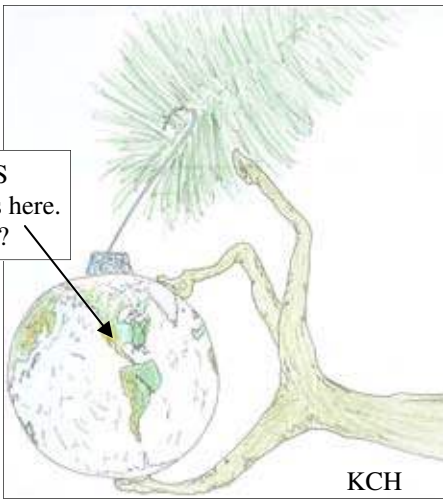


The PAS
Social is here.
Are you?



KCH

Volume LVII, Issue VI

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

NO NEWSLETTER NEXT MONTH

I bet that got your attention. Well, let me explain. Matt and I decided that this issue that you have just received will be a double issue. What happened is that we are passing the Feb issue out at the Social. That's on Jan 22. If we were to make the next issue, the Mar issue, it would be passed out at the Feb 3 meeting which is only 2 weeks later than the Social. So, we decided to do a combined issue, and this also saves PAS a few cents per stamp because we only mail out one issue, with 2nd ounce postage, saving the club 14 cents per newsletter that has to be mailed. That may not be much when it is thought of all by itself, but after you have 10 newsletters that's \$1.40. Now it looks like a lot, and I have more than 10 issues we mail out each month. So, don't look for a newsletter at the February meeting because you already picked it up at the Social. Now, I will wait till the February meeting to mail this out, so if you don't get it at the Social, you can pick it up at the February meeting instead. I won't be mailing it till after the February meeting. I do hope everyone can make it to the Social. See you there, and see you at the Feb meeting also.***

CHILDREN'S HOSPITAL STAR PARTY

Jerry has announced that we will be doing the next Children's Hospital star party on March 17, St. Patrick's Day, and he wants as many volunteers as can make it. He asks that we bring tables to set up little displays and dress in GREEN. March 17 falls on a Thursday and he would like everyone who can help out, please do. The Children's Hospital is located at 20th Street and Thomas and everyone is welcome to assist in this awesome star party. The kids will love it and so will you when you see their faces light up from showing them something they may not otherwise get to see. Come enjoy the fun!***

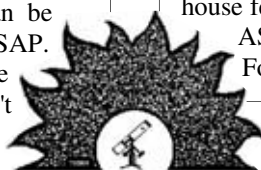
TREASURY NOTICE

It is with sadness that I must announce that our Treasurer has resigned from his position, effective 1/12/05. Richard wishes it to be known that his resignation is not due to any one in the club but rather a difficult situation within the treasury. The Treasury position then falls upon the President until a new Treasurer can be found. If you'd like this position, please let Mark know ASAP. Now, the other thing I wish to announce along these same lines is that Richard feels that it is best if he doesn't continue to be a PAS member or even involved in any of

the PAS events. This is not what PAS wants. We want Richard to stay part of our group whether he is a current Officer of the club, or not. So, at the PAS Social (where this edition Newsletter will be handed out, will be a card for those of us who wish to sign it and ask Richard NOT TO LEAVE THE CLUB. Please put something nice in the card that encourages and tells Richard that he is welcome to stay in our group. Thank you for your time and we hope to have a replacement Treasurer soon, or Mark will have it for the remainder of the PAS year (till May 2005).***

PAS 2004 YEAR IN REVIEW

We had an awesome year full of activities. Here are a few highlights: We attended and helped at the Arizona Science Center for many Adult Night Out's, which fall on the first Friday of each month. Those dates were Jan 9, Feb 6, Mar 5, Apr 2, & May 7. Through the summer months and some of the Fall, the weather wasn't very cooperative, so we didn't get to do the observing sessions as we would have liked to. We had a nice collection of speakers at our PAS meetings which were mostly held on the first Thursday of each month. We had some really great speakers for the year. Dan Heim, AJ Crayon, Dennis Young, Dan Heim did a second presentation to open the year in September, Ross Tucker, Dennis Young did a second time, and Nat White was our last speaker for the year. It was a good selection of speakers and they had great topics. And on each LAST Thursday of the month (with a few exceptions) we met for the Meeting of the Minds and made some really good decisions. The Meeting of the Minds is open to anyone with ideas and we were hoping to get more involvement from club members. If you can make that meeting, please do. We would love to have you along. We really do have a great time at the meetings, especially at the end when we do our socializing prior to leaving for the night. Come have some fun with us! We did a slew of really fun Star Parties this year. Here are a few that were very fun for all involved: We did a star party for Rancho Salano Private School on March 18th for which I hope we get hired to do again. We attended 1 of 2 ASU West Open House on March 25 and helped Paul Schmidtke share Astronomy with the public. We will continue to attend those events when possible. The second open house fell on the Total Lunar Eclipse and was clouded out for both ASU West event and the one we were about to hold at Foothills Academy. The annual Anthem star party was



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scheduled for April 17 and was rained out and moved to the summer. We had a good time at the 2nd Anthem Star Party. On April 16th we did the White Tank Mountain's Star Party for the Girl Scouts. That was really fantastic and I hope we get called to do that one again. The Challenger Space Center hired PAS to do a job on April 24 which turned out to be lots of fun. We could really use more jobs from them as well. We did a job at Grayhawk and that was a fun one as well, and we got fed while there on May 29th. The rescheduled date for the 2nd Anthem star party was June 26. The weather was much nicer then. We did a star party at Paradise Valley Estates for a private Halloween party. On Oct 1 we did a star party for a wonderful group celebrating a Festival of the Moon for their Jewish holiday. That was a very nice star party with many scopes and all three astronomy clubs were there. And without my help a group of us did a star party at Phoenix College for a group of 2nd graders on Nov. 18th. We were also involved in promotional type events such as the Sally Ride event that took place on the ASU campus on March 6. Astronomy Day at the Arizona Science Center was on May 15 and it was a massive project but the public seemed to enjoy it. We had a busy year and it was all enjoyable. We hope to have plenty of telescopes to assist and volunteer in the coming year and hopefully some of the past events will occur again this year with the help of PAS and its wonderful volunteers. Thanks to all my volunteers throughout the whole year!***

It's going to be ONE EXCITING YEAR at PAS in 2005!

Meeting of the Minds Review Dec 16, 2004

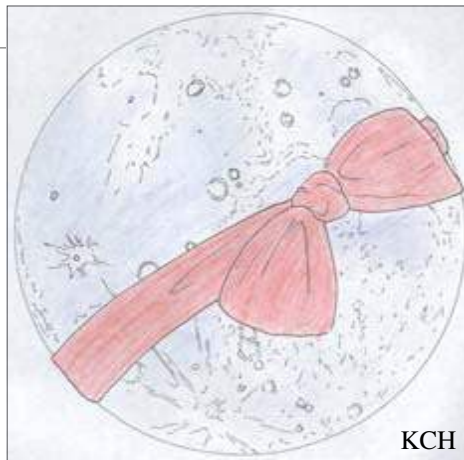
Check it out! At the PAS Meeting of the Minds, December's meeting, we had a massive discussion and a bunch of decisions to make. Here are the results of that meeting and some additional information. Our topics were a wide range of what's coming up in the new year. This is a meeting you didn't want to miss. And as a reminder: These are the meetings you want to be at because those in attendance are the ones who make the decisions on W, W, W, W, W and H. Did you get that shorthand? Those in attendance decide Who, What, Where, When, Why and How PAS will do it, make it, & run it. If you didn't come to the December meeting, you missed out on this one. We opened the meeting, and the plan was that Terri would make a list, and open with "Welcome to the December Meeting of the Minds - Here are the topics - I now give the floor to Mark, who will lead us through those topics." However, Mark wasn't feeling well, so Terri ran the meeting. 1) William covered the first topic since he came up with the idea. This is an intriguing idea and we need a head count of how many participants we can get to donate for the cause. A yard sale - yes, a yard sale to raise funds for PAS. Here is the plan.... We will find a location to hold the yard sale. Then, we will have PAS Members donate items they don't want a week or so prior to the sale date. Terri will then go through and price everything to sell. We can hold it for 2 days. The first day will be a Friday because it is a good selling day. Terri doesn't have a job at the moment, so she can run the sale with a few people to help out on Friday. Saturday we would want everyone who donated to please stop by, even if it is only for 1 hour, and help watch that things are not stolen while we run the sale. Now, we got this idea from a garage sale up in Flagstaff. What they do is collect from their church members, and one member holds the sale, and all the proceeds go to the Church.

