

PAStimes

Phoenix Astronomical Society
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PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Dennis Young To Speak January 7

Dennis Young has graciously agreed to be our January speaker after Veronica Zabala had to cancel at the last minute. We thank Young and we are looking forward to his talk. For each Guest Speaker, we ask that they provide us with a paragraph about their topic, themselves, or a combo paragraph or two including both. Here is what Young provided us:

“Dennis Young .. a Sedona resident for almost 25 yrs and an experienced sirius viewer of the heavens for over 30 yrs. My hobby turned profession is showing the celestial stars over head at many public

outreach programs and also private shows with large astro equipment. Also astro photography is another field I have touched upon over the years, showing celestial events thru what I call ...Astro-scenic photography.

“Story of the Stars” Presentation by Dennis Young

“I have a rare, short video on Navajo Nation and NASA about the their beliefs on the heavenly bodies. This was the first time that NASA and Navajo came together in a Public Outreach about 3 yrs ago at the 4 corners states that I was involved with.

The rest of the talk will be on the Current Astro events, and how the World WIDE WEB(www.) has changed the astronomer's interactions with astronomy.”

For the second meeting in a row we will be meeting in room G-147. This may change for the February meeting so watch this space for an announcement.

Also this month is the Social January nine. This is one of the highlights of the year and we hope to see everyone there. The address to the location can be found in the link provided in the article on page 2.

Happy New Year everyone!

Dec 3, 2009 PAS Meeting in G-147

By Terri, Event Coordinator

Photos of this event can be seen at this link:

http://www.pasaz.org/forums/gallery.php?g2_itemId=5052

Ken Herkenhoff was an awesome guest speaker for PAS this month. Not only did he entertain but also he was very informative, organized, and fun to listen to. At the end of the meeting, several PAS members asked if I could ask ken to do another presentation for the club in the near future.

At the meeting, held in G-147, 2 cards made the rounds. One went to Jerry O'Neil who works for PVCC. He's in the hospital, or was, for his heart. And then we also passed around a card to be signed by the membership for John Pulis who isn't doing so well, again. Both cards were mailed out shortly after the meeting.

We opened the meeting with a brief introduction and handed it very quickly over to Ken. Ken came down to us that night from Flagstaff and wanted to be able

to return home earlier than later, so I accommodated him and started the meeting with his presentation, rather than with the usual announcements. After his presentation, we did announcements.

After Ken's presentation, we did a few brief announcements. It was the evening of the PAS SWAP MEET, but there were no Swaps made. No astronomical items were brought for sale. Kevin brought a note with him from John Pulis that said he has a telescope for sale. We also had the massive Magazine sale. For next to nothing, you could donate to PAS and take any and all magazines you wanted from the table. I believe we brought in 75 cents to the club, but hardly and magazines were taken. Kevin brought a bunch of National Geographics for donation.

I wish to thank Bruce & Sherry for bringing cookies. Ed, Bette and Bruce brought some cookies as well and the water. Sam and Frank were not there, so there wasn't popcorn this month. I'm glad the rest

of you brought something. Thanks goes to Rod for doing the sign in, as I didn't have a Host or Hostess this month. Where is everyone?

The 50/50 was won by Bruce. \$31 was split and Bruce took \$15 donating the other .50 to PAS. That paid for his dues!!!



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Dec 3, 2009 PAS Meeting in G-147

Continued from page 1

Jerry announced the big Rocket launch happening on Dec 26th. If you are done with your Christmas activities and want to watch a rocket launch, go to the launch website listed by Jerry's name in the PAS Officer's list within this newsletter, and see when and where the launch will be held. More info can be gotten by calling Jerry about it. There's also a huge rocket launch scheduled for the 4th weekend in Feb. You

don't want to miss that!

Several members complained that they didn't like the new venue - G-147. For the January PAS meeting, we have to meet in G-147 because the Library is closed for the holidays. There's no school. But for the Feb meeting, we will make the decision at the Jan meeting as to if we in G-147 or the Library. Watch for the announcement if

you miss the Jan meeting.

