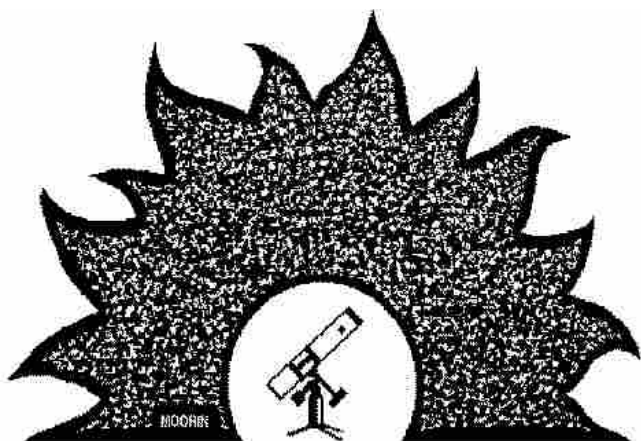




PAStimes

Phoenix Astronomical Society
www.pasaz.org

March 2012
Volume 63 Issue 7

PHOENIX ASTRONOMICAL SOCIETY – ESTABLISHED 1948

NOTICE

Due to technical difficulties with Don's computer, this newsletter has been “slapped” together by Matt Kohl (former co-editor). Just in case you were wondering why it looks slightly off.

THE ORIGIN OF THE MOON AND THE IMPACT OF COSMIC IMPACTS

By Terri, Event Coordinator, Events@pasaz.org

The Phoenix Astronomical Society welcomes William K. Hartmann at the March 1, 2012 PAS Meeting. Doors open at 7pm, meeting begins at 7:30 with a few brief announcements & then Dr. Hartmann takes the floor. Location will be the **Q Building** of PVCC in Rm 120A & 120B. The Q building is at 32nd Street & **Grovers Ave.** Parking is available close to the building. We expect a huge turnout, so arrive early, bring a snack to share, bring a friend!

Dr. Hartmann is also donating a book to raffle off. He writes (about the book in the raffle): “I can donate a copy of *The American Desert* for the raffle. This is a book I did in 1991 and is a book of my text and 180 color photos by my wife and me and some of our friends, all about deserts with lots of Sonoran Desert photography. Nice book, 12 x 14 inches.”

There will be a **Book Sale & Signing**: Dr. Hartmann writes: “I’ll bring 3 or 4 of my titles, *Traveler’s Guide to Mars*, *Out of the Cradle*, and maybe some *Grand Tour* copies (both about planetary exploration, illustrated with paintings Ron Miller and me), and my novel *Mars Underground*.

Typically they go for around \$20 each, tho (*sic*) *Out of the Cradle* paperbacks are less.”

For his **presentation**: Dr. Hartmann will describe the discoveries that led to what is now the leading theory of the origin of the moon, first suggested by him and Donald R. Davis, at Tucson’s Planetary Science Institute, in 1974. Modern work continues to affirm that giant collisions helped shape the solar system and affected even the development of life on Earth. Hartmann will also describe his work that uses asteroid impact craters as markers to establish the ages of surface features on Mars, and evolution of the volcanoes, riverbeds, and environment of the red planet. The talk will include some of Dr. Hartmann’s paintings on astronomical subjects. William K. Hartmann is recognized internationally as scientist, writer, and painter. His scientific work involves the evolution of planets and planetary surfaces. He is credited with the most widely accepted theory of the origin of the moon. He has also studied asteroids and asteroid 3341 is named after him in recognition of his planetary research. He has been on the

imaging team of three successful missions to Mars. In 1997, Hartmann was named first winner of



the Carl Sagan Medal of the American Astronomical Society, in recognition of his communication of science to the public. He has also won awards from the European Geophysical Society, the Geological Society of America, and the Meteoritical Society. A 2007 profile in the journal *Science* was titled “Renaissance Man of the Solar System.” Hartmann has published 3 college textbooks that went into multiple editions, several popular science books, and two novels from Tor/Forge Books (NY): *Mars Underground* (science fiction set on Mars) and *Cities of Gold* (a novel of modern SW and the Coronado expedition of 1539-42). In honor of his paintings of astronomical subjects, he

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UPCOMING MARCH PAS EVENTS

By Terri, Event Coordinator, Events@pasaz.org

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

Mar 1: PAS Meeting in PVCC Main Campus **Q Building Rm 120A**. Read about this meeting & parking in article "The Origin of the Moon" starting on page 1. Bring a Friend. Meet at 7pm, Meeting begins 7:30 with a few brief announcements & then Guest Speaker takes the floor. Bring a snack to share. Water provided by our President. We expect a huge turnout, so arrive early.
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=643&day=2012-3-1&c=1>

Mar 2: School Star Party near Metro Center Mall 7:30 to 9:30pm. Set up is 6:30 with pizza. RSVP with Terri to attend. Attendance 500+. Scopes needed.
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=734&day=2012-3-2>

Mar 13: CTCA Private Star Party in Goodyear, PAStimes Star Tours Members Only.
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=768&day=2012-3-13>

Mar 15: ASU West Open House 7pm to 9pm. RSVP with Paul Schmidtke. See link for details, & different place to set up for this event, map included.
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=730&day=2012-3-15&c=1>

Mar 17: DFAC & PAS Joint Star Party

at Heimhenge. PAS Members ONLY. RSVP with Dan to attend. BYO Food & Drink. Event begins at 6pm. Parking is limited. Dan says: "Just make sure people carpool if possible. Restroom will be available, of course, but otherwise BYO everything."
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=723&day=2012-3-17&c=2>

