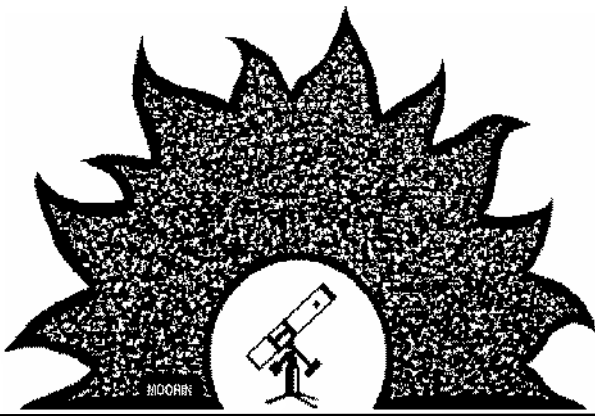




PAStimes

Phoenix Astronomical Society

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Asteroids, Ion Propulsion, and NASA's Dawn Mission to Vesta

Dr. Williams is a Participating Scientist on NASA's Dawn Mission at the asteroid Vesta, where Dawn departed on September 8 after spending over a year in orbit. Please join him for a talk on all the results discovered about this proto-planetary world!

Bio: Dr. David A. Williams is an Associate Research Professor in the School of Earth and Space Exploration at Arizona State University, Tempe, Arizona. Dr. Williams is the Director of the Ronald Greeley Center for Planetary Studies, the NASA Regional Planetary Image Facility at ASU. He is also the Director of the NASA Planetary Aeolian Laboratory at the Ames Research Center in California. David is currently performing research in volcanology and planetary geology, with a focus on

planetary mapping, geochemical, and remote sensing studies. His research has included computer modeling of seismic wave propagation through planetary interiors, visible and near-infrared spectroscopy of the lunar surface, planetary geologic mapping of the satellites of Jupiter and the planet Mars, computer modeling of the physical and geochemical evolution of lava flows in a variety of planetary environments, and petrologic study of lava samples from Mount St Helens. He was involved with NASA's Magellan Mission to Venus and Galileo Mission to Jupiter. He is a Co-Investigator on the European Space Agency's Mars Express orbiter mission, and he is currently serving as a Participating Scientist on NASA's Dawn Mission to asteroid 4 Vesta. David is the immediate Past Chair of

the Planetary Geology Division of the Geological Society of America, has served on several NASA committees including the 2007 Jovian System Observer Science Definition Team, and is currently a steering committee member of the NASA Outer Planets Advisory Group. §



PAS Meeting Oct 4 Review

By Terri, Event Coordinator

The meeting began with a pre meeting dinner at Deer Valley Airport Restaurant. I wish to note - we will be doing this pre dinner meeting again for the Nov 1 PAS meeting. RSVP your attendance today. In attendance at the dinner on Oct 4 were: William & Terri Finch, Annette Finch (William's Mom), Jerry Belcher, Matt Kohl, Earl DeLong, John Miller and Darlene Ahlfeld. We had a great dinner and then took off to the meeting.

The meeting room was partially available to us around 6:20. A gentleman, probably a teacher, was manning the door. He had 3 people inside who were taking a test or something. Once a few of the PAS mem-

bers were in the door, he asked his group to leave. I didn't mean to chase him out. We set up, and then the Guest Speaker arrived about 7pm. He got set up with Jenny Weitz's help.

This meeting was so interesting and awesome! Dan Heim is an awesome, fantastic, well organized speaker. We love to have him return, from time to time, with more to share with us. The topic was "Atmospheric Optics" which includes fantastic atmospheric eye candy as Rainbows, Fog Bows, Red Bows, Double Bows, Dew Bows, Moon Halos, Sundogs, Glitter paths, Sun Pillars, Glories and we ended with Green Flash by the Sun. Many thanks to Dan for a



See PAS Meeting, page 3

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November PAS Events

By Terri, Event Coordinator

Upcoming events list:
<http://www.pasaz.org/forums/downloads.php?do=file&id=49>

If you can assist at any of these events, Please be sure to RSVP. Your telescope & help is greatly appreciated!

Nov 1: PAS Meeting 7pm to 10pm PVCC Main Campus LS-205. Bring a snack to share. Bring a friend! Everyone welcome!

Dinner prior to the Meeting is set for 5pm at Deer Valley Airport Restaurant. RSVP your attendance with Terri.

Nov 6: CTCA (Private) 7pm to 9pm. RSVP with Joe. PAStimes Star Tour Members only.

Nov 8: Free Telescope Workshop 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 type of

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. And this is a public Star Party!

Nov 9: Estrella Observatory Star Party 5pm potluck, 7pm observing, PAS Members only. RSVP is with Yves for this event.

Nov 10: Dark Sky Antenna's Star Party for PAS Members only. Event begins at sundown and goes to dawn. RSVP is with Eric for this event. Bring your own everything.

Nov 10: (Private) DBG star party for Kids 7pm to 9pm. RSVP in calendar to attend. PAStimes Star Tour Members only. RSVP is with Terri.

Nov 15: PVCC Black Mountain Campus Public Star Party. Black Mountain campus is located at 60th Street and Carefree Hwy. RSVP is requested [Events@pasaz.org](http://www.pasaz.org/forums/downloads.php?do=cat&id=2). Event is from 7pm to

10pm.

Nov 16: Private School Event from 6:30 to 8:30pm. RSVP is with Terri Events@pasaz.org. Pizza being provided.

Nov 17: Leonids Meteor Shower party at Mike's home in Carefree. 6:30pm potluck, 8:30pm Star Party. Everyone welcome, public event. RSVP is required with Mike for this event.

Nov 20: CTCA Back up date for Nov 6.

Nov 22: Happy Thanksgiving to All!

Nov 29: Meeting of the Minds 7pm to 10pm PVCC Main campus Rm LS 205. If there aren't enough topics to hold a meeting, this meeting gets canceled.