I appreciate everyone who attended and was quietly giving their full attention to our wonderful Guest Speaker Ken Herkenhoff. The meeting went smoothly and was a great success. We would love to see you at the next PAS meeting in Jan 2010. HAP-PY NEW YEAR!!! ***

PAS SOCIAL Jan 9, 2010 4pm to ?

By Terri, Event Coordinator

The PAS Social for 2010 will be held at Chris Johnson's home in Goodyear. All info you need to know can be found & is being discussed in the PAS forums at this link:

<http://www.pasaz.org/forums/showthread.php?t=340>. Chris's address can be found in the PAS Downloads MEMBERS ONLY section in the PAS Roster at this link: <http://www.pasaz.org/forums/downloads.php?do=file&id=48>. This is a PAS MEMBERS ONLY or by Invite ONLY event.

Here's the plans for this year's Social.
 3pm Set up
 4pm PAS Members arrive
 5pm Dinner is to be enjoyed
 6pm Dart Game Begins
 7:30pm to ? White Dwarf Gift Exchange
 At end of WD Gift Ex, Surprise Movie

provided by Chris.

Party ends after Movie.

RSVP is required. Get your RSVP to Terri no later than the end of the PAS meeting on Jan 7th so that Steve can be sure to have enough seating for everyone attending. When you RSVP, please include first names of all who are coming with you as well as what food they are bringing. I'd like to avoid similar foods. See the Forums to be sure someone has not already decided to provide what you wish to bring. First to list in the Forums gets to bring that item. So, if you do not have Internet access, call Terri today with your choice of food and she will post it in the forums for you. Forum link is listed above.

Bring: One dish of food, & one drink to share per person attending. A six pack of pop, or 2 liter bottle would work. 6+ bottles

of water, a jug of juice. The idea is to bring more than what you can drink in the night, as to provide for others. Bring a couple different drinks if you like.

Bring: One disguised and wrapped gift, preferably astronomy related, to be able to play the White Dwarf Gift Exchange game. This is the highlight of the evening. You won't be allowed to play unless you provide one gift. Exchange your gift for a ticket with Terri upon arrival.

PAS members may bring a guest to the party, but the RSVP has to be provided to Terri. I wish to make first name tags this year, to help us get to know each other better.

We hope to see you there! RSVP your attendance today! ***

January 2010 Upcoming PAS Events

By Terri, Event Coordinator

Jan 2 Saturday: Meteor Shower Party, PV Park 6pm to 10pm, RSVP with Rod. No public RSVP cancels this event. Weather Permitting.

Jan 7 Thursday: PAS Meeting in G-147, 7pm to 10pm - Bring A Friend!

Jan 9 Saturday: PAS Social at Chris Johnson's home in Goodyear. 4pm to Whenever. See article this issue for more details. RSVP with Terri for Social.

Jan 16 Saturday: CEO, RSVP with Chris.

Jan 21 Thursday: FREE Telescope Training Workshop, PVCC G-147, 7pm to 10pm, RSVP with Terri. No Public

RSVP's cancels this event. Also, bad weather cancels event as it is planned to have an outdoor viewing session as well.

Jan 28 Thursday: PAS Meeting of the Minds - PAS Business Meeting, G-147 PVCC 7pm to 10pm, Lack to topics cancels this event. ***