Mar 18: FREE Telescope Workshop at Bookman's 19th Ave & Northern, 3:30pm to 5:30pm in Musical Instrument section of the store. RSVP is required. Please provide type of scope & number in your party, when you RSVP.
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=666&day=2012-3-18&c=1>

Mar 22: FREE Telescope Workshop & Star Party at PVCC Main Campus in G-147 & in Overflow Parking lot, from 7pm to 10pm. PAS Members may use the 6" Dobs provided by PVCC for the Star Party. I do suggest PAS members bring their own eyepieces for better views. RSVP with Terri is required for the Telescope Workshop. When you RSVP, please include what type of scope you need assistance with & how many are in your party. Special Tele Conference will be going on at 7pm.
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=684&day=2012-3-22&c=1>

<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=684&day=2012-3-22&c=1>

Mar 24: Messier Marathon, private party with potluck at Mike's home in Carefree. RSVP with Mike to attend. Bring a main dish & a drink to share.
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=731&day=2012-3-24&c=2>

Mar 27: Back up date for Mar 13 CTCA event.
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=752&day=2012-3-27&c=1>

Mar 29: Huge Public Star Party at PVCC **Black Mountain Campus** 7pm to 10pm. Set up is 6pm. Meet in N.W. corner lot, cones should be blocking telescope area. Invite everyone you know. Please RSVP with Terri for this event.

<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=692&day=2012-3-29&c=1>

Mar 30: Private star party in Scottsdale 6:30 to 11pm. RSVP is filled.
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=724&day=2012-3-30&c=1>

Mar 31: Private star party at DBG 8-9:30pm. RSVP is filled.
<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=704&day=2012-3-31>

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April 1: FREE Telescope Workshop at Bookman's 19th Ave & Northern, 3:30pm to 5:30pm in Musical Instrument section of the store. RSVP is required. Please provide type of scope & number in your party, when

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was given the Lucien Rudaux Lifetime Achievement Award of the International Association of Astronomical Artists. Hartmann holds a Ph.D. in Astronomy and M.S. in Geology, both from the University of Arizona, and a B.S. in Physics from

you RSVP.

<http://www.pasaz.org/forums/calendar.php?do=getinfo&day=2012-4-1&c=1>

Apr 5: PAS Meeting in the Library of PVCC Main Campus. Bring a Friend. Meet at 7pm, Meeting begins 7:30 with a few brief announcements &

then Guest Speaker takes the floor. Meeting concludes & Library closes 9:30pm. Bring a snack to share. Water provided by our President.

<http://www.pasaz.org/forums/calendar.php?do=getinfo&e=643&day=2012-4-5&c=1> ***

Pennsylvania State University.

Parking for Mar 1: If you go to the parking lot at Grovers Ave & 32nd Street & it is full, I suggest parking in one of the other lots, perhaps the one you normally park in for a PAS Meeting, and walking over to the Q building. It appears that we

may need to do this. I also suggest arriving a little earlier than you normally would, to allow time to find a parking spot and / or walk over from your usual parking area. We are expecting a huge turnout! Seating is limited. Arrive early! ***

PAS MEETING REVIEW FEB 2

By Terri, Event Coordinator



Photo by Matt Kohl

This was a fun meeting. I arrived early by request of our Guest Speaker, Chet, and helped set up, & organize. We opened the meeting at 7:30pm and within minutes, turned it over to Chet Schuler. Chet had a captive audience as he explained Stellar Spectrums. Everyone held their

questions to the end, for which Chet went to 9pm. He seemed to be having a great time doing this presentation, and the audience of 32 people was very into his topic.

We then closed up the meeting with the 50/50 raffle for which \$26 was collected and the winner Kevin Adams won \$13. Many thanks goes to a variety of attendees. Sam Insana brought the luscious popcorn. Due to my mistake, Ed Wurst brought the plates and napkins this time. Thank you Dad! Ed also provided cookies and donuts. The water was provided by President Bruce Wurst. Many thanks goes to Mandy & Rachquelle Hervieux who donated some money to the Snack

Fund. There was a veggie platter brought to the meeting, unopened, but the thought was there and many thanks are sent out to the one who brought it. I didn't see who brought it, but since it was never opened, I hope they took it home and enjoyed it.

Jenny had a bunch of her astronomy students in attendance. New people attending this meeting were Matt, Alex, Kevin, Dick, Rachquelle & Mandy. Welcome new people! We packed up and were chased out, late, from the Library. But the meeting was awesome & the turnout was fantastic! Hope to see you at the March 1 PAS Meeting with William K. Hartmann in the Q Building! ***

SPECIAL MARCH EDITION PASTIMES NEWSLETTER

By Terri, Event Coordinator

Many many thanks goes to Matt Kohl who has created this issue of the Newsletter. Don was having major computer problems around the time of putting the newsletter together & was

unable to create the newsletter due to needing to reformat his computer. So, Matt stepped up and offered to create the March issue. Many thanks goes to Matt for saving the day! For the April

issue, we hope Don will be able to have a computer that is cooperating. Thank you Matt!!! ***

THANKS FROM ANTHEM SCHOOL JAN 26

By Talley Sieglen

Please pass along my appreciation to everyone who came out to our school.

It was a very successful event :):):) Regards, Talley Sieglen ***

(see ANTHEM SCHOOL STAR PARTY JAN 26 on page 2 of the February 2012 issue)

WELCOME NEWEST PAStimes STAR TOURS MEMBER

By Terri, Event Coordinator

I wish to welcome Albert Tucker, who has been with PAS for about a year, but just recently joined the PAStimes Star Tours Group. What is this group? This is a SIG (Special Interest Group) within PAS where by PAS Members can be hired to do PAID Star Parties (minimum of 2 scopes at an event). Everything you need to know about

being part of this SIG is in this Forum Thread:

<http://www.pasaz.org/forums/showthread.php?t=30>.

