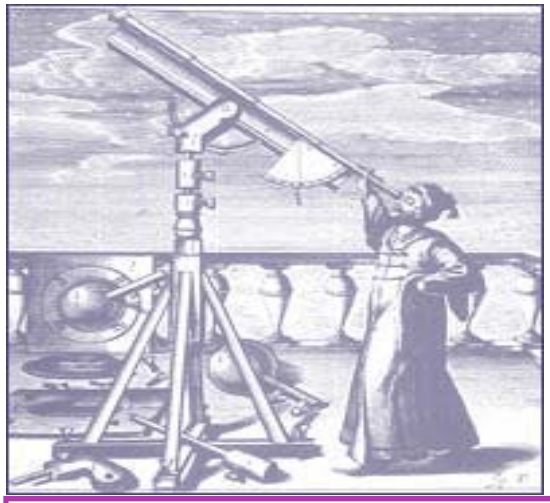

Next PAS Meeting 7:00PM
Thursday, September 4, 2002
(Please Arrive at 6:30, if possible, for this Special Meeting)

Volume 56, Issue 1

PASTIMES

Monthly newsletter of the
Phoenix Astronomical Society
Founded 1948

PAStimes Internet Home Page: http://PASAZ.org
Join our Astronomy discussion group: http://groups.yahoo.com/group/PASAZ
PAS Email: phoenixastronomy@yahoo.com

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(Subtitled for the Binary Impaired): *Welcome Back*

ARIZONA SCIENCE CENTER ASTRONOMY DAY 2003 REVIEW

And what a day it was! Let me give you an idea of what I had set up and then I'll let you know how it went and include others' versions on what they saw, as well. The initial idea was to have all the kids who attend the Science Center get involved in a treasure hunt and win a prize. Simple, eh? The Science Center didn't want me to make it that difficult. So, working with the education department of the Science Center, I adjusted my questions for the kids to match what they had in mind. So, I spent one afternoon with William (my husband) and Matt (my co-editor) and we went to the Science Center and scouted out the possibilities of using about 30 of the displays within the science center to base the questions on for the kids. The questions were going to be multiple choice so that they just had to do a simple experiment and get an answer. Well, the format was changed again and they were somewhat multiple choice but in an easier to read format. I liked the new format, easier for the kids, and easier for my Answer Checkers. So, I finally trimmed it down to about 15 questions that had to do with the science center displays and the rest had to do with our PAS displays. So, the question pages were done.

Here is Christine. Here is the wonderful, fantastic gal who puts all the events together at the Arizona Science Center, that PAS gets involved in. She looks as exhausted as I felt by the end of the day. But she has more energy than anyone I know. Thank you so much Christine, for all you do for PAS and for Astronomy Day. Photo taken by Bruce Wurst

What did the kids do with these? Well, upon entering the Science Center people were greeted in the morning hours by Frank and Sam Insana who handed out a single page, front and back that gave instructions on how the kids can earn a prize by doing some experiments. This page also included info about our Sponsors, for which I hope everyone visited their sites and helped our sponsors with some more traffic and business. Our sponsors included NASA's Space Place, the U.S. Geological Survey, Donations from club members to purchase needed prizes, Lowell Observatory, Center for Advanced Space Studies, Astronomy Magazine, All In One Store, Bob Holmes, International Dark Sky Association, the Arizona Science Center, and a few others. We had 4 PAS Space Stations set up. The idea was that the kids would pick up a Log Sheet with the questions from each of the 4 Space Stations, answer the questions (named Experimentation Stations) having to do with the PAS display and then tackle the questions about the Science Center displays on that same floor. Once complete they would earn a prize. That was the original idea, but instead the Science Center wanted us to make it simpler for the kids, so we adjusted it so that they would complete 3 questions per page and get a prize. If they completed the whole page they were eligible to get into a drawing for a Grand Prize. We had 11 Grand Prizes to give away, donated by Bob Holmes, Lowell Observatory, International Dark Sky Association, and U.S. Geological Survey. We ran out of prizes and Grand Prizes just as 5pm came upon us. So, what the kids actually did was go to each of the four Space Stations and answer the questions. So, if they answered 3 questions of their choice per page, they got a prize. If they did all four sets of questions that way, that was 4 prizes + a raffle ticket to get in the drawing for Grand Prize. If they did all the questions on all the pages, that was 24 questions, they got one extra prize plus one more raffle ticket for Grand Prize. So, in total they could earn 5 prizes and a chance at 2 Grand Prizes for completing all 24

Three of the Arizona Science Center folk set up an Astroscan for solar viewing during the Astronomy Day event PAS was involved in May 17, 2003. Photo taken by Bruce Wurst

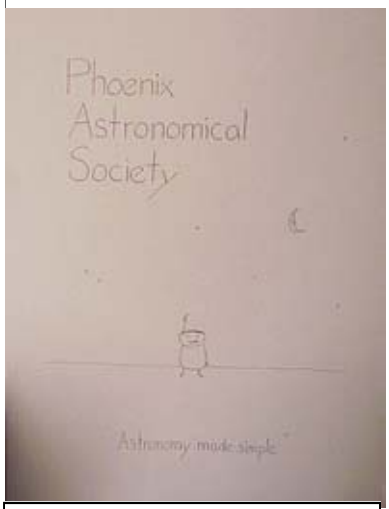
See ARIZONA, p. 2

-ARIZONA, cont'd. from p. 1

questions on the pages. Since the Education Department of the Science Center didn't think it was important that they got the answers correct, but instead just wanted them to do the questions, we didn't actually check any answers. But we did have them talk to a Space Station Chief Scientist (that's my volunteers) about their favorite experiment that they did on each of the 4 pages. The children were Space Scientists for the day visiting Space Station 1 where they found info on the Planets, Rockets and other down-to-Earth type items such as info on the U.S. Geological Survey. The U.S.G.S. supplied the majority of the awesome posters we had placed at each Space Station. Kevin Schindler of Lowell Observatory supplied an awesome poster which we put at Space Station 3 so everyone could see it. Great thanks goes to Adrienne Wasserman and Kevin Schindler for lending those posters to me for this event. Each floor also had a painting, done by our PAS member, Kevin Harcey, and a Friend of PAS, Kevin Gray. I wish to thank Kevin Harcey for his awesome paintings and Kevin Gray. On Floor 1 we had the awesome image that Kevin Gray painted. These pictures will be in future newsletters for those who missed seeing them in person. They are signs that say Phoenix Astronomical Society, and will be used over and over again at future events. Kevin Harcey did many images. He did the image we put in the Telescope area which was labeled "Astronomy made simple." He also did the Cloud picture which was posted at Space Station 3 on floor 3, and the awesome image of the Ring Nebula which I had put on Floor 2 at Space Station 2 along with an awesome image of a Comet. Each painting or drawing was done on a foam Poster Board, except for Kevin Gray's, which he did on a poster board. Those images are awesome and you should come to the September PAS meeting, just to see them in person. Both Gray & Harcey did a fantastic job on their paintings and I want to send many thanks to both of my artists! If you desire to paint, draw, write or create for the newsletter, or future events, don't hesitate to contact me and I'll let you know what I need and you can do it. We appreciate all the help we can get. One other things Kevin Harcey did was design the 8 pictures we used for the back of each Question page. The idea was that if the kid wasn't old enough to read the questions, they could stop and color the page, and then move on with their parent's help to answer the questions on the other side. Kevin drew an Apollo 11 image of a rocket, a space shuttle type rocket (those were for Space Station 1), A picture of Saturn and another picture showing a moon, an astronaut and the shuttle in the background (for Space Station 2), an awesome collection of galaxies on one page and a comet for another page (for Space Station 3) and a dome observatory and the image we wish to use for our next T-shirt, the dog looking through the telescope (for Space Station 4). Thank you so much Kevin. You are a wonderful artist! The kids would then travel to Floor 2 and find Space Station 2 where I had set up a display showing info about Deep Space, so I had handouts there about Nebulae and Galaxies. There was an awesome pamphlet sent to me by Astronomy magazine called Deep Sky Picture Show. Anyone who wants a copy must come to the September PAS meeting, as I have extras. This pamphlet is awesome. Shows all the Messier objects in color! It is frameable and I got mine laminated to put on my wall. The third floor had Space Station 3 which was about Clubs and other fun things to do and see astronomically. So, I had info about PAS. This is also where the Prize Guy was, so after the kids finished their projects, they had to go to Space Station 3 to get their prizes. And Space Station 4 was our telescope display. I had pamphlets on telescopes and Kitt Peak Observatory, Lowell Observatory, and other large telescopes around the USA. It was my hope that most of the pamphlets would go home with the kids who were enjoying the trip to the Space Stations, and hopefully inspire them to pursue more info on Astronomy. I would like to thank my volunteers for the great job they did helping out anyway they could. At Space Station 1 on floor 1 we had Matt Kohl, who had his laptop and showed Color Slides of Outer Space and who was to check in our volunteers when they arrived and give them a name badge and their assignment (pre-typed, explaining what I asked them to do - I only had a few volunteers not actually helping as requested). Matt was also Captain of Space Station 1 and helped direct the public and our volunteers to their proper locations and assignments. Sam and Frank Insana were our Handout experts. They did an awesome job of handing out the initial pages to everyone. This page also had an area for people to sign up for the newsletter for free, but we only had one person turn that in. Roger Scholl helped with the kids and the handouts after Frank and Sam had to leave. Amber Moore and Rob Rihr helped with the kids and so did Richard Steffes & Roger Scholl. John Alexander worked with the kids too. This floor was pretty successful. Space Station 2 on floor 2 had William Finch running his laptop that showed Black & White slides of Outer Space. William was the Captain of this Space Station. Ted Finch worked with the kids, as did Rob Martin, Nathan Messer, and Salah Mohammed. Thank you Ted for taking some photos that may be seen in this newsletter. A new member to PAS, Nathan Messer was helping out on the second floor and wrote a review about the day: "On the second

See SCIENCE, p.3

On Floor 1 at Space Station 1 we had this awesome painting by Kevin Gray. It is much more impressive in person. Photo taken by Terri Finch



Astronomy Made Simple. This cute drawing was done by Kevin Harcey. We used it on Floor 3 in Space Station 4. It went real well with the Telescope display. Photo taken by Terri Finch

Yes, this is a painting done by Kevin Harcey. He outdid himself here. Look at how well the Ring nebula is defined. We used this painting on floor 2 of the Science Center in Space Station 2. Photo taken by Terri Finch

-SCIENCE, cont'd. from p. 2

floor the questions broke down into three types really. The best was the Meteorite man, which worked really well. The kids got to actually do something, and got really into it. They both had fun and learnt something. Then there were the space station and Ham radio questions, which involved the kids going off and looking at a display, and getting a piece of information from it. This worked well, as the kids had to go and find something, which was interesting when they got there, and they learnt something, but didn't have to work too hard for it (although the conflicting information on the two boards for the space station display confused people). The third type of questions were the ones based on handouts. I think the handouts themselves were a good idea, as both kids and parents seemed to have had their interest sparked and wanted something to take home and peruse later, but I'm not sure that having questions based on them was the right thing, as there was lots of information in each handout, ideal for reading in the car on the way home, but this either meant the kids had to scan the handout for the answer that was needed, which meant they weren't really getting anything out of it, or read the whole thing, which when surround by so many whizzing flashing things wasn't what the kids wanted to do right then. The suggestion I'd make for a similar event in the future would be more questions like the space station display. For example, there was an excellent painting of the ring nebula at the display on the second floor. A paragraph under it explaining what it was, and a relevant question on the sheet would have 1) made the painting more meaningful and interesting to them 2) meant they learnt something and 3) given them some immediate feeling of achievement. Similar things could be done with posters of galaxies, double stars etc. Not sure if this is the kind of thing you're looking for, but I hope this helps. Nathan" Bob Holmes was our Meteorite Man and from what I heard, he did an awesome job with getting the kids to know which was a meteor wrong and which is a meteor right (meteorite). The feedback I got from the kids who were involved was that they loved visiting him. Bob wrote: "I think the idea of PAS promoting at the ASC open house was great. This was the first event I had a chance to meet the members and enjoyed all of them. Organizationally, all was good for me, and the day went by quickly (would have been quicker if I hadn't forgotten my lights). My only hope was that there might have been greater attendance, but I don't know the numbers you all expected. I really enjoyed seeing the parents and kids together, moving from station to station, filling out the sheets. This was particularly noticeable at my table (although I must admit that I had very little opportunity to see the other stations), as it was a 'hands-on' project. Actually, more parents were into the meteorites than kids, but that's typical. Overall I had a great time and look forward to doing more with the club. Best regards, Bob Holmes www.meteoritebiz.com" Space Station 3 on floor 3 had Bruce, Ed and Bette Wurst working the PAS Prize Table. Bruce was Captain of this Space Station & Prize Guy. Ed Garbero helped by taking kids around and helping them find the answers. He was having so much fun and his help was very appreciated. He did such an awesome job I wish to give him a fantastic amount of thanks! Cherie Cambron was an awesome help with the kids and their questions. Cherie is a student at PVCC. Her wonderful personality really enhanced the kids visit to that Space Station. And Richard Leeks made a great partner to work with. He really seemed to enjoy the kids. While I filled in for Bruce as Raffle/Prize Guy, Bruce went around and took 97 photos of everyone and everything going on in the Science Center that day. I thank him for all those wonderful photos. Not all will be in the newsletter, but about 1/2 of them turned out wonderful and will be added in the newsletter over the next several months. When I wasn't filling in for The Prize Guy (Bruce) I was roaming around making sure everything was running smoothly. PAS Space Station 4 was located on Floor 3 around the corner and was our Telescope display. I had Don Boyd as Captain of that Space Station. He did an awesome job along with Richard Guthrie in helping the kids find the answers and pamphlets needed to complete the project. I had one side of the Telescope display with tables of past PAStimes Newsletters, and the other side had handouts on larger telescopes, such as Kitt Peak and Lowell Observatory. I wish to thank John Alexander for organizing the past issues of the newsletters for me and for running errands for me as he did that often throughout the day. I had made some questions having to do with other activities the kids had to do, that weren't just going over to a display and playing for a while and then coming back with an answer. One question asked

See CENTER, p. 4

Meteorite Man, Bob Holmes, was a great success at the Arizona Science Center Astronomy Day event. Here he is on floor 2 with his display in Space Station 2. Lots of people were checking out his meteorites. We see Nathan poking his head up in the back and to the right is William and his computer. Photo taken by Bruce Wurst

At the Arizona Science Center we had 4 displays - 4 Space Stations, and this one, located on Floor Three, named Space Station 3 had (from Left to Right) awesome helpers: Ed, Cherie, Richard and Mike. Mike was our free roaming helper, but must have been visiting this station at the time of photo. Photo taken by Bruce Wurst

Bob, our Meteorite Man, and Mike, our Meteorite finder are talking meteorites on floor 2 at Space Station 2 in the Science Center. Photo taken by Ted Finch