Well, everything we sell at this sale of ours will go to PAS. The church sale then decides on a time, and has an ad in the newspaper saying "At 5pm everything is free." To get rid of the last minute stuff, we could do the same thing on that Saturday. All that doesn't sell by 5pm Saturday, the second day of the sale, then becomes free so that we don't have to pack anything away. We could do this once or twice a year to raise funds for PAS. But to do it, we have to have enough stuff to make it worth while, plus I could keep tabs on what items sold and how much was raised, and Richard could issue receipts for the amount collected per person if it is desired. So, let's say Matt sells 10.00 worth of stuff, he would get a receipt for that much if he needed for tax purposes as a donation. So, if this interests you, and you'd like to donate to PAS with stuff you don't want, please let Terri know that you'd like to be involved. Even if you only have one item, it is worth donating to this cause. Let me know ASAP. We are thinking of doing this sometime in March, when it warms up a bit. Now along with this idea is those packets of info. For every sale, we could pass out info about PAS right there at the check out table. This would also advertise the club, so we'd be accomplishing twice as much with this, and we definitely would want to advertise it in the paper so we get the best response for our 2 days of effort. If you have any ideas to make this better, let me know prior to use doing it. 2) The next topic was Speakers. We talked to Mark about it and told him his deadline is Jan 15 to get the February Speaker info to us in time for the next Newsletter to go out. Of course, this issue you are reading, is the issue that will be accomplished at that time. Some ideas Mark had was to have Ross Tucker come back and tell us more about JPL and the Solar System. He'd also like to have Dennis Young come back and do an observing session and talk to us another time when it warms up. 3) Sally Ride. The day before the meeting I emailed our contacts for the Sally Ride festival and asked them when it was. I believe it was last year on March 6th. So, we are looking forward to doing it again this year. It was a great way to advertise the club. And we had a bunch of really great volunteers for that event that I'd love to see help out again this year. Along those same lines, we'd also like to see if we can get Sally Ride to come to PAS for the March meeting. I'll keep you posted on that idea. She will already be in town for the event, and we could adjust our meeting date to accommodate her and have an Astronaut come speak to PAS. That would be awesome. *(Unfortunately, Sally has already been scheduled for something that night - Co-Ed)* 4) Then we switched topics and talked to Mike, who told us that the newspaper - Sonoran News, which covers Cave Creek, Wickenburg, Carefree, N. Scottsdale, N. Phoenix, Rio Verde, Anthem, the Boulders, Desert Mountain, Legend Trail, Pinnacle Peak, Terravita, Tramonto, Troon, Tatum Ranch and Winfield, would be able to advertise our public events and PAS Meetings when ever we wish to invite more folk to our events. So, we will definitely ask Mike to help us out there. He made a contact at the newspaper just recently. Curtis Riggs is one of the reporters and has been involved with Mike over the last week or so. Mike made it in the newspaper for talking about the history of Carefree and his families' part in the creating of the town. He is in the Sonoran Newspaper December 15, 2004 issue if you are interested in reading about it. Anyway, with Mike having an "in" with the newspaper, we can hopefully advertise more PAS events through him and draw in possibly more PAS Members and more folks who want to know more about



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astronomy. 5) Black Canyon City star parties. Some of us know the joy of a dark sky site and the High Desert Park in BCC is awesome for viewing. So, we discussed but didn't make any definite plans, yet, to host 2 serious viewing sessions on the dark sky nights in March and April which would fall on March 12 and April 9th. These are still in the discussion stage but are definite good viewing nights and the star party will be either at BCC or Lake Pleasant. Keep an eye on the Upcoming file in the newsletter to be sure where to attend those star parties. 6) Then we talked about the Field Trip we'd like to set up and attend for the summer time to the Anderson Mesa Interferometer. Our December speaker was Nat White and he asked that we do a tour with him sometime in the summer. So, I'm looking for input on what day of the week to do the tour, such that the most people can attend. I was thinking doing it on a Sunday morning so that we could drive up as a caravan, or carpool situation, take the tour like around 11am, and then enjoy the day in Flagstaff as a group, then drive back that night. It is a 2.5 hour drive up to Flagstaff and then another 45 minutes to the site which I believe is N.E. of Flagstaff. 7) The next topic was about the James Bond exhibit and when would we like to attend. Those folks who volunteer to help at the Arizona Science Center anytime last year can join us in seeing the James Bond exhibit with Christine's assistance. But we have to pick a date to do it. We were thinking of January 15 or 16 (*These dates fell through - Co-Ed*), or maybe doing 2 groups, one on Saturday and one on Sunday. And we were discussing the time to be around noon to meet there. This is still being discussed so if you have any input on the date and time you'd like to attend, let me know. 8) Our next topic was a star party at Mike's house. We have tentatively set it up for our dark sky night on May 7th. This would not be a public event. Open to current PAS members only because of the location. But we'd love to see everyone out there. And PAS members can invite outside guests. This is only tentative at this time. Again, watch for updates in the upcoming file in the newsletter. 9) The next topic was kinda up in the air and is still being discussed but it would be a real cool thing if we could get Dan to host another Moon Marathon at his place, open to only PAS members. We could schedule that for the summer months, some Saturday evening when it is convenient and the moon is in the right phase to enjoy its view. So, I will get that set up with Dan, soon. 10) Then we talked about Mike's antics.. his trip to the location where they were celebrating the birth of Carefree, Arizona. He was telling us how he ended up in the newspaper and now he's started something that will take a while to complete, in getting his Grandparents known for creating Carefree. 11) Mark suggested that we have a DART PRACTICE in January. This sounds like fun. We can pick a date or two, on maybe a Friday or Saturday night, meet someplace that either has darts and a board, or use the dart board I have (but I have no darts at this time) and get together to do some practice. Now, why do this? If you recall, at the PAS Social, Dan usually wins the dart game. (*Alas, we never got a chance to practice. Will Dan win again? - Co-Ed*) 12) And the last topic of the night was Astronomy Day. I emailed Christine and let her know the dates that the Finches are NOT available for Astronomy Day this year. That would mean that if the Arizona Science Center picks one of the three dates that I



KCH

can't be there, we'd have to have a few volunteers who would like to be there that day to promote PAS. This year we will have a table and do handouts only. We aren't doing anything spectacular. I'd like to see about 4 to 8 volunteers for the day, in shifts, and I will be setting that up soon, as soon as I get the date for Astronomy Day at the Science Center. So, watch for that info and volunteer if you can spend an hour or more helping hand out info about PAS to the public. We might do a mini Telescope display right there in the same location as the handouts to draw people over to our tables. 13) A bonus topic was the fact that the last star party set for Foothills Academy

was cancelled due to not so great weather during that awesome Lunar Eclipse. So, now we need to ask Dan when he'd like to reschedule for us to do a star party for the students of Foothills Academy. So, I will email him and get that info to you very soon. We need all the scopes we can get for that evening. Now, I'd like to thank those who attending the Meeting of the Minds: Mike, Mark, Don, Richard, Kevin, Matt and the Finches. Come join us at the next meeting in January.***

PHILOSOPHY OF LIFE

Received from Leah Sapir

Living on Earth may be expensive... but it includes an annual free trip around the Sun.

DEEP IMPACT ON A COLLISION COURSE FOR SCIENCE

NASA's Deep Impact spacecraft began its 431 million kilometer (268 million mile) journey to comet Tempel 1 on January 12th. Data received from the spacecraft indicate it has deployed and locked its solar panels, is receiving power and achieved proper orientation in space. Data also indicate the spacecraft has placed itself in a safe mode and is awaiting further commands from Earth. Deep Impact mission managers are examining data returns from the mission. Further updates on the mission will be posted to <http://www.nasa.gov/deepimpact> and <http://deepimpact.jpl.nasa.gov/>. Deep Impact is comprised of two parts, a "fly-by" spacecraft and a smaller "impactor." The impactor will be released into the comet's path for a planned collision on July 4. The crater produced by the impactor is expected to be up to the size of a football stadium and two to 14 stories deep. Ice and dust debris will be ejected from the crater, revealing the material beneath. The fly-by spacecraft will observe the effects of the collision. NASA's Hubble, Spitzer and Chandra space telescopes, and other telescopes on Earth, will also observe the collision. Comets are time capsules that hold clues about the formation and evolution of the Solar System. They are composed of ice, gas and dust, primitive debris from the Solar System's distant and coldest regions that formed 4.5 billion years ago. The management of the Deep Impact launch was the responsibility of NASA's Kennedy Space Center, Fla. Deep Impact was launched from Pad 17-B at Cape Canaveral Air Force Station, Fla. Delta II launch service was provided by Boeing

See IMPACT, p. 4

Expendable Launch Systems, Huntington Beach, Calif. The spacecraft was built for NASA by Ball Aerospace and Technologies Corporation, Boulder, Colo. Deep Impact project management is by JPL.***

ROUND-ROBIN STORY CONTEST

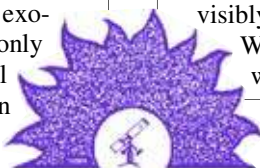
Do you enjoy writing stories? Would you like to win a prize for doing so? The Round-Robin Story Contest continues. Based on the introduction to the story (May 2004 issue) and the previous chapters write chapter 6 (leave it open-ended so we can add more chapters). **We only have two more newsletter issues left for the year. Let's start winding the story up. I have the Epilogue waiting. Your chapter can now be any length.** No need to bother with paragraphs. The deadline is the 15th of each month. The editors will then choose which one they feel helps move the story along the best and include it in the next newsletter (please don't make us write it ourselves). If you are the winner for that month, you **MUST** attend the next meeting in order to claim your prize. (Prize may be awarded the following month if your hard-luck story about why you couldn't attend the previous meeting is convincing enough).