Dec 6: PAS Meeting 7pm to 10pm PVCC Main Campus LS-205. Bring a snack to share. Bring a friend! PAS ANNUAL SWAP MEET! §

PAS Name Badge Order

By Terri, Event Coordinator

Order deadline moved to Nov 1

Due to a request to postpone putting in the Name Badge order, an extension has been added. Originally I was going to put the order in during October, but one new member asked me to hang on to the order (because the next order won't be for 6 months) so that they could come up with the money to get their name badge. So, I am postponing the ordering of the name badges

until after the November PAS meeting. That is the deadline to put in your order, through Mike, with a PAS Dues Sheet. The form can be found here: <http://www.pasaz.org/forums/downloads.php?do=cat&id=2> and you fill it in, at least with your first and last name, maybe phone number, and pay Mike \$15 and make sure I see that you did, so that I can add your name to the list. Current list of paid for Name

Badges is: Jeremy D., Earl D., Mikey W., Darlene A. So, Nov 1 is your deadline to get the money to Mike, and shortly after, I will be ordering the name badges with the intent of delivering them anytime after I receive them, or at the December PAS meeting, if that is where you see me next. Thank you for your orders.

Dinner prior to November Meeting

By Terri, Event Coordinator, Events@pasaz.org

Location: Deer Valley Airport Restaurant Time: 5pm
 RSVP will be under Phoenix Astronomical Society RSVP with Terri by Noon Nov 1, by email or in PAS calendar

Come have dinner with PAS. The RSVP is for you to join us at the PAS table for dinner. Everyone is welcome.

Arrive as early as 4:30. No need to wait for all to arrive. Order dinner when you get

there. Here's the link for quick RSVP: <http://www.pasaz.org/forums/calendar.php?do=getinfo&e=950&day=2012-11-1&c=1>

PAS Meeting Oct 4 Review

Continued from page 1

super, fantastic presentation that created many wonderful questions & discussions. Friday night, after this presentation, Eric Steinberg & Terri Finch saw a beautiful Sundog!

Prior to Dan Heim taking the floor for his presentation, we had a few announcements: PAS Dues are due for 2013. Paying early helps Mike keep the PAS Roster up to date. On order, we will be doing the Year in Space Desk Calendars and Wall Calendars. See the article with details about this in this issue. Deadline for orders is the November PAS meeting, and the cash is due then as well for your order. Name Badges were discussed as well. Then Sam Insana presented the Challenger Space Center event for the next day and Terri Finch added that there are 10 reservations open for PAS

members to attend and only 4 were on the list, thus far.

Jerry Belcher then talked about the items he was ordering for sale. He had the Astronomical Journal Observing Log for \$11, the Messier Journal and the Herschel 400 Journal each for \$11. The large calendar, astronomical calendar for 2013 will be \$18 to \$23 depending on how many he orders. Last year, I think I paid \$20. It is definitely worth the info if you are a serious astronomer.

We talked about some upcoming events: Oct 12 and 13 is the All Arizona star party at Antenna's site. Data on that is in the PAS Public Calendar. The Arizona Science and Astronomy EXPO (also now in the PAS Public Calendar) is on Nov 10 and 11.

The Messier Marathon hosted by SAC has a practice date of Mar 15 and the marathon date at the Antennas site is Mar 16.

It was an awesome meeting. I wish to thank Matt Kohl for providing the plates & napkins for snacking. I totally forgot to bring them. And thanks to Sam Insana for providing the popcorn. Matt also provided a few snacks - Space Adventures Goldish. Thanks to Darlene Ahlefeld for bringing the grapes. After eating at the Deer Valley Airport Restaurant prior to the meeting, I had no room for anything until the end of the meeting, and then I had a few grapes. Thanks to all the NEW PAS Members who attended this meeting. There were more new members than sustaining members in attendance. See you all at the next PAS meeting!

Estrella Observatory Oct 13

By Terri, Event Coordinator

It was a wonderful night for a star party. We met at Yves Klein's home where Estrella Observatory is located, and had a huge potluck. About 25 of Yves's friends attended. This was more of a private party, rather than a PAS Members Only event. In attendance from PAS were William and Terri Finch, Darlene Ahlefeld, Rick Cunningham (the newest PAS member at the time of this event), and Don Boyd. The food for the potluck was varied. The scalloped potatoes Rick brought didn't last long. They were totally delicious. Darlene had brought cheese, crackers and grapes, and the grapes were awesome! I brought my famous pinto beans. There was tons of food, sandwich rings, rotisserie chicken, salads of different types, cookies and more. Reviewing this list is making me hungry, it was all great food. Many thanks to Yves for hosting the party and supplying awesome food for the event.

Then Darlene, Don and I set up our scopes. We set up close to each other so we could chat and share objects easily. Throughout the night, many of Yves's friends came over to check out the sights. While we were doing the star party with our scopes, Yves had his scope set up and was

doing astrophotography. Since he rearranged his screens, he was able to have a group of people all gathered and enjoying the astrophotography session by his scope. The skies were clear of clouds, but it was cold out. And the city glow was in the way most of the evening.

Weather wise, it was an awesome night. The sky glow was taking up about 1/4 of the sky all the way around. Some neighbors had their lights on, so we had some glow coming from nearby homes. Many objects were viewed. It was just a bit too bright to see the Crab Nebula. We viewed the Perseus Double Cluster, & Jupiter was awesome! And Jupiter produced the Great Red Spot!

Darlene learned how to align her scope and finder. Don and I had a crowd most of Yves's friends had left. So, Don and I packed in the scopes about 12:30. Darlene had left about 11pm. And then Don, William and I stayed a bit longer to catch some astrophotography and we left around 3:30am. Yves and Scotty were still having a great time when we departed. I got to bed 4:45am. It was a great night. The only thing that was rough about the night was the

temperature went down to 60 and when it did, my heavy jacket wasn't enough. Next event at Yves is Nov 9 and every one should be sure to bring a warm jacket. Hope to see you there!

Darlene writes: I am absolutely thrilled that Yvaine (my new scope) and I pulled up Jupiter with all four moons! I had a good time talking to people looking through my scope. Need to study lightyear distances, there was an interest in that. A couple people talked about how exciting it was to actually see the stars in person. We even took a whack at the Milky Way. I just pointed straight up and told them I thought that was a good location and just look at all those millions and millions and quadrillions of stars that were mind-bogglingly far away.

Looking through the way-bigger scopes was truly spectacular, the Doctor (Terri's scope) is a force to be reckoned with! Too bad we couldn't come up with Andromeda, I still think Cassiopeia grounded her and took her keys.

Yves writes: I saw the sun rise. Thank you for coming.§

Int'l Observe the Moon Night in Carefree Sept 22

By Terri, Event Coordinator

It all started with clouds. William and I didn't feel that well, so we weren't planning to attend Mike's party. But then, when I called Mike to find out who was at his home, I decided we could go. So, we loaded up the little car with the Astro scan and needed items for the star party, and hit Sam's Club on the way to Mike's picking up snacks, because it was well past the time of the potluck. We arrived.

