arizona Museum of Natural History Field Trip

September 28: William & Terri Finch along with Sam & Frank Insana and Matt Kohl, his dad Arnold, sister-in-law Amber and all five nephews attended this event. It was a very fun morning. We arrived in time for the doors to open at 11am, and we were done by 2pm. The interesting parts of this

museum, that I really enjoyed, was the Astronomy section, the Geology section and the Dinosaur section. We saw the whole museum. We read & answered question displays, we viewed about an hour long video on the Dinosaurs, and it was just a great day. The Astronomy section was set

up in a timeline with some very interesting info. Very nicely done. I wish to thank Matt for finding the Free Tickets to attend this event. And I wish to thank Sam & Frank for their informal, fun, interesting tour of the museum. ***

Impromptu Observing Session Aug 8

By Eric Steinberg

August 8th provided a welcome break from monsoon humidity and especially cloud cover. I along with another observer from SAC took advantage of the clear skies with a night at the Cherry Road site. This is a nice site, not quite as dark as Antennas but pretty close. It's also just a little further (and a lot darker) than Mayer. I arrived there around 5:30, set up and had dinner at a leisurely pace. Temps were in the upper 80's but once the sun went down, it cooled off nicely and did not get chilly until around 11. A sliver of moon hung over the horizon

sinking out of view a little after 8. First up was Saturn looking crisp on and off – skies were only moderately steady with seeing around 6 or 7 out of 10. Once it was dark we looked at a number of Messier objects including M4, M5, M6, M8, M10, M11, M13, M14, M16, M17, M20, M51, M82, M101. With the excellent transparency, the southern nebulae (Lagoon, Triffid, Eagle, Swan) were particularly impressive with an O-III filter. Once it got truly dark, the Milky Way was stunning – bright with lots of definition and detail all the way from

below Cassiopeia past Sagittarius where it dissolved into the Phoenix light dome. It was worth taking a break from the telescope just to watch it. Other objects observed were the Eastern and Western Veil Nebulae and the Cat's Eye. I finished the evening with 21 more objects on the Herschel 400 list, including 14 obscure open clusters in Cassiopeia and a bunch of small galleries. Overall a really good night for faint fuzzies and a welcome monsoon surprise. ***

Estrella Observatory Star Party & Yves's Birthday Party Aug 9

By Terri, Event Coordinator

Many thanks to Yves for inviting us to his birthday party. From PAS, in attendance was, Mike Marron, Ofelia Waters, William & Terri Finch, Rick Cunningham, Kevin Harcey, & Rodney Fong. The food was awesome. Yves always provides a great spread of things to enjoy for dinner. The cool thing this time was the Lychee. Oh, and Ofelia made a most awesome Beef Brisket. The birthday cake had an image of the Lagoon Nebula on the top, very well done. Photos of this event will be in the PAS Photo Gallery. We started out eating and eating and it was very good. Then, we decided to set up Rick's scope, as William and I didn't bring our scopes, but instead

provided eyepieces and accessories to Rick to play with. We enjoyed this time with Rick & using his scope. So, we started out with some public objects such as Saturn, before is set, and because we were the only scope there, other than Yves's Monster scope. And we showed the Perseids Double Cluster, Andromeda, which I couldn't find but Rick did, ET Cluster, Alberio. When no one from the group was at the scope and it was just the 3 of us, we did some hunting in Sagittarius. Along the bottom of Sagittarius is 3 Messier objects I had never seen. M 70, M 69 and M 56 or something. Anyway, we viewed all three of them because usually in August, no one gets to see Sagittarius due

to storms and clouds. This event was clear to the South, so I took advantage of it, and we viewed these three items in Rick's scope. Very enjoyable. Then, the intent for the next night at Mike's event was to compare the view of these three objects in William's scope (which we did). It was a great time, we met a bunch of nice people, enjoyed the event, the food, and then about 10:45, the clouds took over the sky, totally, we packed up, said good night and Happy Birthday to Yves, and left about midnight. Many thanks to Yves for such an awesome event and for inviting us to celebrate his birthday with him. Looking forward to the next Estrella Observatory Star Party. ***

Bookmans Aug 11

By Terri, Event Coordinator

It was a lovely, hot, humid day inside Bookmans Entertainment Exchange at 19th Ave and Northern. Right inside the door, by the front windows, was the PAS Table of handouts and the following PAS Members, there to assist: William & Terri Finch, Don Boyd, Rodney Fong, Rick Cunningham and new to this venue, Ryan Maughan, who has been a member for a while, but just not active. Thank you all for assisting with this event.