HOUSTON, WE HAVE A PROBLEM CHAPTER 4

by Barbara Hartman, based on an idea by Matt Kohl

The creatures were resonating at a high frequency causing the ship to shake violently. "Captain! Micro fractures are forming in the hull," screamed Jerry. "I don't know if she'll hold together with much more of this! Suddenly there was a loud <POP> and the shaking stopped. We all unbuckled and rushed to the view port. Some of the blobs were floating in space. One of the larger ones close to the view port suddenly turned white and became cracked all over --the creatures were crystallizing! Then it made a loud pop, broke lose and drifted off the hull. The words -- THEY ARE DYING -- flashed in my mind. "Oh no!" Terri gasped in horror. "Captain, you've got to do something," she pleaded. Staring into her compassionate eyes I reluctantly said "Jerry, Dan, suit up you're going EVA. C'mon." I lead them to the air lock anti-room where a space suit for each one of us hung. As I helped Jerry on with his helmet, I could see the fear in his eyes as I fastened the locks. I felt really bad about this, but what could I do? I rationalized that these were sentient beings and we had to save them. After all WE were why they were dying. There had been hundreds on the hull when we did our little fast as light speed maneuver and after it only some 60 or so still clung on and now; who knows maybe only just a few left. I gently tapped his helmet. "You'll be fine," I tried to assure him. "You'll use the space nets -- won't even have to touch them." I hated sending them out there. These runs had become so routine I barely ever saw any of my crew afraid to do anything I asked of them. But this time was different. We had no idea what these creatures were capable of. I had chosen Jerry and Dan; perhaps for selfish reasons, even though they had family waiting back on Earth for their return. I chose them because I needed William, my pilot to get us back, and Terri my exobiologist, well, because if things got ugly she'd be the only one with the knowledge and training to save us. "We'll follow full decontamination procedures upon your return and I'll have William set up a Bio-shield force-field in the

cargo bay, which should contain anything these things will throw at us." Barring a heart stopping jolt that is, I thought to myself, but with the suits they are fully insulated from anything like that. I waved at Dan to get his attention and pointed at them both. "Keep your coms on out there. I want to know if anything goes even a tiny bit wrong," I said and gave them each a thumbs up. They'll be fine, I repeated over again in my head as I closed, locked the hatch and began decompression. Back on the bridge: "Hold her steady, William," I told him. "We don't want them to have to worry about anything but bringing those creatures in safely." "Right," William said as he concentrated intently on his panel. Terri and I watched out the view port window. The guys had just come up around the curvature of the hull and into view. They looked strangely small out there. Terri had the bio sensors back on-line now and we were getting readings that the creatures were only in a couple of places on the hull and no longer widely dispersed as they had been, that meant there were only a few left. "Wow! They sure look bigger out here in person than from the view port," Dan said over the com as he came to a small group of them and began to pick them up with the net. "They seem as though they are dormant or something," Jerry said as he slipped the net over one and picked it up. Just then <CRACK -- POP> and a large blob broke free from behind Dan and floated straight for him. "Dan, you've got one coming at you -- from your left rear." He barely had a chance to turn and he was hit. It knocked him off his feet, he lost his grip on the net, it floated away and now he was free floating in space too. William, from his monitoring station exclaimed, "His heart rate is up -- breathing fast and shallow -- He's panicking!" "Dan!" I called. "Stay calm, I'll get you back. Take a deep breath. William, calculate bearing and velocity for return." "Okay, mark 0.526 -- 2 second burst. He's venting atmosphere!" William exclaimed. "That thing must have ripped his suit. How bad?" I asked William. "Not that bad," he stated. "Only a tenth of a milibar per .05 seconds." "Okay Dan, here's what I want you to do. Kick thrusters to bearing 0.526 and give it a two second burst. No more or you'll come in too fast. You got that?" I told him. "Oh God -- I'm venting!" Dan said frantically grasping at the tear in the arm of his space suit. "Oh God!" he cried again as he floated even far out. William yelled "He's panicking again!" "Dan! Focus!" I shouted. "William, bearing and velocity." "1.39 -- 2.5 seconds," William stated. "Dan, stay with me!" I pleaded. "Mark 1.39 for 2.5 seconds, you got that!?" "Uh-huh," Dan stammered. "You're not venting that bad, you hear me? Like being at high altitude is all, like mountain climbing -- you remember -- The Devils Tower, last summer?" "Yeah- yeah." Dan said breathlessly. <Pish pish> The thrusters went and <shshshshshhhhhhh>, then a snapping sound like magnets on metal when his gravity boots reconnected with the hull. Terri, William and I breathed a sigh of relief. "Sorry, we lost most of them. I've only got about 5 in here," Jerry said holding up his net and hanging onto Dan at the same time. "Okay, Jerry, bring 'em in -- quickly," I said as I nodded to Terri to come along. "Bring a Med-kit. William, you've got the bridge. Terri and I are going to decon and help. Activate a Bio-shield around the cargo bay, thanks." Once out of decon, and with the creatures safely stowed, we all adjourned to the mess hall for coffee to help us think what to do next. Dan still visibly shaken asked to be dismissed to his quarters and I agreed. When he was well out of earshot, William leaned over and whispered to me, "You know, fifteen more seconds without



See ROBIN, p. 5

air and he wouldn't be here." "I know." Terri, perhaps overly concerned about the welfare of the five blobs that we saved, offered up the idea that they should be fed somehow. I admired her for her compassion, but it is a luxury that ship captains can seldom afford. One of Terri's favorite quotes states that Nature does not abhor virtue it is simply ignorant of it. Well I certainly couldn't let these creatures get the better of us. I had to think of my crew and our mission. I had become used to being the stern one, the one who always had to put a damper on things; keep things in order and disciplined. That's what makes a good captain. After a long moment of silence, Jerry spoke, "I think if we can make a small science console in the cargo bay, I can rig up a sort of feeding station for these things from it and we can maybe get some valuable data from them too." "Yes, I think we could divert some power from main engines to mimic the sun's radiation, assuming that warm is food to them, and if they like it we could give them a low level dose every few hours or so, just to maintain them," William offered. "Can we set up bio-scan capabilities?" asked Terri, "Then I can monitor them to see how they are doing." "Alright. It sounds like a plan. Keep me apprized, I'm going to check in on Dan." I said as I stood up to leave. Outside Dan's quarters, I knocked and waited. There was no response, but I thought I heard something in there. Fearing that he had somehow become incapacitated, I overrode the door lock security code and rushed in. The room was dark and had a foul smell. Suddenly, something came at me from the shadows. When I came to, it was evidently gone. I had no idea what it was or how long I'd been out. In the hallway outside the room I activated the intruder alert alarm and headed for the bridge.

CHAPTER 5

by Barbara Hartman

When I got there, William and Terri were visibly shaken. I knew it had been there ahead of me. "There's something on board with us," I said breathlessly. "Yeah, we know," William blurted "It was in here." "What was that?!" Terri questioned. "I don't know, but we've got to catch it," I stated flatly. "How?" they both asked. "I'll get Jerry and we'll tranquilize it and lock it in the cargo bay, I guess. You guys stay here and monitor its movements so I know where to find it. Oh, and scan for Dan, I couldn't find him." "Okay, I'll set the internal bio-sensors to look for non-humans and scan for Dan's com signal," Terri replied. "Good," I said and ducked out to find Jerry. He was in the cargo bay calibrating the feeding station for the blobs. "They seem to be doing well, I think these few may make it after all," I said kneeling down beside him. "Yah, they'll probably be okay now," he announced, quite proud of his work. "Say we've got a little situation on our hands," I sounded ominous, even to myself. "Wha -?! How do you mean?" Jerry asked standing up and fiddling with the knobs on the console. "There is something rather fierce on board with us. It attacked me in Dan's quarters. I don't know what or even if it did anything to Dan, I can't find him. Terri is scanning for his com signal." "I heard the intruder alarm, but I just thought that someone hit it by mistake again. Sorry, I didn't pay any attention to it." "Don't worry about it," I said. "How could it get on board with out the sensors alerting us?" Jerry asked. "I couldn't say. Malfunction, maybe - we'll check it later. For now we've got to get the tranquilizer gun and extra darts. We need to subdue it before it damages any of the ships systems." I try to be prepared for anything and

my tranq rifle has come in handy a couple of times. Once it was Space Pirates - what they were going to do with spent nuclear fuel rods I don't know, probably kill themselves since they had no way to safely handle the stuff. You could say I saved their lives by putting them to sleep and delivering them to the authorities. And then there was the Terrilian rat infestation - those things were the size of . . . - Just then Terri's voice broke into my