Clouds definitely had the night sky, but the group of us were enjoying the conversation. From PAS was Mike Marron, Darlene Ahlefeld, William and Terri Finch. And 2 other wonderful folk joined us: Desiree & her boyfriend, JC. That was it for the party. We started out waiting for the clouds to break. It wasn't until about 10pm before

we were able to see the Moon. So, Desiree went outside to set up her scope. About a half hour later, I went out to set up the Astroscan. And from the time I got set up until about 12:30, we had a great viewing session.

Through the Astroscan we saw Jupiter, Perseus Double Cluster, Andromeda Gal-

axy, Albireo and of course, the Moon. Desiree tried to find all the same objects. I think she got aperture fever this night.

Darlene had brought, for the potluck, a pasta salad. I didn't see any other main dishes at the potluck, but before we had gone out to set up our scopes, we all ate. William and I had brought burritos for ourselves from Filibertos. And Darlene was so sweet. She saved me a half bag of the cheese puffs she knows I love. Thank you Darlene! I ate them all during our snacking meal.

Many thanks to Mike for hosting the party. And thanks to Mikey Webb from the week before, for leaving behind the case of water. It was much appreciated. There were a bunch of PAS Members who could not make it to this event due to being sick, or their vehicle wasn't working. We wish them well! It was a fun event and Darlene was very helpful finding and identifying objects, and Desiree was wonderful to have at the event. JC and Mike did a bunch of conversing about all sorts of topics. The

next big public event at Mike's will be Astronomy Day on Oct 20. See you there!

Darlene writes: Saturday's International Watch the Moon party was "over the moon." One of us wondered at weather conditions in the valley but gave it a try anyway. The higher I got the better things looked. Mike and I enjoyed varied conversation till others showed for the viewing (forgot to eat!). We had plenty to go around and carried on discussion till moon time. Sure enough, the moon showed up in all her glory and played hide and seek with some here-and-there clouds. I was thrilled to see wispy clouds traipsing across the face, need video!! While she was hiding behind the clouds, I got to see the Pleiades, Andromeda, Abireo, Cygnus, Cassiopeia and Jupiter rising over the mountain. Wow, hope I can get that clarity when my scope gets here. We also saw some bright, moving stars, they turned out to be airplanes.... All in all, I had so much fun I nearly turned into a pumpkin when I missed my time limit of 11:00 (had to get up early Sunday morning).§

CTCA SkyTour Event Report Sept 25

By Various attendees of this event

Joe Collins writes: Attendees: PAS members: Albert Tucker, Mike Marron and Don Boyd. Volunteers: Laurice Dee Ph.D. and Ofelia Waters. We had a combined total of eighteen CTCA patients, care-givers, and employees join us at the Café for a meteorite display, solar viewing and evening Sky-Tour program on the 5th floor garden terrace followed by lunar surface viewing led by Dr. Laurice Dee and Albert Tucker.

Dr. Laurice Dee writes: The weather could not have been more perfect for the CTCA SkyTour event that was held on the 25th of September! Comfortable temps with completely clear skies! I almost missed the dinner get-together that was held for those of us that volunteered at the event. The traffic from Mesa to Goodyear was so [expletive] horrible that it took me almost an hour and a half to get to the CTCA. Fortunately, I was able to make it to the cafeteria right before it closed! The food that we all had could not have been more delicious! My deepest thanks to the CTCA CancerFighters for the meal tickets and for allowing us to enjoy our dinner in the din-

ing room before going up to the 5th-floor terrace to set the telescopes up for the event.

Albert Tucker, Don Boyd, and I worked upstairs while Mike Marron and Ophelia Waters remained in the dining room to display some meteorites. Both Albert and Don had their telescopes up and running for the event. I provided some assistance, as well as making sure that everything was OK before the event started.

The event got underway when a small stream of cancer patients and their caregivers arrived to take a look through the two telescopes. Albert pointed his telescope at our Moon – aka La Luna – while Don aimed his at various celestial objects, particularly the Messier objects. Albert had his laptop set up right next to his telescope that showed the identifying names for the various surface features of La Luna.

While Albert and Don were doing their own 'show and tells' with the cancer patients and their caregivers, I met two individuals with whom I struck a great conversation about our celestial neighborhood, solar system exploration, and some

other interesting topics. Samantha – one of the caregivers – and Sara – a former CTCA patient and now a volunteer for the CareFighters – were quite fascinated with the inner workings of our solar system and how La Luna is able to show her face to us all the time. Sara brought Harlan – a 7-year-old boy – with her to the event since he's extremely interested in astronomy and wanted to view the night sky via the telescopes. I was able to demonstrate to Harlan and Sara how Earth and La Luna interact with one another and why La Luna would show the same face to us. Samantha helped Harlan memorize the names of the planets in our solar system – as well as their order – via a particular sentence with the letter of each word matching with that for each planet.

I could not have been more mesmerized at the reactions of the young boy and some of the cancer patients when they became quite captivated at what they had seen of the night sky!

Of course, La Luna was the center of our attention – and our affection – when we

CTCA SkyTour Event Report Sept 25

From page 4

'inspected' some of her most interesting, detailed surface features along the terminator, as well as away from it. It's the great mixture of cancer patients, their caregivers, us volunteers, and our celestial neighbors that made for a very rewarding CTCA Sky-Tour event!

The next event will be on the 9th of October – with a backup date of 23rd of October [in case of lousy weather on the 9th]. I have already penciled in for the upcoming event and am so looking forward to it as well!

Don Boyd writes: We had 12 people total for viewing on the 5th floor: 6 for Solar and 6 for nighttime. I started out on the moon, then tried the double cluster but there was just too much light pollution; then showed the Butterfly Cluster, (M6), then M7, then ET Cluster, then, as a special request, the core of the Andromeda galaxy,

although very faint, the person who requested it could see it. I then showed the Pleiades and ended the night with Jupiter. Albert and I were there until 11:30pm. Mike and Ofelia started their meteorite display early and left around 10:30pm. Mike said he had a total of 6 people view and talk with him about his meteorites: 4 downstairs in the Cafe and 2 more upstairs after he came up to deliver our checks.

Mike had a cheeseburger and said it was even better than when he had it the last time. I had a Reuben and it was very good as well.

Albert Tucker writes: The PAS event at CTCA was a total success! We received positive input from staff and patients alike. Using the Virtual Moon program to show multiple photographs of the targets viewed sealed the deal for everyone.