-CENTER, cont'd. from p. 3

them to attend one of the Planetarium Shows on the first floor in the Planetarium. Another question asked them to go outdoors (with a parent to accompany them) and check out the Solar Telescope Display (for which Dennis Young was the place I was sending them). From what I heard, there weren't many who went out there once they were in the Science Center (due to the heat) but a lot of them looked through the telescope upon entering the science center. And there were presentations being done on the first floor in the Freedman Gallery, for which Dan Heim did one of those presentations. So, one question sent them to those presentations as well. Dan Heim did a presentation for us and wrote: "Self review: My presentation, 'Why No Two Solar Eclipses are Ever the Same,' started on schedule at noon in the Sound & Light Theater. ASC had spaced the presentations an hour apart this year, so there was no rush at all and plenty of time to digress and field questions. Approximately 15 people attended; another few wandered in and out as they browsed displays around the Theater. Two gentlemen in the front row were particularly curious, and kept me busy with questions from eclipses to cosmology. The show ran 45 minutes, including Q&A. It went off without a hitch ... a bit of a relief, since last year the RF mouse controlling my laptop succumbed to interference from nearby high voltage displays. I've since replaced it with a more reliable product. Stay tuned for next year, when I present my new 3D version of eclipses (currently a work in progress)." I wish to thank Dan Heim for his presentation as well. I wish to thank Dennis Young for bringing down his telescope for the people to view through. I didn't get to see his set up, unfortunately, but I know he had it kid and user friendly, and he always puts on a good show. Dennis wrote: "Things went well at the Science Center. I saw a few students or kids with the sheets (Log Sheets) and they asked a few questions as they looked thru each of the scopes out there. The response was great." Thank you to all my volunteers and all the SAC, EVAC, Dark Sky Assoc., Lowell, and other display folk we had there. We all worked together to make this an awesome event, and I do believe it was successful. Thanks goes to John Pulis who helped out in many areas, and Mike Marron who was our floating Meteorite guy. He had his own display set up on floor 1 off to the side, and had his VCR Tapes of "Murder at the Observatory" running for those who wished to watch it. "Murder at the Observatory" is a homemade movie, there are 2 in the series, and if you wish to see them, ask Mike to lend them to you. I thought they were pretty funny. I preferred the second one, "Aliens at the Observatory," but both had a good story line. And I must thank the Science Center for allowing us to hold such an awesome event at their location. Thanks goes to everyone who wrote a review for this event, as those reviews put more ideas into this article than I could have come up with on my own. Dan wrote: "As long as you asked for more input, here's one idea. I think maybe a single large PAS area on the first floor would be better than spreading ourselves thin. I don't know how much work setting up on the second floor was, but judging from your comments about the low traffic it may not be the most efficient approach for our efforts. Since the Planetarium and Light & Sound Theater are both on the first floor, seems like that's where most of the astronomy-minded visitors will hang out. Hey, thanks also for your efforts as the organizer! Overall I think it was a great event. Dan @ Heimhenge." And Thanks goes to Christine for letting me set it up and accommodating all of our requests for the day. Oh, and Christine and the Science Center must get very special thanks for supplying the Pizza lunch for the event. Most of us donated to Christine so she didn't have to take the whole bill, but if it weren't for her organizing the food and drinks, most of us would have starved. Thanks you so very much! I believe that if we do this again, next year, geared towards the kids again, that I'd like to change the format of the question pages into 1 page (same questions, keep all 24 edited slightly, cutting out some of the ones having to do with pamphlets (suggested by Nathan), and do the same thing again with prizes, same format and everything), change the location of our Space Stations such that they are easier to find, maybe have one main display on Floor 1 and a second one with the Telescopes on Floor 3 where there is room. So, the kids would only visit 2 space stations total, but hit all the questions again for the prizes. The kids will be all over all the floors but will get their prizes on Floor 3. My initial idea for putting the prizes on floor 3 was because I didn't' want to cause a traffic jam as kids were waiting to get their prizes (if on Floor 1) so I positioned it on Floor 3, leaving Floor 1 open to the incoming traffic. I wouldn't mind doing this again, and if I do, I hope to have the same volunteers again, doing the same things, but more active. I really love how Ed Garbero put so much effort into helping the kids find the answers. I would really like all my volunteers (less the Captains of the Space Stations) doing that with the kids next year. The more interaction, the better for both the kids and so my volunteers don't become bored. And my volunteers all did an awesome job. Thank you! The Grand Prize winners were Christine Brugger, Joey McKenzie, Nathan Miston, Breonna Neslon, Kaitlyn Pesterfield, Victor Kalinkin, Marion Dontaya, Sean Dicke, Gabrielle Franco, John Mullen and Cecina Babich-Marrow. These were the kids who did all 4 Log Sheets to get a Grand Prize ticket and won. The Arizona Science Center & CHRISTINE are AWESOME! Astronomy Day was a huge success this year, and I hope to make it a great success again next year. I will have to say

See ASTRONOMY, p. 5

Dennis Young and his solar telescope display outside the Arizona Science Center on Astronomy Day. I do wish to thank Bruce Wurst for going out there and grabbing a few photos. I never made it outside to see what they were doing.

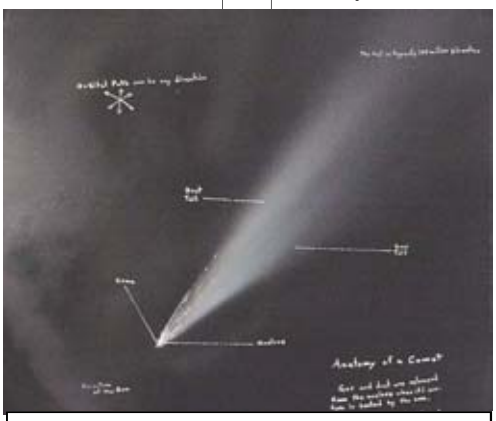
All the volunteers were invited to join the pizza and snacks provided by the Science Center and Christine for lunch. Here we see Matt (left) and John Pulis. It looks like the food was going fast, and everyone took off quickly. The pizza was very good. Thank you Christine! Photo taken by Bruce Wurst

-ASTRONOMY, cont'd. from p. 4

that PAS has the BEST volunteers in the Universe! Thank you all! This is from the Sponsor List on the initial handout given out by Frank and Sam Insana:

Thanks to our sponsors, we have many prizes & supplies to make this event possible within the Arizona Science Center today.

* The Phoenix Astronomical Society provided most of the copies, writing & coloring utensils. The majority of copies were done by Mark Stephenson, President of PAS. Other copies supplied as needed by Leah Sapir, PAS Member. Visit our website: http://www.PASAZ.org



The Anatomy of a Comet, painted by Kevin Harcey. We used this painting on floor 2 at Space Station 2. Photo taken by Terri Finch

* NASA Space Place postcards & business cards supplied by Nancy J. Leon. This site has many fun Kid related things to do. Check it out at: http://SpacePlace.Nasa.Gov It is worth the visit.

* Pencils donated by Ed & Bruce Wurst, Private Music Instructors 602-971-3355

* Lithographs ,Posters for prizes & posters behind displays were supplied by Adrienne Wasserman of the United States Geological Survey. Check out the U.S.G.S. site at: http://astrogeology.usgs.gov

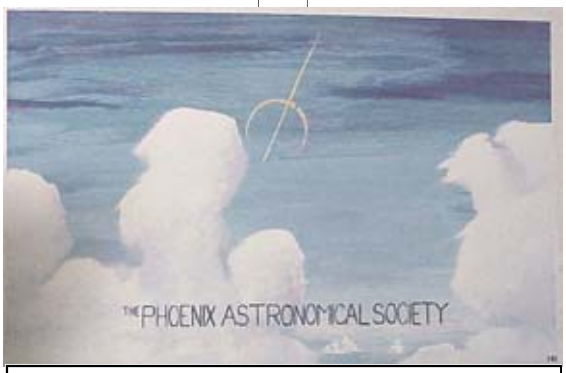
* Glow-in-the-Dark Stars provided by a donation from Leah Sapir & Richard Guthrie, PAS Members.

* Posters, Pluto Lithographs, Lowell Sweatshirt, & 3 books provided by Kevin Schindler of Lowell Observatory. Check out Lowell's website at: http://www.lowell.edu

* A presentation on Floor 1 plus Constellation puzzle donated by Dan Heim, a PAS Member, of Heimhenge Enterprises. Visit his website at http://www.heimhenge.com He has other fun activities for kids, too.

* CD's & Posters provided by Meredith Higbie of the Center for Advanced Space Studies. Visit their website at: http://www.lip.usra.edu

* Astronomy Day Posters & "Getting Started in Astronomy" Pamphlets donated by Astronomy magazine. Check out their site at: http://www.astronomy.com



The Clouds: That's what I'm calling this painting by Kevin Harcey. This painting was used on floor three of the Arizona Science Center in Space Station 3. It sure looked great! Photo taken by Terri Finch

* Pencils donated by Salah Mohammed, owner of ALL IN ONE STORE at 4726 W. Olive Ave., 623-934-1079, hours: 9 to 9 Mon - Sat, & 12 to 6 on Sunday.

* Meteorite for Grand Prize donated by Bob Holmes, Meteorite Man. Check out his website at http://www.meteoritebiz.com

* T-shirts for Grand Prize, Handouts & Sticky notes donated by International Dark Sky Association http://www.darksky.org

* The location to do this event plus the copies of the Log Sheets donated by the Arizona Science Center, http://www.azscience.org

* Set up & activity designed by Terri Finch, PAS Editor & Private Music Instructor, 602-547-2420

Here is the initial page with directions that the kids or the parents read before they started their project. EARN A PRIZE TODAY Sponsored by the Phoenix Astronomical Society. Welcome to Kids' Astronomy Day! Your mission today is to visit our space experimentation stations or activities & perform some experiments. Like all top Space Scientists, you'll need to record your results (use the log sheets found at each Space Station - there are 4 total), & when you're done, return to the Space Station to report your findings to our team of Chief Space Scientists from the Phoenix Astronomical Society. You need to return all of your results to receive your prize payment. Everyone can join in, but prizes will be awarded only to those Space Scientists of ages 0 to 17. Parents are encouraged to help find the answers using the clues given. The first 100 Space Scientist who complete this task, earn a coloring book. Every Space Scientist who completes the task (4 completed log sheets - 3 questions each page) gets a chance to win a grand prize. Drawings will be on Floor 3. You do not need to be present at the time of the drawing to receive your prize, but prior to leaving the Science Center for the day, or by 4:45pm, swing by Space Station 3 to see if your name has been drawn for a Grand Prize. Here's how you can do it: Stop at the PAS Space Station 1 (on Floor 1) & pick up your Rocket (choose between two images, both pages have the same experiments for you to do so only choose one. You may stop to color the rocket if you wish. This area has information about the Planets & our Solar System. Pick up a writing utensil, & do 3 experiments of your choice from the back of the Rocket sheet. Then, return the writing utensil, have the Space Station Chief Scientists discuss your findings. Be sure to answer the Bonus question on each page, as that is the one you will discuss with the Chief Scientists. Collect a puzzle piece for completed log sheet. Each puzzle piece is another prize for you. Complete 4 logs sheets & get a raffle ticket for the Grand Prize. If you are ambitious, complete all experiments on all 4 log sheets & earn a 5th prize & a 2nd raffle ticket. When done with Space Station 1, continue on to Floor 2. There you will find PAS Space Station 2. Collect as many puzzle pieces (of the 4) as you wish & take them to the Space Station Scientist PRIZE GUY on Floor 3 & he/she will award you with a prize. If along the way you do not find what you need, there will be a map at each Space Station showing you where to find the answers within the Science Center. Some answers will come from the Space Station location, & others will be on the floor you are on or inside, outside or in a mystery location. If you are lost, speak to the Space Station Scientists for help. The Chief Space Station Scientist & his crew will also be a good help to finding answers. Feel free to gather any information needed from the Space Stations (marked with signs saying "Freebees") & keep the info if you desire or leave it for someone else to take. The Space Station Scientists can give you assistance as well, but they will not give you the direct answers. There will be crayons at each Space Station to color your pictures. Each Floor has a different picture to

See DAY, p. 6

-DAY, cont'd. from p. 5

go along with the topic. Space Station 1 on Floor 1 is Planets (pick up a Rocket page), Space Station 2 on Floor 2 is Deep Space (pick up a planet page), Space Station 3 on Floor 3 is Clubs & Places to Go (pick up a galaxy or comet page), & Space Station 4 on Floor 3 is Telescopes (pick up a Telescope page - no crayons at Space Station 4). You must have collected a PUZZLE PIECE for each completed Log Sheet you've done to receive your prize. There are 4 Space Stations, thus, there are 4 PUZZLE PIECES to collect. There will be several kind of prizes available (more at the beginning of the day than the end). The earlier you complete your Log Sheets, the more choices for prizes you will have. You can only earn up to 5 prizes & receive the chance to win up to 2 Grand Prizes today. The type of prize you win depends on the ping pong ball you pull out of the can. For instance, we have posters, & lithographs (pictures supplied by NASA with information on the back), Astronomy CD's, Glow-in-the-dark Stars & other exciting items for the main prizes. We have T-shirts, books & more for Grand Prizes. When you have completed all 4 Log Sheet pages, return to Space Station 3. Once completely done, you will have your prize & can then continue investigating the Arizona Science Center. Since the drawing for the Grand prize will be throughout the day, we suggest that sometime prior to leaving for home you check back in on Space Station 3 & see if your name has been drawn. Present your winning raffle ticket & take your prize with you. We do hope you enjoyed your trip to our Space Stations & hope you will visit us again soon. Feel free to help yourself to any of the pamphlets found a the Space Stations that are marked FREEBEES. We encourage parents to collect & share with youngsters. Also check out our sponsors (above) & our website: http://PASAZ.org for more fun & information.