thoughts from the com. "Captain Marks, you'd better come to the bridge right now. There's something you need to see." Her voice carried an element of disbelief. "We're on our way." Jerry grabbed the rifle, I, the case of darts and we both ran for the bridge. Once there we found Terri and William frantically fussing over the sensor controls. "We checked and rechecked. There are no malfunctions, but how can this be?" William fretted. "Have a look for yourselves," Terri invited us to look as she and William stepped aside. "Oh good. You found Dan," I said, noting his com signal blip on the screen. "Well yes, technically, but it's not Dan," said Terri. "At least not the Dan we knew and loved," William offered. "What are you talking about?" Jerry questioned, a little bit agitated. He liked facts and numbers not riddles. "Well," Terri continued, "see his vitals, down here." She pointed to some lines on the lower part of the screen and continued. "It appears as though his DNA has been altered. I don't know how and I don't know why yet, but it seems that he is de-evolving. His hair growth has increased all over his body and his brain wave patterns are slowed, he has gained in body mass mostly bone density. As you can see from the com signals location he is moving about very fast and erratically, like a caged animal. I am certain that the beast we saw earlier was really Dan." We were all stunned and just stood there looking at each other for a long moment. "Can you turn the com on?" I asked. "I want to talk to him, see if there is any of OUR Dan left." "Oh, sure," William said and he flipped a switch. "There." I spoke into the mic. "Dan, Dan are you there?" I questioned. We heard only primeval grunts and thrashing in return. "Well, I guess that's that. There isn't enough of Dan left to reason with. Suggestions anyone?" "If we could get him to my lab, I can run some tests. Maybe that will tell us something," Terri said. "Okay, you two stay on the bridge and tell me if he starts moving. Jerry and I will sneak up and tranquilize him. Everyone good with that?" I asked. Jerry nodded and Terri and William agreed. "Be careful," Terri said. "Always am!" I chimed back. A while later we had Dan tranquilized, tied up and on an exam table in the Lab. Terri was giving him the once over while Jerry and William constructed a cage in the cargo bay complete with radiation shield to protect him from the creatures food. We were giving them 3 minute bursts at 4 hour intervals and it seemed to be maintaining them. Now we had this new problem and I seemed to have lost a good man. Well I

tried not to count him out just yet. All my hopes were on Terri to find a cure, or some kind of solution anyway. Jerry and William stopped by the lab after finishing the cage. "Hey,



See STORY, p. 6

how's it going in here?" William asked as he poked his head around the corner and came in. "Well, I ran a, . . ." Terri began, but Dan started to moan and thrash around, I motioned for help in holding him down while Terri administered a sedative. Suddenly Dan lashed out and bit Jerry on the arm just before winking out again. "Did he break the skin?" Terri asked motioning for Jerry to allow her to examine it. "Yeah, but it's not bad," he stated. "A human bite can be very nasty. Here, let me treat that," Terri offered. "Terri, are you done with him?" I asked. "Oh yes, you can take him, thanks," She said tending to Jerry's wound. William and I wheeled Dan out on the exam table and put him on a cot we had placed in the cage for him. He didn't look at all like himself, I thought as I stood there and watched him sleep. William turned to me and said, "You shouldn't beat yourself up over this. It won't do any good. All we can do now is try to make him comfortable and hope we can find a solution." "I know," I said as I thought to myself – I have an awful lot riding on Terri. She never let me down and I prayed she didn't now. I took some much needed R & R in my quarters and then stopped into the mess hall for dinner with my crew – what was left of them anyway. I had my usual comfort foods, lasagna and peach cobbler with vanilla ice cream, then a coffee chaser. About the time I was having my cobbler and coffee is when Terri and William showed up. Jerry was conspicuously absent. "What, no Jerry tonight?" I asked. "Oh we haven't seen him since he left the lab earlier today," William said. "He probably needed to sleep off the adrenalin rush from his scuffle with Dan," Terri said as she sat down across from me at the table. We discussed the day's events and then talked about the results of some of the tests Terri had performed on Dan. "From the results I have so far it seems to be like a virus," she said with reservation. "A virus," I echoed. "It seems to be attacking his cells at a molecular level, reverting them to a former evolutionary state. I am formulating hypotheses for a vaccine, but I need the rest of the test results which should be ready tomorrow afternoon. Then I will be sure how to proceed." "Do you think he was infected by the creatures?" William asked. "Either by them or in space when his suit ripped and he was exposed to who knows what out there," Terri reasoned. Just then we heard a great crash from the galley and something bent and hairy scurried by the entryway. Startled we all yelled, "Jerry!" as we scrambled after it. (to be continued)***

THANK YOU BARBARA!

Yes, we have an awesome new author in our reach. Barbara Hartman has been the author of our Round Robin story (for which I have to find another prize for her). She has written the next two Chapters (4 + 5) and she is doing a great job.



Now, that doesn't mean she wants to do it every month. So, get your writing gear on and let's see who can earn a PAS Prize for the next chapter. Barbara has chosen an IDA T-shirt from the prizes for Ch 4. She will receive that at the PAS social. For Ch 5 we haven't discussed what she will get. I'll leave it up to her at the March meeting because that is what Chapter 5 is for, the March newsletter. So, read up, write up, and email up those ideas. Let's get this flowing. We only have a few more chapters and then Matt will do the Epilogue, which is already written. And then we may have a surprise coming after that. So, watch for the news. Send your Round Robin submission to us today! ***

THANK YOU DISA!!!

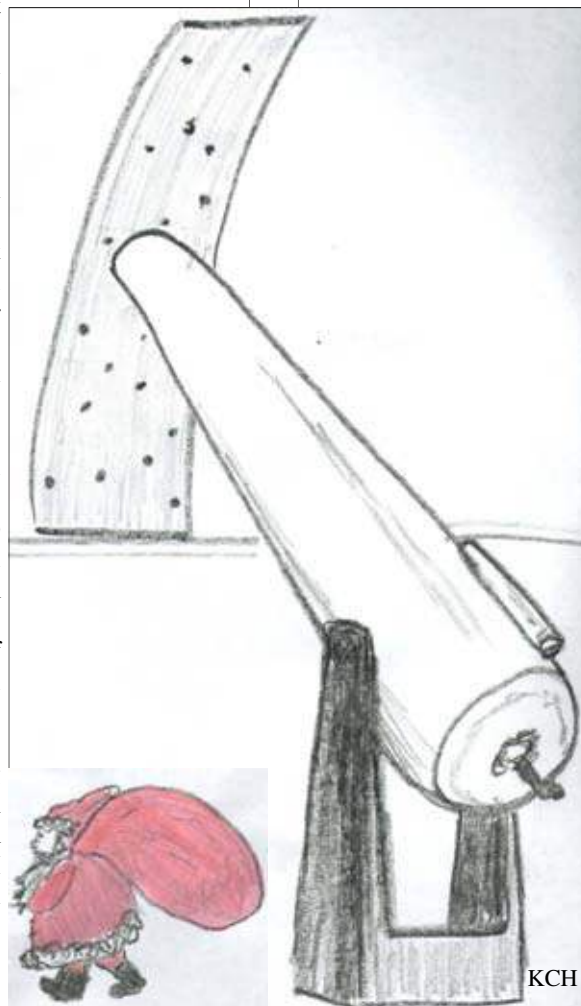
Wow, what a wonderful gal! If you need something in this club and someone wonderful can accommodate you, that would be DISA! Disa has been a member of the club for about a year. In that time she has advertised our club heavily to groups of school kids who love our handouts. In fact, she has another one coming up at the end of January in which another 30+ kids will get info about PAS and about Astronomy stuff. Well, the other thing she has done that Dan, myself, and probably Mark are thankful for is to find the February speaker. And from what I hear, he will be awesome. So, bring your friends, your friends' friends and everyone you can grab, and let's welcome our February speaker with an overloaded room. In fact, Disa was saying we might want a bigger room for this one. Come share the fun with us. Read about our speaker below. See you there! And THANK YOU DISA!!!! You are AWESOME!***

OUR SPEAKER HAS LANDED

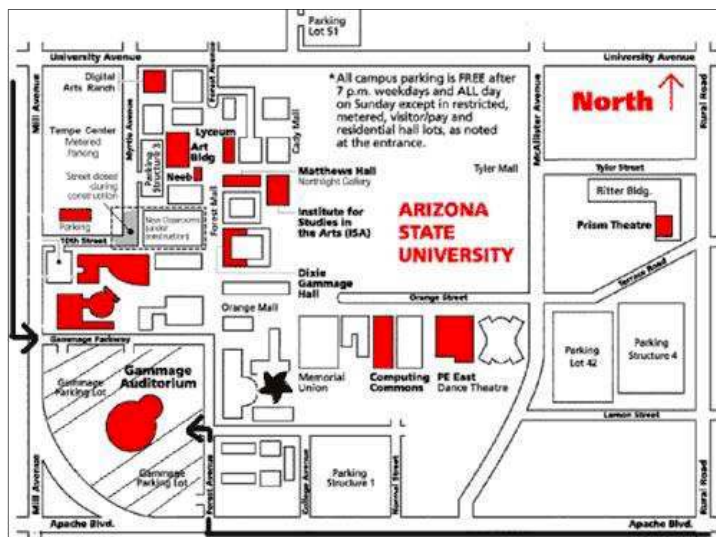
We have, with the help of Disa, gotten an awesome speaker for the February PAS Meeting. You will definitely want to bring everyone you know to this meeting. We can accommodate a huge crowd if needed. The speaker is JACK FARMER, and his topic is: "Robotic Field Geologists on Mars: The Mars Exploration Rover Mission". Bring everyone you know!***

SALLY RIDE FESTIVAL 2005

If you can volunteer to help out at the Sally Ride Festival on March 5th, 2005 at the ASU Campus, it would be appreciated. Last year we had an awesome time. Adam brought his telescope and showed the public some solar viewing. Don was there with his scope and Jesse came as well. The rest of the crew came



What did Santa bring you?