To become a Member of this SIG, you need to send your best phone (cell) number, type of scope you would use for a paid event, & your main cross streets where you live to Terri

Events@pasaz.org. Then, when a paid event comes in, you get the notice right away. Join today! To be a Member of this SIG, your PAS Membership has to stay current & you will be required to have a PAS Name Badge. Order your badge through Terri, too. ***

THE NORTHERN LIGHTS

By Bob Christ

I lifted the window and the initial image looked like a gigantic musical bass clef arc, sans the attendant dots, that occupied a significant area of sky. Then 2-dots of punctuation, in the form of a colon, suddenly appeared at the lower left portion of the image's arc.

A thick horizontal band formed, stretching below the area occupied by the now diminishing arc and a mushroom-like image formed as well. The band stretched to the left and right as far as I could see and all images were ghostly in appearance and in grayscale. Seconds later the head of the mushroom image disappeared and its solid stem morphed into two vertical bands. I was witnessing the Aurora Borealis for the first time. While my expectation to see the Northern Lights was brightly-colored swaths of light dancing swiftly and beautifully across the sky, these

grayscale images were simply hypnotic. I watched for about 45 minutes until the pain in my neck from craning to see out of the small window won the battle.

My host was Delta Airlines on January 22nd, flying over Greenland at about 36,000 feet altitude. It was 2AM, and while everyone else slept I asked one of the flight attendants out of curiosity if we would be above the Arctic Circle on the flight from Seattle to Amsterdam. He queried the navigator who related we would be relatively close, but not above the Circle, and that I should look out the port side of the plane. Two empty adjacent seats on the left side of the plane provided the opportunity to view the Northern Lights.

Some time ago I read a list of 10 objects that everyone one should view in the sky, and seeing the Lights was one of two targets that I thought would

allude me. I have now seen 9 of the 10 objects, and an annular eclipse of the Sun is the final target. This event will take place this May and hopefully I will be able to make the trek to northern Arizona to take advantage of the event and complete the list. Our ultimate destination was Cape Town where Carol and I boarded our cruise ship ultimately bound for Singapore. The southern skies were not cooperative and clouds on the horizon each night precluded seeing the green flash again and Canopus was the southernmost star readily visible at night. So, once again, the "romantic" Southern Cross eluded detection while out at sea.

We'll be south of the equator again next year in February, so, if the "sky gods" look favorable upon me, I'll be able to revisit the Cross then. ***

Planet Q&A

by Leah Sapir, PAS Member & Newsletter Contributor

PAS recently received the following question: "Early in the morning (5:30am) we can see a bright orange dot (star?) in the western sky and we're wondering if this is Aldebaran? And if it's not, what star is it that we see?"

Answer: That bright reddish star is the planet Mars! It's currently around 60 million miles away - which is one of its closest points. When it is at the far end of its orbit it can be as much as

250 million miles away. So that's why it's so bright right now. Also, the bright star a little to its left, i.e. a little farther south, is Saturn. Follow the handle of the Big Dipper - it will point to a bright yellow star named Arcturus; then keep going in the same direction and you will come to Saturn, right next to another bright star named Spica. Saturn will be a little brighter than Spica (and a little farther east), and a little dimmer than

Arcturus.

Also, Mars currently rises around 7 pm, so you can also see it in the east in the evening. Saturn rises around 10:30 pm, so you will also be able to see Saturn in the evening, but depending on whether you have a clear view of the eastern horizon, you might need to wait a while for it to get up above the trees and houses. Both planets will be rising earlier from day to day, so in a

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few weeks both will be more visible in the eastern sky in the evening. Other highlights of the evening sky right now are Venus (high in the west after sunset, and shining like a beacon) and Jupiter (also in the west, and very bright, but higher up and not as bright as Venus). The planet Mercury is also in our evening sky, close to the horizon, in late February and early March. Draw a line from Jupiter through Venus, and keep following it till you approach the horizon. Mercury

will be dim, but it will be the brightest star visible in that location. Aldebaran is somewhat reddish, but not as much as Mars. Aldebaran is a winter star, so you can find it in the western sky in the evening now. Follow Orion's belt to the right, and you will come to the V-shaped head of Taurus, the bull. Aldebaran is at the left (eastern) side of that "V". Keep following that line from Orion's belt through Aldebaran, and you will come to the Pleiades, a very pretty cluster of stars. About five or six stars are visible

to the naked eye, and many more can be seen in binoculars or a telescope. The Pleiades are 400 light years away. In the other direction - If you follow Orion's belt to the left - you will see Sirius, the brightest star in our sky. And don't forget Betelgeuse (bright reddish star at the top left of Orion - the hunter's shoulder) and Rigel (bright white star at bottom right of Orion - the hunter's knee). Wishing you clear skies and happy observing! ***

BOOKMANS TELESCOPE WORKSHOP Feb 12

By Terri, Event Coordinator

It was a lovely Sunday afternoon. William Finch, Don Boyd, & I arrived around 3pm for set up. Mike Marron arrived there with his meteorites. Ed & Bette Wurst showed up a little later. We got set up, and then I went looking for the items Yvette left for me to do the Raffle. We had 1 RSVP scheduled to show up, Joe Levine & his son Ian. Everything was set up, many photos were taken, and then Joe showed up around 4pm. He had informed me he would be late getting there. While Don assisted Joe with his 4"