GRAND PRIZE WINNERS
Drawings every 20 minutes

PRIZE	DONATED BY	WINNER
Meteorite	Bob Holmes	Christina Brugger
Space Sweatshirt	Lowell Obs.	Joey McKenzie
Astro for Dummies	Lowell Obs.	Nathan Miston
Star Up T-Shirt	Dark Sky Assoc.	Breonna Neslon
3D Tour of S.S.	U.S.G.S.	Kaitlyn Pesterfield
Stars Up T-shirt	Dark Sky Assoc.	Victor Kalinkin
Powers of 10	Lowell Obs.	Marion Dontaya
Stars Up T-shirt	Dark Sky Assoc.	Sean Dicke
Stars Up T-shirt	Dark Sky Assoc.	Gabrielle Franco
Bad Astronomy	Lowell Obs.	John Mullen
Stars Up T-shirt	Dark Sky Assoc.	Cecina Babich-Marrow

***

MANY THANKS

I wish to thank Ted Finch for the wonderful photos he supplied me with from the Anthem Star Party and the Arizona Science Center Astronomy Day event. Many of those photos will be seen in this issue (Sept) as well as some upcoming issues. Thank you so much! ***

SHOP CATALOGCITY.COM TO HELP GENERATE EXTRA FUNDS FOR PAS

As you know Phoenix Astronomical Society can always use additional funds. To help with this, we now have a new fast and easy fundraising service called a CatalogCity CareCode. Here's how it works: CatalogCity.com is the first online shopping mall to feature hundreds of catalog merchants' products all available for purchasing via a single shopping cart. The great thing about this One Cart mall is that the merchants and products are the same great name brands mailing catalogs to us everyday. With CatalogCity.com, Searching, Browsing and Buying from thousands of brands and millions of products has never been faster or easier. What makes this site so compelling is that we can now leverage our group's combined purchasing power to help raise the funds we need. All we have to do is buy online at http://www.catalogcity.com using our new CatalogCity CareCode: PASAZ. Whenever we do, up to 10% of every purchase will be set aside as a donation for Phoenix Astronomical Society. Then, every time our group's CareCode Donation Total reaches $100.00, another check will be sent to Phoenix Astronomical Society. You can read all the details about our new CatalogCity CareCode web page by going to: http://www.catalogcity.com/CareCode/PASAZ Once you start shopping, you'll be surprised at how quickly your personal donation total builds. However, the real power of this fundraising service comes from convincing as many of our organization's members and supporters to do their shopping and buying at CatalogCity.com. In fact, with just 50 active supporters buying $100 per month, we can raise over $5,000 for our organization. The hard part has been completed, we have our own web page and CatalogCity CareCode: "PASAZ" and you've found out about it. Now the fun begins. The more we shop -- the more they'll donate to Phoenix Astronomical Society. It doesn't matter who does the shopping, as long as our shoppers remember to enter our CareCode "PASAZ" the first time they checkout. Once they've registered our CareCode, a portion of all their future qualifying purchases will be set aside for Phoenix Astronomical Society. So, let's start spreading the news to anyone we can think of who loves shopping and who is willing to help us out. Now, if you really want to do this right, besides ordering things through Catalog City and making money for PAS, why not generate some income for yourself as well. Both PAS & YOU can profit from this venture. Call Terri or William to find out how you can do that at 602-547-2420.***

LAKE PLEASANT STAR PARTY REVIEW MAY 31, 2003

William & Nathan check out the food situation. William was preparing the grill, while Nathan was putting up his telescope.

It was a slightly windy evening. After spending 2 very hot, melting days running a garage sale the Finches and Matt Kohl rushed off to the star party. We arrived in our usual location and found that some people were shooting guns, target practice. We would have stuck around and claimed the spot when they

See PLEASANT, p. 7

-PLEASANT, cont'd. from p. 6

left but they were drinking too, so that made us nervous. We decided to move on. So, we chose the alternative spot which we conclude has a better horizon to see from. We might want to make that the usual spot and the other location the alternative spot. The Finches with Matt arrived and no one was there. We scouted out an area to set up for the potluck. Now, the time of arrival was set for 5:30 so this had us a bit worried because it was already 6:30. Where was everyone. Just as we were starting to get the grill going Nathan joined us. He was a welcome sight. We settled down to dinner, Hebrew National Hotdogs on buns, Potato salad, Rice Krispie treats for desert and a delicious vegetarian chili which was very tasty. After enjoying dinner we chatted while we watched the setting sun and the dark fall. The sunset was very nice. Around dark, we cleaned up dinner, and moved further back into the area for viewing. Nathan and I did a bunch of viewing and then Kevin Harcey joined us. When dark fell, we put our car hazard lights on to help anyone arriving later to find us. So, Kevin followed the hazard lights and so did Don Boyd. We had a great observing session. The wind wasn't too bad. The breeze kept the bugs away, and it kept it cooler. It was comfortable viewing and perfect seeing. In the midst of things we saw, Nathan found the last two objects for the night around 1:00am. We viewed through his scope, Uranus and Neptune. Thank you, Nathan, for that tour. During the viewing, I fell asleep for a while (heat and garage sale wore me out) and then William took a nap and Matt Kohl slept for a little while. At the end of our viewing session, Kevin invited everyone to his place for a movie. We didn't attend because we were exhausted but last time we did that, we had a great time, so I could guess that Nathan and Don had a good time at Kevin's with a movie. We hope to see a bigger turnout for the next star party. Bring food, bring a scope, bring many friends, let's star party! ***

Lake Pleasant Star Party this past May at the alternative location. Nathan Messer, a new member to PAS, joined William, Matt & myself for a delicious, small but filling potluck. We had an awesome viewing session afterwards with more telescopes.

Salah Mohhamed (Owner of the All In One Store) and John Pulis converse while waiting for the meeting to begin.

MAY PAS MEETING REVIEW NEEDED: PR DIRECTOR

The May meeting was very interesting. We held the 50/50 raffle and John Pulis won. Jerry proposed a magazine exchange. He said we should bring in magazines we want to share, leave them for a few months for people to borrow and return, and if we see that no one is borrowing them from the table I put the handouts, then take them home. Jerry has had a Popular Mechanics magazine there for the borrowing for the last several months. Anyone can leave a magazine for loan and then pick it up a few months after. Remember also, my handouts are recyclable. If you borrow something really cool, take it home and read it and decide you don't want it any more, DO NOT throw it away. Instead, recycle by returning it to the handout table for someone else to enjoy at the next PAS meeting. Adam did a short Treasurer's report by request from the club members. Leah Sapir donated the book by David Levy that was raffled off this month. Adam Bloomer was the winner of the book. We held elections. Mark is still the Prez, Jerry is staying the Vice and Star Party Dir, Adam will continue to be Treasurer, Terri was changed to Photographer but is still Editor as well, William is still the Homepage Director, Matt is still the Co-Editor, but has dropped the position of P.R. We elected in John Pulis as Main Host, and Ed Garbero as Co-Host. And the position for P.R. Director needs to be filled. Jerry wants to do a star party around Mars' closest approach, which is about the time this newsletter will get out to everyone, August 26, 27, 28 which is a Tuesday through Thursday. If you are interested, talk to Jerry. After the main meeting, which only lasted about 1 hour, we gathered our snacks and stuff, and got out our telescopes to view. I wish to thank everyone who brought snacks. Thank you to Leah for her donation of the book. Thank you to everyone who brought their scope. And thank you to Mark for making copies of the newsletter and other things in preparation for the Arizona Science Center event. ***

Tom Cotton & his wife Mali are our newest PAS members. Welcome aboard. They will be seen at many PAS functions & meetings.

Don Boyd heading for the snack table at the May PAS meeting.

LUNAR ECLIPSE AT ASC REVIEW MAY 15, 2003

Wow, what an evening! And what a turnout of telescopes! We gathered as early as 4:30pm on this Thursday evening, waiting for the Total Lunar Eclipse! We had many scopes, and thanks goes to all the scopes involved: Leah Sapir, Don Boyd, Adam Bloomer, Steve, Richard Guthrie, Roger Scholl, and a few folk I didn't know. We had a total of 9 telescopes and we must have seen about 1,000 people come through. We waited and watched for the Lunar Eclipse while viewing Saturn (until it set for the night) and Jupiter. The sky wasn't super great for seeing, so we mostly stuck to Jupiter, Saturn and the eclipsing Moon. But the people were so excited. And it was a great thing that the Arizona Science Center (ASC) was able to have Member's Night on that night. That helped draw more people to the event. I had many handouts and actually ran out of them by the night's end. The folks with the

See LUNAR, p. 8

-LUNAR, cont'd from p. 7

Jupiter makes an appearance, & a crowd of people start to show up. We are all focused on Jupiter until it gets darker or the Moon appears.

telescopes all worked as a team, showing different things all night long and we kept insisting that the public look through another scope, and another. They sure loved it and I think it did great to have so many scopes there for the number of people we had was fantastic. We hope to be able to do more events like this with the Science Center. Thanks to Christine Shupla, Planetarium Director for the AZ Science Center, who invited us to help out in this event! ***

ANTHEM STAR PARTY REVIEW

It was April 26, and the weather was really nice out. We never did need the jackets we had brought with us. We set up again in the park, where we did last year. We were on the grass, it makes for nice standing. There were several scopes, and I do wish to thank all the people who brought their scopes: Adam Bloomer, Mike Marron, Richard Guthrie, Bruce Wurst, Rob Martin, Ellen & Tom Walzack, Glenn Vogt, Chuck Shields and myself. And there was plenty of table help as well, with thanks going to Ed and Bette Wurst, Kevin Harcey, Matt Kohl, and Ted Finch. We had a visit from Bruce LaFrance (who has been a member for quite some time, but invisible at meetings and star parties. Hopefully this means we will see more of him in the near future). The viewing was limited due to sky glow but we saw many views of Jupiter, Saturn, the Orion Nebula and a few other items. We had a crowd of probably 1,000 to 1,500 people. We didn't do anything in sales but do appreciate all the tips we got. One visitor asked us to get some smaller size shirts for the kids. We will have to look into that when we make our new design. It was a great star party and many people were there to help and to have fun. Heather sends her thanks to everyone from PAS for participating. She wants us back again next year... so make plans to attend again. Special thanks goes to Tom and Ellen Walzack for attending our event. They are from Dennis Young's group, the Sirius Lookers, and we greatly appreciate their participation. Some photos were taken prior to sundown.***

The early arrivals for this star party got their photo taken: Richard Guthrie, Ed Wurst, Bette Wurst, William Finch, Matt Kohl (behind William) and Terri Finch. They were caught setting up the PAS table. Photo taken by Ted Finch

Bruce is setting up his telescope for viewing. In the background is the PAS table.

GIRL SCOUTS AT WHITE TANKS REVIEW

At first it was looking like we wouldn't have a star party. Matt had heard there was going to be rain, so it was iffy as to if we were going or not. I did a bunch of research on several weather sites on the internet to find out if we were due for rain, and none of them said so. They said 10 percent chance. Now, the weather man has, in the past, said 10 percent chance of rain and we've gotten a downpour. So, I take what is said with a grain of salt. So, Kevin listened to the TV and they said no rain due. So, we packed up our scopes and headed out. William & Terri in the car with Doctor Who, and Kevin & Matt in Kevin's truck with Kevin's scope. We had planned to arrive prior to 7pm, but with traffic delays, and not knowing it would take so long to get out here, we were a little late. However, everyone else seemed to arrive around the same time. Chuck & Mindy Shields were first out there. We arrived with Robin Wier on our tail. Soon Richard Guthrie came along and then Kevin showed up. We set up our scopes and were offered food. Some of us got some. Soon it was dark, and the clouds were taking over the sky but luckily we had good seeing conditions most of the night. The horizon to the North was all clouds, but to the West and East were good. City lights to the East made horizon objects impossible. The night started out with many people on Saturn, Jupiter and Orion, because they were the easiest to find. The Girl Scouts were totally enjoying this. We talked to many of them and found out they mostly live up by us, over in the MetroCenter Mall area. We had a great time with the scouts and the adults that were there. We had a total of 7 scopes at the site. There was mine, Kevin's, Richard's, Chuck's, and Robin brought his 10", 8" and his Binocs. Everyone had a wonderful time. Then around 9pm, several of the group decided to pack it in because the temperatures had dropped and the clouds were taking over. The host, Betty asked us to stay until the Moon rose. I offered and so did a few of the others. While staying we were given desert. It was really good. Chuck, Mindy, Robin, William, Kevin and Matt and myself enjoyed some chatting while waiting for the Moon to rise. As predicted it rose about 9:40 something. When we first saw it, it was covered in clouds. That made it more interesting. I grabbed it in the Doctor and everyone flocked to my scope to see the Clouds moving across it. That was really pretty so see. Then while one person was watching in the Doctor, an airplane went right in front of the Moon, and he was thrilled to see that. Once the Clouds got out of the way, the view was awesome. It was a mostly full Moon, having just been full the Wednesday before. We were there until about 10:15 watching the Moon. Then the group started leaving, so we started packing up and left about 10:30. We were thanked a million times and they said they'd like us to return to do more outings for them. Since they were a Scout Troup, we don't normally charge for that kind of event. But because of the driving distance, I asked for a donation. Betty gave us $10/scope (figuring on 5 scopes because that is how many we had confirmed were coming originally). Everyone involved donated their earned $10 back to PAS. That was a great gesture, and PAS appreciates it. We all had a great time and earned a little money for the group. Also while

See SCOUTS, p. 9

-SCOUTS, cont'd. from p. 8
there, Richard Guthrie donated $10 towards the purchase of prizes for the kids doing the Treasure Hunt at the Arizona Science Center on May 17. That went towards the purchase of the Glow-in-the-dark Stars that I had been wanting to get for that purpose. I found a great website with more stars than I can get for that amount through the 99 cents store, which is originally where I was going to get it from. I wish to thank the Girl Scout Troup for being so enthusiastic the whole night and to all my telescope volunteers who made the night a great success. By the time William, Terri and Matt left the place, the clouds had stolen most of the sky, but we didn't get rained on. Betty had said it rained earlier in the afternoon and they were worried we'd have to cancel our star party.***

MPAPW 2003 REVIEW

received from Scott Loucks

. . . just to let you know I attended the MPAPW 2003 last weekend and it was fantastic. I don't know if any of the club members made it or not, but it was a really well prepared and fascinating event. Anyone that has any interest in asteroids at all would have benefited from the discussions presented during this workshop. Currently, I am pursuing an asteroid program at LAMP (Loucks Astrometry of Minor Planets), so I had a personal interest in nearly all of the topics. (See my site at www.geocities.com/srloucks/home.html.) I hope to post the MPAPW proceedings once I receive them. So, anyone interested can at least view these topics there. Again, I am still waiting for the proceedings to arrive; not sure what kind of time frame we are talking about here, but I don't think it will be too much longer. Also, one interesting note I should mention, as it turned out I actually received my Minor Planet Center assigned observatory code (G88) on that same weekend. So, this was a stellar weekend for me anyway. Regards -Scott Loucks LAMP Obs. MPC # G88 ***

SAC STAR PARTY REVIEW

received & written by Leah Sapir

Saguaro Astronomy Club held its semi-annual public star party on Saturday night, May 10th, at Thunderbird Park. Thunderbird Park is easy to reach, on 59th Ave, about a mile and a half north of Loop 101. It is "close to town", but far enough "out of town" to have reasonably dark skies. 21 members brought telescopes, and an estimated 300 people attended, according to an SAC member interviewed. Objects viewed included: the moon, Jupiter, Saturn, M81 and 82 (pair of galaxies in Ursa Major), M13 (globular cluster in Hercules), M57 (the Ring Nebula in Lyra), M35 (open cluster in Gemini), and M104 (the Sombrero Galaxy in Virgo). SAC regularly schedules their public star parties, co-hosted by the Glendale Parks & Recreation Dept, for Saturday nights with a first-quarter moon in May and October. The choice of a night with a first-quarter moon is based on their experience that the public enjoys seeing the moon, as well as other objects, through a telescope.***

At the Lunar Eclipse Star Party at the Arizona Science Center May '03, Leah is searching for Jupiter, too.

"What you heard was wrong; actually, nature *adores* a vacuum. That's why most of the universe consists of vacuum. And that's why we have vacuum cleaners -- to clean something nature is fond of."

Don Boyd sets up his telescope while anticipating a huge group of people to visit our scopes.

