

Volume 56, Issue 2

PAS TIMES

Monthly newsletter of the
Phoenix Astronomical Society
Founded 1948

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GET READY FOR MARS

THE BACKYARD ASTRONOMER: GET READY FOR MARS!

By Bill Dellenges

"Mars, by virtue of its color alone, must have seized the attention of stargazers from the time immemorial, catapulting them into inescapable fantasies." From Mars by S.J. O'Meara, edited by Terri to fit the printing date of this issue. Right now, you will see an unusually bright red "star" in the night sky. It will actually be the planet Mars, making an exceptionally close visit to Earth on August 27th. On that date, Mars will be "only" 34,646,418 miles away in the directions of the constellation Aquarius. Thought we come close



This lovely image was taken by Greg Coons (PAS Member) while at Barb's Star Party in Black Canyon City on August 30 during Barb's Mars Odyssey. Mars 12" SCT 35MM (400) FILM 8/30/03 2400 MST

to Mars about every 2 years when we pass it due to our faster orbital velocity, these rendezvous place the two planets at about 60 million miles apart. Since Mars is only half the size of Earth, the planet is not impressive in telescopes at that distance, nor does it dazzle the unaided eye visually. Because the orbits of these two planets are elliptical, or egg shaped, some close approaches are better than others. In fact, about every 15th year they can get as close as 35 million miles. Not only is this the 15th year but in August, Mars is at its perihelion point in its orbit (closest to the Sun). These two

facts combine to make this approach the closest one in about 60,000 years. So amateur astronomers like myself are getting very excited and dusting off our telescopes. This will be my fourth apparition of Mars, having viewed the 1956, 1971 and 1988 visits. What might the casual observer expect to see? In June the distance was around 60 million miles and Mars was seen before sunrise low in the south-southeast sky. Then in August things got interesting. Mars's distance from Earth decreased from 39 to 34 million miles and its brightness increased from -2.3 to -2.9. Only the planet Venus shines brighter than this (-4.5). Moving backwards? Planets appear to move through the constellations in an eastern direction. The ancients long ago recognized this and aptly named these celestial objects planets, Greek for

"wanderers." But when we - on the inside track - pass an outer planet, a funny thing happens. For about 2 months, the planets appears to move backwards! This is, it will seem to move through the constellations not eastward but westward. This phenomenon is called retrograde motion. Watch this intriguing dance during Aug and September. Direct, or eastern movements resumes in October. Here are some tips for you backyard astronomers with telescopes. A caveat: Mars is always a challenging object to observe. Even at its closest approaches, the size of its disk in arc seconds is only half the size of Jupiter's as seen in a telescope. The problem, of course, is that a 4000 mile diameter planet, even at 34 million miles, exhibits a very small disk. Another problem is that viewed from the U.S. this summer, Mars never gets higher in the sky than about 4-0 degrees. Thus we'll be viewing it through more atmosphere than we'd like, so image sharpness may not be as good as if it were seen higher in the sky. My best advice is to use a telescope of modest size, around 4 - 8 inches of aperture as smaller telescopes are more forgiving of a turbulent atmosphere. Refracting telescopes are generally better suited than reflectors for observing the planets. Let your telescope cool off outside for at least one hour (the longer, the better) before observing so it can reach the ambient temperature of the night air which renders better images. Do not observe objects over the hot roof of a house! Use color filters to reduce glare and increase detail of the planet. I find almost any color filter will make a planet look better than if no filter is used. Planetary observation is an art. Success comes to that observer who waits for moments of good seeing (steady air) to spot detail like seasonal shadings and polar ice caps on Mars. So, spend minutes, not seconds at the eyepiece, perhaps seated if possible, waiting for those magical moments when the planet suddenly stops bubbling and presents a crisp image. By the way, the next return of Mars will be Oct 30, 2005, at a distance of 43 million miles. In 15 years, July 31, 2018 we get another close pass at 35.8 million miles. The next time Mars comes as close as this summer? Aug 24, 2208. And CLOSER than this summer? Aug 28, 2287. Enjoy your view of the mysterious red planet these coming months. You've waited 14 years and earned it!