Galileo scope, Mike entertained everyone who would come see, with his meteorites. He stole the show of course. The Meteorites drew in about 20 people, who weren't there for the telescope workshop. They also didn't get in on the raffle, as most of them were passing through, and then departing before 5:30pm, when the raffle was set to give away its prizes. About 5:15pm Anatoly Geyfman joined us with his 8" older orange Celestron. This was interesting. Because it was orange, it looked so much smaller than my scope, same size, but black... so it appeared smaller. Anatoly wanted help knowing if the drive was working. So, Mike & William assisted with his scope. Then, as Anatoly was putting away his scope, we were all gathered where his telescope case was, and we were talking eyepieces, accessories, etc, and then the topic turned to upcoming star parties for which these two fine

gentlemen could bring their scopes, set them up and get assistance, during an event. I named a few upcoming events. The Raffle consisted of the following, donated by Bookmans: 2 \$10 Off your next purchase, Gift Cards to Bookmans, "Skywatching" by David Levy, and a PAS T-shirt. The winners were happy to have stuck around to wait for their prizes. We packed up, & returned the supplies for the raffle to Bookmans. It was a very good event. A small crowd, but was just enough to keep it interesting. Many thanks goes to Ed for locating a few extra chairs, and returning them when we were done. Thanks to Mike for attending and entertaining the crowd. Many thanks to Don for assisting both Joe & Anatoly with their scopes. We look forward to the next event at Bookmans on Mar 18. Yvette & I are working on something special for that event date, too. Watch for an announcement. See you there! ***



ANTENNAS STAR PARTY Feb 17

By Eric Steinberg

Based on the weather, we moved the Antennas trip from Saturday to Friday and were treated with clear, inky black skies, enough so that Venus affected dark adaption and zodiacal light was clearly visible from the horizon, nearly to the zenith. Seeing started out at 3/5 and improved to 4/5 after midnight. There were 15 observers present,

mostly with RV's of one sort or another. We used our trusty tent, which was fine but which at our age tends to get old quicker than we are. We observed 26 objects total including 7 new ones before fatigue and cold took their toll (we both have colds, but didn't want to miss the night). Views of familiar objects take on a whole

new dimension there and faint constellations like Cancer and Coma Berenices are clearly visible. Highly recommended.

Objects viewed this evening: "*" indicates a new object. Jupiter, Mars - boiling early, better @3:30AM, polar cap clearly visible,

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Saturn - spectacular @03:30AM - Cassini Division clearly visible., M1 - Best view yet. No fine detail, but crab-shape clear
M3* - Stunning view, M31 - dramatic, bigger than my widest field eyepiece.,

M32, M33, M34, M37 (a favorite - really pretty), M40* - double star, surprisingly far apart, M42 - Bright, lots of color and depth, M43, M64* - Black eye galaxy, M79, M93, M97* (Owl), M104* (Sombrero) - Very

cool., M108*, M110, NGC2024 - Nebulosity near Alnitak in Orion, NGC2261 - Hubble's Variable, Nebula, NGC2281, NGC2392 (Eskimo or Clown), NGC2403*, NGC2903* ***

FEB 23 MEETING OF THE MINDS

By Terri, Event Coordinator



At the February Meeting of the Minds, we had a very good time. Many snacks were brought & shared, bottled water was brought by Ed Wurst, in the absence of our President (Bruce had to work). Many thanks to Ed who also brought donuts & cookies. Sam brought popcorn, which was enjoyed by me. Thank you Sam. Leah Sapir, our Guest Speaker for the night, brought the pretzels. Tim Jones provided the big bag of many little candies. Thanks to everyone who brought something snack-ish to share. In attendance at this meeting were these PAS Members: Steve Palmer, William & Terri Finch, Don Boyd, Mike Marron, Ed & Bette Wurst, Albert Tucker, Lou Roberts, Renee & Joe Collins, Tim Jones, Bob Christ, Frank & Sam Insana, Eric Steinberg, & Leah Sapir. Also attending from PVCC were Dave Hellman & Jenny Weitz. And one of Jenny's students, who has become a familiar face to PAS, also attended, Kevin Adams. During the meeting, one of Jenny's students stopped by to borrow a telescope. Attendance was 22. The evening opened up with Terri (Vice President) welcoming everyone to the meeting. Then a quick announcement was made, that if you haven't already gotten on the PAS

ListServ, now was a good time to have yourself added manually by Tim. So, Tim added 5 new members to the ListServ. Welcome new ListServ members.

We then turned the floor over to Leah. Leah talked for about 1.5 hours about Internet astronomy. She showed us site with pictures, such as Astronomy Picture of the Day, or Astronomy FM and AAPOD. Then she moved to the interactive sites that have on line telescopes, for a fee, that you can control, and photograph what you want. She provided a handout of the links to these sites for which I took the extra copies & will have them available for pick up at the next several meetings. If you missed getting a copy, be sure to grab it. The sites she covered were Telescope.net, Telescope.com and Slooh. She spent the most time on Slooh, and many questions were asked. Tim gave input about this site as well.

Leah concluded her presentation and while Jenny set up for her mini presentation, we all took a moment to get up, get the handouts, pay dues, if that was on the list, and get settled back down with our snacks & drinks. Jenny took the floor and showed us the animated power point presentation she designed for the proposal of funds to build & create a better astronomy facility at PVCC Black Mountain Campus. Her proposal included 1) Astrophotography & 2) Spectroscopy Research facilities. It was a very well done presentation. She is trying to get sponsors to give a total donation of \$112, 000+. Many ideas were shared on how to accomplish this goal. Tim had many suggestions on the

astrophotography equipment PVCC should purchase.