ANCALA STAR PARTY REVIEW

It was a windy, cooler evening. We all gathered at a very wonderful resort called Ancala Country Club, in Scottsdale. The night had clouds and city lights to contend with. We have a turn out of 10 people, most of which were employees. We stayed from 7pm to 10pm fighting the clouds. Don and I were looking for Jupiter's red spot, but with the clouds in the way, we had a rough time. We are thinking of rescheduling this star party for sometime in August. If you wish to assist, let me know.***

At the Ancala Star Party, this past May, Bette sets up the tables for selling t-shirts, memberships, and XS. The night became windy and made it harder to keep things pinned down.

About the photo: It was taken through a telescope in Safford, Az. during a 3/4 moon phase during a "harvest moon" appearance. It was shot on Agfa, 35 m.m. film on a Pentax K1000 during the early evening hours. Photographer: Richard B. Lee of B'Leeve photography

ADS IN PAStimes

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.

Wanted Old blue white Celestron C6 f/8 SCT from 1960s, with or without fork mount, any condition, also any old blue white celestrons, whole or in pieces.
Robert Piekiel,
18 Wilson Dr. Box 64
Marcellus, NY 13108
315-673-3093

I have a Discover 17.5"f4.1 PDHQ Dobsonian, Never used, still in wrapper that I am selling for $1500.Please contact if anyone is interested.
John Williams
johnwilliams@acrnet.com

LARGEST FULL MOON OF THE CENTURY

Did any of you go out to see the "Largest Full Moon of the Century?" Well, we did. It didn't visually look any larger than any other full moon to us, but William and I took a few shots of it and thought you'd like to see them. One shot has the clouds in front of the Moon and the other has a nice set of trees. Since the Moon rose behind buildings and trees and clouds, it was hard to get a clear image, so we found it more interesting to enjoy it with foreground items in the photo.***

PUZZLE OF EMPTY GALAXIES

by Dr David Whitehouse
BBC News Online science editor
received from Steven Saline

The Universe may be teeming with starless galaxies inhabiting its most isolated regions, says an Australian scientist. Graduate researcher Brad Warren, of the Australian National University, has identified galaxies in our local region of space that are mostly gas with very few stars. "If you look for gas with a radio telescope you see an enormous blob of gas. If you look for stars through an optical telescope you only see a small smudge of stars on the sky," he told BBC News Online. For some reason these galaxies have failed to form stars out of their hydrogen gas. The search is on to find out why.

R. Schultz (VE1IF), shortly after completing construction of the Vatican Observatory 12 GHz radio telescope to be installed at Discovery Park, Safford, Arizona. Photo received from Richard Lee

Starless and bible black

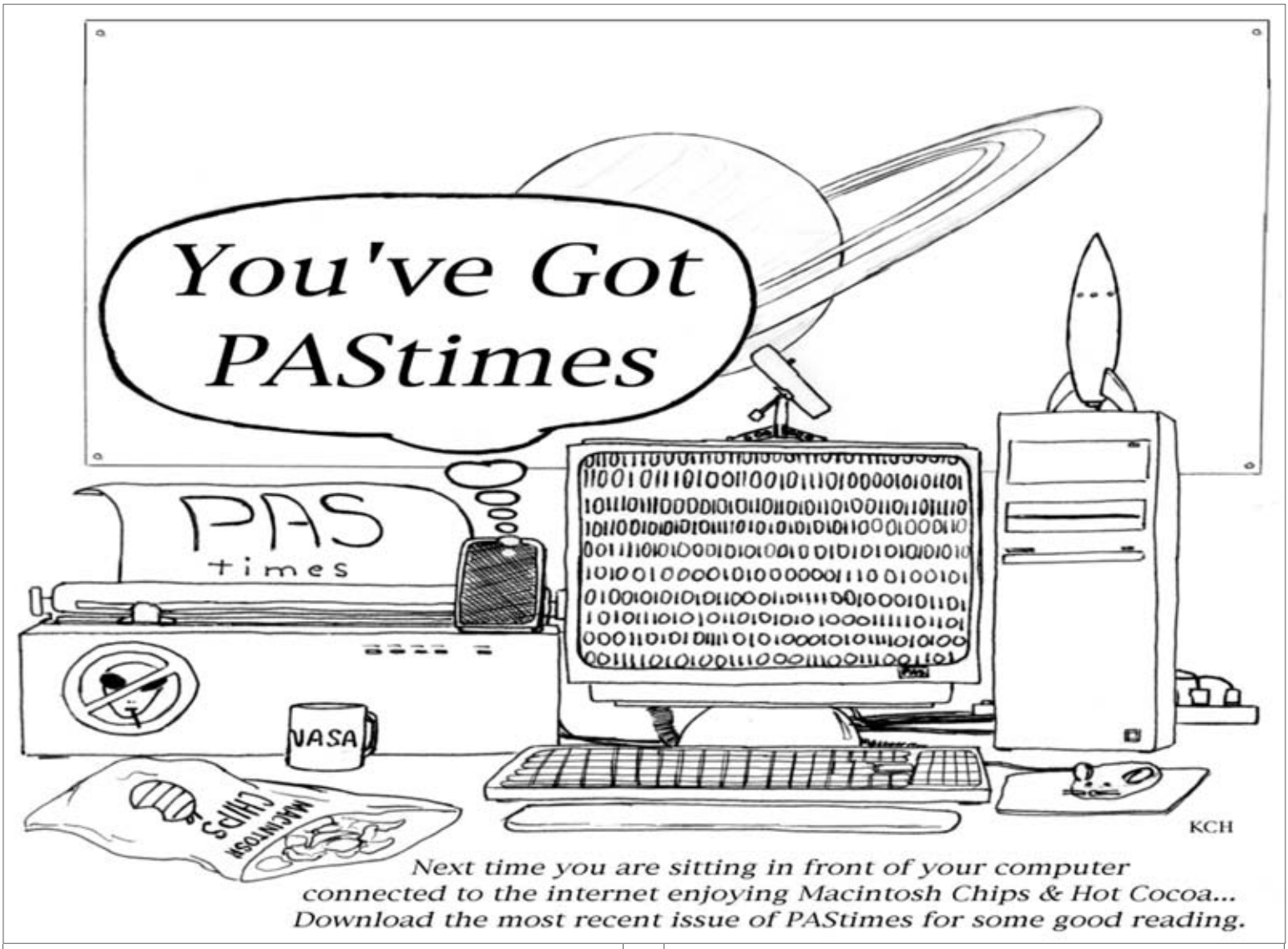
In research presented to the meeting of the International Astronomical Union (IAU) in Sydney, Brad Warren outlined his discovery of 20 gassy galaxies. He used optical and radio telescopes to follow up a survey of hydrogen clouds in the southern sky. Some of the clouds were galaxies that were almost starless. "When you look for gas in these galaxies the signal just booms in," Mr. Warren told BBC News Online. "But when you look for stars, all you see is a barely recognisable smudge." Galaxies made mostly of gas that contain very few stars have been seen before. This new study shows that they are more common, and stranger, than had been thought. They are found in the great intergalactic voids - vast spaces between groupings of normal galaxies. Few objects inhabit these regions, where lonely stars, torn from their parent galaxies, live isolated lives before they fade and die alone. The gassy galaxies are vast discs of hydrogen, tens of thousands of light-years across - somewhat smaller than our own Milky Way galaxy. Although they weigh more than a billion suns, they have only a tiny number of barely visible stars at their centre.

Stars never formed

According to Brad Warren, the reason they are stillborn may be their remoteness: "These galaxies are isolated. They haven't had any stimulation from other galaxies that may trigger star formation," he told us. "Alternatively, there may be something within the galaxies themselves that is holding back star formation by keeping their gas spread out. We don't know. We're looking into that." Understanding why these galaxies failed to form stars may also help explain why most galaxies do. "Discovering why will give us important insights into how, when and why galaxies, such as our own, formed," says Mr. Warren. He says the next step in his research is to investigate the few stars inside the galaxies to see if they are peculiar in any way.***

The new control box for the 12 GHz radio telescope at the Discovery Park, Safford, AZ. The 'scope rolls out from a little 'mine shaft'. Photo received from Barbara Clontz & Richard Lee

Q: How far can you see on a clear day?
A: 93 Million miles...From here to the Sun.



Next time you are sitting in front of your computer connected to the internet enjoying Macintosh Chips & Hot Cocoa... Download the most recent issue of PAStimes for some good reading.

RECYCLING

PAS is doing a lot of recycling and you can help out. The most important one we are involved in is the collection of Aluminum cans or other sources of aluminum to raise funds for PAS. Now, this is a contest... collect your aluminum and turn it in with your name on it and Terri and William will take it to the recycling center and turn it into cash for PAS. How is this a contest? The person who turns in the most POUNDS of Aluminum or other recyclable materials to Terri for the next year, will receive the 2005 PAS Membership for free. Don't let the "other" guy do it. Jump in now. You still have over a year to collect and turn in your aluminum. The second kind of recycling PAS is doing is with Magazines and handouts at the PAS Meetings. Terri tends to bring many handouts for the taking, borrowing, swapping, etc. As you leave with a handful of free handouts from the PAS meeting, remember that you can recycle those unwanted handouts by returning them to the Freebee table when you come back the following month. Yes, we want your handouts back - but only if you do not with to keep them. Did you read about Kitt Peak and decide it isn't something you need to hang onto? Then return it for someone else to enjoy. Only the dated items should be tossed out. Jerry has started a magazine swap. Come to the PAS meeting, bring a magazine you think would interest the other members, leave it on the Freebee table. If it stays there for 3 months in a row, take it home. Otherwise, let someone borrow it or you borrow someone else's. It is fun. The current magazine on the table is Popular Mechanics, received from Jerry. It will stay there for the September meeting. If no one borrows it, Jerry will take that one home. Anyone can, at any time, drop off magazines to swap. Please remember that the person bringing the swap item might want their item back, so please return it the following month. ***

GRAVITY WEIGHS ON YOUR MINDS

by Clay Thompson
from the Arizona Republic

. . . If the Earth suddenly cracked in half, would each half have the same amount of gravity? Do you find this question disturbing? I certainly do. Not the thought of the Earth suddenly cracking in half, but the thought of one or more of you sitting around wondering about the Earth suddenly cracking in half. That's the disturbing part. The Earth is not suddenly going to crack in half, OK? Don't worry about it. OK, now about the gravity part. Gravity, or at least gravitational pull, is a function of mass

See GRAVITY, p. 12

-GRAVITY, cont'd. from p. 11

and distance, right? We could discuss this at greater length, but it makes my brain hurt. Assuming that the Earth did suddenly crack in half and assuming that each half had the same mass and were not affected unequally by the pull of some other body, why wouldn't they have the same gravity? This is probably some sort of trick question, and I'm probably going to spend the rest of the week hearing from gravity know-it-alls about what a moron I am. Maybe I shouldn't have taken up this question at all. Well, as long as I've come this far I might as well keep at it. *Do you know the speed of gravity*? No. Neither does anybody else for 100 percent sure, but the thinking lately is that the speed of gravity is the same as the speed of light. This I learned by reading an article at www.space.com about a paper two guys - Sergei Kopeikin of the University of Missouri at Columbia and Ed Fomalont of the National Radio Astronomy Observatory - presented in January (2003) to the American Astronomical Society. It never occurred to me to wonder about the speed of gravity, but apparently this is something that has been preying on other people's minds. Isaac Newton thought gravity worked instantaneously, and I guess everybody else did, too, until Albert Einstein suggested that it moved at the speed of light. Anyway, these two guys came up with an experiment that involved the degree to which the gravity of Jupiter bent the light from a distant galaxy as the planet passed near it. So by some brain-hurting calculations, they figured out gravity moves at the speed of light. However, not everybody agrees with this, and the results had a 20 percent margin of error, which sounds like a lot, but it's probably not bad compared with this column's.***

The Sun sets while we set up at Ancala (May '03) for the star party.

STAR LIGHT, STAR BRIGHT: ASTRONOMERS' JARGON EXPLAINED

by Joe Rao, Space.com
received from Steven Saline

As darkness falls on these balmy July evenings, the famous "Summer Triangle" is high in the eastern sky. The triangle is composed of three of the brightest stars in the sky, each the brightest star in its own constellation. The brightest is the bluish-white star Vega, in Lyra the Lyre. Next in brightness is yellow-white Altair in Aquila, the Eagle. Finally there is white Deneb, in Cygnus, the Swan. Sometimes when I find myself outdoors and giving an impromptu talk on the night sky, I'll direct my audience's attention to the Summer Triangle. I'll then ask two questions. First, I'll ask in what order of brightness are the three stars, from the brightest to the faintest? This question is rather easy to answer since it is obvious that Vega is by far the brightest of the trio, appearing to shine twice as bright as Altair and more than three times brighter than Deneb. Then, I'll follow up with my second question: In terms of luminosity, what would be the ranking of the three stars? In other words, which star is the most luminous of the trio?

At the Lunar Eclipse Star Party at the Arizona Science Center May '03, the Science Center set up a table to explain how the Lunar Eclipse was going to happen and why. They did an awesome job with assisting Christine.

Shedding light

If someone fails to understand the difference between brightness and luminosity, I'll bring up the following analogy: Pretend you're outside at night with two friends. One of them has a powerful 5-cell flashlight and the other a tiny penlight flashlight. Your friend with the 5-cell flashlight walks a distance of 600-feet before he turns the light on and ultimately shines it toward you. Now your other friend walks a distance of only ten feet, and from that distance shines the tiny penlight bulb in your direction. Question: from your vantage point, which appears brighter . . . the light from the 5-cell flashlight or the much-smaller penlight flashlight? Obviously, it is the penlight. But now . . . which light is the more luminous? Obviously, it is 5-cell flashlight. But since it's 60 times farther away, it doesn't appear as bright as the much closer penlight.

Anthem Star Party in April '03, This is your editor with her scope, Doctor Who, getting ready to show the public a great viewing session of the night sky. Photo taken by Ted Finch

Back to space

The same explanation can be used when speaking of the luminosity of the three stars in our Summer Triangle. Astronomers know that Vega clearly is more luminous compared to Altair, because it's situated at a greater distance from us. Altair is just 17 light-years away, while Vega is 25. So, the light you see from Vega now started on its journey to Earth back in 1978; from Altair we're looking at light from 1986. As compared to our Sun, Altair is about 1½ times larger and nine times brighter. Vega, however, is more than three times larger and 58 times more luminous. But both Vega and Altair pale in comparison with Deneb, one of the greatest supergiant stars known. Deneb is 1,467 light years from Earth; its is more than 85,000 times that of our Sun. Astronomers utilize absolute magnitudes for the stars. This is the brightness that a star would have if all the stars were placed at the same distance from us. That distance is equal to 10 parsecs, or 32.6 light years.

Trading places

Were we able to move our Sun out to this distance, it would appear to shine at a paltry magnitude of +4.9, meaning that it would appear as a moderately faint star; most people would need a sky chart in order to identify it. Altair would appear to shine at magnitude +2.1, just a trifle fainter than Polaris, the North Star. Vega would glow at magnitude +0.6, just a little brighter than Altair appears to us. But Deneb would appear absolutely dazzling. Shining at magnitude –7.5, it would be readily visible both night and day, and appearing nearly 13 times brighter than Venus!