The magnetic field definitely affects our sensors but accurate alignment using multiple stars allowed us to target faint objects.

The moon was the highlight of the evening with views having so much detail.

The temperature was pleasant and a slight breeze made the evening very enjoyable.

Joe Collins writes: We extend our thanks to Jennifer Kehren for advertising, providing meal tickets and color printouts of our handouts. We also thank the CTCA Café for providing dinner and refreshments. Thanks to PAS members who attended for working and volunteering their time to make this event a success and enjoyable for CTCA patients and caregivers!

Estrella Observatory Alignment Party Sept 28

By Terri, Event Coordinator

It was a clear night, then a cloudy night, then a clear night, then a super windy night. What a night! So, in attendance from PAS was Darlene Ahlefeld, William and Terri Finch, Don Boyd & Yves Klein - Host & Owner of the Observatory. Yves had invited 2 friends, Scotty and Hedder. The 7 of us gathered around the huge telescope and assisted and attempted to align it all night long. We used some stars in the Summer Triangle to align to, then tried to get over to the Dumbbell Nebula. Had difficulty finding it, so realigned to Altair, and

again tried the Dumbbell Nebula. Found it this time. But by the time we got the alignment working, the winds came up and became an issue. It wasn't until the breeze blew so hard that dust flew in our eyes, that caused us to pack it in. We then pulled the telescope to safety, put away everything we had out at the observing station, and went in the house. We chatted for about ½ an hour and then departed around midnight. Darlene said she would turn into a pumpkin, so no one told her what time it was so that she could drive home safely. It was a good

event. I believe we were more successful this time than the past 2 times at aligning the scope and we, as a group, are becoming more familiar with how the electronics work, and the computer that is hooked up to the scope... there's a lot to learn about using this scope and making it take photos for us. This was not a potluck but plenty of drinks were provided and we all had a great time. Awesome discussion, wonderful friends. I look forward to the next event at this location. Can't control the weather, but we can have an awesome evening! ***

Year in Space Calendar Orders

by Terri, Event Coordinator & calendar order RSVP person

Year in Space Calendars is offering Desk Calendars & Wall Calendars. The wall calendars are new this year. Please visit this site to find out more: <http://yearinspace.com/> And if you want to reserve your copy (copies - great gift idea), then RSVP it with Terri Events@pasaz.org. I will be collecting cash for these orders at the October 25 Meeting of the Minds & the

November PAS meeting, with the intent of receiving the orders by the December meeting, to be able to give them to you to give as gifts, if you purchased it for that purpose. So, bring cash to the November PAS meeting. Currently, as of writing this article on 10/8, we have 4 desk calendars on order. I did see that it says we can combine the order, meaning we can order desk calendars

and wall calendars in the same order, and still get the discount for ordering 10+ at \$10.95 each. If the order isn't at 10 calendars, the items are \$11.95 each. No shipping as long as it is all shipped to one address, and that would be my address. Put in your order today. Thanks.

Congratulations from Night Sky Network

By Marni

Hi PAS Coordinators,

I'm pleased to let you know that your club was one of five lucky Night Sky Network clubs to win the Asteroid Action Pack this quarter. Winners were chosen at random from over 650 events held between July 1 and September 30 that used NSN

materials. You can expect the package to arrive in the mail in the next week or two. Here's a link to the article announcing your win:

https://nightsky.jpl.nasa.gov/news-display.cfm?News_ID=541 Keep up all of

the great work. We are inspired by your dedication!

Marni, Vivian, and Jessica, Night Sky Network Administrators, Astronomical Society of the Pacific, Night Sky Network: <http://nightskynetwork.org>

PAS Swap Meet at December Meeting

By Terri, Event Coordinator

Start planning for the PAS Swap meet today. Look through your closets, sheds, garages and find anything astronomy related you would like to sell off at the Annual PAS Swap Meet which is held during every December PAS Meeting.

Here is what you do. Bring your item and a piece of paper per item for sale. Then on the piece of paper, list everything you know about your item at the top of the page. Leave the bottom of the page for people to do a silent auction. During set up of the meeting, from 7pm to 7:30, go from item to item and put your silent auction on the paper. As the meeting closes, you will then

have a few minutes or more until 10pm to complete your silent auctioning and trade item for cash. Please bring cash for these transactions.

Now to make this more efficient in making a sale for you, please take a moment to write a brief description of your item for sale. Include all the info that the buyer may wish to know about and possibly the price. I do not include, in this description in the newsletter, who is selling the item, but we do run the description in an article about what to expect to see at this event. So, this is your chance to advertise it.

Now, if you don't sell it at the Auction, and still want to, take the description you sent me for the newsletter, and make it it an ad. PAS Members can put ads in the newsletter for FREE. Take a moment to do that and try to sell your item for the holidays. We would love to post your ad in the December newsletter. Start thinking about it now, and finding those old astronomy items you just don't need any more. Send them to Events@pasaz.org. Your item for sale will go in the Newsletter, in the forums (include a photo if you can) and out to the 350 extra astronomy lovers who are on my astronomy list. This usually produces a sale. §

Estrella Observatory PAS Star Party on Nov 9

By Terri, Event Coordinator

Do you want to attend a close by, in town star party that is going to be awesome? Bring your scope, bring a potluck food - main dish and a drink to share. This is an

All PAS Star Party. And the last one was a blast! The potluck begins at 5pm. We will set up our telescopes shortly after that. There's plenty of room for your telescope at

this location. Weather permitting, we will see you there. Please RSVP with Yves or Terri. §

Bookmans Telescope Workshop Sept 30

By Terri, Event Coordinator

In attendance from PAS were: William & Terri Finch & Don Boyd. Don was there when we arrived. The Bookmans' employees were very helpful and brought us a table and several chairs. About the time I was looking for a place for my PAS Table of handouts, a gentleman walked up and handed me a Membership form and money. We all were curious what that was about. But in the short moment he was there, Ross Myers explained that he arrived at Bookmans, and his wife called right then. The fridge had gone out, so he was off to help her. So, he dropped off his membership and ran, literally. Welcome New PAS member Ross Myers.

Then, we had 2 RSVP's, both with Tasco scopes. Gary Schremser arrived with his long Red 4.5" Refractor and his grand daughter Katie, and Rick Cunningham brought his 1000mm short scope. We had a great discussion & informational exchange during this event for about the whole 2 hours. Gary's scope was interesting. It was in a very sturdy wood case that was 2 sided with styrofoam inside. It took him awhile to set up. Rick's scope was an easy assembly. We talked about eyepieces, filters, solar viewing, suggestions on what scope to purchase. Then Gary joined the club. Welcome New PAS Member Gary Schremser.