We then turned the floor to Sam who covered 2 topics. Both had to do with the AZ Centennial that just went by on Feb 14. As a moment of pride in the history of Arizona, Star Gazing is in the top ten list.

Then Steve shared some info about a tour of the Mirror Lab in Tucson, and over night trip he is trying to set up for PAS. It would include a trip to Mount Lemmon and possibly the Flandrau Planetarium. The trip to the Mirror Lab is attempting to be with free admission. We hope he can set that up for us.

Eric then mentioned the events calendar and pages and how many links are needed for an event. I briefly answered this at the meeting, but later posted to everyone in the ListServ why we have the events lined up as we do. Maybe this will generate input on how I can do it easier, so there isn't so much I have to do to make the event info flow.

We also discussed the upcoming Messier Marathon & whether it should be a public or private event. And it was decided NOT to have a separate event at Mike's house for the PAS Dart Game that didn't happen at the PAS Social this year in January. Instead, it was decided to have Jerry change the face plate on the existing trophies & present them to next year's winner.

The meeting closed at 9:30 and socializing & eating, clean up went on to 10:15pm. It was a very good meeting, with great discussion & wonderful people to be with! Thank you all for attending. ***

TELESCOPE WORKSHOP AT PVCC Feb 9

By Terri, Event Coordinator

What a surprise this event was! Attending PAS Members were Eric & Ora Steinberg (used PVCC 16" Lightbridge), William & Terri Finch (Handouts & traffic control), Mike Marron (Meteorites), Don Boyd (6" scope), Tim Jones (Scope), Bob Christ, & Jenny Weitz (PVCC Astronomy professor). I wish to thank all the folk above for attending & helping out at this LARGE event. From the public, we had Fred Reilly with his Meade 114mm & his wife Debby for the Telescope Workshop. Paul Akermielm RSVP'd but in the crowd, I may have missed chatting with him. We, Tim & I, estimate we had over 100 people from the public. Here's the names of those who attended and signed in... Taylor West, Kelly Bodine, Matthew & June Bohr, Samantha Stewart, Courtney Bartolf, Anfono Ramos, Erin Long, Brooke Ransaw, Jamacia King, Maji Blakes, Victoria Bray, Pauline Munoz, Jaime Bales, Sinclair Bales, Trent Baze, Bailey Polcher, Tyler K, Michelle, Erica Chernecki, Danielle Russo. Many of these were Jenny's students,

but the crowd was mostly the public. What we discovered, as the night went on, was that Jenny was contacted by AZSciTech.org and there is a yearly science festival that happens around Maricopa County. The PVCC events were added to this science festival, including this event, Mar 1 William Hartmann for the PAS Meeting, Mar 22 Telescope workshop & Mar 29 Star Party at Black Mountain Campus. If the attendance at this event was any indication of what to expect for Mar 1 - I would suggest everyone arrive a lot earlier than planned to be assured you get a parking spot. See article about parking on Mar 1. Near the end of the event, a member of PAS showed up and talked with us for about ½ hour, Kraig Nelson. He had come from his class and couldn't get to G-147 from the Q building until about 9:45pm. I wish to thank Jenny for taking out one of the 6" scopes to add to the star party scopes. We needed a few more scopes for this event and more room to have it, with the number we had in attendance. Many thanks goes to Kevin Adams



who helped tremendously, also taking out one of the scopes to assist. Kevin is one of the students of Jenny. We hope to see a lot more of him, assisting & enjoying the night sky with us. Kevin is also part of the PVCC Astronomy Club. Thank you Kevin! It was an awesome, very packed with people, event & was a great success! See you at the next one.

Eric writes: I was totally surprised by the size of the crowd – usually it's pretty quiet there. People seemed to enjoy looking at stars on an orange background though! (I think Jenny is trying to get a shroud for the PVCC Lightbridge).***

DESERT FOOTHILLS ASTRONOMY CLUB MEETING Feb 15

By Terri, Event Coordinator for PAS



When PAS members are able to take some time to enjoy other astronomy

events outside of PAS events, it is always nice to have a review about those events. William, my parents (Bette & Ed) and I visited Dan Heim's club on Feb 15. Fr. William Stoeger of the Vatican Observatory was there doing a presentation about the Cosmos. Eric & Ora Steinberg, & Albert Tucker were also there from PAS. Dan had forgotten his camera, so he asked me to take photos. I didn't have mine, but I had my cell phone and I took about 30 photos for Dan.

They will be in the PAS Photo Gallery, soon. This meeting had an attendance of 70+ with standing room only. F. Stoeger did an awesome presentation and many questions were asked at the end of his talk. We had a great time, & it was very nice not to feel obligated to run the meeting. Would love to attend more great speakers. Dan's group is scheduled to join at our Mar 1, Hartmann meeting. Thank you Dan, for inviting us! ***

SPECIAL TELECONFERENCE AT PVCC EVENT MAR 22

On Mar 22 PAS is doing a Telescope Workshop & Star Party at PVCC. In G-147, we will be setting up to do a teleconference through the Night Sky Network for the following, starting at