In attendance from the public was Angela Brunetti and her daughter Isabel. They

wanted to know what telescope to purchase as a first telescope. William, Terri, Don and Rick gave them all the info to help them make the decision. They were there about 1.75 hours. Then, about half way through their discussion, Steve Zeem came with his CGem mount and a GFT 102 scope. Rodney, Don and Rick assisted him and before he left, I invited him to future events.

As we were getting ready to pack up, Mark Cameron stopped by to say hi and get info about the club, and then Rocky wandered over and asked questions about eyes

and if we thought he was having trouble with his eyes. As we are not Doctors, we suggested he come to an event, compare what others are seeing and use that info to determine if his eyes needed help. He was seeing 3 stars, with one of them moving (not a plane).

It was a very successful event. Thanks to all who attended, all who helped and many thanks to Rodney for helping set up, take down, and help Steve move his scope into Bookmans and then back out to his vehicle. See you at the next event! ***

Mike's Perseids Meteor Shower & Star Party Aug 10

By Terri, Event Coordinator

It was an awesome night for stargazing, friends, food, fun, and people. Lot's of people. So, it started with Rick Cunningham (with scope) arriving early so he could use his new solar filter and it was awesome. He started right away sharing the views of the sun. Sam Insana (with scope) showed up a little later to set up his PST. Thank you both for doing that. It was hot and humid in that sun. Also attending this event from PAS was: Eric & Ora Steinberg (with scope), Rodney Fong, William & Terri Finch (with 1 scope), Don Boyd (with scope), Bob Senzer, Mike Marron (Host of the party), & Darren Johnson (with scope). Many thanks to all who brought their telescopes for this great event.

Food was awesome. We had a great turnout. People brought lots of yummy things to eat and Mike was saying he had

too many desserts to hang on to, by the end of the event. We had about 45 people from the public in attendance, of which I caught some names, but not all. Shereen brought Mac & Cheese, Rick had Chicken, Greta & Julia Young had Pasta Salad, William & Terri brought pizza, Sam brought the Frozen Fruit Bars. But there was plenty to eat.

The evening started with viewing a few objects for the public. We had a group of scouts attend as well as some friends from Yves's Birthday party the night before this event. Julie Holman was at this event.

The night progressed and about 10:30 some clouds came to visit, but by 11 they left, and then 11:30 some more came in. So, some parts of the night, we were dodging clouds. Unfortunately, the heel of my shoe accidentally disconnected Eric's electricity, and so he took down his scope and left

about 11:30pm. My apologies to Eric. The rest of us stayed set up until about 12:30. Darren had to leave in a hurry, so we helped him pack up and go. Sam departed after he found the elusive Cat's Eye Nebula. Eric showed us it in his scope, then Don, Myself and Sam searched and searched, and finally Sam found it, then Don found it and by then I gave up. We also had a search from Don and myself for Neptune, which I think Don found before quitting for the night. The weather was great, a breeze now and then, not too strong, but it was muggy and hot, and some clouds. I want to thank everyone for attending this awesome event. Rick, Don, William and I were last to leave about 1:30, getting home about 2:30am. Many thanks to Mike for hosting the party! We look forward to the next Meteor Shower party / Star Party / Event at Mike's!!!