It was a very good event. We had a great time and it appeared that Rick and Gary did as well. They left pleased with the info we provided. We talked them into attending the next several October events. Many thanks to the Telescope Team: William Finch & Don Boyd, who assisted Gary and Rick at this event.

Just as we were getting ready to close up the event for the day, a gentleman, no name provided, came up to us and donated a book that Bookman's didn't take for trade: "Sky Guide" Many thanks to that gentleman. I will use it at a school star party and award it as a prize to a very thrilled, interested student. §

Bookmans Telescope Workshop Oct 14

By Terri, Event Coordinator

Many thanks to Don Boyd & William Finch for joining me at the Bookmans event. We had no RSVP's, but while there, some people picked up the bookmarks I had laying on the PAS Handout table. What the three of us did was discuss buying a telescope for William, and what we would need, and we did research on telescope accessories and talked about the night before event at Estrella Observatory. We were hoping for a walk-in but didn't get any. But it was a productive meeting since the three of us wanted to chat about things, and so we used it as a type of Meeting of the Minds, but talked telescopes. We hope for a better turnout at the next event.

It Came from Outer Space Oct 5

By Terri, Event Coordinator

William & Terri Finch, Mike Marron, Rockie Hervieux and Sam Insana attended this awesome event at the Challenger Space Center. Photos of this event will be in the PAS Photo Gallery. It was a ribbon cutting and grand opening of the meteorite collection & display on how to find meteorites, found by Geoff Notkin of the TV series "Meteorite Men." The description of this event is "An exciting exhibition of meteorites and equipment from the personal collection of explorer Geoff Notkin, star of the tv series Meteorite Men. On display, the Brenham Pallasite Space Rock, a 230-pound meteorite in the top 1% of its type found on planet Earth."

At this event, the Challenger Space

Center fed us a lunch of sandwiches, chips, drinks, cake and salad. It was a good lunch. Then they did the ceremony, first with an introduction and thanks to all the sponsors, and then with Geoff introducing the find of the meteorite. That took about ½ hour, and then we were told to gather for the ribbon cutting ceremony, for which, if you weren't up front, you missed. The photo session with the various large scissors for the town of Peoria and the City of Glendale, were used, several times. That took another ½ hour. Finally, we could get in to see the meteorites.

I hung around Rockie and her caretaker that took her out of school to come see this event. I got some great shots of Rockie with

a meteorite, not the main one, but a pretty one that was on display. Then the crowd died down and William, Sam and Mike were able to get into the little meteorite room. Rockie had left by then, so I took photos with the guys, instead.

While there, I ran into our March 2013 guest speaker, Melissa Morris. We chatted for a long time. Also saw Bob Holmes (a previous guest speaker for PAS) and Tony La Conte & his wife Carole. Mike had stolen away a collection of kids to show them his meteorites. William and I took a walk around the whole center. Very interesting stuff. It was a good day and took longer than the 2 hours I had scheduled for this event. §

PVCC Telescope Workshop Sept 20

By Terri, Event Coordinator

It was a lovely evening for viewing. In attendance from PAS was: Eric Steinberg, William & Terri Finch, Earl DeLong, Darlene Ahlefeld, Mandy & Rockie Hervieux, Mike Marron & Don Boyd. Kevin Adams (PVCC student) made an appearance 2 times during the night. Jenny Weitz (PVCC Instructor) was in attendance as well. RSVP's for the night were: Brion Crum with a Meade 4500, Jim & Rhonda Bensfield with their C Powerseeker 70mm, Melissa and Steve Montgomery who attended to find out what scope to purchase, and Desiree Bostick with her Celestron 60LCM. Everyone who RSVP'd, did attend. I wish to welcome the newest PAS Members: Jim & Rhonda Bensfield and Melissa & Steve Montgomery!

The evening started slow. Jenny pulled out a 6" telescope and started setting it up.

Eric showed up and took out the 16" Light-Bridge. He later came in earlier than expected, with the scope, and said that the side lighting was too annoying to see anything good. He did show some items before giving up on it. A second 6" scope from the college was set up. The folk who came with scopes to learn how to use them, all seemed pleased with the help they received. Many thanks to Don, Eric and William for assisting those in need. Also, many thanks to those who did the star party. Mike was the hit of the night, like usual. He had the biggest crowd for the longest time. His meteorites really steal the show, at times. Many thanks to Jenny for keeping the room open to just before 10pm for us to have our event. We had about 18 of her students in attendance, as well. Mike and I, I guess we looked official, got to sign some of the

assignment sheets for the students. It was a wonderful event. Thanks to everyone who attended, helped out and was there for this event!

Earl DeLong writes: This was my first PAS event and everyone made me feel welcome. I spent the evening talking with the students and explaining what the ring nebula is and pointing out the constellations. I need to get another green laser pointer if anyone has a recommendation, please let me know. I also spoke with a couple about what type of telescope to purchase and the benefits of joining our club (they did join). The observing site at PVCC is convenient to reach, but being in the city light pollution is a real problem there. Also the ozone alert that day didn't help. Everyone attending seemed to have a good time. I look forward to my next event. §

Arizona Sky

Leah Sapir



Now is a good time to observe Jupiter, as it approaches opposition. That is when Jupiter is on the same side of the Sun as we are; it is closest to Earth, and visible all night. Jupiter orbits the Sun at a distance of 485 million miles (5.2 AU), which means that it is 4 AU from us at opposition and 6 AU at the far end of its orbit. A full orbit of Jupiter around the Sun takes 11.9 years, but due to our own motion combined with that of Jupiter, we can see it at opposition once every 13 months.

Jupiter is truly huge. Its mass is 300 times that of the Earth, and 2.5 times as much as all of the other planets combined. It is composed mostly of hydrogen and helium (75% hydrogen and 24% helium by mass). It also contains traces of methane, water, and ammonia, and even tinier amounts of a few other elements and compounds. At the center is a rocky (silicon-based) core, probably about twice as large as Earth and about 10-20 times the Earth's mass.

Jupiter's diameter is around 11 times that of the Earth, and 1/10 the diameter of the Sun. It rotates on its axis very quickly –

in about 10 hrs. Jupiter's rapid motion and mostly-gaseous composition causes it to bulge at the equator: its diameter is 89,000 miles at the equator, but 83,500 from pole to pole.