See JARGON, p. 13

-JARGON, cont'd. from p. 12

But because its light takes nearly 15 centuries to reach us, Deneb merely appears in our summer sky as a fairly conspicuous but by no means particularly notable star. Which only goes to prove that even in astronomy, perhaps especially in astronomy, looks can be deceiving.***

FLAGSTAFF FESTIVAL OF SCIENCE 2003

by Bonnie Stevens 928-527-3344

Science Erupts this Fall in Flagstaff (Flagstaff, Ariz.). The Flagstaff Festival of Science, one of the longest running science festivals in the country, is currently planning its 15th season, which runs September 26 through October 5. As Flagstaff is situated within a volcanic field of more than 800 craters, the 2003 Festival theme, Science Erupts!, will highlight the volcanic activity that shaped northern Arizona. The Shoemaker Keynote Presentation will be delivered by volcano expert and geologist Wendell Duffield. After decades of chasing fiery lava flows around the world, exploring dark lava tubes that snake beneath the earth and studying the steam from searing magma for its geothermal energy potential, Duffield will share his spectacular journeys, dramatic pictures and hard-learned lessons with Flagstaff, 7 p.m., Friday, Sept. 26 in Northern Arizona University's Ardrey Auditorium. The 10-day Festival will also offer opportunities to explore geologically interesting sites such as Red Mountain, a highly unusual basalt cinder cone; Lenox Crater, an ancient cinder cone that offers views to examples of a variety of volcanoes in the area; Grand Falls, a spectacular waterfall created by lava damming the canyon of the Little Colorado River; and Lava River Caves, underground passageways caused by flowing molten rock. In addition, the Festival will explore volcanic activity on Io, one of Jupiter's moons, and fascinating volcanic features elsewhere in the universe. Adventures in archaeology, geology, ecology, meteorology, astronomy, medical technology and much more will be offered, as well. The Flagstaff Festival of Science is designed to promote science awareness and enthusiasm in and about northern Arizona. All activities are FREE .Supernova Friends of the Festival include the City of Flagstaff, W. L. Gore & Associates, the Coconino National Forest and Northern Arizona University. For more information, log on to http://www.scifest.org, or contact the Flagstaff Visitor Center, 1-800-842-7293.***

FIRST STARS HAD NO PLANETS

by Dr David Whitehouse, BBC News Online science editor
received from Steven Saline

The first stars to form in the Universe had no planets. Only later generations of stars, that contained more metal, were able to have planetary companions, according to new research. To reach this conclusion, astronomers looked at 754 nearby stars like our Sun. Some of the surveyed stars had planets but most did not.

The results showed that the more iron and other metals there are in a star, the greater the chance it has a companion planet. The implication is that planets did not form around the metal-poor stars that formed when the Universe was very young. "Stars forming today are much more likely to have planets than early generations of stars," says astronomer Jeff Valenti. "It's a planetary baby boom."

'Under-appreciated stars'

Following the discovery of the first extrasolar planet in 1992 - about 100 stars are now known to have planets -

See STARS, p. 14

MR. SPOCK'S LOGIC PUZZLE

The Great Space Race

Five pilots are competing in the Great Space Race. Unfortunately, they have all forgotten which rockets they are to pilot and which suits they are to wear. Can you figure it out for them?

1. Pilot #3 recalls a saying about something and something else making green that is supposed to help him remember which rocket and suit is his.
2. The pilot in the black suit didn't have the first or last number and is not piloting the blue rocket.
3. Only one pilot is wearing the same color as the ship he is to fly. It is not pilot #2 or #4.
4. Pilot #5 is not piloting the red rocket and is wearing neither the yellow suit nor the white suit.
5. Pilot #4 wears the red suit but doesn't pilot the black rocket.

	Black Suit	Blue Suit	Red Suit	White Suit	Yellow Suit	Black Rocket	Blue Rocket	Red Rocket	White Rocket	Yellow Rocket
#1										
#2										
#3										
#4										
#5										
Black Rocket										
Blue Rocket										
Red Rocket										
White Rocket										
Yellow Rocket										

Answer in Next Issue

#1 _____ Suit, _____ Rocket

#2 _____ Suit, _____ Rocket

#3 _____ Suit, _____ Rocket

#4 _____ Suit, _____ Rocket

#5 _____ Suit, _____ Rocket

Astronomer #1: So anyway the cop pulls me over and asks if I realized that I had just run a red light. So I said that I did not see the light as being red, because it must have blue-shifted as I was approaching it. **Astronomer #2**: And he let you go? **Astronomer #1**: No. He gave me a speeding ticket instead.

-STARS, cont'd. from p. 13
astronomers noticed that stars rich in metals were more likely to have planets. Iron and other metals are created by nuclear reactions inside stars and subsequently scattered into space by stellar explosions. This means that stars with metals were extremely rare in the early history of the cosmos. Over time, however, each successive generation of stars became richer in metals, increasing the chances of forming a planet. The new survey of metal abundances in stars by Debra Fischer of the University of California, Berkeley, and Jeff Valenti of the Space Telescope Science Institute, is the first to cover a statistically large sample of 61 stars with planets and 693 stars without planets. "People have looked already in fair detail at most of the stars with known planets, but they have basically ignored the hundreds of stars that don't seem to have planets. These under-appreciated stars provide the context for understanding why planets form," says Jeff Valenti. "We now know that stars which are abundant in heavy metals are five times more likely to harbour orbiting planets than are stars deficient in metals. If you look at the metal-rich stars, 20 percent have planets. That's stunning," says Debra Fischer.

Heavy metal stars

"Whether a star has planetary companions or not is a condition of its birth, those with a larger initial allotment of metals have an advantage over those without, a trend we're now able to see clearly with this new data," Fischer adds. It has been suggested that metals allow dust, rocks and eventually proto-planets to form around new stars. Since the young star and the surrounding disc of dust and gas would have the same composition, the metallicity observed from the star reflects the abundance of raw materials, including heavy metals, available in the disc to build planets. "These results tell us why some of the stars in our Milky Way galaxy have planets while others do not," says Geoffrey Marcy of the University of California, Berkeley. "The heavy metals must clump together to form rocks which themselves clump into the solid cores of planets." ***

MARS OBSERVING SESSION

by Christine Shupla,
Arizona Science Center Planetarium Director

We've decided to hold a free observing session here in Heritage Square on August 27th for all those folks who would like to see Mars. I realize that plenty of club members may be out someplace nice and dark that night, but if anyone would like to join us here, we'd love to have them! We're letting folks know that the observing session will be from 7:30 to 9:30 pm, although I don't expect Mars to be visible until about 8 pm (rough estimate). The science center lobby and restrooms will be open, but the rest of the science center will be closed. John Stanley is doing two articles on the Mars close approach; the first will be coming out soon, and the other will be on August 26th. Both will mention the observing session here. Please let me know if any of your club members will be able to join us!***

May PAS meeting, Richard Guthrie and Ed Garbero talk while Sam Insana enjoys a snack.

DUES ARE DUE VERY SOON

October 31, 2003 Deadline

At the Lunar Eclipse Star Party at the Arizona Science Center May '03, Adam sets up his telescope for this awesome event.

Yes, it is time to think about renewing your PAS dues, once again. And this time you can sign up as a family. One newsletter will be sent to the family, one per address. So, if you have a husband or a wife, and children living at home, you can include them in your membership. They can then use your PAS membership card to get discounts around town. Their names will be included on your membership card (one card given out per household but all names listed on it). Family membership only includes the immediate family, one household worth. So, for example, Sam Insana may wish to do a family membership which would include Vera and Frank as well. Get those dues in to me ASAP as not to be left out of the PAS LOOP.***

OZONE LAYER SHOWS SIGNS OF RECOVERY

NASA's satellites find loss is slowing

by Mike Toner
from the Arizona Republic

After two decades of declining ozone levels, NASA reported the first signs that the Earth's atmosphere may be on the mend. "Ozone is still decreasing but just not as fast," said Mike Newchurch, of the University of Alabama, Huntsville, in announcing what researchers say could be the first stage of an ozone layer recovery. Newchurch, who headed the study, said the rate of ozone loss in the upper stratosphere appears to have begun slowing in 1998, a decade after industrial nations agreed to halt production of most ozone-destroying chemicals. Until then, ozone, a molecular form of oxygen that shields Earth from harmful ultraviolet radiation, had been decreasing steadily by about 8 percent a decade in a trend that has stirred scientific concern about increases in skin cancer and damage to marine ecosystems. Holes that form each spring in the ozone layer over the polar regions have been virtually devoid of the gas. Last year's (2002) ozone hole over Antarctica, however, was one of the smallest in several years. "We are still decades away from total ozone recovery," Newchurch said. But he and fellow researchers say the recent changes detected by NASA satellites provide encouraging signs that concerted action can have an impact on global problems. "This is really a very nice story," said Joe Zawodny of NASA's Langley Research Center in Hampton, Va. "The scientific community identified ozone depletion as something that was a threat to all of us, the international community believed them, and now we are beginning to see the results of their actions." Since major industrial nations agreed to cut production of ozone-destroying chlorination compounds, the level has dropped from more than 1 million tons a year to less than 50,000 tons.***

YEAR IN SPACE CALENDAR

Terri will be collecting orders for the 2004 Year In Space Calendar. Last year was our best year for orders and I'd like to top it this year with a bigger order. Remember, the more calendars we order the bigger and better our savings will

See CALENDAR, p. 15

-CALENDAR, cont'd. from p. 14

be. I believe we got them each for $7.95 last year. Let's try to get them cheaper this year. If you are interested in getting a calendar, let Terri know either by email, phone, or at a PAS meeting or event. We want to place the order around Oct 31 to be assured we receive them by Christmas. They make awesome gifts. Ask Terri to see an example if needed. She lives out of the one she has and enjoys it daily with its large format photos of deep space, a new one each week.***

EARN A FREE MEMBERSHIP TO PAS

Remember, besides turning in aluminum cans to get that free membership, get five of your friends to join PAS (put your name as the referral at the bottom) and earn a FREE Membership to PAS. It's easy and fun!***

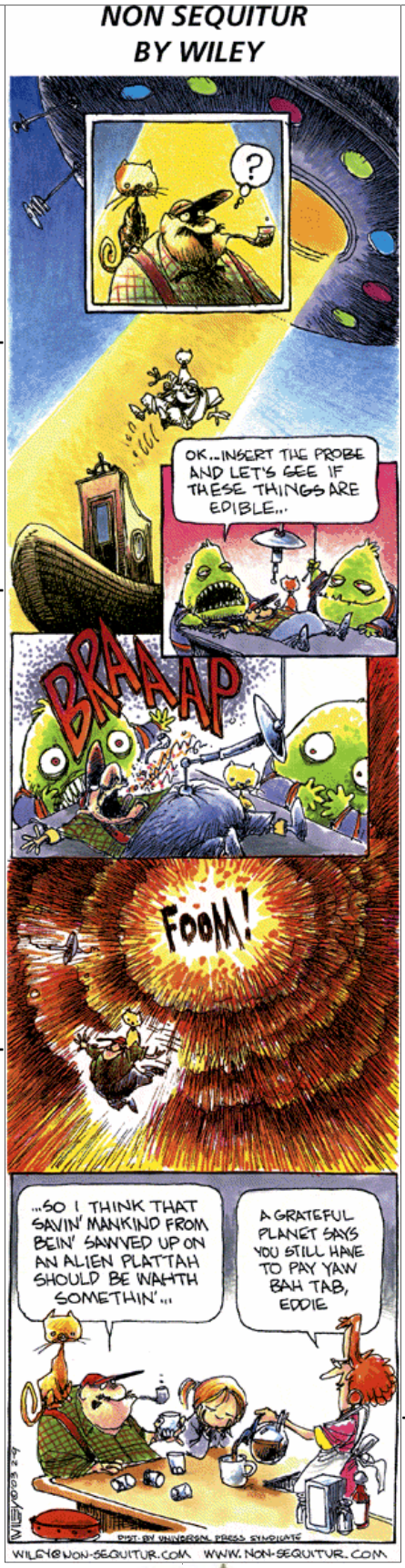
ADVERTISE FOR FREE IN PASTIMES

Do you have a business that would like a little extra advertising for no charge? It is so simple you won't believe it. Create an ad, give it to Terri, and offer PAS members some kind of discount or deal for using their PAS membership card. It is that simple. For example, if you go to Salah's ALL IN ONE store, he will give PAS members 10% off anything in his store. That's an awesome savings for PAS members, and every 2 or 3 months, his store gets mentioned throughout the year in PAStimes as a PAS partner. Do it today.***

THE MEETING OF THE MINDS

July 31, 2003 Review

We had a good turnout at the Officer's Meeting/ Meeting of the Minds held at Perkins from about 7pm to 10pm. It was a longer than normal meeting because we had a lot to discuss since the summer was already mostly past us. There will be one more meeting prior to the September PAS meeting which will be on August 29th and held at Mark's home at 7pm (for address call Mark at 623-435-5454 if you can attend). Topics for this meeting will be 1) ideas on fund raising, 2) fun things to do at the PAS meetings to draw more attendance, 3) Possible new Raffle ideas and more. We can use your input, so if you can attend, please do. In attendance, and appreciated for attending were Mike Marron, Jerry Belcher, Mark Stephenson, Matt Kohl, Ed Garbero and the Finches. Several of us ate dinner while we discussed the situations at hand. Below you will find some of the results of the discussion. The September Star Party at the Lake will be a HOT DOG COOKOUT. Bring a meat, doesn't have to be dogs, and a dish to share. Try to arrive a few hours prior to sundown so you have plenty of time to munch. It has been voted in and approved to have a $30 membership added to the membership form for those who have families who want to be included in the activities. We have unofficially (meaning it has to be voted in at the September meeting) had Mike Marron become our new P.R. Director, and Kevin Harcey and Ed Garbero would like to be Assistant P.R. Directors. That will become official at the September meeting, but in the mean time, they will be assisting the Editor in contacting the resorts to which we sent a flyer and brochure about PASTIMES STAR TOURS, in hopes of getting some paid observing sessions from them. Mike will be following up and making sure they received those items, and reminding them we exist would like to help them show their customers the night sky. We decided, collectively, that the PASTIMES STAR TOURS group should, individually, make a collection, or have books on hand, at those star parties, to share information about the object being viewed. The format for these events will be that each person will choose, announce, and stay on one object per night (or till another object is needed) so that no two scopes are on the same thing at the same time. Adam and Terri will be coordinating this part of it. Thus, once set up, chose your object and let us know so we can avoid doubling up on one object in the night sky. Smaller scopes in attendance will get first pick, because they know their brightness limit, example: Don Boyd's scope shows the Moon really well, so he would get to be on the Moon all night. Whereas Terri's scope loves to see Jupiter and she has filters to enhance the view, so she'd stay on Jupiter all night (or till the object left the sky or became too distorted to show and be proud of). But, the information part is that what ever object you are on, you are then responsible for sharing info about that object throughout the night. Books are all right to bring, or make 3X5 cards and keep them with you, on the more popular objects. The over all meeting was interesting and we had a great time seeing Mike's newest photos of his parent's observatory in which they renovated it recently and added gargoyles. Photos may be available in future issues of this newsletter.***



VIEW MARS AT OPPOSITION: SEPTEMBER PAS MEETING

We are making plans to have an exciting September PAS meeting. For this meeting you will want to: **1)** Bring your scope, **2)** Bring many, many, many friends, **3)** Bring a snack to share (cookies, candy, etc.), **4)** It will be Mars sharing and viewing night, so bring photos you've taken and pictures you've drawn or

See SEPTEMBER, p. 16

-SEPTEMBER, cont'd. from p. 15
collected of Mars to share (Show & Tell), **5**) Bring drinks to share, as well. Canned pop or ice tea makes a great way to share without cups (if cups are needed call Terri prior to the meeting to let her know to grab some), and be there as close to 5:30 as possible. Also, wear your PAS t-shirt if you have one. We will be opening this year with an observing session of Mars right outside our meeting room, plus some more interesting things.