Perseids Meteor Shower Aug 12

By Rod Sutter, PAS Member & Past President

On 8-12-2013, My wife and I along with my parents went to Fort McDowell Casino and spent the night, had nice rooms. While Sue and my parents were playing Bingo, I took a short walk from the casino. I headed north down a paved road, went to the top of a hill and found a nice spot to watch and shoot the Perseid Meteor Shower of 2013. Set up my Canon Rebel T3i on the tripod around 8:45pm. After shooting about 10 test shots decided to go ahead and start shooting pic of the area that I wanted to use

for my background. I shot about 4 or 5 different scenes till I found the one that I settled on, that's the one in the picture. I shot 450 pictures all settings if I remember right were at f3.5 for 20 sec ISO 800 FL 20mm with a 18-55 f3.5-5.6 Canon zoom lens. (Wish I had a wide angle lens, maybe next time). Of the 450 pictures that I took, I captured the 9 meteors in the picture. Stacked 9 on top of the background and adjusted the levels in Photoshop.

My last picture that I shot was at 3:45am. I counted a total of 91 meteors that I visually saw, but only the 9 in my picture were in the field of view of my camera. Pretty bad odds, well not really since I did not have a wide angle lens, guess it was OK. Headed back to the room and crashed out at 4:15, was a wonderful meteor shower. Probably one of the best that I had seen in years. OK, now it's time to get ready for Comet ISON. I will be shooting lots of pictures of that. ***

Mike's Lecture #4 Aug 24

By Terri, Event Coordinator

It was a lovely evening to have a lecture at Mike's home in Carefree. Many thanks to Mike Marron for hosting this event. In attendance from PAS were: Don Boyd, Sam Insana, Bob Senser, Eric & Ora Steinberg, William & Terri Finch, Rodney Fong, Kevin Harcey, Ryan Maughan, & Darlene Ahlefeld. Special guests at this party were Steve Zeen, a new member of PAS, a family of Quail and a Coyote who

came to check out the Quail, and then were frightened away by everyone in the kitchen window watching him.

The food was awesome. We had Pappa Johns Pizza, Mac & Cheese, Churches Chicken and the most delicious Oatmeal Raisin Cookies made by Ora.

During the Lecture "Galactic Jets & Stellar Evolution," Rodney provided a flashlight to be a spotlight for Mike as he

used props to make his astronomical actions come to life. Many thanks to Rodney! The lectures was 2 hours and 34 minutes and was very good. If you missed this one, we can most likely get Mike to do it again sometime, as he expressed a need to revise it and do a practice presentation again.

It was a great evening and it was fun to meet the new PAS Member! See you at the next event! ***

Bookmans Telescope Workshop Sept 22

By Terri, Event Coordinator

Welcome new member Hasel Nicks. The Bookmans Telescope workshop was a success. No RSVP's were received prior to the event but Hasel showed up, without a

scope, but asked a bunch of questions, kept us chatting, and had an awesome time! Many thanks to Rodney Fong, Don Boyd and William Finch for joining me at Book-

mans and being a great source of information. It was a great event. ***

Estrella Observatory Sept 7

By Yves Klein

The party was awesome! We had a very nice group of people that came. It did not rain but it was cloudy. So instead of looking at stars we talked about my tele-

scope system, how it works and people had many question related to astronomy and tried my best to respond. lol! It was fun! We had the latest experimental music from

Waveformanalogueresearch Elektro. I think it scared a couple people away but for the most part everyone enjoyed it. ***

Scout Star Party for Pack 71 Sept 16

By Sam Insana

On Monday afternoon, September 16, at 5 pm, Don Boyd and I attended a cub scout gathering at a school in Tempe, Our Lady of Mt. Carmel.. We set up our telescopes on grass on the athletic field. There were about 20 kids and 20 adults. We both showed them the Sun, which had one sunspot, and showed them some solar flares.

We were then served pizza while the scouts had a short meeting. When the sun went down at 6:30 pm, we showed everyone the Moon, Venus, and Saturn. The kids were excited and well behaved and seemed to learn a lot. They were earning an astronomy loop for their belt. We left at 7:30 pm.

Don writes: We did get pizza. They seemed very pleased with our presentation and the boys were very well behaved. We showed the Sun from 5:30 till just after 6, when the pizza was brought out then at 6:30 we showed the Moon, Venus and Saturn. ***

CTCA-PAS SkyTour Event 9-17-13

Report from Laurice Dee, Ph.D., JPL Solar System Ambassador, E-mail: launchspace@msn.com

The CTCA SkyTour event - held in Goodyear - turned out so very well. The night sky was perfectly clear, and the turnout was good. Joe Collins and Don Boyd had their telescopes going while I had Joe's iPad all set up to be shown to the event participants. I could tell that the attendees had a good time since they were able to observe Venus, Saturn, our Moon, and some of the deep sky objects. Using the iPad, I was able to share with a couple individuals some interesting facts on the Saturnian system.