SEPTEMBER PAS MEETING IN REVIEW

The September PAS meeting started with very few people. Our plan was to begin at 6:30pm and we would have but at that time only 4 or 5 people were there, not enough for a

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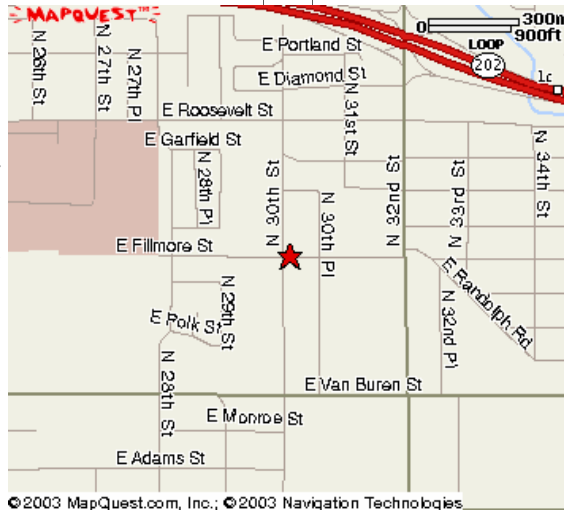
-SEPTEMBER, cont'd. from p. 1

meeting. The clouds, wind & weather was not cooperative. I had advertised our event heavily & was expecting a turnout of about 500 people. We had about 30 total. Some people brought their scopes. I wish to Thank Don, Leah & anyone I missed who brought their scope. We didn't get to use them, but I thank them for bringing them incase the clouds blew away. They didn't. The Finches & Matt arrived at 6pm. Our meeting room was being used by a group for "Meet the Teachers" night. They finished quickly when we arrived and helped us set up tables. I brought 46+ handouts for people to take. I brought the 5 paintings that were used at Arizona Science Center for Astronomy Day in May. The T-shirts (of which we sold 2) and slides were there for sale. I'd like to thank Jerry for bringing the cookies & pop. I had hoped others would bring more snacks but they didn't. We had everyone sign up for Show & Tell. 4 people did. Mark opened with announcements. Then we went into showing a video of Jerry & Terri who were on Channel 12 at 5:30 in the morning about 3 weeks prior. It was about 3 minutes long. Then we drew names to find out who would do their Show & Tell next. Mike Marron was drawn first. He presented some interesting fact about Mars, giving us ideas on what to share with the public when we show Mars through our telescopes. He brought a bunch of Meteorite samples and shared and talked about them as well. Then we had Greg Coons who had photographed Mars at Barb's Mars Odyssey in Black Canyon City the weekend before. The photos were excellent! He passed those around for review. Leah Sapir was drawn next. She reviewed how she saw Mars and told us about the several security personnel who visited us just as we were cleaning up at the Science Center event on May 27. Everyone enjoyed her story, especially those who attended. Mark Stephenson presented next. He talked about what kind of film to use and how to take astrophotos. Then he shared many wonderful photo prints of Mars, Jupiter and Saturn. Many questions were asked of Mark on how to photograph. A question was asked by Amber Moore on what kind of scope a beginner should consider getting. Jerry and Mark gave many examples of the types of scopes to consider, and gave the best advice (in my opinion) which was to visit many star parties and get to know what kind of scope fits their needs. We had planned for three raffles. No one brought anything to raffle off, so the Red Raffle Tickets weren't used this time. Instead we did the 50/50 raffle which was won by Richard Guthrie. He won \$12.50 which he donated back to PAS. We thank you Richard for your generous donation. I had brought some extra posters I had accumulated during the summer to give away at the September meeting to the kids 0-17 in attendance. There were 10 posters I had bundled up for this purpose. 3 kids showed up... two nice girls and J.T. won a poster each. We closed the meeting after the raffles and visited with each other for a while afterwards. We closed up the place to head home around 9:30. The wind was still roaring & clouds filled the sky when we left. Thanks goes to our 4 presenters. I wish to thank John Pulis for being a superb Host. Thanks also to John Pulis, Mike Marron & Matt Kohl for helping us to repack my car with all those boxes of handouts. We had a good meeting even though the weather got in the way of the plans, and the attendance wasn't as

high as expected. We hope for larger attendance and better timing at the October meeting. Please see info on October meeting in this issue so you know what to be prepared for.***

STAR PARTY AT WILSON HIGH

October 3, join us for an ALL SCHOOL star party. Your help is requested. RSVP if you can make it by emailing or calling Terri. This is the star party that I mentioned at the last meeting that I didn't have any info about. Here it is. School is Wilson High School located at 3005 E. Fillmore Street, Phoenix 85008. The two major cross streets are 32nd Street and Van Buren, right next to the Celebrity Theater. We have set it up for 7pm to 10pm and could use all the scopes we can get. Thank you for RSVP'ing with me.***