PAS Virtual Star Party Review

By Rod Sutter

Yes we finally got together on a clear night and was able to hold our very first VSP (Virtual Star Party). I arrived at Chris's home before anyone got there, Chris was off to the store picking up snacks and drinks for everyone. After he and Steve came back, we were ready to get things kicked off. Chris sent his info to the Observatory in Mayer to get things ready for the evening. There were only the three of us, Myself, Bruce Meyers and Steve that showed up for the first VSP. We gathered the information that Chris needed to send to the observatory. Chris showed us what info was needed to be input into the ACP Planner program, we copied the info and sent it to Chris, he then sent the info to the scopes. Bruce decided he wanted to shoot a Galaxy. My first shot I wanted to see if we could get some shots of an asteroid. After viewing "TheSky6" program I found 3 asteroids that seem to be pretty close together in the sky. I showed Chris he thought it would be interesting to see if we could get them and asked me how I wanted to shoot them, I asked him if shooting 5 sets of 300 seconds each then waiting for about 45 minutes would be long enough to see if the targets moved would be sufficient and he said let's find out. If it does not work out you'll still have time to pick another target, or re shoot with longer times.

I gathered the info in "TheSky6" program, setup the display view to see if all three asteroids would fit into the field of view in one of the camera's. After Chris looked them over, He decided that the best camera for the operation would be the wide field of view FSQ. So he sent the info to the observatory and the FSQ telescope. Mean while Bruce was gather info about his Galaxy, he was going to shoot NGC 891. I don't know for sure what Steve was going to shoot, I think he was helping Bruce with the Galaxy NGC 891, if I'm wrong, sorry Steve, you know the older you get it seems the more you forget, that's true for me anyway. After the scopes were up and running, Chris brought up all the windows in his computer of what was

running at the observatory. He also brought up a live view of the scope room so we could watch the scopes in case we have a malfunction. Chris told me that my pictures should be ok even though the FSQ had a little problem the other day when it came loose from the scope and fell and smacked against the tripod and did some minor damage. So a small portion of the upper left corner of the image might have some imperfection in it, I told him I probably would not know the difference since this is the first time we've ever done something like this, it seemed more like our very first "Live action training class".

After the imaging was all done, Chris told me we still had lots of time left for more imaging if I wanted. I decided to bring up "TheSky6", and see what would be a good target. After long consideration (about 3 1/2 minutes or so) my eye was drawn to M 31. Chris asked me how I wanted to shoot it, I told him that since this is just a training class how about just luminance. He said that was a good idea and if I decided that I wanted to add color shots later, we could shoot some color shots at a later date and then just add them to my Luminance. I thought that was a great idea, so that's what we did. I got the info from "TheSky6" made a plan in "ACP Planner" and sent it to Chris which he in-turn sent it to the observatory. After about an hour and a half I had a great shot of M 31. Chris then showed me how to load a program called "Filezilla FTP client" if you don't have this program it makes file transfer much easier. Chris told me that's what I should use to transfer the files from the observatory to my laptop. He said this could be done the next day, or when ever you get time. That way your not tying up yourself trying to download all the files now when you could be gathering more info and shooting objects, "Use Your Time At The Observatory Wisely" that's what Chris was trying to tell us, then download your files at a later time. It was a great idea, after I got home around 3:30 am, I hit the sack right away.

The next morning I took Chris's advice and brought up Filezilla, thankfully Chris showed me how to use "Filezilla FTP" before I left the VSP. All of this stuff is quite overwhelming, I knew it would be, but I wanted to tackle it anyway. I think that's why most of you that really want to do a VSP, but all the things that go on are just too much to get your arm's and mind around, I know that it was for me, so much info, so little brain space to put it in. But you know what, after actually sitting down and having Chris help you with it, it's probably really frustrating for Chris to keep telling me the same things I just asked him 5 minutes ago, but he was really helpful. Each one of you that did not make the VSP should really think about doing it, even if you don't want to shoot any pics or think you don't need any, just the experience of a VSP is really something you should experience. So after we had all of our shots, Chris put Bruce's NGC 891 on a jump drive and we all headed to his office for the editing class. This is where we learn how to manipulate the raw images into a great photo. That is another class all by itself. So now just think about what I wrote here and come to the next VSP, and see what it's all about. Even if you don't have a laptop, you could use mine, I'll be glad to help with what ever I can, well at least help you gather the info on what object you want and to make our ACP Plan anyway. I've had lots of experience making ACP Plans, we a little experience anyway, I'll help with what I can, other wise it's an Email off to Chris. I'm still trying to figure out how to adjust all the pics that I shot that night. Now that the first VSP is over, making the ACP Plan, sending it to Chris, going to the VSP, watching the pics come from the observatory, downloading from the FTP server, I thought that was overwhelming, now I have to figure out how to change the data that I gathered and make it look like a great picture instead of a blurry bunch of white globs on my screen. Well the rest is up to you, come to the next VSP and see what I'm talking about.