While Joe and Don were still showing some objects through their telescopes and engaging in discussions with the participants, I used the lunar app on the iPad to search for some interesting surface features of our Moon. I also had a few features in mind that I wanted to find out what they were. All the attendees were leaving by the time I was done with my 'homework'.

Armed with the features that I was able to discover from the iPad, I used Joe's telescope to scout for them. Seeing the features close up couldn't have been more awesome! After spending some time observing the rugged surface of our natural satellite, I used my smartphone to photograph the fea-

tures from the iPad. The photos that you see here are in order, and they are as follows: (Photos can be seen in PDF file in the PAS website at this link:

1. Our Moon, 2. Plato - Montes Alpes - Cassini, 3. Same as #2 - without labels, 4. Cassini, 5. Same as #4 - without labels, 6. Mare Serenitatis, Mare Tranquillitatis, Mare Fecunditatis, Mare Crisium, 7. Same as #6 - without labels, 8. Mare Serenitatis, 9. Same as #8 - without label, 10. Mare Tranquillitatis, 11. Same as #10 - without labels, 12. Ptolemaeus - Albategnius - Klein, 13. Same as #12 - without labels

I mentioned earlier that I had a few features in mind that I wanted to know what they were. If you'd look at the southern hemisphere of our Moon in her full moon phase, you'd see a pair of faint-looking 'circles' - one besides the other - some distance south of Mare Vaporum and southeast of Copernicus. These circles do not appear quite definitive as if they were craters. Even if the circles look pretty much opaque - as if they were going to disappear anytime - they show up pretty well in photos. They are not nearly as dark as the mares, but still, they are pretty much noticeable. Checking for info on Joe's iPad, I discovered that the

circles were craters called Ptolemaeus and Albategnius. And there is a crater within Albategnius called Klein. I surmise that both Ptolemaeus and Albategnius are extremely old craters that kind of flattened out as a result of some lava or some liquid substance being brought up to the surface. Klein - as a crater - was an 'addition' when Albategnius was hit.

Our Moon - in her waxing gibbous phase - showed more of her features - including all the above - that Tuesday evening. Even there were many that I wanted to see, the features from the north and east were the main focus of my observations.

My heartfelt thanks go to Joe for allowing me to use his telescope and iPad for some serious observing of our Moon. The timing couldn't have been more perfect for our Earth's closest neighbor to beckon us to look up and treasure her special presence! The reason why I say this is because the sky was too cloudy for us to observe any objects - including our Moon - when we held our previous event last August 20th. If you have any questions, please do not hesitate to contact me. In the meantime, enjoy the photos! ***

CTCA-PAS SkyTour Event Sept 17

Prepared by Joe Collins CancerFighter™ & Phoenix Astronomical Society member

This event was staffed by Don Boyd (PAS Member/Worker), Joe Collins (CancerFighter™, PAS member/Worker), Renee Collins (CancerFighter™ & Volunteer), and Dr. Laurice Dee (Volunteer). We cancelled the solar viewing portion of the event due to the high temperature (>103 degrees) and because solar activity was at a minimum, so no sunspots for people to see. We had thirteen customers (patients, caregivers and CancerFighters) upstairs on the 5th floor garden terrace for the SkyTour event, and lunar observing. The evening started with 25% cloud cover, but the skies proceeded to clear and outdoor temperatures became more comfortable as the night progressed. We expect, with the winding down of monsoon season our next event will be even better!