A MARS ODYSSEY IN BLACK CANYON CITY

Date: August 30, 2003

Location: Barbara Hartman's Backyard

Now, those of you who missed this awesome star party, DO NOT MISS THE NEXT ONE! Not only did we have an awesome hostess, Barbara, but we also had awesome food, awesome people, and awesome viewing of everything and Mars. Wow, I just summed it up in one sentence. I do wish to thank everyone who brought something to share for food. Kevin Harcey brought the Corn on the Cob. We had plenty to eat and Barb's husband Scotty did the cooking on the grill. We had a slew of people in attendance and still room for more scopes. In attendance were Adam Bloomer, Mark Stephenson, Greg Coons, the Finches, Kevin Harcey, Kevin Gray, Leah Sapir, Georg Koester, Twana Fox, Barb & Scotty, and a few others who I didn't catch their names. Thanks to all who brought foods to share, and everyone who shared their views of the night sky. Greg & Mark were doing astrophotography of Mars, and some of Greg's images are in this issue. The weather was superb, no clouds all night, and Mars was an awesome view. Barb and I played with her new 10 inch Newtonian putting my Super WideAngle 14mm on it, and trying to photograph it with a digital camera. The plan didn't work the way we wanted it to, but we had fun trying. Leah discovered I had filters and so she played with them, trying different ideas and views of Mars. When we weren't viewing, we were chatting and chatting and we had a splendid time. Thank you Barbara, for an awesome night!***

ASC ADULTS' NIGHT OUT

Adults' Night Out has been moved from Wednesdays to the first Fridays of the month, so this Friday will be one. They've changed a couple of other items, so here are the details:

* It is the first Friday of the month, from 5:30 to 9 pm.

* Specifically for adults

* Admission to the Science Center for Adult's Night Out is now FREE (as is the lecture)

* A film will usually be offered, for \$5

• Currently, we don't plan on doing regular planetarium shows as part of Adults' Night Out, although the

See NIGHT, p. 3

-NIGHT, cont'd. from p. 2

planetarium may occasionally be used for something else. (We're considering offering an informal astronomy course in the planetarium during Adult's Night Out, starting in January 2004, followed by a different course.)***

O*I*T*H = OBJECTS IN THE HEAVENS, 2nd EDITION

Hello, fellow stargazers. I'd like to interest you in my new astronomy book. Ultimately, I hope you'll decide to print this in your club newsletter or announce it at a meeting. O*I*T*H is an object-oriented deep-sky field book for use with small scopes and binoculars to expand their personal viewing enjoyment. All types of magnitude 10 objects are included, culled from 30 astronomy catalogs - galaxies, clusters, nebulae. This pocket-sized, spiral bound viewing list features detailed but simple maps, plain English descriptions, types, sizes, locations and magnitudes along with ample space for taking notes. The 2nd edition has just been released listing 665 objects in total, 187 of which are other-than-Messier/NGC and also 130 binocular class objects with their own symbol for easy reference. The text includes basic stargazing terminology and tips as well as the full Messier Catalog, common-name objects, bright stars, meteor showers and planetary details. The goal of O*I*T*H was to be a complete yet easy-to-use at-the-scope guide. The first orders came from the Adler Planetarium, Chicago, where it is being used as a classroom textbook for this summer's Practical Astronomy classes and sold in the bookstore. Available immediately from my on-demand publisher (see website below) with substantial club quantity discounts, O*I*T*H is designed for long-lasting field use and as a supplement to large star charts and bulky reference works. Here are a couple of testimonials:

- *Your book is perfect for use with my go-to LX-90. Now I know what to look for.*
- *This little book has it all and is of use and benefit to any level "star gazer". You did a great job in the format/layout. I like the binocular symbol usage and the brief description or notable of each listed object with space for notes. Everything needed is right at your fingertips in portable size. You have definitely filled a void and this book will be greatly appreciated in the hands of anyone wanting to expand their search of the heavens. This book is a "Must" for any interested astronomer of any level.*

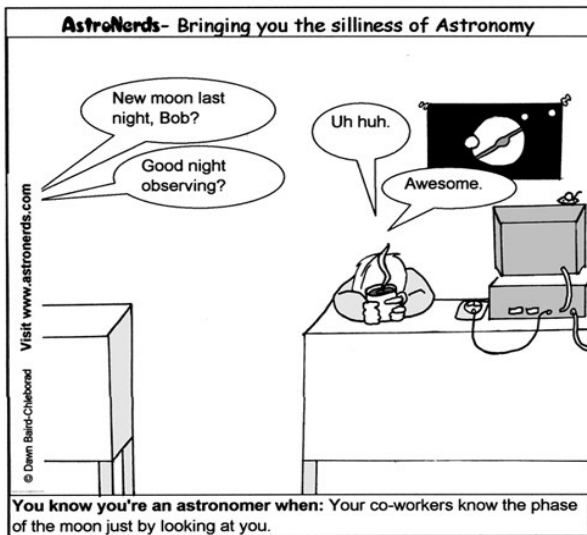
Press Reviews appear in June'03 Sky & Telescope and March'03 Astronomy Magazine. (These were for the 1st printing; the new edition has been completely revised, redrawn, updated and corrected.) 110 pages, spiral bound, laminated soft cover, 5.5" x 8.5", \$24.99 retail. For more information, expanded descriptions, sample pages and to get autographed copies, see my personal website: <http://www.birrendesign.com/astro.html>. Order bulk quantities at discount through Trafford Publishing: <http://www.trafford.com/robots/02->

0475.html. Thank you for your kind attention. If you have any questions, don't hesitate to contact me directly.