Sunglasses for a Solar Observatory

By Patrick Barry

In December 2006, an enormous solar flare erupted on the Sun's surface. The blast hurled a billion-ton cloud of gas (a coronal mass ejection, or CME) toward Earth and sparked days of intense geomagnetic activity with Northern Lights appearing across much of the United States.

While sky watchers enjoyed the show from Earth's surface, something ironic was happening in Earth orbit.

At the onset of the storm, the solar flare unleashed an intense pulse of X-rays. The flash blinded the Solar X-Ray Imager (SXI) on NOAA's GOES-13 satellite, damaging several rows of pixels. SXI was designed to monitor solar flares, but it must also be able to protect itself in extreme cases.

That's why NASA engineers gave the newest Geostationary Operational Environmental Satellite a new set of sophisticated "sunglasses." The new GOES-14 launched June 27 and reached geosynchronous orbit July 8.

Its "sunglasses" are a new flight-software package that will enable the SXI sensor to observe even intense solar flares safely. Radiation from these largest flares

can endanger military and civilian communications satellites, threaten astronauts in orbit, and even knock out cities' power grids. SXI serves as an early warning system for these flares and helps scientists better understand what causes them.

"We wanted to protect the sensor from overexposure, but we didn't want to shield it so much that it couldn't gather data when a flare is occurring," says Cynthia Tanner, SXI instrument systems manager for the GOES-NOP series at NASA's Goddard Space Flight Center in Greenbelt, Maryland. (GOES-14 was called GOES-O before achieving orbit).

Shielding the sensor from X-rays also reduces the amount of data it can gather about the flare. It's like stargazing with dark sunglasses on. So NASA engineers must strike a balance between protecting the sensor and gathering useful data.

When a dangerous flare occurs, the new SXI sensor can protect itself with five levels of gradually "darker" sunglasses. Each level is a combination of filters and exposure times carefully calibrated to control the sensor's exposure to harmful high-energy X-rays.

As the blast of X-rays from a major solar flare swells, GOES-14 can step up the protection for SXI through these five levels. The damaged sensor on GOES-13 had only two levels of protection—low and high. Rather than gradually increasing the amount of protection, the older sensor would remain at the low level of protection, switching to the high level only when the X-ray dose was very high.

"You can collect more science while you're going up through the levels of protection," Tanner says. "We've really fine-tuned it."

Forecasters anticipate a new solar maximum in 2012-2013, with plenty of sunspots and even more solar flares. "GOES-14 is ready," says Tanner.

For a great kid-level explanation of solar "indigestion" and space weather, check out spaceplace.nasa.gov/en/kids/goes/spaceweather.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

A Previous PAS Guest Speaker

David Burstein, 62, of Tempe, passed away peacefully on December 26, 2009. David was a retired Arizona State University astronomy and astrophysics professor and a beloved husband, father and grandfather. David's research on galaxies, star population and general clusters was known around the world and his work is heavily cited by others.

Born in New Jersey, David decided at an early age he wanted to study the stars. He received a B.A. from Wesleyan University, Conn., and a Ph.D. from the University of California, Santa Cruz. He spent 26 years at ASU, teaching hundreds of students about the universe. He served on numerous faculty committees, including a year as the president of the Academic Assembly. He rarely missed a Sun Devils football game.