Joe Collins (jcollins79@cox.net) Pre star-alignment, I manually aligned the scope for early viewing of Venus and Saturn with Titan for customers. Alignment went well even without the GPS accessory because my CGEM mount computer kept it's settings in memory from the previous month's event; regardless, my CGEM mount still required 3 star + 2 Calibration stars for fine-goto-alignment. I shared with customers the sights of the alignment and calibration stars I used for this procedure: Vega, Altair, Arcturus, Deneb, and Merak. During the SkyTour, I had the following objects for view: M57 Ring Nebula, Double Cluster in Perseus, Polaris, Albireo, M31 Andromeda galaxy core, M3, M13, M69, M92 globular clusters, Alcor-Mizar, and a few asterisms: 'Coat hanger' & mini-'coat hanger' clusters. Laurice showed customers info from the iPad for objects I had in the telescope for viewing. We were able to do lunar observing with a new 2" lunar

filter (from ORION Telescopes Watsonville, CA) for over two hours which fascinated patients and caregivers. Two improvements for future events: Hardware-Celestron has a new accessory called star-sense which greatly improves accuracy and lessens time for doing alignment. Software-There is an iPad application called 'Star-MapHD' version 3.2 ©2012 by Frederic Descamps which has a new feature called 'Tonight' that lists good targets for telescopic and binocular viewing. This app could be a big help for organizing future lists of objects to view for our event handout/flyers.

Don Boyd (azphotog@gmail.com) I had a difficult time aligning my scope as it kept resetting. But when I did get it aligned, my goto telescope mount worked well and I saw M6 (the butterfly Cluster), M7 the Perseus Double Cluster, The ET Cluster, the Coat-hanger, and Alcor and Mizar...and just before it got too low, Saturn. The next to last object I tried to view was the Pleiades, but it was too low. As soon as it stopped moving to my last target for viewing, the scope lost power again and lost its alignment; so I moved it manually to Alcor and Mizar. Note from editor- Don thinks he can fix his problem by replacing the CAT5 connector to his Meade AutoStar hand controller.

Acknowledgments- Thanks go to Jennifer Betancourt of CTCA for printing out our flyers and providing meal tickets and publicity for the event. We also want to recognize our volunteers here for their support of this event: Dr. Laurice Dee and Renee Collins.

Next time- We (PAS AZ) are looking forward to coming out again next month on Tuesday October 1st.

Some helpful Java Scripts from Sky & Telescope (and Internet links from other sources):

http://www.skyandtelescope.com/observing/objects/javascript/moon_phases

Moon Phases on any date

<http://www.skyandtelescope.com/observing/objects/javascript/jupiter#> Jupiter and Galilean moons simulator

http://www.skyandtelescope.com/observing/objects/javascript/saturn_moons Saturn & its moons simulator

<http://www.skyandtelescope.com/observing/almanac/almanacCustom?latitude=42.383&longitude=71.133&tzzone=7&UTdate=now&UTtime=now#> Moon & Planets Almanac

<http://www.skyandtelescope.com/observing/objects/javascript/mars> Mars surface profiler

<http://skychart.skyandtelescope.com/skychart.php> Interactive Sky/Star Chart

http://www.skyandtelescope.com/observing/objects/javascript/satellite_tracker/satelliteChooserISS/HST/STS Satellite tracker

<http://www.skyandtelescope.com/scopcalc> Telescope Attribute Calculator

<http://www.lunasociety.org/atlas/> Full Moon Atlas by grid zones

<http://earthsky.org/tonight> A beginner's website showing what is up tonight

<http://www.skyandtelescope.com/observing/ataglance> An intermediate website with a weekly update on celestial events

<http://tonightssky.com/> A website for amateur astronomers to plan a viewing list of celestial objects for a given place and time.

Flagstaff 29th Annual Science Fest Sept 21

By Sam Insana

Frank and Sam Insana attended some of the 85 events scheduled for the Flagstaff Festival of Science which ran September 20-29th. The events I attended were the Life in the Extreme lecture by Steve Squyres PhD Cornell University showing photos and data from the 3 Mars rovers including data and photos received the day of the lecture. I also saw NAU modern dancers putting on quite a show interpreting the ocean, desert, ice and outer space. I also

looked through the 20 inch telescope at the NAU campus observatory at M31 and M13. I also attended the expo at Wheeler Park which housed about 50 scientific displays from State Parks, to Audubon, to Lowell Observatory, and many others. Frank saw the same events I did plus others like NAU engineering and science labs. He was able to look through an electron microscope, talk to professors and students, and see working robots. Frank attended several other events