Peter Birren - author of "Objects in the Heavens"
<http://www.birrendesign.com/astro.html>
847/640-0171 ***

PAS DID A SHOW WITH DR. SKY!

It was a very moist night on Aug 26, 2003. Leah Sapir, Don Boyd and the Finches arrived on location in Tempe at the Hobby Depot. We set up our scopes, put up 2 tables of handouts and were ready to greet the crowds by 7:30pm. At the time when we arrived, the clouds covered about 1/2 the sky. But by the time we left around 10:30, the sky was covered in clouds and it was raining. During the radio show on 550am, Dr. Sky announced two upcoming events we had at the time: the Arizona Science Center, Aug 27, and Our PAS meeting Sept 4. We thanked him for that. During the time we were there, Channel 3 came by and was photographing many people, scopes, etc. We think we were in the background. At one time, they asked if I'd do an interview to tell about the type of telescopes we have on display outside the hobby store, but they never came back to do the interview. There were about 500 people who drifted by, and we had to keep apologizing that they could not see anything due to the cloud cover. But, we did hand out plenty of materials about astronomy and stuff on PAS. I told everyone I could to come to the Sept PAS Meeting. At one time, the wind came up. It knocked down a display of a huge screen several times. Then it took our handouts for a spin. Don, William and I quickly packed up all the handouts around 9:00. Then the rain came and the crowd thinned. For handouts, it was a very productive night, getting them into the public's hands. For observing, it wasn't good. Didn't see any astronomical objects in the sky... only in the pamphlets I had for the public to take. Let's hope for better weather at a future time when we work with Dr. Sky again.***



MARS OBSERVING SESSION AT ARIZONA SCIENCE CENTER

Event happened Aug 27, 2003 - Great Success!

It was very questionable as to if we would see Mars that night. Especially if you read about our event the previous night with Dr. Sky. It started out that we arrived a little later than planned, 7:15, and set up the table of freebees. I must say, we had so many people attend this event and take the freebees, that I left with about 1/10 of what I had brought with me. I was very pleased to get this info out to the public. I had brought pamphlets on Mars as well as info on other astronomy related items and info on PAS. We had a nice display and we got lots of info out there. We estimated we had 17+ telescopes for viewing. One group was down in Heritage Square while the other group was up on the Terrace with Christine. The night was so busy with people, I never made it up to the terrace to see what they had there. But Don Boyd was one of our people who was up there and they counted around

See OBSERVING, p. 4

-OBSERVING, cont'd. from p. 3

200 people up in that area. By the night's end, we figure we had no less than 300 people in attendance (not including the scope people). I want to thank all the people who brought their scopes and helped us show Mars to the public. From PAS we had Don Boyd, Sam Insana, Leah Sapir, the Finches, and Mike Marron (with scope and tons of books to share with people). From SAC we had Steve Dodder and Glenn M. (I don't know the spelling of his last name but he is very helpful at these events). I also had a few extra helpers who don't belong to any club, Charles Young and Chuck Shields. If I missed naming someone who came, please be sure that at future events, you check in with me sometime during the night to let me know you are there so I can properly thank you. I don't like missing anyone in my Thanks. Christine took care of the people on the terrace and I handled things down at Heritage Square. We had an excellent, exhausting time. The night started with no Mars, it was below the horizon. While it wasn't in view we found other objects to view for the public to see.

We explained, many times, how the clouds were making it hard to see clearly and the horizon wasn't all that great for viewing (heat disturbance). Then, around 8pm till we left at 10:30 the viewing of Mars was terrific. We could see the Polar Ice Cap and some detailed colors on Mars. It was very exciting and we all had a blast. Thanks to everyone who attended and helped out!