SALLY, cont'd. from p. 6

to help do handouts and everyone was appreciated and we all had a great time. Mark it on your calendar and if you can make it, RSVP with Terri now. The Festival people require a head count and names to make name tags, so I need to know who will be available to do this with us. Call or email today. Thanks to all our volunteers!***

2005 DESERT SUNSET STAR PARTY

received from "Chartmarker" chartmarker@cox.net

Pat and Arleen Heimann will again be hosting the Desert Sunset Star Party May 4-8, 2005, at the Caballo Loco RV Ranch southwest of Tucson. Caballo Loco is located east of Kitt Peak and nestled against the Sierrita Mountains. Whipple Observatory on Mt Hopkins is located to the east. Lots to do during the day and great skies at night. There will be speakers and door prizes on Friday and Saturday evenings. Check our website for details: "<http://www.chartmarker.com/sunset.htm>" ***

ARIZONA BILTMORE STAR PARTY

PAS Volunteers Needed - February 27, 7-9pm

received from Dan Heim and Sean Ryan

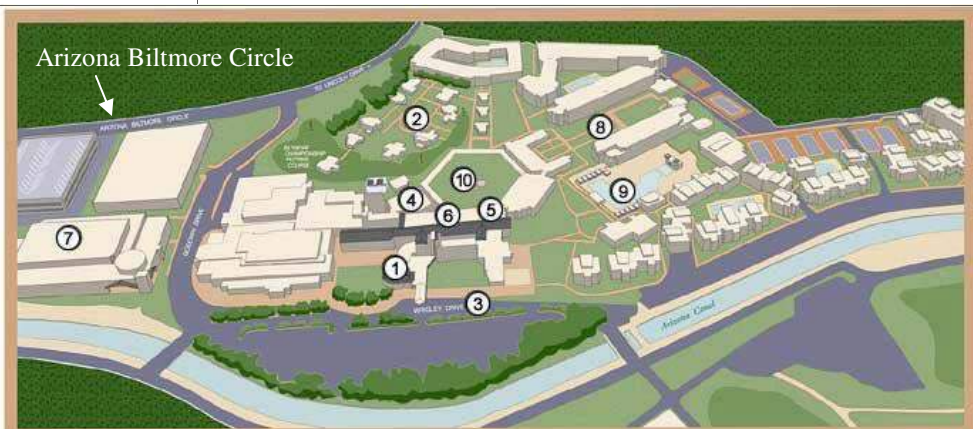
My name is Sean Ryan and I am the Marketing Director for Sky Publishing in Cambridge, MA. I will be attending a conference in Phoenix at the Biltmore Resort in February and had an idea. The "Retail Conference" is put on by the Magazine Publisher's Association and attracts people in the newsstand business. Magazine buyers from Barnes & Noble, Borders, supermarket chains, etc. One of the unique things about this conference is that they have a time period on **February 27th** where one can "bring a magazine to life." The cigar magazines hand out cigars. The food magazines cook food. Well, I thought it would be pretty cool to make Sky & Telescope come alive by hosting a mini star party. Do you think it would be possible to ask for volunteers from your club to bring their scopes out for a few hours? I would "reward" each volunteer with a complimentary subscription and another item from our catalog. I

would be available to help with the crowd and provide food/beverages. Please let me know if you and your organization would be interested and I will provide more details. Thanks. Wishing you clear skies, Sean Ryan Marketing Director Sky Publishing Corporation 49 Bay State Rd. Cambridge, MA 02138 617-864-7360 ext. 162. Here is the Star Party info you need to know and a Map to find your way there: **Viewing from 7-9** would be great. The event is in the McArthur Ballroom. I've spoken to Susan Calederon from the Biltmore who can put us out in front of the ballroom near a parking lot and the canal. They do have to leave some lights on but they are willing to shut off some of the lights and sprinklers. The audience will be true "newbies" so Saturn, Orion, and other bright objects in the sky are going to be great. Although we all love to search for faint fuzzies I suspect this crowd would be in awe of the Moon through an 8-inch Dob. Susan from the Biltmore has suggested that someone from the Club scout out the location but I don't want to impose on your hospitality. If someone wanted to check out the location just let me know and I'll contact Susan. The map of the complex is below. The McArthur Ballroom is building # 7. Dan wrote to Sean: Sunset on this day is 6:30 pm. Viewing of Orion and Saturn will be excellent by around 7:00 pm. If you can make it to this event, please RSVP with Terri so she can have a head count of who will attend. And since we will be receiving a subscription for our efforts, please bring a return address label with you so you don't have to spend too much time away from your telescope while filling in paperwork. We hope to have a large turnout, so prepare for a fun evening.***

DECEMBER MEETING REVIEW

I wish to thank Nat White for coming down from Flagstaff and giving such an awesome presentation about the Interferometer on Anderson Mesa in Flagstaff. He did a fantastic job and had everyone involved in the talk. We really appreciate his visit. We opened the meeting with Mark, then Jerry took over with star parties. He said there were about 80-90 children at the Phoenix Children's Hospital that enjoyed looking through several telescopes that night. And he announced that Dec 31, 2005, we should

See DECEMBER, p. 8



- ① Aztec Room
- ② Cottage Court
- ③ Front Drive

- ④ Grand Ballroom
- ⑤ Guest Room
- ⑥ Lobby

- ⑦ McArthur Ballroom
- ⑧ Paradise Garden
- ⑨ Paradise Pool

- ⑩ Squaw Peak Lawn and Terrace



**ARIZONA
BILTMORE
RESORT & SPA**

consider that it is a Dark Sky night and would be perfect for some kind of Public viewing event. If you have any ideas, please share them with us. He also announced that the Door prize for up at the Heimhenge Social will be something special. He said that who ever wins it, prior to opening it must donate \$25 to the PAS Treasury. After opening it, if they don't want to keep it or can't use it, they can sell it to another member. He also mentioned the if Kevin got a hold of it, it would be something that Kevin would love to keep. So, you have that to look forward to at the Social. This newsletter will be passed out at the Social as well, so be sure to pick it up if you didn't already download it from the internet. Then Jerry announced the special 2 day rocket launch which will be held the end of February. You can go to ["http://www.AhPRA.com"](http://www.AhPRA.com) for more

details. I'll be putting the rocket launches into the newsletter as Jerry gives them to me. Nat took over from there, did an awesome talk and was very informative and entertaining. For those of you who don't know this, Nat and I are planning a summer, possibly Sunday outing, Field Trip up to the Interferometer for all of PAS. If you are interested in attending, give me dates during June, July and August in which you would like to attend and we will go with the majority. We may want to vanpool up there, or just plan to all meet at the interferometer at the time it begins. We will have to discuss this further to work out the details. Let's to that at the next Meeting of the Minds. \$4.61 was raised for the snack fund. Don Boyd won the 50/50 raffle receiving \$7.50 for his share, and \$7.50 for the PAS Treasury. The Swap meet went well, although not much was sold. We had a few interesting items. Adam brought and sold his



I call this picture "Jerusalem - the gold at the end of the rainbow". It had been raining during the night, and early in the morning the rain let up and the sun came out - making this beautiful rainbow over Jerusalem. The shaded area in the foreground is the town of Maaleh Adumim, about 5 miles east of Jerusalem, and the lighted area in the background is Jerusalem. The two hills at the left are part of the Mount of Olives, and the hill at the right is Mount Scopus. Usually you can see a building on each hill (Church of the Ascension, Augusta Victoria Hospital, and the Hebrew University), but because of the weather conditions (the same ones that created the rainbow) the buildings are hidden by the clouds and haze. *photo & caption by Leah Sapir*

believe he sold them. Kevin brought some Art and I don't recall if he sold any. And the Finches brought the Green Lasers, but no sales there. The meeting actually ended very early and a few folks were invited to join the Finches for movies. Mike was tired and fell asleep through the movie. It wasn't a great movie, so I can understand why he snoozed. We had some snacks to munch and had a great time. I wish to thank all those who participated in the Swap Meet. Start collecting for next year's event. And thanks to Matt for picking up the snacks for the group. Thanks also to Ed and Bette Wurst for dropping off some snacks. And thank you to everyone who purchased a Year in Space Calendar, as they were delivered that night as well. Hope to see you all at the next meeting!***

DID YOU KNOW?

received from Meredith Higbie, Assistant

Director SCORE - South Central Organization of Researchers and Educators

Settling down for a LONG winters nap... Because of Uranus' lengthy orbit and extremely tilted axis, it's winter and summer seasons last the equivalent of 21 Earth years.***

SECRET WORLDS: THE UNIVERSE WITHIN

received from Bette Wurst and Fred Hays

View the Milky Way at 10 million light years from the Earth. Then move through space towards the Earth in successive orders of magnitude until you reach a tall oak tree just outside the buildings of the National High Magnetic Field Laboratory in Tallahassee, Florida. After that, begin to move from the actual size of a leaf into a microscopic world that reveals leaf cell walls, the cell nucleus, chromatin, DNA and finally, into the subatomic universe of electrons and protons.***

STELLAR INCUBATORS IN THE TRIFID NEBULA

NASA's Spitzer Space Telescope has uncovered a hatchery for massive stars

A new striking image from the infrared telescope shows a vibrant cloud called the Trifid Nebula dotted with glowing stellar "incubators." Tucked deep inside these incubators are rapidly growing embryonic stars, whose warmth Spitzer was able to see for the first time with its powerful heat-seeking eyes. The new view offers a rare glimpse at the earliest stages of massive star formation – a time when developing stars are about to burst into existence. "Massive stars develop in very dark regions so quickly that is hard to catch them forming," said Dr. Jeonghee Rho of the Spitzer Science Center, California Institute of Technology, Pasadena, Calif., principal investigator of the recent observations.