Special Offer: We are offering to anyone who attends the September PAS Meeting on September 4th, a discount on PAS T-shirts to clear out our recent inventory. We will have the Earth, Symbol and Sun T-shirts available at the cost at $13/shirt for the September meeting only (A savings of $2 per shirt). Help us reduce our current supply so we can create and have available new T-shirts in the near future. Please arrive at 6:30, if possible, for this Special Meeting.***

MARS, CLOSER THAN EVER IN HISTORY

by Blaine P. Friedlander Jr.
received from Steven Saline

Turn off the television, step outside and look eastward: Mars is back and it's better -- and closer -- than ever. Closer, in fact, than at any time in recorded history. Officially, the red planet's closest approach -- about 34.6 million miles from Earth -- will take place Aug. 27 between 5:53 a.m. and 5:54 a.m. EDT, when the planet will be low on the southwestern horizon says Geoff Chester of the U.S. Naval Observatory. Then our neighboring planet reaches opposition on Aug. 28, which means that Earth will be exactly between the Mars and the sun. Mars reaches perihelion, or its closest approach to the sun, on Aug. 30. Astronomers call this event a perihelic opposition. Add all of this up and sky gazers get an up-close, full-face planetary view. Mars is going to be spectacularly bright -- the brightest Mars you and any of your ancestors have ever seen -- at negative 2.9 magnitude, making it easy to see even from light-polluted urban areas. In the constellation Aquarius, Mars can be found in the east-southeastern sky. It now rises at about 10:15 p.m., and it will cross the meridian, about 38 degrees above the southern horizon, at about 3:20 a.m. By mid-August, Mars will begin rising an hour earlier. At the end of the month, this fabulously bright planetary neighbor rises in the east-southeast at around 8 p.m. Mars now has the sky all to itself until Saturn rises at about 3:30 a.m. You can find the ringed planet in the constellation Gemini, high in the eastern sky before sunrise. Venus and Jupiter are hanging out with the sun, making them difficult to spot.***

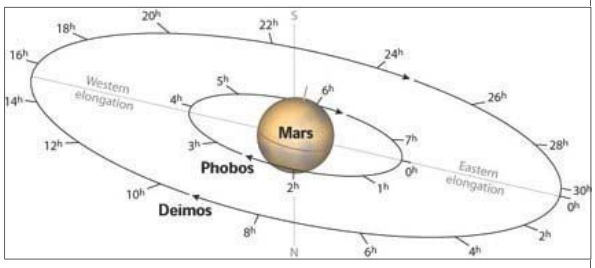
CLOSE ENCOUNTER WITH MARS

received from Susan Henson

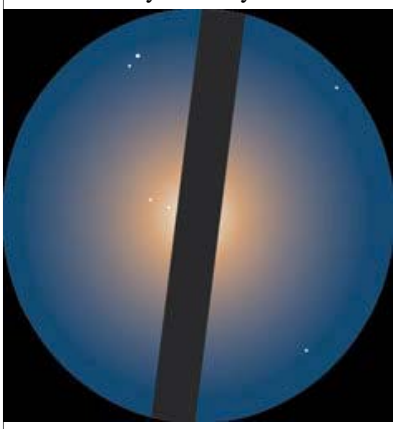
Never again in your lifetime will the Red Planet be so spectacular. During July and August Earth is catching up with Mars, an encounter culminating in the closest approach between the two planets in recorded history. The next time Mars may come this close is in 2287. Due to the way Jupiter's gravity tugs on Mars and effects its orbit, astronomers can only be certain that Mars has not come this close to Earth in the last 5,000 years but it may be as long as 60,000 years. The encounter will culminate on August 27th when Mars comes to within 34,649,589 miles and will be, next to the moon, the brightest object in the night sky. It will attain a magnitude of -2.9 and will appear 25.11 arc seconds wide. Mars will look similar as the full moon to the naked eye at a modest 75-power magnification and will be easy to see. At the beginning of August, Mars will rise in the east at 10:00 PM and reach its azimuth at about 3:00 AM. By the end of August, when the two planets are closest, Mars will rise at nightfall and reach its highest point in the sky at 12:30 AM. That's pretty convenient when it comes to seeing something that no human has seen in recorded history. So, mark your calendar at the beginning of August to see Mars grow progressively brighter throughout the month. Share with your children and grandchildren. No one alive today will ever see this again.***

THE MARTIAN MOONS IN 2003

by Roger W. Sinnott and Adrian R. Ashford
from SkyAndTelescope.com



Have you ever seen Mars's moons, Phobos and Deimos, in your telescope? From July through September 2003, conditions for glimpsing the fleet orbs are as good as they ever get. Just don't expect to have an easy time of it! Your chances of success go up the closer you observe to August 27th — the magical date of Mars's closest approach to Earth on nearly 60,000 years. Deimos is then as bright as magnitude 11.6, and Phobos is even brighter at 10.5. Either moon would be a cinch to spot in a 3-inch telescope, if only brilliant Mars were not so close to them in the sky. It's always best to try for the moons near an eastern or western elongation (maximum separation) from the planet. At such times Deimos can be found three Mars diameters from the planet's limb, and Phobos one diameter from the limb. Phobos may be physically larger and brighter than Deimos, but Mars still outshines it by 200,000 times, and that makes this inner moon much harder to discern. Unfortunately, the early observers' trick of putting Mars just outside the field of view does not work well with today's eyepieces, which tend to have much wider apparent fields than those of yesteryear. The moons themselves would be way off to the side, near the same edge of the field hiding Mars. What you really want is for Mars to be near the field's center but hidden behind a small obstruction, leaving only the moons as sharp pinpoints of light. This can be done with an occulting bar that extends at least halfway into the field, or perhaps completely across it. As far as we know, you can't buy an occulting bar. But a temporary one is easy to contrive from a piece of a wire or a narrow strip of aluminum foil. Most eyepieces have a field stop or circular opening in a metal disk that defines the focal plane. The idea is to tape or clamp the bar in contact with this field stop, causing the bar to appear in sharp focus when you look through the eyepiece. A fuzzy bar is no good for hiding Mars. Since



See MARTIAN, p. 17

-MARTIAN, cont'd. from p. 16

the moons lie east or west of Mars at their greatest elongations, turn the eyepiece so the bar runs north to south. "I've found that a deep-blue or violet Wratten gelatin filter works equally well, if not better," wrote contributing editor Stephen James O'Meara in his advice to observers two years ago, when Mars was almost as favorably placed as in 2003. "Trim the filter to a semicircular shape and mount it in the eyepiece's focal plane so it masks half the field of view. Since Mars will shine dimly through this mask, you can more easily judge the distance and direction from the planet where you should look for each moon. Keeping the planet behind the mask is also easier, especially if the telescope has an imperfect drive or no drive at all." All observers agree that high magnification, excellent seeing, and very clean optics are essential for glimpsing the moons. But a high-power eyepiece has the smallest lenses and other parts, greatly complicating the installation of a homemade occulting bar. An easier option is to add one to a low-power eyepiece, then team it up with a Barlow lens to boost the magnification.***

STAR PARTY AT THE GRAND CANYON 2003

by Leah Sapir

Volunteers came to the Grand Canyon with their telescopes from Virginia, Texas, California, even Hawaii. Photo taken by Leah Sapir

The 13th Annual Grand Canyon Star Party was held this year on June 21 to 28. In past years this event has been held in early June; but Dean Ketelsen, who organizes this wonderful event each year, decided to hold it this time towards the end of June, when school kids are on vacation and more of them would be able to participate. And, in fact, among the tourists who came to view the sky through our telescopes, there were a lot of families with kids. Although most of the volunteers were from Arizona, there were also a lot who came from other states just for the star party. For example, one couple came all the way from Virginia, and this was their third time participating in the GCSP. Others came from Colorado, Nevada, Texas, California, and Hawaii. Some of the volunteers (like myself) were there for the first time, and others had participated 3, 4, 5, even 10 times. The volunteers from Arizona came from Phoenix, Tucson, Sedona, and other towns. There were even several members of the High Desert Astronomy Club of Kingman. Shirley Fieker of HDAC told me that their club has 40 members, and she thinks that at least 8 or 9 were at the GCSP. (For more info about HDAC, you can contact Shirley at fieker@ctaz.com)I know that at least two members of PAS participated - besides myself, I also saw Adam Bloomer there. Other Arizona astronomy clubs were also represented. There were scopes of all sizes, from binoculars and 85 mm scopes to 12", 15", 18", etc. I think Dennis Young had the record for both largest (his 28" of course) and one of the smallest (he had a 90 mm refractor there too). On one evening I counted 36 scopes and 5 pairs of binoculars, but I think that on the weekends there might have been more. Barry Peckham from Hawaii showed some of the large-but-portable telescopes he designed. It seems that in Hawaii, you can't just jump into a car like we do in Phoenix and drive out to a dark sky site - because the dark sky sites are on other islands, so you'd get pretty wet if you did that! (and your scope wouldn't feel too good either…) Instead they need to fly (with their telescopes!) to the other islands using commercial airlines - and therefore there is a need for large-but-portable scopes. (not a bad idea on the mainland either!) Barry calls his models the "Litebox Travelscope", and you can read more about it on his website - http: // www.litebox-telescopes.com. One of the telescopes he displayed had a mirror made by Pierre Schwaar. Also interesting was the "couch-potato telescope mount" . Actually it is not a telescope but a mount for binoculars, on a rotating base, with a reclining beach chair, designed by Sim Picheloup of Houston. You can sit back in the reclining chair, turn in any direction, and adjust the binoculars to any height or angle. Sim's brochure didn't mention a website, but I did find some reviews (and pictures) of his invention by entering the words "picheloup telescope" in my favorite internet search engines (google, yahoo, etc) Jane Houston Jones and her husband, Morris "Mojo" Jones, represented the "San Francisco Sidewalk Astronomers", who dedicate their time and efforts to bringing knowledge of astronomy to the general public. As they describe it in their brochure and website: "We stop people on sidewalks and let them see the craters of the Moon, the moons of Jupiter, the rings of Saturn, or the spots on the Sun. For just a moment, they have a personal connection with the universe around them, and sometimes life seems a little better after that." You can see their very interesting website at www.sfsidewalkastronomers.org. Most of the tourists didn't come specifically for the star party. For the most part, they were just visiting the Grand Canyon, heard about the star party, and decided to stick around to see it. We met people from almost every state and a few foreign countries too. And it was a really great feeling to show people things that they'd never seen before. Even something "simple" like Albireo brought "oohs" and "ahhs" when I pointed to it in the sky, and explained to people that the two-color double they had just seen in my telescope was that faint little star halfway between Vega and Altair. Each evening started with a lecture and slide-show presentation by one of the volunteers; and in the meantime, the other volunteers got their telescopes set up in the parking lot near Yavapai

See CANYON, p. 18

Dennis Young and his 28" telescope at the Grand Canyon Star Party. Photo taken by Leah Sapir

Dennis Young setting up his 28" telescope at the Grand Canyon Star Party. Photo taken by Leah Sapir

-CANYON, cont'd. from p. 17

Point. The first visible object after sunset was Jupiter, of course; gradually as the other stars came out, we were able to vary the objects that we showed. These included double stars such as Albireo, Alcor/Mizar, and Cor Caroli (also known as Alpha Canes Venatici); the double-double Epsilon Lyrae, and the three-color triple Omicron Cygni (with a little imagination it is red, white and blue); globular clusters such as M4, M5, and M13; galaxies such as M51 (the Whirlpool Galaxy) and M104 (the Sombrero Galaxy); open clusters such as M6/M7 (the Butterfly Cluster) and M11 (the Wild Duck Cluster); and nebulas such as M57 (the Ring Nebula), M27 (the Dumbbell Nebula), the Veil Nebula (including NGC 6992, 6960, and 6995, all in Cygnus), M16 (the Eagle Nebula), M8 (the Lagoon Nebula) and M17 (the Swan Nebula, also known as the Horseshoe or Omega Nebula). Barry-from-Hawaii mentioned that he likes to point out the difference in the shapes of the different globulars - M13 reminds him of a spider, with lines of stars coming out of it, but M5 reminds him of a rose, with little curved lines of stars around it. The other objects were beautiful, too. In some of the larger telescopes, M51 looked almost like its photograph in those glossy coffee-table books! And we also showed the tourists some nice things they could see without a telescope, such as the constellations and the Milky Way. Later in the evening, when the tourists started to thin out (and after the shuttle buses with their glaring headlights stopped running), we were able to look for other objects. One popular object was an asterism called "Stargate" - a triangle within a triangle, located near the Sombrero Galaxy, about 5 degrees from the upper left corner of Corvus. Another was the "Owl Cluster" located near Delta Cassiopeiae - with two large stars for eyes, and the rest of the cluster resembling an owl with outstretched wings. (I think it is NGC 457.) Dennis Young showed us Mars and Uranus in his 28" scope, and one participant managed to find Pluto. (But nobody found Mickey Mouse, sorry.) The first night I was there (Sunday) the skies were clear, but it was very cold and windy. On Monday night some clouds blew in and scared us a little - after coming so far, we didn't want to get clouded out! Luckily the clouds cleared up by the time it got dark enough to see the stars, but it was still cold and windy. I had brought a coat, but I hadn't thought it would be necessary to bring the rest of my "winter stargazing outfit" - gloves, hat, scarf, etc. - because after all it was late June! But if I'm able to go next year, I'll know better. The third night, Tuesday, we lucked out - clear skies, and not cold or windy. I stayed up late to search for lots of Messier objects, because it was my last night there. And in between searching for objects, just the view of the dark skies and the Milky Way was very beautiful! Of course the Grand Canyon is nice in the daytime, too. Even though I'd been there lots of times taking out-of-town family members to see our state attraction, this time I was able to go on various "ranger tours" where I learned a lot about the geology and fossils of the Grand Canyon, and about ancient Indian civilizations there. There were plenty of other nature tours and lectures, I just didn't have time for all of them! It was really great, and I enjoyed both the star-gazing and star-showing. Thanks to Dean Ketelsen for organizing this event!***