Here is some thanks from Christine: Thank you all for your wonderful help last night!!! I think/hope that everyone had a great time. Let me know if there's anything you wish had gone differently. (I'm aware that some of the streets were blocked off by police for the baseball game; I'm sorry... wish there was something we could do about that but our own efforts have been unsuccessful.) Steve kept a count--about 169 people looked through his telescope alone; I'm sure we had more than 300 people here! Channel 10 took some video for a story; Channel 12 had tentatively said they would come, but we didn't see them. One of the other stations said they might look at us from their camera on top of Bank One, I think. Please let the other club members who participated know how much I appreciate all of their help too. Thank you so much for all of your work in a very successful observing session! Christine Shupla***

ASU STUDY SUGGESTS MARS NEVER HAD OCEANS, SEAS

by Paul Recer
from The Arizona Republic
received from Leah Sapir

Researchers say there is virtually no evidence of limestone formation on Mars, a finding that suggests the Red Planet never had oceans or seas. That conclusion, however, does not alter the possibility of life on Mars, experts say. Philip Christensen, a professor of geological sciences at Arizona State University, said that an instrument on NASA's Mars Global Surveyor that searched the planet for evidence of carbonate found only trace amounts of the mineral. The

finding means it is unlikely that Mars ever had oceans of water as some scientists have suggested, he said. "Maybe instead of calling them oceans, we should call them glaciers," Christensen said. "A frozen ocean will not form carbonate. I believe Mars has a lot of water, but it is cold and frozen most of the time." Other Mars experts said the finding makes a significant contribution to the continuing debate among scientists about how much water there was on Mars, where it went and how the planet's intricate patterns of riverbeds, canyons and fans were formed without huge volumes

of flowing water. "This is dramatically important," Matt Golombek, a geologist with the Jet Propulsion Laboratory, the lead agency in NASA's Mars exploration, said of the new study. He said there is clear evidence that water flowed on Mars in the past but yet the thin atmosphere and frigid temperatures of the planet now make liquid surface water impossible. This suggests that Mars was once warmer and wetter and with a denser carbon dioxide atmosphere. The new finding by the ASU researchers shows that may not have been the case,

Golombek said. "If you had a warmer, wetter, thicker atmosphere, you would expect to find carbonate somewhere, and so far we haven't found it," he said. "This geochemical information is in direct contradiction to an early warmer, wetter Mars." In the study, Christensen and his co-authors, Joshua L. Bandfield and T. D. Glotch, used a thermal emission spectrometer, or TES, that was designed to search for evidence of carbonate minerals on Mars.***

RAINBOW OF FILTERS

Borrowed from SAC News May 1999

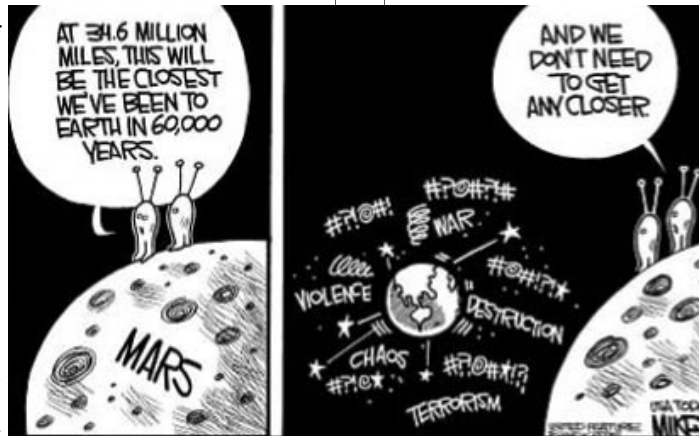
Colored eyepiece filters can improve the visibility of darker Martian surface features & reduce glare in larger aperture telescopes. Deep yellow, orange or red filters enhance the contrast of the dark areas. These filters also slightly improve the seeing by eliminating shorter (mostly blue) wavelengths of light which are more susceptible to atmospheric disturbance. However, blue and green filters are excellent for the observation of the polar ice caps, and for isolated phenomena such as dust storms.***

FROM FLAGSTAFF TO PLUTO HISTORY OF LOWELL OBSERVATORY

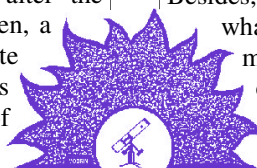
From the Hill: The Story of Lowell Observatory,
by Rose Houk, ISBN: 0-961-8228-1-1
review by Mike Brehm
received from Bette Wurst

Ok, I'm an astronomy buff. I've always wanted to discover a comet, name an asteroid, or chart the spectral shift of a far-flung galaxy. But I'm also supremely lazy, and would rather spend my time curled up with my sweetie on a blanket watching the stars instead. Besides, I took a couple astronomy courses in school, and realized what countless others must have before me - astronomy is not my cup of tea. Oh, I could handle the math and the cosmological theory fine. It's just that I've found that the more I study something the more I tend to forget what got

See LOWELL, p. 5



from The USA Today; received from Leah Sapir



me into it in the first place, and I end up finding something else to spend my time on (with a few exceptions). That's what I loved about Rose Houk's book about the history of Lowell Observatory. While not skimping on the important scientific accomplishments of the staff, the book provides a needed background to the astronomers behind the accomplishments, as well as listing various facilities, and scopes available to the researchers. The book is richly illustrated as well, with numerous photographs of celestial phenomenon, the telescopes themselves, and several period pictures of the observatory's founder. For those interested in a concise history of Lowell this is an excellent starting point.