David's family would like to thank the outstanding caregivers at Sunrise of Chandler, the Alzheimer's Association and Hospice of the Valley. In a time of sadness, they provided solace that words cannot begin to describe. David is survived by his

wife of 38 years, Gail; his daughter Elizabeth Browne (Eric) of Tucson; his son Jonathan Burstein (Kathy), of Delray Beach, FL; his grandson Andrew David Burstein; and his father-in-law Edmund T. Kelly, of Tempe. He spent many nights staring through telescopes, looking at the stars. Now he is with them, soaring through the cosmos. In lieu of flowers, please donate to a college fund set up for the young sons of Cheryl Schiefer, a family friend who lost her battle with cancer. An account is set up in Cheryl's name at Tempe Schools Federal Credit Union, 2800 S. Mill Ave., Tempe, AZ, 85282.



What Can I See Without a Telescope?

By Don Boyd

This month I am starting a new column for the newsletter called "What Can I See Without a Telescope?" It will highlight naked eye objects easily visible in the city.

January 3, 4 - Quadrantids Meteor Shower

January 11-Antares 1.1° South of Moon

January 13- Mercury 8° north of Moon

January 18- Jupiter 5° South of Moon

January 27- Mars at closest approach to Earth

January 29 - Mars at Opposition

Year In Space Calendar Pickup

By Terri, Event Coordinator

The calendars have arrived. If you need your calendar prior to the first of the year, please give me a call or drop me an

email and let's get together so you have what you need. If you are in no hurry to get your calendar, then I will bring them with

me to the Jan 7 PAS meeting. Pick them up there. Please have Merry Christmas and we will see you in the New Year 2010!!! ***

Virtual Star Parties Using C.E.O. & A Class At Kitt Peak

Chris writes: I'd recommend that any club member seriously interested in the Virtual Star Parties consider this course. It will help them understand how to do astrophotography at the PAS VSP events.

INTRODUCTORY ASTROPHOTOGRAPHY

Friday-Sunday, Mar 19-21, 2010

Friday-Sunday, November 12-14, 2010

To be held at Kitt Peak: This exciting 3-day workshop is intended for amateur astronomers ready to take the next step and plunge into the exciting world of astrophotography and image process-

ing. We will cover everything from the history of photography itself to modern cameras, webcams, and CCD image processing. Avoid years of false-starts and costly mistakes as you learn how the pros create those stunning astrophotos seen in books and magazines. Meals and lodging provided. Reservations required. ***

Canceled Events - Why RSVP's Are Important

By Terri, Event Coordinator

Over the last 6 months or so, PAS has been part of the CANCELED EVENTS happenings. As it says, we have had more canceled events than actual events. This is sad, but PAS can not control the weather. Believe me, I wish I could. Anyway, due to this important factor, of event being canceled at last minute due to storms getting in the way, I wish to remind everyone how important it is to RSVP for an event.

We have had several folks email me during the event and say "I went to PVCC but no one was doing the star party." Of course, they didn't look to see if the sky was clear, nor did they check their email for a cancel notice. If you email me, being as I am the Event Coordinator, and I email you back

with a notice of "On" or "Off" for that event, that is what the situation is. So, I just want to remind you... if you plan to attend an event, put your RSVP into the online calendar, or in the Forums for that event's topic discussion, or drop me an email to say you are attending so that if, by chance, I have to cancel an event due to weather, you will know it the moment I can get that data to you.

Now, also note, if I, Terri, am not the RSVP for the event, such as the PV Park or PVCC events - in which case Rod is the RSVP, then you must RSVP with the proper person to be sure to get the notice. Some events I am unable to be available to Cancel them online or through email or even

through phone, as I might be teaching that evening.