7pm sharp. After the teleconference, we will continue with the original activities. Everyone is welcome! **Maya 2012 Telecon! Mark your calendar for Dr. Anthony F. Aveni**

on Thursday, March 22
Join the NSN members for a teleconference with one of the most prolific and loved science writers of
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our time, Dr. Anthony F. Aveni, as he gets us ready to face the 2012 craze with facts and humor. We are pleased to welcome the astronomer and

anthropologist that Rolling Stone magazine named one of the 10 best professors in the country. He will talk about the phenomenon of the 2012 prophecies, theories, and predictions that this date marks the end of the world, or at least the end of the world as we know it. Here's your chance to bone up on the history and science behind the mayhem to help you prep for questions from the public. Dr. Aveni is widely known for his 16 very popular books, numerous TV

appearances, and legendary classes. He is considered one of the founders of cultural astronomy and is an expert in the astronomical history of the Aztec and Maya Indians of ancient Mexico. His latest book is titled *The End of Time: The Maya Mystery of 2012*. He is Russell B. Colgate Distinguished University Professor of Astronomy, Anthropology, and Native American Studies at Colgate University, where he has taught since 1963. ***

NIGHT SKY NETWORK PIN ARRIVAL UPDATE

By Vivian White, Night Sky Network Administrator

Hi Terri, I'm so sorry. There was a mistake (ok, 3 mistakes, actually!) with the order and the pins have been delayed for just about 20 clubs, unfortunately including PAS. I had no

idea they would be this late. They assure us that they are on the way here now and they should go out to you by the end of this month (Feb). Your empty box is staring at me from across

my office, waiting for 20 pins to go in and get sent off to you. Please accept my apologies. That was a big mistake on our part. ***

A VISIT FROM COMET GARRADD

By Leah Sapir, PAS Member & Newsletter Contributor



Comet Garradd on October 28, 2011, with spiral galaxy NGC 6408.

*Image credit: Rafael Rodriguez and
www.astronomy.fm*

In August 2009, while searching for near-Earth objects, an amateur astronomer in Australia discovered a comet. Gordon J Garradd reported his finding, and the object was named Comet Garradd (C/2009 P1). It was described as circular, around 17th magnitude, with a diameter of 15 arc seconds. (For comparison: M57, the Ring Nebula, is about one arc minute in size – i.e. four times as large as the comet when it was first discovered. But M57 is 9th magnitude – about 1500 times brighter than the comet's original 17th mag.)

At the time, the comet was about 8 AU from the Sun – almost as far as the orbit of Saturn. But since then, of course, it has moved closer. Comet Garradd reached its perihelion

(closest approach to the Sun) on December 23, 2011, at a distance of 1.5 AU (about 145 million miles) – about the same distance as the orbit of Mars. After swinging around the Sun, it is now on its way out. On March 5 it will be closest to Earth at 1.25 AU, about 115 million miles from us. It is currently rated at 7th magnitude, about six times brighter than M57, and about the same as globular cluster M92.

Most solar system objects orbit the Sun more or less in the same plane. From our point of view here on Earth, we see this plane edge-on, and as a result it appears that the Sun, Moon and planets are usually found in a certain area, sort of a band across the sky. We call it the "ecliptic" because it is the area where eclipses can take place. Right now, for example, we have a nice line-up of planets: Mercury, Venus and Jupiter are in the west after sunset, then Mars rises around 7 pm (when Mercury is setting) and Saturn rises a few hours later. For most of the evening we can see at least three planets, and they will be more or less in a straight line – along the ecliptic.

But, Comet Garradd's orbit is

not in the ecliptic plane; its orbit is highly inclined to the plane of the solar system. It therefore follows a path that takes it way above and below the ecliptic. Here is a Java applet from JPL that shows the comet's orbit in 3D: <http://tinyurl.com/5vqygi7>. (Use the arrows below the picture to move forward or backward in time; use the scroll bars below and right of the picture to change the viewing angle.)

As we can see in the 3D view, the comet is heading for a flyover above the North Pole; or to be more exact, it is already far north of the solar system's plane, and we are about to pass under it. As a result, Comet Garradd is now moving into our northern sky and will even be circumpolar for a while.

In January the comet travelled through Hercules, passing the sky position of globular cluster M92 on February 3 and producing a nice photo-op, as seen in this APOD picture by Rolando Ligustri: <http://tinyurl.com/6ogzthu>. Its brightness of 7th magnitude makes it a nice match for M92. In February the comet moved through Draco; in the

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"Comet" continued from page 8

first half of March it will pass through Ursa minor, with a short jaunt through Draco's tail, and then it will be in Ursa major from mid-March to mid-April.

Photos of the comet show two tails. The tails are actually about 90 degrees apart, i.e. at a right angle to each other, but depending on our vantage point at the time, they can seem to form anything from an acute angle (as seen in this picture from October 2011 by Rafael Rodriguez <http://tinyurl.com/7l76n6m>) to 180 degrees (as seen in the APOD picture with M92). Here is a 3D diagram with the comet's tails drawn in: <http://tinyurl.com/7phpmza>. The diagram is by Phil Plait (<http://blogs.discovermagazine.com/ba-dastronomy>), based on the JPL applet.

Why do comets have tails? And why can they have two of them?

Comets are "dirty snowballs" – composed mostly of water ice, along with a few other frozen gases (which can include carbon monoxide, carbon dioxide, methane, ammonia, cyanogen, and others), all mixed with dust, sand, and grains of rock. The average cometary nucleus is about 10 miles in diameter (varying from about 1/10 of a mile to a few dozen miles); and at this small size they are almost invisible till they begin to approach the Sun. The Sun's warmth causes the ices to evaporate – a process known as "sublimation", because they evaporate directly without melting (as we see with dry ice, i.e. frozen carbon dioxide). The evaporated gases form a cloud, called the "coma", around the nucleus, and this is what we see

through a telescope. The gas molecules are actually very far apart; if we could see the coma close up, it would resemble a vacuum. But although the gas is thin, the molecules reflect sunlight very well, and from a distance we see the coma as a fuzzy cloud.