Jupiter is brighter than all the other planets except Venus. Its high visibility is due to both its large size and the the reflective clouds on its surface. Through a telescope we can see alternating stripes – the light-colored “zones” and dark-colored “belts”. A small telescope will show Jupiter as a yellow disk with two brown bands. These are the wide north and south equatorial belts bordering the equatorial zone at the center. A larger telescope will show additional detail: the narrower north and south tropical zones, temperate belts and zones, and polar regions.

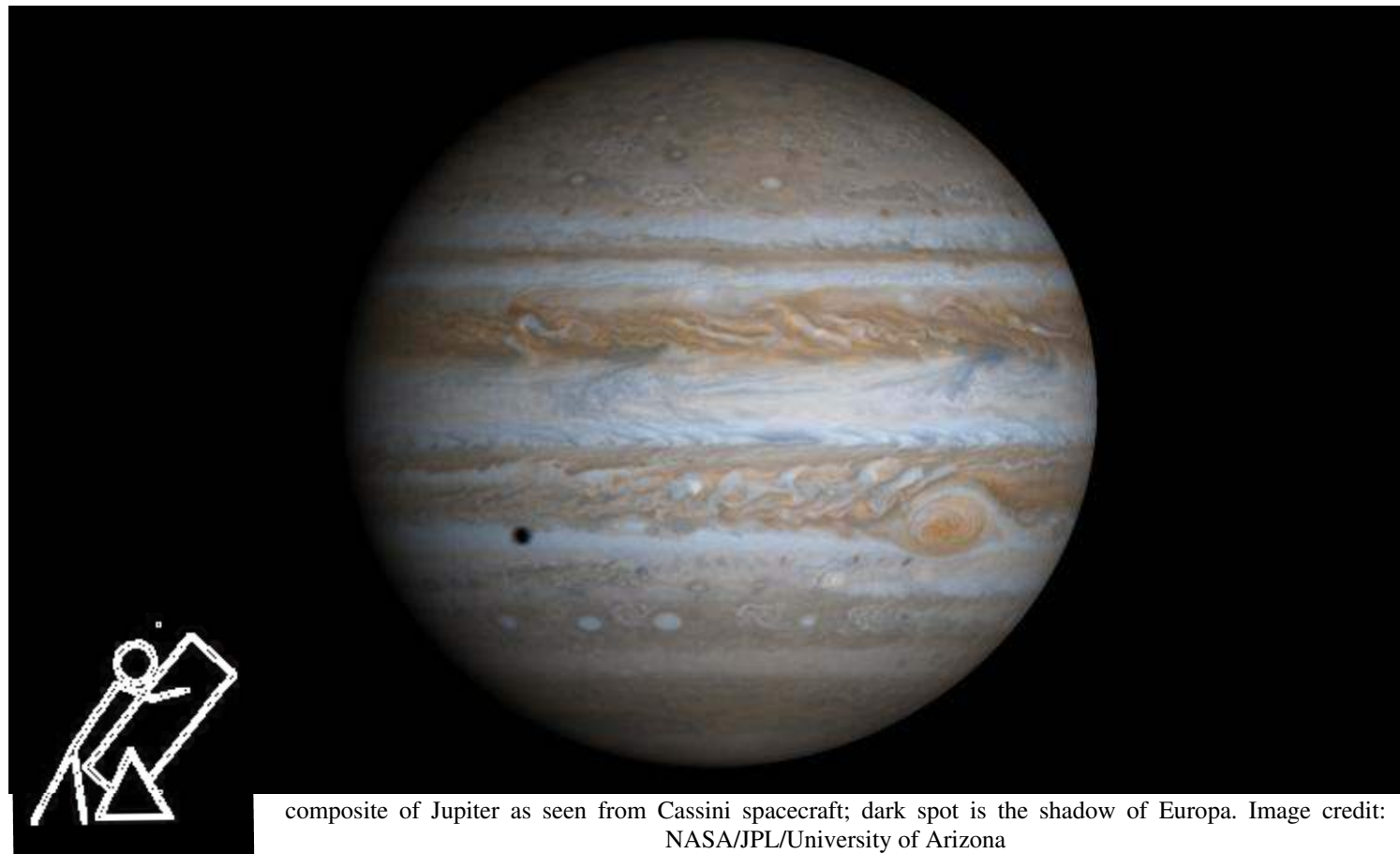
When we view Jupiter, we are actually looking at swirling cloud tops. The clouds in the bright zones are made of frozen ammonia crystals. The darker belts are lower and “warmer”, although this is relative: the average temperature of the cloud tops is around –240 F (–150 C). The color of the

belts can vary due to sulfur-containing compounds, such as ammonium hydrosulfide.

Winds up to 300-400 mph create swirling vortices at the edges of the zones and belts, since the winds blow in opposite directions in adjacent bands. Dark and light spots, representing storms, can appear and can last for weeks or years, and amateur astronomers can make a real contribution to knowledge of Jupiter by tracking the motion of these storms.

he largest and most famous storm is the Great Red Spot, an elliptical high pressure system on the southern edge of the south equatorial belt. It is about 7500 miles wide and 16,000 miles long – twice as large as Earth – and extends about 5 miles higher than the other clouds. Its color is usually pink, but sometimes brightens to red (especially when solar activity increases) or fades to gray; the color variations are the result of stirred-up sulfur or phosphorus. It rotates counterclockwise in 6 days. The Great Red Spot was first observed 1664 by Giovanni Cassini and Robert Hooke.

Below the frozen cloud tops, the temperature gradually gets warmer, reaching a



composite of Jupiter as seen from Cassini spacecraft; dark spot is the shadow of Europa. Image credit: NASA/JPL/University of Arizona

point with Earthlike temperatures, gaseous hydrogen and helium, and clouds of water vapor. But Jupiter's gravitational pressure is intense. About 600 miles below the cloud tops, gravitational pressure converts the helium and molecular hydrogen to a liquid. The change of state is gradual, rather than distinct gaseous and liquid layers.

At a depth of about 12,500 miles, where the pressure is 3-4 million times that of Earth's atmosphere, the hydrogen is compressed into "metallic hydrogen" – a very dense liquid state with ionized protons and electrons, that has the properties of a metal, such as the ability to conduct heat and electricity. Below this, near the core of Jupiter, the pressure is about 100 million atmospheres, and the temperature around 20,000-30,000 F.

Jupiter emits twice as much heat as it receives from the Sun. This is partly from its original heat of formation, and partly from gravitational contraction. Jupiter does not produce heat by nuclear fusion; it would need to be 80 times more massive to become a star.