Venus at sunrise over the Judean desert, picture taken from Maaleh Adumim, Israel. Mercury was also visible at the time, slightly above Venus; but by the time there was enough light to see the sunrise and the scenery, Mercury had faded a little and was not visible in my camera. *photo & caption by Leah Sapir*

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See STELLAR, p. 9

"With Spitzer, it's like having an ultrasound for stars. We can see into dust cocoons and visualize how many embryos are in each of them." The new false-color image can be found at <http://www.spitzer.caltech.edu/Media>. It was presented at the 205th meeting of the American Astronomical Society in San Diego, Calif. The Trifid Nebula is a giant star-forming cloud of gas and dust located 5,400 light-years away in the constellation Sagittarius. Previous images taken by the Institute for Radioastronomy millimeter telescope in Spain show that the nebula contains four cold knots, or cores, of dust. Such cores are "incubators" where stars are born. Astronomers thought the ones in the Trifid Nebula were not yet ripe for stars. But, when Spitzer set its infrared eyes on all four cores, it found that they had already begun to develop warm stellar embryos. "Spitzer can see the material from the dark cores falling onto the surfaces of the embryonic stars, because the material gets hotter as gravity draws it in," said Dr. William T. Reach of the Spitzer Science Center, co-author of this new research. "By measuring the infrared brightness, we can not only see the individual embryos but determine their growth rate." The Trifid Nebula is unique in that it is dominated by one massive central star, 300,000 years old. Radiation and winds emanating from the star have sculpted the Trifid cloud into its current cavernous shape. These winds have also acted like shock waves to compress gas and dust into dark cores, whose gravity caused more material to fall inward until embryonic stars were formed. In time, the growing embryos will accumulate enough mass to ignite and explode out of their cores like baby birds busting out of their eggs. Because the Trifid Nebula is home to just one massive star, it provides astronomers a rare chance to study an isolated family unit. All of the newfound stellar embryos are descended from the nebula's main star. Said Rho, "Looking at the image, you know exactly where the embryos came from. We use their colors to determine how old they are. It's like studying the family tree for a generation of stars." Spitzer discovered 30 embryonic stars in the Trifid Nebula's four cores and dark clouds. Multiple embryos were found inside two massive cores, while a sole embryo was seen in each of the other two. This is one of the first times that clusters of embryos have been observed in single cores at this early stage of stellar development. "In the cores with multiple embryos, we are seeing that the most massive and brightest of the bunch is near the center. This implies that the developing stars are competing for materials, and that the embryo with the most material will grow to be the largest star," said Dr. Bertrand Lefloch of Observatoire de Grenoble, France, co-author of the new research. Spitzer also uncovered about 120 small baby stars buried inside the outer clouds of the nebula. These newborns were probably formed around the same time as the main massive star and are its smaller siblings. Other authors of this work include Dr. Giovanni Fazio, Smithsonian Astrophysical Observatory, Cambridge, Mass. NASA's Jet Propulsion Laboratory, Pasadena, Calif., manages the Spitzer Space Telescope mission for NASA's Science Mission Directorate, Washington, D.C. Science operations are conducted at the Spitzer Science Center, Pasadena, Calif. JPL is a division of Caltech. The new Spitzer image is a combination of data from the telescope's infrared array camera and multiband imaging photometer. The infrared array camera was built by NASA Goddard Space Flight Center, Greenbelt, Md.; its development was led by Fazio. The multiband imaging photometer was built by Ball Aerospace Corporation,

Boulder, Colo., the University of Arizona, Tucson, and Boeing North American, Canoga Park, Calif. The instrument's development was led by Dr. George Rieke, University of Arizona.***

MISSION NEWS AND SCIENCE

received from Meredith Higbie, Assistant Director SCORE - South Central Organization of Researchers and Educators

A **black hole** is an object whose gravity is so strong that not even light can escape from it. If we can't see them, how do we know they're there? As matter falls or is pulled towards the black hole, it gains kinetic energy, heats up and is squeezed by tidal forces. This violent accretion and collision emits X-rays and gamma rays, highly energetic forms of light. Scientists are investigating these poorly understood processes with the help of current missions. Two of which are: The **CHANDRA X-Ray Observatory** (<http://chandra.harvard.edu/>) is designed to observe X-rays from high-energy regions of the universe, such as the remnants of exploded stars. The recently launched **Swift Mission** (<http://swift.gsfc.nasa.gov>) is designed specifically for Gamma Ray Burst science.***

POINTS TO PONDER

received from Fred Hays

- ☛ Why does someone believe you when you say there are four billion stars, but check when you say the paint is wet?
- ☛ If the temperature is zero outside today and it's going to be twice as cold tomorrow, how cold will it be?
- ☛ How is it that we put man on the moon before we figured out it would be a good idea to put wheels on luggage?



STARDUST UP CLOSE

by Patrick L. Barry and Dr. Tony Phillips

Like discarded lumber and broken bricks around a construction site, comets scattered at the edge of our solar system are left-over bits from the "construction" of our solar system. Studying comets, then, can help scientists understand how our solar system formed, and how it gave rise to a life-bearing planet like Earth. But comets have long been frustratingly out of reach -- until recently. In January 2004 NASA's Stardust probe made a fly-by of the comet Wild 2 (pronounced "vilt"). This fly-by captured some of the best images and data on comets yet ... and the most surprising. Scientists had thought that comets were basically "rubble piles" of ice and dust -- leftover "construction materials" held together by the comet's feeble gravity. But that's not what Stardust found. Photos of Wild 2 reveal a bizarre landscape of odd-shaped craters, tall cliffs, and overhangs. The comet looks like an alien world in miniature, not construction debris. To support these shapes against the pull of gravity, the comet must have a different consistency than scientists thought: "Now we think the comet's surface might have a texture like freeze-dried ice cream, so-called



See STARDUST, p. 10

'astronaut ice cream': It's solid and can assume odd, gravity-defying shapes, but it's basically soft and crumbles easily," says Donald Brownlee of the University of Washington, principal investigator for Stardust. Scientists are currently assembling a 3-D computer model of this surface from the photos that Stardust took. Those photos show the sunlit side of the comet from many angles, so its 3-dimensional shape can be inferred by analyzing the images. The result will be a "virtual comet" that scientists can examine from any angle. They can even perform a virtual fly-by. Using this 3-D model to study the comet's shape in detail, the scientists will learn a lot about the material from which the comet is made: how strong or dense or brittle it is, for example. Soon, the Stardust team will get their hands on some of that material. In January 2006, a capsule from Stardust will parachute down to Earth carrying samples of comet dust captured during the flyby. Once scientists get these tiny grains under their microscopes, they'll get their first glimpse at the primordial makings of the solar system.

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

SUNSPOTS

received from Tony LaConte

Two coronal mass ejections (CMEs) are heading toward Earth and they could spark strong geomagnetic storms when they arrive on January 16th-17th. Sky watchers should be alert for auroras. The CMEs were blasted into space by M8- and X2-class explosions above giant sunspot 720 on Jan. 15th. With all this excitement about this GIANT unaided eye (please use proper filtering) sunspot group, I thought I would send you an image I took this afternoon (1-16-2005).***



photos by Tony LaConte

NASA SPACE PIONEER JOHN YOUNG, ASTRONAUT WITHOUT EQUAL, RETIRES

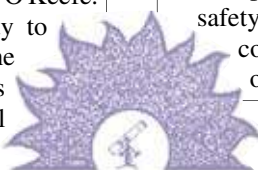
received from Peter Argenziano

Space pioneer John W. Young, a man who flew twice to the moon, walked on its surface and commanded the first Space Shuttle mission, is retiring. Young's achievements during his 42-year career at NASA are unmatched. He was the first human to fly in space six times and launch seven times, six times from Earth and once from the moon. He is the only astronaut to pilot four different types of spacecraft, flying in the Gemini, Apollo and Space Shuttle programs. Young is the longest serving astronaut in history. His retirement from NASA was effective Dec. 31. "John's tenacity and dedication are matched only by his humility," said NASA Administrator Sean O'Keefe. "He's never sought fame and often goes out of his way to avoid the limelight. However, when you need a job done and you want it done right, John's the person to go to. He's a true American treasure, and his exemplary legacy will inspire generations of new explorers for years to come."