Besides the gas from the evaporated ices, the coma also contains bits of the dust and rock that had been frozen inside the ice before it evaporated. In the meantime, the Sun produces both radiation (the full spectrum of light, from infrared to ultraviolet) as well as a stream of fast-moving charged subatomic particles known as the "solar wind". Both the ultraviolet radiation and the particles of the solar wind can knock electrons off of the gas molecules, turning them into ions; and the ionized gas is attracted and pulled outward by the charged particles of the solar wind, forming the "gas" or "ion" tail. This tail is usually blue or green, due to fluorescence of the gases – when the electrons find their way back into the ground state, photons are released, often in the blue-green wavelengths. The exact wavelengths depend on the identity of the gas molecules involved.

In the meantime, the bits of dust and rock don't have an electric charge, so they are not influenced by the solar wind, and continue to follow the comet's orbit. Since they are somewhat heavier than the comet itself (which is composed mostly of frozen ices, i.e. not as dense as the solid material alone) the dust and rock move more slowly and tend to trail

behind the comet, forming the "dust tail". To some extent, the lighter solid particles are pushed aside by pressure from the Sun's radiation. (Even though photons don't have mass, they can exert pressure due to their high energy.) Therefore, the dust tail fans out a bit in a direction away from the Sun, although it isn't completely opposite to the Sun's direction, as the ion tail is. Since the solid particles are attracted by the Sun's gravity just as the comet is, the dust tail is often curved along the comet's orbit. The dust reflects and scatters sunlight, and we see the dust tail as yellowish or reddish – for the same reason that the Sun looks yellow and sunsets look red.

But even when the comet will eventually move out of our sky, the show isn't over. Bits of debris from the dust tail remain all along the comet's orbit; and when the Earth crosses one of these trails, the bits of dust and rock plummet through our atmosphere and burn up, producing a meteor shower. A study of each meteor shower can identify the comet (or in some cases, the asteroid) that produced it. The Perseid meteor shower (mid-August) is caused by Comet 109P/Swift-Tuttle; the Leonids (mid-November) by Comet 55P/Tempel-Tuttle; and the Orionids (mid-October), along with the Eta Aquarids (minor meteor shower in early May) are souvenirs of Halley's comet.

Use this sky chart from Sky & Telescope <http://tinyurl.com/6tdzbvg> to find Comet Garradd in tonight's sky!***

OBSERVING AWARDS

By Terri, Event Coordinator

When a person becomes a member of PAS, they also are included in the mailing of a quarterly publication called the *Reflector*, which is put out by the Astronomical League. In this publication is a list (in the March '12 issue on page 16) of Observing Awards one can achieve for having fun enjoying their telescope. This link

<http://astroleague.org/observing> has the awards listed & how to achieve them. Here are a few of the more obvious awards you could earn: Binocular Messier Award, Comet Award, Constellation Hunter - Northern Skies, Dark Nebulae Award, Herschel 400 Award, Lunar Observing Award, Meteor Award, Solar System

Observing Award, Sunspotter Award, and the list goes on. Also, you might want to read the article "Why Observing Awards?" on page 12 of the March '12 *Reflector*.

One reason I bring this to your attention, besides that it is fun to get an award for something fun you might already be doing is that one of our

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"Awards" continued from page 9

members, Stanley Spielbusch is listed as having achieved the Solar System Observing Award (in this issue). Congratulations Stanley! Let's all get out there & earn awards & love doing

it!

On page 13 in this same issue, there's an article named "Mark Your Calendar" that talks about the upcoming June 5 Venus Transit. And at the bottom of the article, they talk

about adding a new "Planetary Transit Special Award." Some of us might want to try to achieve that award while at our event at PVCC Black Mountain Campus that day. ***

SPACE WEATHER GAME ON SCIJINKS

Distributed by Laura K. Lincoln, on behalf of the Space Place Team

It's always a good idea to maintain a healthy respect for the Sun, especially if you are in charge of operating any satellites, which can be badly damaged by high-energy charged particles from solar storms. Thankfully, many satellites can now be put into a temporary "safe" mode when necessary. However, operators must know when to flip the "safety" switch. The GOES satellites are in

geostationary orbit high above most other satellites. Along with keeping an eye on Earth's weather, the GOES also keep an eye on the Sun's antics and give warning when bad space weather threatens other satellites. "Shields Up!" is a new game on the SciJinks website, in which the player's job is to keep three separate satellites safe from random blasts of damaging rays and particles from the Sun, while still

keeping the satellites operating as much of the time as possible. Read the story of a super solar storm in 1859, and play "Shields Up!" at <http://scijinks.gov/shields-up>.