MAKE IT SO

by Bonnie Stevens, from Flagstaff Live, August 2003
received from Bette Wurst

TIPS FOR PHOTOGRAPHING THE PLANET MARS



At the moment there are more than 50 sets of images of Mars taken during June, July and August 2003. Your club's members could use this website to learn what works and what does not when taking pictures of Mars. This way, they need not waste time experimenting, but can spend it more productively taking pictures and AVIs using settings that work. Your members that that do not do webcam astrophotography might still get value from this website, just by admiring the beauty of Mars. My pictures really started to get impressive and beautiful when I started using a 3x Barlow lens on 15 July 2003. I am using an unmodified Logitech Quickcam Pro 4000. Most other standard webcams with ccd chips will work as well. All the techniques I use will be useful when taking webcam images of Jupiter and Saturn as well.***

★ ★

★ This is the PAS advertising column & is a FREE service to all
★ PAS members, guests, & VIP. Any Astronomy related items
★ (books, scopes, binoculars, services, etc.) may be listed here
★ that are being SOUGHT or SOLD. The item will only be
★ advertised for ONE MONTH, but may be renewed each month
★ (as needed) by contacting the Editor, by the newsletter
★ deadline (the 1st of the month). It is requested that Non-PAS
★ Members please make a small donation for placing your ad in
★ both the PASTimes newsletter and to my list of 170+
★ astronomy-loving email contacts. Please make check payable
★ to Phoenix Astronomical Society and send to the return
★ address on this newsletter. We do your advertising in hopes of
★ great returns.

★ Call John or Linda Cain: (480) 759-4881

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The study of geology on the planet Mars is known as areology. The prefix "are" comes from Ares, the Greek version of the god of war; otherwise known as Mars. However, most scientists simply use the term "Martian Geology" instead.***

A MARS ODYSSEY IN BLACK CANYON CITY

August 30, 2003



Kevin Harcey & William Finch relax while waiting to munch on some delicious potluck items. Photo by Terri Finch



Here is Barb. This is the fantastic host of the Mars Odyssey held in Black Canyon City at her home. Here we have caught her reading the PASTimes Newsletter (Sept. issue). Photo by Terri Finch



Have you seen a rather awesome piece of artwork in the newsletter lately? It was done by one of these wonderful gentlemen. On the left is Kevin Harcey, and on the right is Kevin Gray. Photo by Terri Finch



Don Boyd. He's a photographer, so if you need a photo done, please contact him. Don was waiting patiently for the food to be available. Photo by Terri Finch



Kevin Gray & Don Boyd enjoy some morsels while the rest of the crew is cooking in the background. If you look to the left of the cooks, you'll see an awesome backyard that was just the right setting for the Mars Odyssey. Photo by Terri Finch



Kevin Gray thought it would be good for the readers of the PASTimes Newsletter to know who their artists are. On the left we have Kevin Harcey, the PAS Artists for about as many years as I've been editor. On the right we have Kevin Gray, who just joined us about 9 months ago. Both of these dudes are awesome artists. You will see more of their art work in future issues of PASTimes. Photo by Terri Finch



Kevin Harcey was preparing the Corn on the Cob. I guess he did it so much, he grew ears. Ha ha ha! Photo by Terri Finch



As everyone finished their food, we started to set up telescopes. There were many who were in attendance (see article, this issue for more details). It was a very fun and exciting star party. The last to leave were the Finches at 4:30am. You should come to the next one and enjoy it with us. We will see you at the next Star Party in Black Canyon City at Barb's home. Photo by Terri Finch



PASTimes

Sept. Logic Puzzle Answers:
#1. White Suit, White Rocket; #2. Black Suit, Red Rocket; #3. Yellow Suit, Blue Rocket; #4. Red Suit, Yellow Rocket; #5. Blue Suit, Black Rocket

October 2003

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UPCOMING ASTRO EVENTS

Note: PAS events are marked as "PAS."

Sept. 26 - Oct. 5: Flagstaff Festival of Science; More info on events:

<http://www.scifest.org>

Sept. 26, Terri's Birthday (your Editor)

Flagstaff Festival of Science Astronomy Related Events:

* Campus Sky Watchers 7:30 -10 p.m., NAU Campus Observatory View the wonders of the night sky. Dress for the weather!

Sept. 27, PAS: Lake Pleasant Cloud Date; High Power Rocket Launch Contact Jerry for more info about launch

Flagstaff Festival of Science Astronomy related events:

* Interferometer Tours 9 a.m., 11 a.m. & 1 p.m., Anderson Mesa Schedule One-hour tour of this array of telescopes designed to make incredibly precise measurements of the stars. Call 928-779-5132 for reservations.