So, check who to RSVP to, by reading about the events, make sure you let the RSVP person know you are coming, and then watch.... if we cancel the event, most of the time we let you know by 4pm that day, assuming it is an evening event. Before you leave your house, check the sky... check your email, or if you are unsure, call the RSVP person for that event to be sure. We want you to attend, but we also don't want you to make the trip for no reason to the event location. Thank you for a moment of your time to review this simple, but effect and needed step in making all our events more fun for everyone involved. ***

Dues Deadline

By Terri, Event Coordinator

A quick reminder... the PAS Dues are due by Jan 31st if you want to stay an active member on the PAS website as well as on the PAS Roster. One more reminder will be sent out by email mid January... Jan 31st Don, Chris and I work to delete those who have not renewed their Dues, as well as update the list of those who belong in PAS. We don't want to see you leave. But, it is easier on Mike if all the dues come in at the first of the year, and then he doesn't have that much work to do the rest of the year except for NEW PAS MEMBERS.

Remember, your dues are from Jan 1 to Dec 31. If you paid your dues in 2009 from Jan 1 to June 30, you need to renew your dues. I you paid July to end of year,

you are grandfathered in for the following year. Check the Roster on line. Go to our PAS website, go to the downloads, go to PAS MEMBERS ONLY section, and bring up the Roster. If it shows your dues are good for 2009, send them in today. If it reads 2010 in that column, you are good to Dec 31st, 2010. And if you are totally confused, you can email Terri or

Mike for an answer. Thanks to all who stick with PAS. We definitely want to make 2010 a very active astronomically fun year for everyone. We have so many new things we are trying... like the CEO star parties and the VSP, and we may have a few things that are surprises... Watch for announcements of those cool events coming up for your enjoyment. Hope to see you a lot in 2010!!! ***

Arizona Sky



The constellation Perseus is high overhead this month, between Taurus and Cassiopeia. Taurus is west of Orion: if we follow Orion's belt to the right, we come to the V-shaped head of Taurus, and to the Pleiades (officially in Taurus, but actually at the foot of Perseus). The constellation Cassiopeia, like a big "W", is currently in the northwest in the early evening. Depending on our direction of view, it could also be considered an "M", "E", or "3" instead of a "W".

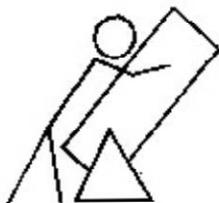
Mirfak (Alpha Persei), the brightest star in Perseus, shines at mag 1.8. It is flanked by two 3rd-mag stars, Gamma and Delta Persei. Mirfak and Delta are actually part of a nearby cluster known as the "Alpha Persei Association" or Melotte 20, easily visible in binoculars or a small telescope.

The Alpha Persei Association is about 600 light years from us, and about 32 light years across. It's called an "association" rather than a cluster because the stars are more spread-out than in an ordinary open cluster. Its age is estimated at 51 million years.

Of course a more famous grouping in Perseus is the "Double Cluster", NGC 869 and 884, located a little more than halfway from Mirfak to Ruchbah (Delta Cassiopeiae, the bottom left point of the "W"). This pair of open star clusters was noted by Hipparchus in ancient times, and we wonder why Charles Messier never included it in his list.

The Double Cluster is about 7000 light years away, and each cluster is about 60 light years across. Most of the stars are hot "A" and "B" stars, but there are a few colorful red giants mixed into NGC 884 (the eastern cluster, closer to Perseus). The clusters are estimated to be about 10 million years old.

The Double Cluster is actually seen better in binoculars or a small telescope than in a large one, because the clusters are brighter and more compact when viewed at low power.



About 2 degrees east of the Double Cluster is another interesting open cluster, NGC 957, somewhat fainter than

its famous neighbors. Like the Double Cluster, it is about 7000 light years away, but it is a bit smaller: only 20 light years across. NGC 957 was discovered by John Herschel in 1831.

A cluster that Messier didn't miss is M34. This one is about halfway between Algol (Beta Persei, in the "arm" of Perseus, which extends southward from Mirfak) and

Almach (Gamma Andromedae, a bright double star at the end of Andromeda's gown).