Jupiter has an intense magnetic field, 10 times stronger than that of Earth, which can be felt out to a distance of 8 million miles into space. It is probably produced by convection currents in the "metallic hydrogen" layer. The magnetic field is full of radiation consisting of high-energy charged particles, which can damage electronic equipment, and would be fatal to humans, if we were ever able to venture close to Jupiter.

Jupiter has rings like Saturn's, but

much smaller and fainter. They were first discovered by Voyager 1, and they have also been imaged by the Galileo space probe. They are apparently made of small grains of rock and dust, but without ice. It is the lack of ice that makes them less reflective than Saturn's rings.

Jupiter's four largest moons (Io, Europa, Ganymede and Callisto) were discovered by Galileo in 1610. Io and Europa are about the same size as Earth's Moon, while Ganymede and Callisto about 1.5 times as large. Jupiter also has dozens of tiny moons, most of which are probably captured objects.

Join us next month when we will explore Jupiter's moons. And till then, wishing you clear skies and happy observing.

The Planets This Month

By Leah Sapir

Mars is still visible in the western sky after sunset, setting around 7:30 pm. And on the other side of the sky in the early evening, Neptune and Uranus are high in the southeast. Uranus is up for most of the night, setting at 4 am at the beginning of November, and 2 am towards the end of the month. Neptune is a bit higher, and sets around midnight. But this month's "star" is Jupiter, which rises soon after sunset and is up all night. It will reach opposition on December 3.

Mercury is still an evening star in the first week of November, although it is very low and soon fades into the evening twilight. It will reappear as a morning star towards the end of the month, and will actually be quite visible in the last week of November and first week of December, if you feel like getting up at 5:30 am to see it.

Venus and Saturn are also morning stars this month. Venus rises around 4 am at the beginning of November, and 5 am towards the end of the month. Saturn begins the month rising close to sunrise, but gradually begins to rise earlier. As it does, Venus and Saturn move towards each other in the sky, reaching a conjunction on the mornings of November 26 and 27, with Mercury below them, closer to the horizon.

On the night of October 31 – November 1, the waning gibbous Moon leads the Hyades across the sky all night, and on November 1-2 the Moon is closer to Jupiter. Then, on November 6, the third-quarter Moon accompanies the Beehive cluster from midnight till dawn.

On November 11, the Moon is a crescent near Venus after 5 am, and on Novem-

ber 12 near Saturn after 6 am. Then a few days later, on November 15, the Moon switches to the evening sky, where it can be seen near Mars in the west after sunset.

On November 27-28, the full Moon is between the Pleiades and Hyades all night, and on November 28-29 it is near Jupiter again.

Don't miss the Leonid meteor shower on November 16-17! The Moon sets around 8:30 pm, leaving a clear night for viewing. Some meteors might be visible on the previous or following nights as well, but the peak is expected between midnight and dawn on November 17. Leonid meteors are mostly sand-grain sized bits of debris from comet Tempel-Tuttle.

Wishing you all clear skies and happy observing!

Ten Commandments for Amateur Astronomers

1. Thou shalt have no white light before thee, behind thee, or to the side of thee whilst sharing the night sky with thy fellow stargazers.

2. Thou shalt not love thy telescope more than thy spouse or thy children; as much as, maybe, but not more.

3. Thou shalt not covet thy neighbor's telescope, unless it exceeds in aperture or electronics twice that of thy wildest dreams.

4. Thou shalt not read "Astronomy" or

"Sky & Telescope" on company time, for thine employer makes it possible to continue thine astronomical hobby.

5. Thou shalt have at least two telescopes so as to keep thy spouse interested when the same accompanies thee under the night sky or on eclipse expeditions to strange lands where exotic wild animals doth roam freely.

6. Thou shalt not allow either thy sons or thy daughters to get married during the

Holy Days of Starfest.

7. Thou shalt not reveal to thy spouse the true cost of thy telescope collection; only the individual components, and that shall be done with great infrequency.

8. Thou shalt not buy thy spouse any lenses, filters, dew shields, maps, charts, or any other necessities for Christmas, anniversaries, or birthdays unless they spouse needs them for their own telescope.

See Commandments page 10



Trials of the Herschel Space Telescope Science Teams

Vast fields of marble-sized chunks of ice and rock spun slowly in the darkness this week, and I sat in the back of a grey conference room with white plastic tables spread with papers and laptops. I was sitting in on a meeting of an international team of astronomers gathered to analyze data from the Herschel Infrared Observatory. This telescope, sometimes just called Herschel, orbits the Sun about a million miles from the Earth.

The meeting began with dinner at Karl's house. Karl charred chorizo on the backyard grill while the airplanes dribbled into Dulles airport. Our colleagues arrived, jetlagged and yawning, from Germany, Sweden, and Spain, and we sat on Karl's couches catching up on the latest gossip. The unemployment level in Spain is about twenty percent, so research funding there is hard to come by these days. That's not nice to hear. But it cheered us up to be with old friends.

The meeting commenced the next morning, as the vast fields of ice and rock continued to spin—shards glinting in the starlight. Or maybe they didn't. Maybe they didn't exist at all.

You see, this team is looking at a series

of images of stars taken by a device called a bolometer that is blind to ordinary starlight. Instead, the bolometer inside Herschel senses infrared light, a kind of light that we would probably refer to as heat if we could feel it. But the idea of pointing the bolometer at the stars was not to collect ordinary starlight. It was to measure heat coming from the vicinity of these stars, like an infrared security camera, in case there was something else to be found lurking nearby.

And lo and behold, for a handful of stars, the bolometer measurements were off the charts! Maybe something was orbiting these stars. From the details of the bolometer readings—which channels lit up and so on—you would guess that this stuff took the form of majestic fields or rings of icy and rocky particles. It would be a new kind of disk, a discovery worth writing home to Madrid about.

There are several teams of astronomers analyzing data from the Herschel Space Telescope. They call themselves by oddly inappropriate sounding acronyms: GASPS, DUNES, DEBRIS. For the time being, the scientists on these teams are the only ones with access to the Herschel data. But in January, all the data these teams are working on will suddenly be released to the public. So they are all under pressure to finish their work by then. The team whose

meeting I was sitting in on would like to publish a paper about the new disks by then.

But it's not so simple. The stars that this team had measured were relatively nearby as stars go, less than a few hundred light years. But the universe is big, and full of galaxies of all kinds—a sea of galaxies starting from maybe a hundred thousand light years away, and stretching on and on. Maybe one of those background galaxies was lined up with each of the stars that had lit up the bolometer—fooling us into thinking they were seeing disks around these stars.