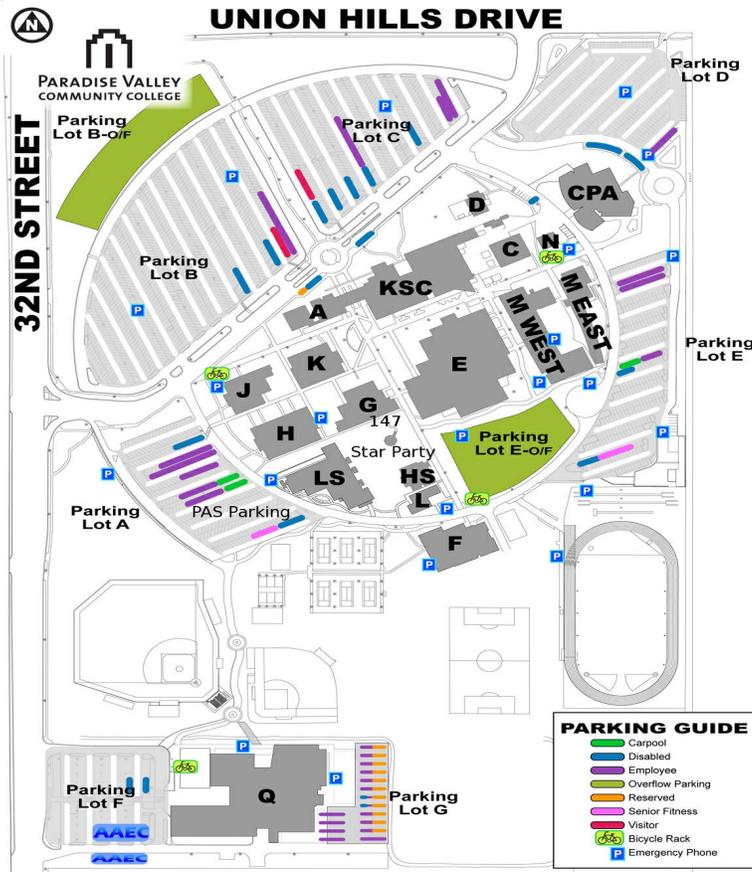
before golfing with his Dad at Forest Highlands.

All 85 events were free, including tours of Meteor Crater, Sunset Crater, Lowell Observatory, etc.....Bruce, Ed, and Bette Wurst were also in attendance at the Science Festival and are planning to attend a lot more events. It was a great time and Frank and I will attend again next year. ***

Map of PVCC Main Loca-

Map of PVCC Black Mountain

34250 N. 60th Street | Scottsdale, AZ 85266



See page 2 for more details

November 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2 Estrella (Private)/ Antennas (Private)
3	4	5	6	7 PAS Meeting	8	9
10 Telescope Work- shop	11 Veterans Day	12	13	14 MOM's (Tentative)	15	16 Meteor shower party
17	18	19 CTCA (Private)	20	21 BMC Star Party	22	23
24	25	26	27	28 Thanksgiving	29 Estrella (Private)	30 Comet Party/ Antennas (Private)

Don Boyd
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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.

2013

Dec 5: Astronomy Swap Meet: Earl DeLong “Chemistry of the Cosmos”

2014

Jan 2: Speaker: TBA

Feb 6: Speaker: TBA ***

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What’s Up For November

By Rod Sutter, PAS Past President

Name	Date	Rise	Set
Mercury	11-15-13	0:27	16:33
Venus	11-15-13	10:46	20:18
Mars	11-15-13	01:49	14:20
Jupiter	11-15-13	21:20	11:20
Saturn	11-15-13	06:19	17:05
Uranus	11-15-13	15:11	03:34
Neptune	11-15-13	13:34	00:42
Pluto	11-15-13	10:23	20:36

All Times Arizona Time

November 15 2013

Sunrise: 06:59

Sunset: 17:25



New: November 03



Q1: November 09



Full: November 17



Q3: November 25