Check out our great sites for kids:

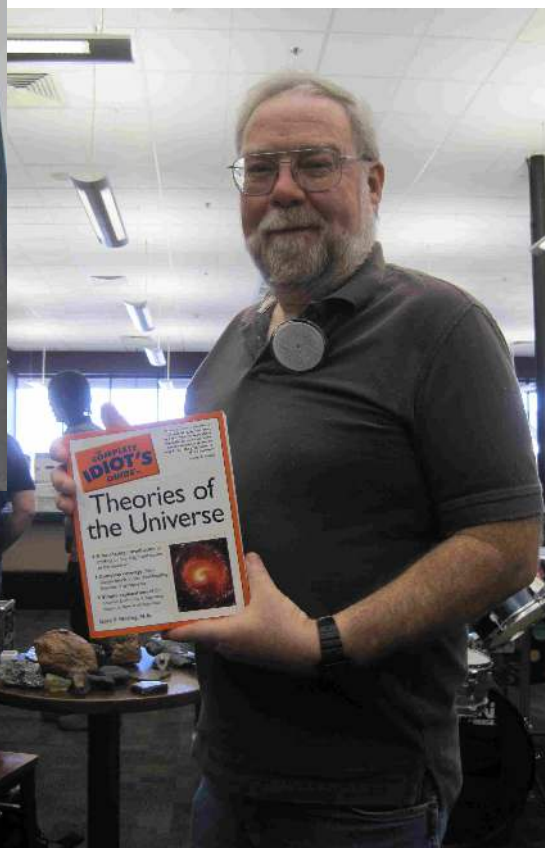
<http://climate.nasa.gov/kids>

<http://scijinks.gov>

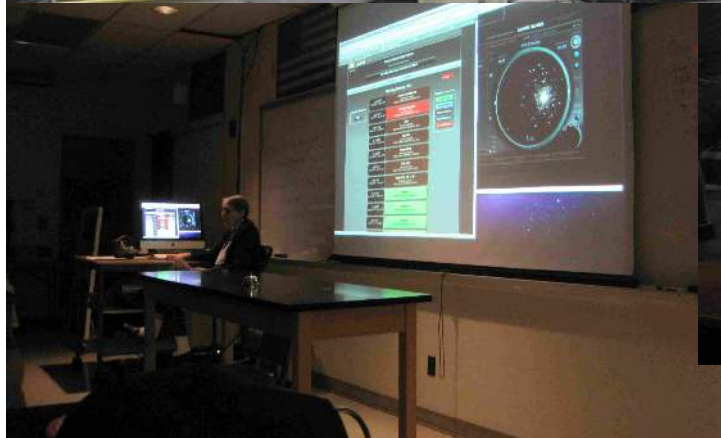
<http://spaceplace.nasa.gov>



Chet's presentation at the Feb. 2 meeting



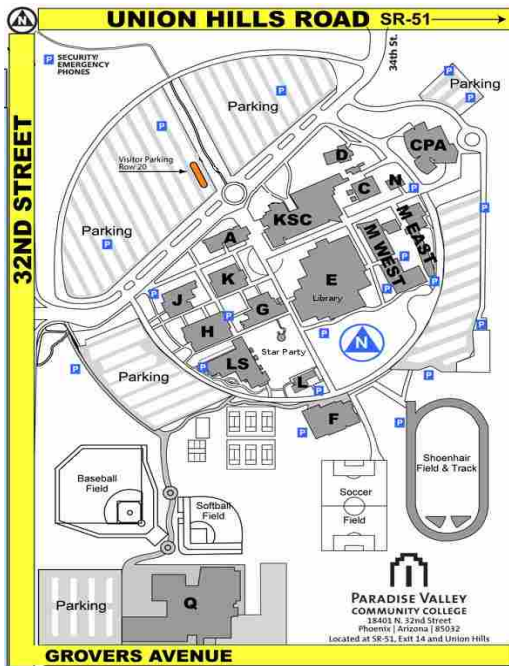
Anyone who knows Mike knows that this picture is pretty self explanatory



Leah's presentation at the Feb. 23 Meeting of the Minds

Map of PVCC Main Location

18401 N 32nd St. | Phoenix, AZ 85032



Map of PVCC Black Mountain

34250 N 60th St. | Scottsdale, AZ 85266



see page 2 for more information

MARCH

				1 PAS Meeting, PVCC Q Building	2 School Star Party (Private)	3
4	5	6	7	8	9	10
11	12	13 CTCA Private Star Party	14	15 ASU West Open House & Star Party	16	17 Club Star Party in New River (Private)
18 Telescope Workshop at Bookman's	19	20	21	22 Telescope Workshop & Star Party at PVCC	23	24 Club Star Party in Carefree (Private)
25	26	27 Back up date for Mar 13 CTCA	28	29 Star Party PVCC Black Mountain Campus	30 Star Party in Scottsdale (Private)	31 DBG Private Star Party

Don Boyd
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To:

2012 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.

Apr 5: Rick Tejera "Navigating the Night Sky, Using a Star Atlas"

May 3 in G-147, Pizza Party: Rogier Windhorst "New Cosmos with the new Hubble, & James Webb Space Telescope"

Sep 6: Members Night - Sign up with Terri to do a mini presentation.

PAS is incorporated in the state of Arizona as a non-profit, scientific and educational 501(c)(3) organization. Our newsletter PAStimes is published monthly from September to May and distributed by USPS and the Internet. All Issues are available for download on our website www.pasaz.org Ads for astronomy equipment are provided as a courtesy to sellers and buyers, and do not constitute any endorsement by PAS. All Photos by Don Boyd unless otherwise credited. All articles and photos are copyright their authors or PAStimes.

What's Up For March?

by Rod Sutter, PAS Past President

Name	Date	Rise	Set
Mercury	3/15	6:51	19:19
Venus	3/15	8:35	22:09
Mars	3/15	17:03	6:06
Jupiter	3/15	8:42	21:57
Saturn	3/15	20:56	8:17
Uranus	3/15	7:03	19:13
Neptune	3/15	5:31	16:34
Pluto	3/15	2:15	18:32

All Times Arizona Time

March 15 2012

Sunrise: 6:33

Sunset: 18:32



Q1: March 1



Full: March 8



Q3: March 15



New: March 22