The team argued and paced, and then broke for lunch. We marched to the cafeteria through the rain. Meanwhile, vast fields of marble-sized chunks of ice and rock spun slowly in the darkness. Or maybe they didn't.

What else did Herschel recently uncover? Find out at <http://spaceplace.nasa.gov/comet-ocean>.

Dr. Marc J. Kushner is an astrophysicist at the Exoplanets and Stellar Astrophysics Laboratory at NASA's Goddard Space Flight Center. NASA's Astrophysics Division works on big questions about the origin and evolution of the universe, galaxies, and planetary systems. Explore more at <http://www.science.nasa.gov/astrophysics/>.



Samuel Pierpoint Langley, who developed the bolometer in 1878. His instrument detects a broad range of infrared wavelengths, sensitive to differences in temperature of one hundred-thousandth of a degree Celsius (0.00001 C). In 1961, Frank Low developed the germanium bolometer, which is hundreds of times more sensitive than previous detectors and capable of detecting far-infrared radiation.

A Cosmic Tease:

By Dr. Marc J. Kushner

Corona Ranch Sept 18

By Eric Steinberg

On September 18th, PAS members Eric Steinberg and Don Boyd provided 16" and 6" telescopes for a healthcare-related corporate event at the Corona Ranch in South Phoenix. Skies were clear, with fair seeing and warm temperatures. There were about 300 people in attendance for several different attractions, of which around sixty people came to look. We showed the moon, M11 (Wild Duck Cluster), M13, M6 (Butterfly Cluster) to the very relaxed and appreciative crowd.

Terri Finch adds: I wish to thank Eric and Don for doing this event on such short notice. Many, many thanks to both of you!§

Ten Commandments for Amateur Astronomers

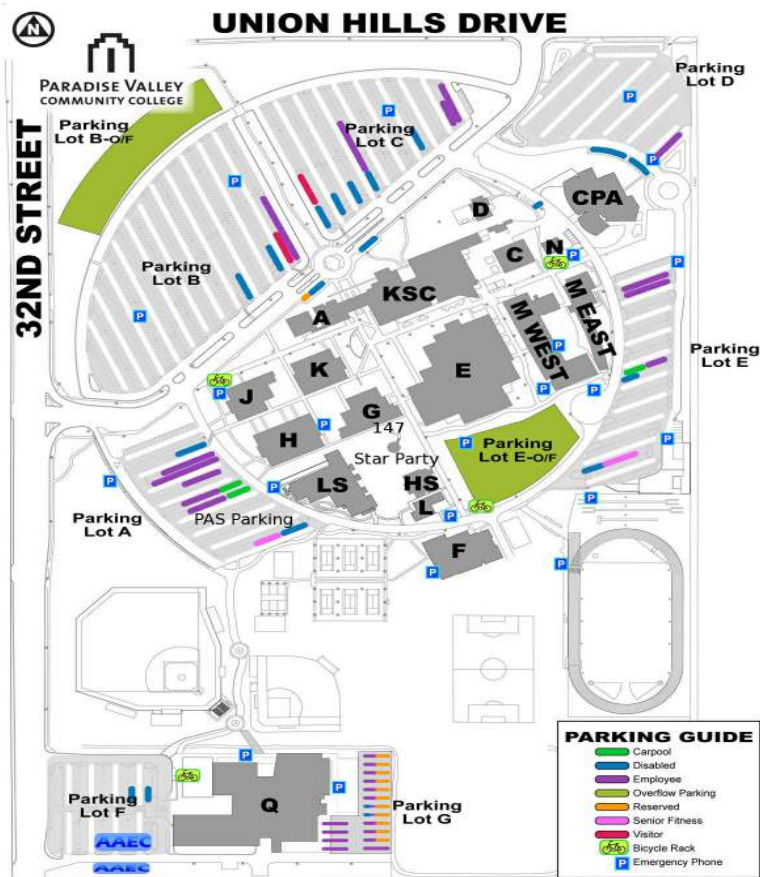
From page 9

9. Thou shalt not deceive thy spouse into thinking that ye are taking them for a romantic Saturday night drive when indeed thou art heading for a dark sky site.

10. Thou shalt not store thy telescope in thy living room, dining room, or bedroom, lest thou be sleeping with it full time. §

Map of PVCC Main Location

18401 N. 32nd Street | Phoenix, AZ 85032



Map of PVCC Black Mountain

34250 N. 60th Street | Scottsdale, AZ 85266



See page 2 for more details

November 2012

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 PAS Meeting	2	3
4	5	6 CTCA	7	8 Telescope Work- shop at PVCC	9 Estrella Observato- ry Star Party	10 DBG Private Star Party Antenna's Dark Sky Star Party
11 Veterans Day	12 Vet's Day(Observed)	13	14	15 PVCC Black Mountain Star Party	16 Private School Star Party	17 Leonids Meteor Shower Party in Carefree
18	19	20 CTCA back up	21	22 Thanksgiving	23	24
25	26	27	28	29 Meeting of the Minds - Tentative	30	

Don Boyd
PAStimes Editor
3039 W. Peoria Ave 102-188
Phoenix AZ 85029

To:

OCT 25 MOM's is Canceled

The October 25 Meeting of the Minds is canceled due to lack of participation. We will vote at the November PAS meeting. You can still vote by proxy if you can not make it to the meeting. Just get your vote to Terri by Noon Wed Oct 31. Items being voted on are in the October Issue of PAStimes on bottom page 2. ***

2012-2013 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.

Dec 6: Mike Marron "Galactic Jets & Cosmic Evolution"

Jan 3: James Ashley "Meteorites on Mars"

Feb 7: Thomas McCarthy "Things that go bump into the Earth"§

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What's Up For November

By Rod Sutter, PAS Past President

Name	Date	Rise	Set
Mercury	11-15-12	07:52	16:29
Venus	11-15-12	04:17	15:13
Mars	11-15-12	10:31	17:59
Jupiter	11-15-12	17:04	09:14
Saturn	11-15-12	05:28	15:41
Uranus	11-15-12	14:29	02:52
Neptune	11-15-12	13:29	23:32
Pluto	11-15-12	10:37	19:10

All Times Arizona Time

November 15 2012

Sunrise: 06:57

Sunset: 17:28



Full: October 29



Q3: November 8



New: November 13



Q1: November 28