The Grand Canyon is beautiful in the daytime too. Photo taken by Leah Sapir

ARIZONA IN SPACE

from the Arizona Republic

Arizona's state universities have historically played a role in U.S. space exploration. Some of the involvement:

University of Arizona

- 1958-68 - Pioneer space program
- 1961-65 - Ranger moon program
- 1966-67 - Explorer lunar orbiter
- 1968-72 - Apollo manned lunar program
- 1964-present - Mariner programs to Mars
- 1995 - Camera and spectrograph project aboard the Endeavour studied shuttle glow and the upper atmosphere surrounding the Earth, including how solar energy is absorbed through it
- 1996-present - Mars Pathfinder
- 1998 - Two telescopes on board the Discovery
- 1998 - Lunar prospector

Arizona State University

- 1960s and '70s - ASU scientist Carlton Moore trains astronauts and evaluates moon rocks for Apollo program
- 1976-80 - Ron Greeley of ASU is science team member for Viking mission
- 1977-present - Greeley is imaging team member for the Galileo Jupiter mission
- 1990s-present - Several ASU astronomers are researchers on Hubble Space Telescope and the Chandra X-ray Telescope
- 1992, 1996, 2001, 2003 - ASU planetary scientist Phil Christensen is principal investigator for the thermal emission spectrometer (TES) for Mars spacecraft. In 1996, Mars Global Surveyor maps the mineral makeup for the planet, finding large beds of hematite, a mineral that normally forms in the presence of water
- 1999 - Laurie Leshin of ASU is science team member for Mars Polar Lander mission

Northern Arizona University

- 1993 - NAU receives $50,000 NASA grant to study evolution of dust storms on Mars and cloud belts on Jupiter
- 1995 - Geologist Paul Morgan helps prepare for NASA mission to anchor onto comet
- 1998 - NAU team finds evidence of smog in the atmosphere of Gliese 229B, a large planet beyond our solar system
- 2000 - Student astronomer Lori Levi discovers asteroid that could travel near Earth***

STAR PARTY IN BLACK CANYON CITY - MAY 2003

by Leah Sapir

On Saturday night, May 24, Barbara and Scotty Hartman hosted a star party at their home in Black Canyon City. The event started with a barbecue (that I missed, but I heard it was great!) and continued with sky viewing after dark. Barbara has a 10" scope, and Adam Bloomer was there with his

See BCC, p. 19

2003 - A MARS ODYSSEY

What: Mars viewing and Barbecue pot luck
When: Saturday - 8/30/03 from 4:00 pm to Midnight
Where: 19021 Oasis Dr, Black Canyon City

R.S.V.P.: Contact Barbara via phone at 623-374-5364 (leave a message), 480-948-8009 extension 307 or by email at AlyaSerpens@yahoo.com.

Map and driving directions upon request.

FOOD AND FUN

What to Bring: a main course to cook on the barbie, plus a side dish to share with everyone (make enough for 10 and we should have plenty), your telescope or binoculars, a chair, something to drink, a friend and anything else you may need. We will supply paper plates, plasticware, napkins and cold bottled water. Oh, and the gas grill, of course.

Set up of telescopes and equipment should be at 4 (so we have lots of sunlight left and you can get familiar with the surroundings). We should eat around 5 or 6, then clean up around 7. By then it will be sunset.

OTHER IMPORTANT STUFF

Even though the site is a fenced backyard, it is a rural desert setting. There may be wild animals and small desert creatures about. Also rocks of various sizes and thorny things, so please wear appropriate shoes, hiking boots, athletic shoes, or the like. No open toed shoes, flip-flops or high heals!

Also be aware that we have two large dogs that will be kept inside the house. Don't forget to bring a flashlight for each person in your group, as there will be no outside lighting.

MAP TO BARB'S
19021 OASIS DR, BLACK CANYON CITY

Follow the purple line to the pink dot.

North on I-17 to Exit 242 Black Canyon City
Left (*west*) over freeway, then
Right (*north*) into town
Take third left (*west*) up hill - Oasis Dr - there's a big sign by the turn
Gray house with green trim on the left (*south side of street*) at top of hill.
Second house from the end. 19021 Oasis Dr. 623-374-5364

-BCC, cont'd. from p. 18

10" scope too. Other guests included members of the Prescott Astronomy Club, and some of the Hartmans' neighbors. Barbara also organized a display in her garage with some really beautiful color handouts of pictures from the Hubble Space Telescope, articles about Mars, activities for kids, and other interesting things. By the time I arrived, after dark, the party was well under way, but there was plenty of time (and beautiful clear dark skies!) to see lots of seasonal objects. Barbara showed me an easy way to find M27 (the Dumbbell Nebula). Even "common" objects like the globular clusters M92, M4 and M80, or the Ring Nebula (M57) seemed a lot bigger and brighter in the large scopes and dark skies. Even in my own (6") scope I was able to locate a lot of Messier objects - M65 and 66 (galaxies in Leo), M51 (the Whirlpool Galaxy) and its companion, M27, M71 (a globular cluster in Sagitta, not far from M27), and various clusters and nebulas in Sagittarius - the Lagoon Nebula (M8), the Trifid Nebula and cluster (M20), an open cluster (M21) and various globular clusters (M22, M28, M54, M69, and M70). Even without a telescope, the view of the Milky Way was quite a treat - seeing the "steam rising" from the "teakettle" in Sagittarius. A good time was had by all, and we thank Barbara and Scotty for their hospitality! By the way, Barbara has a very beautiful website at http: // www.geocities.com/AlyaSerpens (named after one of her favorite double stars). Currently you can see pictures of the star party, info about viewing Mars, and a lot of info about other interesting objects in the sky. Thank you Barbara for organizing this - it's great!***

A 'FOCUSED' MISSION

UA Researchers' Reflight For Ill-Fated Lander In '99

by William Hermann
from the Arizona Republic

The University of Arizona's Phoenix Mission harkens back to a space disaster. UA researchers Peter Smith and William Boynton's mission is in some respects a reflight of the ill-fated Mars Polar Lander mission of 1999. The lander was equipped Smith's cameras and robotic arm and Boynton's thermal gas analyzer to measure the composition of Martian soil. But communications were lost with the Polar Lander as it began to enter the Martian atmosphere. Smith, Boynton and evidently NASA didn't want their equipment to go unused: hence their successful proposal to return to Mars. NASA official Jim Garvin, however, said the Phoenix Mission is the Polar Lander "with a difference." "We know more about what to ask now when we do the samples," he said. "We're going to ask more focused questions." Those questions were outlined in the Phoenix Mission proposal. "We propose to land at the high northern latitudes to follow up the exciting discovery of near surface ice by the Mars Odyssey team," the UA team said in its proposal. "This zone is one of the few places on Mars that presents the possibility of the periodic presence of liquid water as orbital dynamics change the regional climate." Arizona universities made up half the field finalists for the NASA grant: Arizona State University, the Jet Propulsion Laboratory in Pasadena, Calif.; and NASA-Langley were the other finalists. During the past several years, speculation has increased among scientists concerning the possibility of the existence of life on Mars. In February, ASU planetary geologist Phil Christensen and NASA announced that through analyzing images from the Thermal Emission Imaging System aboard the Mars Odyssey spacecraft he had found evidence of snow deposits with flowing water beneath them. And where water flows, life can exist, Christensen said. The Phoenix Mission soil analysis conceivably could confirm that life, at least in microbiological form, once existed on Mars. "Instruments sensitive to minute quantities of organic molecules will enable us to assess the habitability of the icy layer for microbial life, past and present," the Phoenix proposal said. Boynton said that in looking for samples, "we're going to follow the water. Water is an essential element for life having gotten started. We'll look for signatures of life in the compounds. Finding anything would be an accomplishment." Smith said the instruments wouldn't find "life itself." "We don't

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-MISSION, cont'd. from p. 19

claim we can find life itself, but we can find a place where life can live," Smith said. "We can find a cozy home for life but won't know if anybody is living in the home." Garvin said that one of the reasons that the Phoenix Mission was chosen was that it capitalized on discoveries made by Mars Odyssey. "They (the UA team) were very discovery responsive," Garvin said. "Odyssey has told us the greatest ice signature on Mars is near the polar cap," Garvin said. "Phoenix will carry improved instrumentation to ask where the ice came from and whether it contains the building blocks of life." Though disappointment ran deep at ASU when officials received word of losing the race for the project, they consoled themselves with their present vital role in the space program. "The fact that we have two instruments from Arizona State orbiting Mars on the Global Surveyor and the Mars Odyssey, and we have instruments aboard two craft bound for Mars, speaks well for our program," said ASU's Vice President for Research, Jonathan Fink. Geological sciences professor Laurie Leshin, who headed ASU's project, was both stoic and big-hearted about losing the mission to UA. "My team and I offer a hearty congratulations to Peter Smith and his team," Leshin said. "They were great competitors and they have a good mission." "Obviously, we are disappointed in not being selected, but we have a great team and it has been a fantastic experience getting to this point," Leshin said. "So, to paraphrase a possible gubernatorial candidate from California, 'We'll be back.' " Fink agrees. "In the future, we will build on the expertise Laurie Leshin has put together and wait for the next opportunity."***

DID SOMEONE SAY RAFFLE?

Reminder: At every PAS meeting we have a raffle for an item donated by a PAS member, guest, friend. The raffle begins prior to the meeting, $1/ticket or $5/6 tickets. It can be a new or used item, but must be in good shape, and can be used by someone in our group. We used to want only astronomy related items, but Sam Insana donated tickets to a game at the Bank One Ball Park, and that went over very well. Past items included books by David Levy donated by Leah Sapir, a Walkman donated by Mr. Telescope, as well as other interesting things. If you have something you wish to donate to the raffle, please bring it along. The money raised from the raffle goes to PAS and a receipt for the amount raised goes to the donator. We do this as a fund raiser for the club as well as for the fun of it. If too many items are donated at one meeting, some will be kept till the following meeting. All donators will be mentioned and thanked in the newsletters.***

UNIVERSE'S STAR TALLY: 70 SEXTILLION

from the Arizona Republic

Imagine all the stars littering the dark sky on a clear moonless night, miles from the glowing city - and multiply that number by more than a million million million. You would come fairly close to the total number of stars that can be viewed by the world's most powerful telescopes, according to an astronomical survey. There are approximately 70 sextillion - that's 7 followed by 22 zeros - stars in the known universe, a team led by Australian astronomer Simon Driver announced recently. That means there are more stars in the sky than there are grains of sand in every beach and desert on Earth. The astronomers made the calculation with observations from the Isaac Newton Telescope in Spain and the Anglo-Australian Telescope in New South Wales as part of a project known as the Two-Degree Field Galaxy Redshift Survey. First, they determined the density of galaxies in a strip about a thousandth the size of the entire night sky and then figured out approximately how many stars are in each galaxy. Using the results, they estimated the number of stars in the galaxies visible to the two telescopes.***

THANKS TO THOSE WHO SUPPORT THE ALUMINUM CAN DRIVE

Here are the results of our recent trip to the recycling center. We raised $26.03 for PAS. I want to thank all of our participants this time. Mike Marron donated 14 pounds bringing his total to 44 pounds. He isn't in the lead any more, but we hope he will keep trying. Ted Finch donated 5 pounds bringing his total to 26 pounds. Matt Kohl, who is now in the lead, donated 38 pounds this time bringing his total up to 50 pounds. The Finches donated 6 pounds to equal 20 pounds total. Adam Bloomer didn't donate this time but his total is 1 pound at the moment. Bruce Wurst donated 8 pounds and his total to date is 14 pounds. We had a donation by Don Boyd of 15 pounds and that's his total. Tim Steelman, a new donator, put in 11 pounds and that's his total. Ed Garbero donated 1/4 pound and Kevin Harcey donated 1/4 pound and that's their totals thus far. The race is on. With Matt Kohl in the lead, we don't' know who will be taking the Free Membership home with them the Fall of 2004. Don't stop now... let's all donate to the cause. Congratulations to Mike and Matt for top poundage and to everyone who is trying to help out by donating aluminum for the purpose of raising money for PAS.***

CLOSE-UP: BEST VIEW OF MARS IN 60,000 YEARS

from CNN.com
received from Steven Saline

Mars is getting ready for its close-up, with the red planet coming as near to Earth this month as it has in almost 60,000 years. Its closest pass will come on August 27 at 5:51 a.m. EDT (0951 GMT), when Mars will be less than 34.65 million miles (55.76 million km) away. The last time it came nearer was

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-CLOSE-UP, cont'd. from p. 20
around September 12 in 57,617 B.C. when Mars came about 25,000 miles (40,230 km) closer, at a distance of 34.62 million miles (55.72 million km) from Earth. "If Neanderthals had telescopes, they would have seen it a little bit better than we will on August 27," said astronomer Geoff Chester of the U.S. Naval Observatory in Washington.

Won't look much bigger

To backyard observers, Mars will be the brightest natural object in the sky except for the sun and the moon, Chester said in a telephone interview. Even though it will be close, it will not look much bigger than it usually does. "People are kind of all thinking that all you've got to do is go outside and you're going to see this big red blob that's half the size of the moon," Chester said. "That's not the case." What people will most likely see is a brilliant pinkish object dominating the southern sky. At that point, Mars will be the brightest thing in the heavens. Venus would have shone bright if it had been visible, but it will be hidden behind the sun when Mars comes closest to Earth. Mars will appear to be about the same size as a middling-sized crater on the moon, Chester said. To get an idea of how big Mars will seem at its closest, the typical thumb held at arms' length covers about one degree of the sky, or 3,600 arc seconds. The moon is about half a degree of the sky, or 1,800 arc seconds. Mars at its closest will appear to be 25.11 arc seconds -- only about one more arc second than its usual 24.

Even closer in 2287

Mars will get even closer to Earth on August 28, 2287 -- but still not as close as it did in the Neanderthals' time. "It is a marvelous opportunity to get people interested in astronomy and what you can see from your own backyard," said Stephen Maran, an astronomer and spokesman for the American Astronomical Society. "We hope that more and more people will get used to looking at the sky so they will be interested in efforts to cut down on light pollution." As Earth's next-door planetary neighbor, Mars has always been a subject of fascination. Recent NASA probes have sent back images suggesting water once flowed on or near the martian surface -- an exciting prospect for those curious about whether Earth-type life ever existed on Mars, since water is seen as a prerequisite for life on other planets. NASA selected the low-cost Phoenix probe as the first so-called Scout mission to Mars. Phoenix is expected to land on Mars in late 2008, in terrain suspected of harboring large quantities of ice within 1 foot (0.348 meter) of the surface, and then will analyze subsurface material, NASA said in a statement.***

HUBBLE SPIES BIG GALAXY GOBBLING LITTLE ONE

from CNN.com

A big galaxy is gobbling a tiny one, just as astronomers have long suspected, and for the first time there is photographic evidence of this kind of galactic cannibalism, snapped by the Hubble Space Telescope. The orbiting telescope captured the image of the gorging galaxy as part of a much larger picture of a long-tailed galaxy that has become known as the Tadpole. This photo was one of the first to be released last year after a new advanced camera was installed aboard Hubble. The Tadpole dominates the image, but the second-brightest object is a massive spiral galaxy seen in the lower left corner, with an apparent companion nearby that is seemingly linked to the bigger galaxy. U.S. and Australian astronomers were intrigued by this mismatched pair of cosmic objects, but the Hubble image alone was not enough to confirm that this was a case of a dominant galaxy feeding on a much smaller dwarf galaxy. To do this, they used the Keck Telescope in Hawaii, which was able to show plumes of stars streaming away from the dwarf galaxy's heart toward the big galaxy, the astronomers said in a statement. The galactic pair is located about 2 billion light-years from Earth. A light-year is about 6 trillion miles, the distance light travels in a year. Their findings were published in Science Express. The tiny galaxy is being ripped apart by the gravitational forces of the larger one, and the dwarf galaxy's stolen stars will wind up as part of a spherical halo surrounding the flattened disk of the larger spiral galaxy, the astronomers said.