* Science in the Park 10 a.m.- 2 p.m., Wheeler Park Slip on some special goggles & get your hands in a glove box to experience what the astronauts feel in space w/ gear from the Challenger Space Center. Collect meteor fragments, watch explosions on the sun and make your own stargazer. A miniature active volcano demonstrates how science is a blast!

* Mountain Campus Science Day Noon - 4 p.m., Wettaw Building, NAU North Campus View the sun through a solar telescope, interact w/ robots, conduct hair-raising experiments w/ NAU physics students & check out the GeoWall in 3-D!

* Campus Sky Watchers 7:30 -10 p.m., NAU Campus Observatory View the wonders of the night sky. Dress for the weather!

Sept. 28, Flagstaff Festival of Science Astronomy related Events:

* Lenox Crater Hikes 10 a.m. & 2 p.m., Sunset Crater Volcano National Monument Lenox Crater is what remains after a cinder cone eruption some 1,200 years ago. Follow Park Ranger & Geologist Kirk Peterson up Lenox Crater on this strenuous one-mile guided hike up the face of a cinder cone. Water & sturdy shoes recommended. Call 928-526-3367 for reservations.

* A Walk Through Time: Archaeology Hike 2 p.m., Red Rock State Park Call 928-282-6907 for directions.

* Campus Sky Watchers 7:30 -10 p.m., NAU Campus Observatory View the wonders of the night sky. Dress for the weather!

Sept. 29, Flagstaff Festival of Science Astronomy related Events:

* Exploration of Mars: From Telescopes to Telepresence 4 p.m., Lowell Observatory Jeff Johnson, US Geological Survey Learn about a century of Mars exploration, the contributions made by Flagstaff astronomers & geologists, & the two, 400-pound robotic rovers that will begin to explore Mars in January 2004.

* Giant Lava Flows on Earth, Mars & Io 7 p.m., Museum of Northern Arizona Laszlo Keszathelyi, US Geological Survey It's glowing & gorgeous. See for yourself how lava from volcanic eruptions shaped the landscape on Earth & other planets.

Sept. 30, Flagstaff Festival of Science Astronomy related Events:

* Star Light, Star Bright: Will You See the Stars Tonight? 5 p.m., Lowell Observatory Chris Luginbuhl, US Naval Observatory Many Northern Arizonans are star struck by the mystery & beauty of our night sky. Find out what you're looking at & why two-thirds of the kids in our country don't have the same magnificent view!

October 2003 (Summary from Year in Space Calendar 2003)

Saturn rises earlier each day, and is easily visible in Gemini high in the south before dawn. A waning gibbous Moon passes by Saturn on the morning of the 17th. Jupiter is visible in the southeast before dawn, in the constellation Leo. Mars also rises earlier each day, & at sunset this month it is shining very brightly in Aquarius in the southeastern sky. On the evening of the 6th, a nearly full Moon is just 1 degree south of Mars. At month's end, Venus reappears low in the evening sky at sunset.

Oct. 1, Newsletter deadline for submissions to November issue Flagstaff Festival of Science Astronomy related Events:

* Ancient Astronomers 5 p.m., Lowell Observatory Bryan Bates, Coconino Community College Prehistoric people depended heavily on the sky to help them plan their lives. Find out what they read when they used the heavens as a guide book.

* Magnificent Mars 7 p.m., Museum of Northern Arizona David

Portree, Northern Arizona University This autumn, Mars, world of giant volcanoes, is closer to Earth than it will be for centuries. Join us for a tour of the fiery red planet, then stay after to observe it through telescopes!

Oct. 2, PAS: PAS meeting, 7pm, Speaker: Dr. Sky, Topic: TBA

Oct. 3, Star Party at Wilson High School, 7-10 pm (see article, p. 2)

Flagstaff Festival of Science Astronomy related Events:

* Rainbows, Haloes & Glories 4 p.m., Lowell Observatory Chris Luginbuhl, US Naval Observatory Some of the most beautiful natural wonders are made up simply of sunlight, water droplets and ice crystals. See for yourself how rainbows, haloes & glories paint the sky.

* Dr. John Spencer Meets Galileo 7 p.m., Riordan Mansion Historic State Park Living history presenters David Portree & John Spencer perform a conversation between Galileo Galilei, founder of modern astronomy, & a modern-day astronomer. Call 928-779-4395 for reservations.

* Campus Sky Watchers 7:30 -10 p.m., NAU Campus Observatory View the wonders of the night sky. Dress for the weather!