Young, a native of Orlando, Fla., retired U.S. Navy Captain and test pilot, joined NASA in 1962. His first mission was as pilot of the maiden manned flight of the Gemini Program, Gemini 3 in 1965. With Young and Commander Virgil Grissom on board, Gemini 3 was the first American space flight with more than one person. He next flew in 1966, commanding Gemini 10. Along with Mike Collins, he performed the first dual rendezvous maneuvers during a single mission. In 1969, two months before man's first landing on the moon, Young orbited Earth's satellite. Young orbited the moon in the Apollo Command Module, while his fellow crewmembers, Thomas Stafford and Eugene Cernan, descended to within 50,000 feet of its surface in the Lunar Module. Apollo 10 was a full rehearsal for the first lunar landing. Young returned to the moon in 1972 as commander of Apollo 16. He piloted the Lunar Module to a landing on the surface, along with Charlie Duke. Young and Duke drove more than 16 miles across the lunar surface in the Lunar Rover Vehicle, collecting more than 200 pounds of samples. It was the most extensive lunar exploration mission to date. "You run out of superlatives when you talk about Captain John Young as a test pilot, astronaut and engineer," said former Space Shuttle astronaut and Associate Administrator for Space Operations William Readdy. "John has an incredible engineering mind, and he sets the gold standard when it comes to asking the really tough questions. When he talks, everybody listens. It's impossible to overstate the positive impact John has had on human space flight operations and safety. Beyond that, he has

set a standard for excellence for all those who have served with him and those who will follow. He's truly an inspiration," Readdy said. Young was at the helm of Columbia for the first Space Shuttle mission, STS-1 in 1981, with Robert Crippen as pilot. It was the world's first flight of a reusable, winged spacecraft; the first landing of a spacecraft on a runway; and the largest, heaviest craft to launch and land to date. It was the first time a manned spacecraft was launched without previous unmanned test flights. Young guided the 96-ton Columbia to a perfect touchdown at Edwards Air Force Base, Calif., after a two-day mission. Young's sixth and final space mission was again in command of Columbia on the ninth Shuttle flight, STS-9 in 1983. It was the first launch of the Spacelab laboratory in the Shuttle's cargo bay. It was the longest Shuttle flight to date, with the first international crew working around the clock for 10 days to conduct more than 70 experiments. When he was not in flight, Young's extensive

contributions continued on the ground. He served as chief of NASA's Astronaut Office for 13 years. He also served eight years as an assistant and associate director of NASA's Johnson Space Center, providing advice and counsel on technical, operational and safety matters. "John Young has no equal in his service to our country and to humanity's quest for space," said the Director of NASA's Johnson Space Center, Jefferson D. Howell Jr.



See YOUNG, p. 11

"He is the astronaut's astronaut, a hero among heroes who fly in space. His achievements have taken space from an unknown environment to the expanding frontier we explore today. His steady hand and unflinching eyes have served our cause of space exploration well, expanding our horizons with unshakable dedication and calm courage. He will be missed," Howell said.***

TARANTULA NEBULA

by Luis E. Campusano, PhD
Director - Founder, QuasarChile

30 Doradus, which is also known as the Tarantula nebula because of its shape, is one of the most fascinating gaseous nebulae in the sky. Its size is enormous, and the mass of its luminous gas amounts to half a million solar masses. Some astronomers believe that 30 Doradus is the nucleus of the Large Magellanic Cloud (LMC). If that is true, it would be unique among galactic nuclei by being so lightly obscured, and therefore so favourably placed for



Dan at Heimhenge looking at a Supernova event, actually just the bright light pollution of the Anthem mall. photo & caption by Georg Koester

astrophysical studies, including by optical methods. Visit our website at www.quasarchile.cl to see our choice of the "Top 10 Southern Hemisphere Objects", and get acquainted with programs for amateur astronomers to observe these Top 10 objects in person or to discover your own Top 10.***

MISSION TO NEPTUNE UNDER STUDY

In 30 years, a nuclear-powered space exploration mission to Neptune and its moons may begin to reveal some of our solar system's most elusive secrets about the formation of its planets -- and recently discovered ones that developed around other stars. This vision of the future is the focus of a 12-month planning study conducted by a diverse team of experts led by Boeing Satellite Systems and funded by NASA. It is one of 15 "Vision Mission" studies intended to develop concepts in the United States' long-term space exploration plans. Neptune team member and radio scientist Professor Paul Steffes of the Georgia Institute of Technology's School of Electrical and Computer Engineering calls the mission "the ultimate in deep space exploration." NASA has flown extensive missions to Jupiter and Saturn, referred to as the "gas giants" because they are predominantly made up of hydrogen and helium. By 2012, these investigations will have yielded significant information on the chemical and physical properties of these planets. Less is known about Neptune and Uranus -- the "ice giants." "Because they are farther out, Neptune and Uranus represent something that contains more of the original - to use a 'Carl Saganism' - 'solar stuff' or the nebula that condensed to form planets," Steffes said. "Neptune is a rawer planet. It is less influenced by near-sun materials, and it's had fewer collisions with comets and asteroids. It's more representative of the primordial solar system than Jupiter

or Saturn." Also, because Neptune is so cold, its structure is different from Jupiter and Saturn. A mission to investigate the origin and structure of Neptune -- expected to launch between 2016 and 2018 and arrive around 2035 -- will increase scientists' understanding of diverse planetary formation in our solar system and in others, Steffes noted. The mission team is also interested in exploring Neptune's moons, especially Triton, which planetary scientists believe to be a Kuiper belt object. Such balls of ice are micro planets that can be up to 1,000 kilometers in diameter and are generally found in the outermost regions of our solar system. Based on studies to date, scientists believe Triton was not formed from Neptune materials, like most moons orbiting planets in our solar system. Instead, Triton is likely a Kuiper belt object that was accidentally pulled into Neptune's orbit. "Triton was formed way out in space," Steffes said. "It is not even a close relative of Neptune. It's an adopted child.... We believe Kuiper belt objects like Triton were key to the development of our solar system, so there's a lot of interest in visiting Triton." Though they face a number of technical challenges -- including entry probe design, and telecommunications and scientific instrument development -- the Neptune Vision Mission team has developed an initial plan. Team members, including Steffes, have been presenting it this fall at a variety of scientific meetings to encourage feedback from other experts. On Dec. 17, 2004 they presented it again at the annual meeting of the American Geophysical Union. Their final recommendations are due to NASA in July 2005. The plan is based on the availability of nuclear-electric propulsion technology under development in NASA's Project Prometheus. A traditional chemical rocket would launch the spacecraft out of Earth orbit. Then an electric propulsion system powered by a small nuclear fission reactor - a modified submarine-type technology -- would propel the spacecraft to its deep-space target. The propulsion system would generate thrust by expelling electrically charged particles called ions from its engines. Because of the large scientific payload a nuclear-electric propelled spacecraft can carry and power, the Neptune mission holds great promise for scientific discovery, Steffes said. The mission will employ electrical and optical sensors aboard the orbiter and three probes for sensing the nature of Neptune's atmosphere, said Steffes, an expert in remote radio sensing of planetary atmospheres. Specifically, the mission will gather data on Neptune's atmospheric elemental ratios relative to hydrogen and key isotopic ratios, as well as the planet's gravity and magnetic fields. It will investigate global atmospheric circulation dynamics, meteorology and chemistry. On Triton, two landers will gather atmospheric and geochemical information near geysers on the surface. The mission's three entry probes will be dropped into Neptune's atmosphere at three different latitudes - the equatorial zone, a mid-latitude and a polar region. Mission designers face the challenge of transmitting data from the probes through Neptune's radiowave-absorbing atmosphere. Steffes' lab at Georgia Tech has conducted extensive research and gained a thorough understanding of how to address this problem, he noted. The mission team is still discussing how deep the probes should be deployed into Neptune's atmosphere to get meaningful scientific data. "If we pick a low enough frequency of radio signals, we can go down to 500 to 1,000 Earth atmospheres, which is 7,500 pounds of pressure per square inch (PSI)," Steffes explained. "That pressure is similar to what a submarine experiences