M34 is closer to us than the Double Cluster, but also a little smaller: 1400 light years away, and 15 light years across. It was discovered by Giovanni Batista Hodierna in the 1600's, and was added to Messier's list after he independently dis-



Double Cluster NGC 869 & 884:(photo by Joshua Hufford, www.astronomy.fm)



California nebula NGC 1499

Arizona Sky

covered it in 1764. The cluster is estimated to be about 250 million years old, and is visible with binoculars or a small telescope.

Perseus also has some interesting nebulae. A little less than halfway from Mirfak to Aldebaran (Alpha Tauri, the bright orange star in the head of Taurus) is NGC 1499, also known as the California Nebula. As its name suggests, the shape of this emissions nebula somewhat resembles the state of California. Although visible with binoculars or a small scope, this is a very faint and diffuse object that requires dark skies for detection.

The California Nebula is about 1700 light years away, and about 75 light years long. It is illuminated by the 4th-mag star Menkib (Xi Persei), about one degree south of the nebula, which ionizes the hydrogen gas and makes it glow. The separation between the star and nebula is apparently the result of the star's solar winds hollowing out that area. Dark streaks, where the dust and gas are thicker and more opaque, are also visible among the brighter areas of the nebula.

The California Nebula was discovered by Edward E. Barnard in 1885.

A more compact nebula is M76, the Little Dumbbell, about 2/3 of the way from Algol to Schedar (Alpha Cassiopeia, the bottom right point of the "W"). This planetary nebula, representing the last stages in the lifetime of its central star, is about 4000 light years away, and about one light year across. It has two NGC numbers because the two lobes of the nebula were discovered at different times: NGC 650 (the southern half) was discovered by Pierre Mechain in 1780, and NGC 651 (the northern half) by William Herschel in 1787. Herschel was aware, however, that both bright spots were the two halves of one object, the already-named M76.

We aren't certain about the actual 3-dimensional shape of M76. It might be a donut-shape seen edge-on, or the two lobes might be separately expanding bubbles,

with the brighter northern half pointing in our direction. Photographs show "streamers" extending from the ends of the nebula; these are made of expanding gas that is speeding away from the center of the nebula. The colors seen in the photo indicate ionized hydrogen, oxygen, and nitrogen.

Meanwhile, back in the solar system, Mars will be at opposition this month, the closest part of its cycle. The actual date of opposition is January 29, when Mars will be about 60 million miles from us; but Mars will be relatively big and bright all month. At opposition, it will also be up all night, rising around 8 am at the beginning of January and 6 pm at the end of the month.

And while Mars is rising, Jupiter will be setting, along with its chums Uranus and Neptune that have been following it across the sky. Jupiter and Neptune will set around 9 pm at the beginning of January, and around 7 pm at the end of the month. Uranus follows them by about two hours.

Saturn will be rising earlier: around midnight at the beginning of January, and

10 pm towards the end of the month. We can look forward to seeing Saturn in the evening sky in February.

Venus is too close to the sun to be seen this month, but Mercury will become a morning star and will be visible before dawn after the middle of the month.

The full moon will be near the Beehive Cluster on January 1-2, and near Mars on January 2-3, all night from east to west. On January 6 the moon will be near Saturn after midnight, and on January 13 the crescent moon will be visible near Mercury in the east before sunrise. On January 17, the crescent moon will be in the west with Jupiter after sunset.

The moon will be near the Pleiades on January 24-25, and between the Pleiades and Hyades on January 25-26. On January 29-30, the full moon will travel with Mars and the Beehive Cluster all night from east to west.

Join us next month when we continue to explore the winter constellations. And till then – wishing you clear skies, and happy observing!



Little Dumbbell Nebula M76

Astronomy.FM – a new website for the astronomy enthusiast!