Remnant trails of stars

The big galaxy will continue to transform its smaller companion for billions of years, said astronomer Duncan Forbes of Swinburne University in Hawthorn, Australia. "After a few billion years, it may be completely disrupted, leaving only a remnant trail, or relic stream or ghost, behind in the halo of the spiral," Forbes said in answer to e-mailed questions about his research. Astronomers who study how galaxies form and transform have reckoned that such interactions between galaxies would occur, but this is the first time that a Hubble image, enhanced by observations by the ground-based Keck telescope and with the help of computer simulation, has illustrated this phenomenon. There could be more discoveries, since Forbes and his team plan to use Hubble's Advanced Camera for Surveys next year to look at nearby spiral galaxies and globular clusters of old stars. "Our project is to study the globular clusters around spiral galaxies, but if there are any disrupted dwarfs present, we will see them," Forbes said by e-mail.

Taking place near Earth

In fact, cosmic cannibalism is taking place in Earth's general neighborhood, Forbes said. The Milky Way, which contains Earth, is currently interacting with both the Large and Small Magellanic Clouds, two nearby galaxies that are much larger than the dwarf Forbes and his colleagues studied. Another galaxy, called the Sagittarius dwarf, was discovered in 1994, but that dwarf is almost totally disrupted, and astronomers only detected it by its remnant trail of stars, Forbes said.***

ASTEROIDS NAMED FOR COLUMBIA ASTRONAUTS

from CNN.com

Seven asteroids circling the sun between the orbits of Mars and Jupiter are being named for the astronauts who died in the space shuttle Columbia accident, officials announced. Astronauts Rick Husband, William McCool, Michael Anderson, Kalpana Chawla, David Brown and Laurel Clark of NASA and Ilan Ramon of Israel died on February 1 when Columbia broke up while returning to Earth from a 16-day orbital mission. NASA's Jet Propulsion Laboratory in Pasadena, Calif. proposed naming the asteroids for the astronauts. The plan was approved by

-See COLUMBIA, p. 22

-COLUMBIA, cont'd. from p. 21

the International Astronomical Union and announced by the Smithsonian Astrophysical Observatory's Minor Planet Center, the officials clearinghouse for asteroid data.

Remembering sacrifice

The named asteroids were discovered by former JPL astronomer Eleanor F. Helin in 2001 using the Palomar Observatory near San Diego. The objects range in size from 3.1 to 4.3 miles in diameter. "Asteroids have been around for billions of years and will remain for billions more," Raymond Bambery, head of the JPL Near-Earth Asteroid Tracing Project, said in a statement. "I like to think that in the years, decades and millennia ahead people will look to the heavens, locate these seven celestial sentinels and remember the sacrifice made by the Columbia astronauts." There are more than 100,000 known asteroids, most of them orbiting the sun in a belt between the orbits of Mars and Jupiter. The largest, Ceres, is about 580 miles in diameter. Astronomers believe there may be millions of other asteroids, ranging from a half mile to many miles across.

Investigating the tragedy

The Columbia astronauts died when their spacecraft disintegrated during re-entry to the Earth's atmosphere. An investigation suggests that a hole was smashed through the heat shield on the craft's left wing when it was hit by foam insulation during launch. The extent of the damage was not discovered during the shuttle's mission. When the craft made its high-speed return to the atmosphere, the 3,000 degrees of heat from re-entry melted metal supports inside the wing and the whole craft broke apart, scattered debris over East Texas and western Louisiana. The three remaining space shuttles were grounded while the Columbia Accident Investigation Board studied the incident and prepared a report. That report is expected late this month (August). NASA officials have said after safety changes are made in the space shuttle system, the craft may start flying again in March or April.***

IT'S UNIVERSAL: THE LIGHTS ARE GOING OUT

by Robert Roy Britt, Senior Science Writer
from Space.com

Not enough stars are being born to replace those that are dying across the cosmos, according to a new study supporting previous claims that the universe is headed into darker times. Most of us don't need to worry, though. Our own lights will stop shining long before a truly noticeable change occurs universally. The new study examined 40,000 galaxies relatively close to our own Milky Way. For billions of years, there haven't been enough new stars turning on to replace the old ones that die and end their primary luminous phase. The research was done by student Ben Panter and Professor Alan Heavens at Edinburgh University, along with Raul Jimenez at the University of Pennsylvania. It will be detailed in an issue of the Monthly Notices of the Royal Astronomical Society. "Our analysis confirms that the age of star formation is drawing to a close", Heavens said in a statement. "The number of new stars being formed in the huge sample of galaxies we studied has been in decline for around 6 billion years."

Similar results have come from studies involving more distant galaxies that are seen as they existed way back in time. Then and there, star formation was found to be far more prolific than in closer, more modern galaxies. The new study used data from the Sloan Digital Sky Survey. It is the first to probe the concept by analyzing the entire light output of such a large number of galaxies, the researchers say. Young stars tend to be hot and blue, while older stars are cooler and redder. So the overall color of each galaxy was used to determine the state of star formation.***

HOW TO CHAT WITH E.T.

By Kathy A. Svitil
from Discover.com

If scientists ever detect a signal from an alien civilization and decide to answer, they will face the greatest conversational challenge in history: What should we say? At a recent workshop in Paris, an international gathering of artists and scientists offered ideas, all of which focused on expressing altruism. "To pretend that altruism is the best way to describe us would be ridiculous, but it is one of our highest ideals, and at times we even show signs of it," says organizer Douglas Vakoch, a psychologist at the SETI Institute in Mountain View, California. All of the proposed messages replace words with more universal concepts. For example: Vakoch suggests using three-dimensional computer animations to tell morality plays about risking one's life to help another. Aleander Ollongren of Leiden University in the Netherlands would reformulate Lingua Cosmica, a logic-based language first developed in 1960, to describe altruistic actions and their consequences. Diana Slattery of Rensselaer Polytechnic Institute in Troy, New York, proposes to communicate concepts like gentleness, nonaggression, and beauty through the dynamic interactions of wavelike, abstract signs. Richard Merritt of Luther College in Decorah, Iowa, envisions sending a message that decodes itself to produce three-dimensional human figures engaged in social interactions. The real question is whether aliens would have any idea of what we were saying. "At this point we don't have a good sense of whether even human beings could decode some of these messages," says Vakoch. He predicts that an actual response might take decades to construct, and he wants to start thinking about the process now: "This is an exercise in understanding human nature as much as it is about making contact with another civilization."***

It was a happy occasion at NASA; they had just made the scientific achievement of a lifetime. As they were uncorking a bottle of champagne, Dr. Oppenstein, the head scientist at NASA, asked everyone to be quiet as he had received a congratulatory phone call from the President of the United States. He picked up a special red phone, and spoke into it. "Mr. President," said Dr. Oppenstein, grinning broadly, "after 12 years of hard research and billions of dollars spent, we have finally found intelligent life on Mars." He listened for a second, and his smile gradually disappeared, replaced by a frown. He said, "But that's impossible ... we could never do it. Yes Mr. President," and hung up the phone. He addressed the crowd of scientists staring at him curiously. "I have some bad news," he said, "the President said that now that we've found intelligent life on Mars, he wants us to try to find it in Congress."

UPCOMING ASTRO EVENTS

Note: PAS events are marked as "PAS."

Aug. 23, PAS: Lake Pleasant Star Party. Let's have another potluck. This is the last summer potluck of this year. Let's make it a big and great one. There are no other star parties to get in our way, we hope. Bring your meat for yourself, and a dish to share, with drinks, plates, napkins, plasticware, chairs, tables, telescopes, and friends! Let's party, 2 hours prior to sundown which is 7:06, so arrive around 5:00pm. Visible planets are Mercury and Mars; High Power Rocket Launch. Contact Jerry for more info on Launch

Aug. 26-27, Night: Mars is nearest Earth, appears 25.1 arc-seconds in diameter - closest in last 73,000 years! At opposition night of August 27-28.

Aug. 27, Arizona Science Center Mars Observing Event, 7:30pm to 9:30pm in Heritage Square. See article this issue

Aug. 28, Mars Closest to Earth

Aug. 30, PAS: Lake Pleasant Cloud Date; 2003 Mars Odyssey in Black Canyon City 4pm to Midnight & potluck. See ad in this issue

September 2003 (Summary from Year in Space Calendar 2003) After several weeks of hiding, Jupiter emerges as a morning star, arising almost four hours after Saturn. By month's end it is low in the east just before sunrise, about 7 degrees above elusive Mercury. A slim crescent Moon forms a triangle with the pair on the morning of the 24th. Saturn rises around midnight, so it is well placed for viewing high in the east-southeast before sunrise. Bright Mars is rising before sunset; when night falls it is easily visible low in the southeast in Aquarius. A nearly full Moon passes close to Mars on the evenings of the 8th and 9th.

Sept. 1, October PAStimes submissions deadline

Sept. 4, PAS: PAS Meeting: Mars Day, 7pm. Bring photos, drawings, show & tell of Mars & Telescopes for viewing, Wear PAS T-shirts - bring snacks & drinks to share; Speaker: TBA

Sept. 9, Morning: Mars 1/2 degree to upper left of crescent Moon; both set in WSW about 5:00am.

Sept. 15, Printing, mailing & Emailing of the October Newsletter

Sept. 19-20, Night: Saturn 5 degrees to right of last quarter Moon; both rise in ENE about midnight.

Sept. 20, PAS: Lake Pleasant Star party - sundown is 6:28pm Visible planet is Mars.

Sept. 23, Fall Equinox (3:47am MST). Sunrise straight east (6:17am, azimuth 89.5 degrees), sunset straight west (6:24pm, azimuth 270.3 degrees).

Sept. 24, Morning: Jupiter, Mercury and thin crescent Moon make triangle within 7 degrees, low in E before sunrise.

Sept. 26-Oct. 5, Flagstaff Festival of Science. See article this issue. More info on events: http://www.scifest.org

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

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

October 2003 (Summary from Year in Space Calendar 2003) Saturn continues to rise earlier each day, and it 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 is also rising earlier each day, and 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, November PAStimes submissions deadline

Oct. 2, PAS: PAS meeting, 7pm, Topic: TBA

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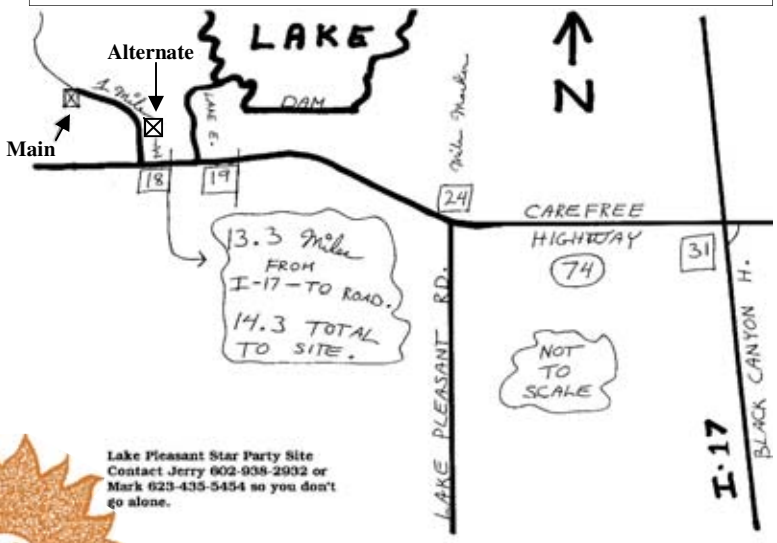
Q: Where do astronauts park their spaceships?
A: At parking meteors

Q: Why did the boy become an astronaut ?
A: Because he was no earthly good !



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

PHOENIX ASTRONOMICAL SOCIETY

Terri & William Finch
PAStimes NL Editor & HP Editors
10828 N Biltmore Dr #141
Phoenix AZ 85029 USA

PAStimes
Sept. 2003 Issue

BRING A FRIEND

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THIS ISSUE:

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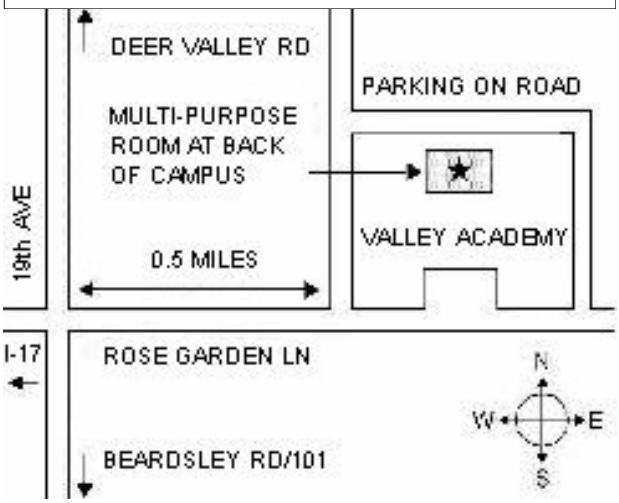
Area code is 602 unless otherwise noted.

P.A.S. Meeting Location

Valley Academy Charter School
1520 W. Rose Garden Ln



Submissions to **PA$times** should be received no later than the 1st of the month for publication in the next issue. Email submissions received at: **PA$Editor@yahoo.com** or **CoEditorMatt@yahoo.**com. Items arriving too late for an issue will be printed in a future issue (if applicable). PAStimes is produced monthly by Terri & William Finch and Matt Kohl. It is distributed to the members, friends & guests of the **Phoenix Astronomical Society**. It is also circulated to business, teachers, and organizations relating to astronomy. For needed changes to the **PA$ Homepages** contact William or Terri Finch, or Matt Kohl. **KCH Cartoon** is by Kevin C. Harcey. Extra Editing & Newsletter Layout by Matt Kohl (MK). Meeting & Star Party **photos** taken & **Editorial** articles written by Terri Finch (Rip). Additional materials from sources as noted. For membership info contact Terri Finch or Adam Bloomer. For newsletter submissions or to get on the mailing list (2 months free) contact Terri Finch. PAS is a nonprofit organization with the purpose of educating the public, and sharing a great hobby! If you receive a duplicate copy of this Newsletter, please pass it on to a friend and inform the Editor. **CLEAR KIE & HAPPY $TAR GAZING!!!**