Oct. 4, Flagstaff Festival of Science Astronomy related Events:

* Meteor Crater Open House 8 a.m.- 5 p.m., Meteor Crater Take a guided hike along a portion of the rim, crash meteors into planets w/ new interactive displays or relax w/ a 10-minute movie in the big screen theater. Call 800-289-5898 for directions.

* Interferometer Tours 9 a.m., 11 a.m. & 1 p.m., Anderson Mesa Schedule One-hour tour of this array of telescopes designed to make incredibly precise measurements of the stars. Call 928-779-5132 for reservations.

* Percival Lowell & A. E. Douglass in Northern Arizona 7 p.m., Riordan Mansion State Historic Park Discover how destiny took two men from Boston and turned them into major contributors to our understanding of the universe and Arizona's past. Living history presenters Kevin Schindler and Rusty Tweed take us back to the early 20th century. Call 928-779-4395 for reservations.

* Star Party 7 -10 p.m., US Naval Observatory Explore the universe w/ your eyes, binoculars, telescopes & astronomers. Arrive no later than 7 p.m. Flashlights should be wrapped in brown paper bags. Wear warm clothes.

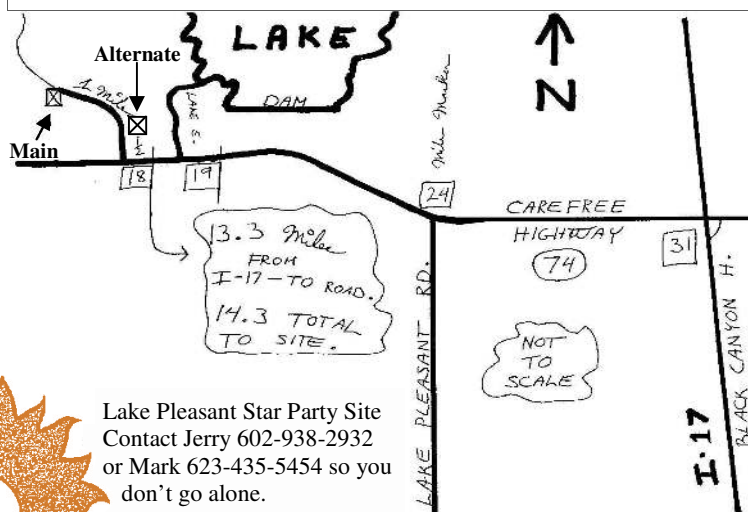
* Campus Sky Watchers 7:30 -10 p.m., NAU Campus Observatory View the wonders of the night sky. Dress for the weather!

Oct. 5, Flagstaff Festival of Science Astronomy related Events:

* US Naval Observatory Open House US Naval Observatory, I-40 to Exit 191, 5 miles west of Flagstaff 12:30- 4:30 p.m., From the world's biggest star catalogues to the Master Clock of the United States, the US Naval Observatory is the primary source of fundamental astronomical data required by astronomers around the world.

* Lowell Observatory Star Party & Open House 7:30 - 10 p.m., Lowell Observatory This is the place where Pluto was discovered & where astronomers are still making fascinating pictures & notes of the universe every day. Explore it here where our astronomical history & future meet.

* Campus Sky Watchers 7:30 -10 p.m., NAU Campus Observatory View the wonders of the night sky. Dress for the weather!***



Lake Pleasant Star Party Site
Contact Jerry 602-938-2932
or Mark 623-435-5454 so you
don't go alone.



October 2003

PAStimes

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PHOENIX ASTRONOMICAL SOCIETY

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PAStimes
Oct. 2003 Issue

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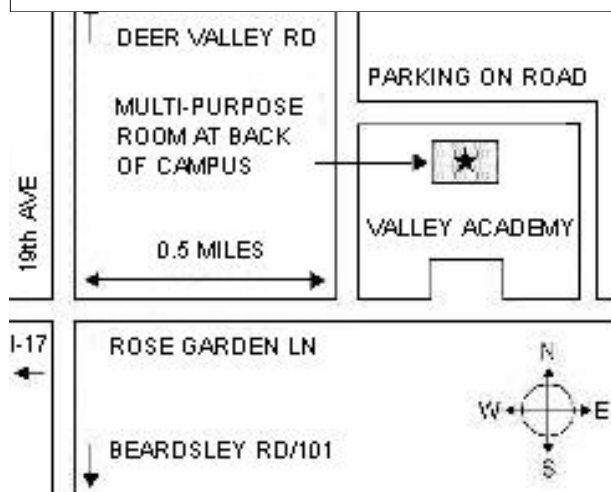
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Area code is 602 unless otherwise noted.

P.A.S. Meeting Location
Valley Academy Charter School
1520 W. Rose Garden Ln



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