This month's picture of the Double Cluster was previously featured as the "Amateur Astronomy Picture of the Day" on the website www.astronomy.fm. The website is run by a group of amateur astronomers, and includes many interesting features: astronomy radio shows, blogs, a

forum, "This Day in Astronomy History", "Astronomy Event of the Day", "Astronomy Word of the Day", and of course "Amateur Astronomy Picture of the Day". The pictures are submitted by members, and each day one picture is chosen as the day's feature. At the end of each

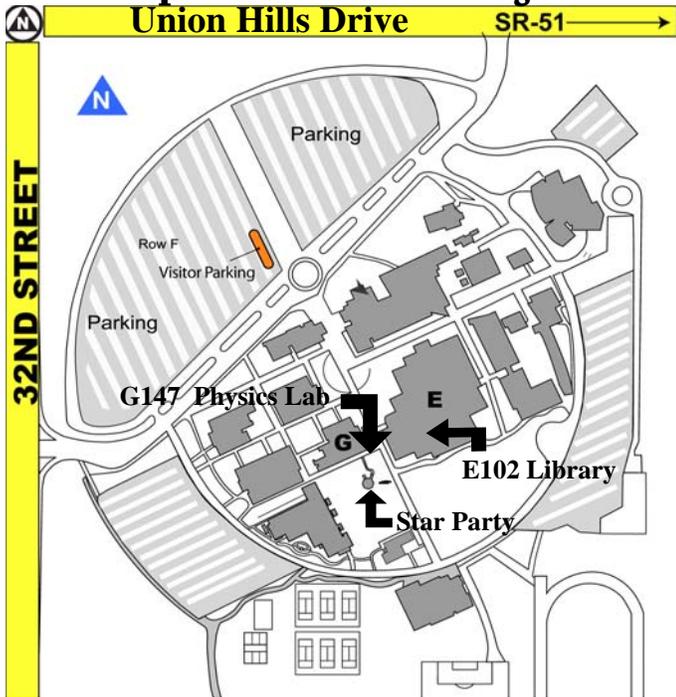
month, members vote for the best AAPOD of the month.

Astronomy.FM is also teaming up with StarPals and Global Rent-a-Scope in a project of "Tour of the Universe by Children of the World". You can read more about it here: <http://tinyurl.com/yhjeqsy>.

Photos Of Last Years Social



Map to PAS Meeting



See page 2 for more information

January

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2 Meteor Shower Party, PV Park
3	4	5	6	7 PAS Meeting in G-147	8	9 PAS Social
10	11	12	13	14	15	16 CEO, RSVP with Chris
17	18	19	20	21 FREE Telescope Training Workshop, PVCC G-147	22	23
24	25	26	27	28 PAS Meeting of the Minds - PAS Business Meeting, G-147	29	30

Ads in PAStimes

Ads in PAStimes run for a month and may be renewed on a month by month basis, if submitted by deadline, space permitting. Ads in PAStimes are FREE to members all others are asked to make a small donation. Donations are to be sent to the Vice Prez who will forward them to the Treasurer.

Don Boyd
 PAsTimes Editor
 701 W. Del Rio St.
 Chandler AZ 85225

To:

PAS Speaker Line-up for Winter 2010

By Terri, Event Coordinator

Jan 7, 2010: Dennis Young. Story of the Stars

Feb 4, 2010: Jerry Snow: ArcheoAstronomy

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What's Up For January?

By Rod Sutter, PAS President

Planets

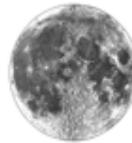
Name	Date	Rise	Set
Mercury	01-1-09	08:39	18:43
Venus	01-1-09	07:08	17:05
Mars	01-1-09	20:46	10:25
Jupiter	01-1-09	10:32	21:22
Saturn	01-1-09	00:21	12:26
Uranus	01-1-09	11:51	23:38
Neptune	01-1-09	10:26	21:75
Pluto	01-2-09	07:24	17:25

All Times Arizona Time

Jan 15 2009

Sunrise: 07:27

Sunset: 17:40



Full: December 31



Q3: January 7



New: January 15



Q1: January 23