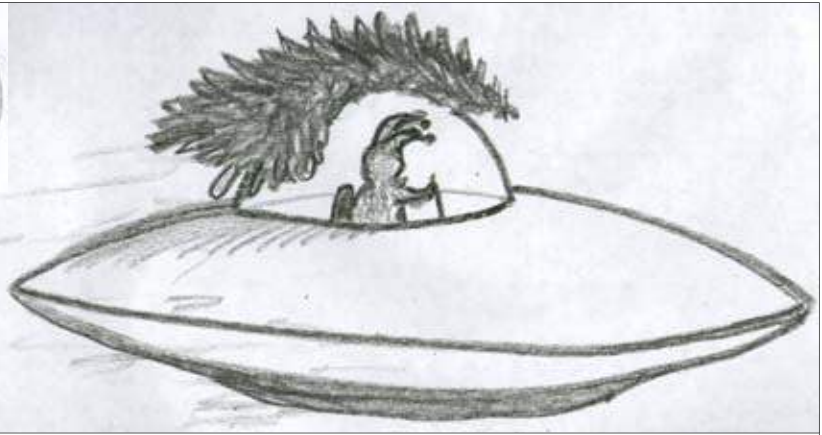
See NEPTUNE, p. 12

in the deep ocean." However, that depth will probably not be required, according to the mission team's atmospheric modelers, Steffes said. The probes will be able to obtain most information at only 100 Earth atmospheres, or 1,500 PSI.***

RIPPLES DETECTED IN SATURN RING

from Space.com

New images from the Cassini spacecraft reveal undulating kinks in one of the rings and theft of ring dust by a moon. The kinks are seen in greater detail than ever before and the thievery has been photographed for the first time. Saturn's moon Prometheus is likely behind it all. The material in Saturn's ring -- ice and rock from the size of dust to mountains -- orbits the planet in a flat plane divided into several rings. In the F ring, kinks travel along the orbital path, looking a bit like moving bumps in a road. Scientists have speculated in the past Saturn's moon Prometheus creates the kinks by pulling material from the F ring and temporarily putting batches of the stuff on a slightly different path. That view is bolstered by an image that appears to show a faint strand of material running from the F ring to Prometheus, presumably lured there by the moons gravity. The potato-shaped satellite is about 63 miles (102 kilometers) long. It would not be the first time Prometheus has stolen something. In Greek mythology, Prometheus stole fire from the Gods and gave it to the mortals. The kinks in the F ring are seen in an animation with 44 panels taken at 3-minute intervals. The rings appear to tilt during the sequence because of the spacecraft's movement south and away from the planet during the roughly 2-hour photography session.***



KCH

"The places they send me! I'm lucky I didn't hit a reindeer!"

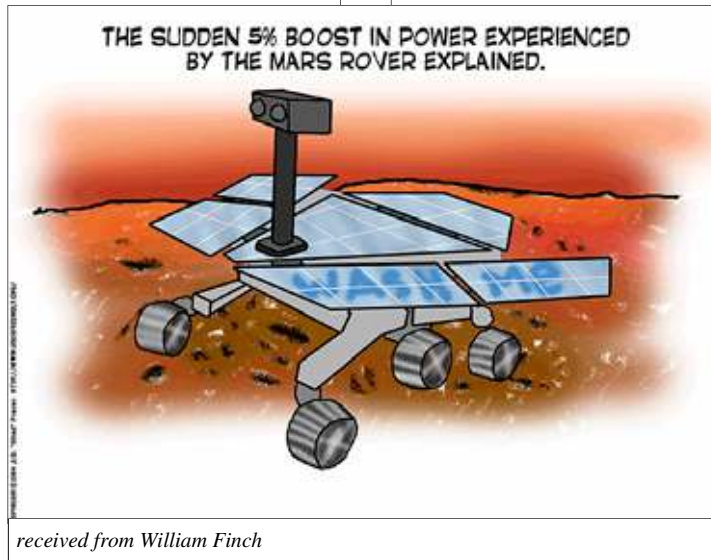
- ☛ May 6th - Global Warming
David Burstein Ph.D., Arizona State University
- ☛ June 3rd - Music and the Brain
Stephen Helms Tillery Ph.D., Arizona State University
- ☛ July 1st - Cosmetic Surgery as Cultural Performance
Tanya Augsburg Ph.D., Arizona State University
- ☛ August 5th - OPEN
- ☛ September 2nd - Risks in the Digital Age

Partha Dasgupta Ph.D., Arizona State University

☛ October 7th - Genetically Modified Foods
Guy A. Cardineau Ph.D., Arizona State University

☛ November 4th - OPEN

☛ December 2nd - The Science of Beauty, The Beauty of Science
Rebecca Lilleberg, Philosophy Cosmetics***



received from William Finch

MOON MARATHON AT HEIMHENG

Date chosen: March 25, 6pm

I'd love to host another Moon Marathon here @ Heimhenge. March 25th (Friday) provides the

Full Moon needed for the event, and is currently open on my calendar. March 26th (Saturday) may be more convenient for members. That's also open for me. Either one is good. Pick one. Let me know. Post it in the NL. I will do the usual "official" Moon Marathon certificates for participants. -Dan ***

STAR TALES

received from Bette Wurst

The rates at which our planets spin vary greatly. Venus takes 244 days to spin once on its axis, while Jupiter takes just 11 hours. The giant planets probably acquired their spin from the motions of the gas in the solar nebula as they pulled in the gas. Mars and Earth probably acquired their spin by the impacts they sustained as they grew. The rotation of Venus and Mercury has been slowed down by the tidal effects of the sun.***

ARIZONA SCIENCE CENTER - Volunteers needed

Adult Night Out Schedule

5-7 p.m. Socializing and touring exhibits

7-8 p.m. Presentation

8:15-9 p.m. Film or Planetarium show

9 p.m. Evening concludes

☛ February 4th - Titan
Mike Floyd, Production Operations Manager for Space and National Systems Division for General Dynamics

☛ March 4th - Dance of the Fertile Universe: Chance and Destiny Embrace
George Coyne Ph.D., Director of the Vatican Observatory

☛ April 1st - OPEN



ANCIENT STAR MAP IS FOUND

by Dan Vergano, USA Today
received from Bette Wurst

An Ancient atlas of stars lost for centuries was unveiled at a meeting of the American Astronomical Society. Hidden in plain sight for centuries, the star atlas was found on a statue in Italy's National Museum of Archaeology in Naples. Called the Farnese Atlas, the 7-foot-tall marble statue depicts one of the titans of Greek mythology, Atlas, holding a 2-foot-wide globe on his shoulders. The sphere was covered with 41 star constellations, from Aries to Andromeda. "Here we have a real case where lost, ancient wisdom has been found," said Bradley Schaefer, an astronomer at Louisiana State University in Baton Rouge. Inscribed on the statue, he reports, is the lost star catalogue of Hipparchus, one of the great Greek astronomers who lived in the second century B.C. No copies of the atlas, a standard reference for ancient astronomers, exist today. Star positions on the statue date to 150 B.C. and match those mentioned in a surviving book of commentary by Hipparchus, Schaefer says. The link between the statue and Hipparchus was suspected by art historians, but Schaefer was the first to plot the constellations on the stone globe.***

BRUSH UP YOUR EINSTEIN

by Dan Kincaid, AZ Republic
received from Bette Wurst

Alice Calaprice's little book, The Einstein Almanac, provides a year-by-year timeline of the life and work of the man who reshaped our understanding of the universe.***

DID YOU KNOW?

borrowed from Astronomy Magazine's Special Issue

THE SUN

The Sun is the only celestial object whose effects can be seen both day and night. During daylight hours, our star provides a wealth of detail – sunspots & flares – to observers who take the precautions necessary to protect their eyesight. At night, the glow of an aurora is the visible manifestation of solar particles striking the atmosphere.

NORTH AMERICAN NEBULA

The North American Nebula stands just 3 degrees east of Deneb, where it impresses observers armed with binoculars or rich-field telescopes.

OCCULTATIONS

Only four 1st-magnitude stars can ever be occulted by the Moon. They are Aldebaran in Taurus, Regulus in Leo, Spica in Virgo, and Antares in Scorpius. Watching the Moon pass in front of a bright star ranks among the more dynamic events visible to backyard observers. But seeing the Moon occult a 1st-magnitude star is even better. This year features several occultations of two of these luminaries: Antares in Scorpius the Scorpion and Spica in Virgo the Maiden.***

STAR TALES

received from Bette Wurst

Planetary nebulae, which consist of gas blown off by a dying star, often have a fascinating symmetry. Detailed Hubble Space Telescope images, such as the Hourglass Nebula, are helping us understand this symmetry.***

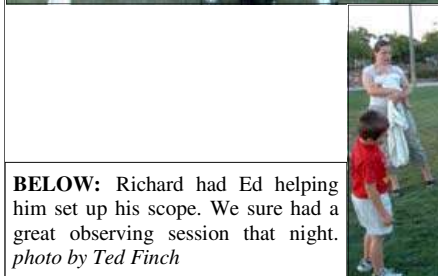


BELOW: Here we see a line waiting for Don to set up his scope. The night was quickly setting upon us but the temperature and the viewing was going to be great. *photo by Ted Finch*



LEFT: The Anthem Star Party. This is the second party, as the first one was cancelled due to a big black storm cloud taking over the sky. So, here we are, setting up for an evening of viewing and it did turn out to be extremely nice. We see here the surroundings of the Anthem park in the background. At Anthem we always set up on the grass. On the ground in front of me we see the Avon boxes of Anthem handouts, a cooler with drinks for sale, my telescope supplies, and at my feet is the Saturn Tip Jar (well, it isn't a jar, but you get the idea). William is putting together the Doctor's legs and we are getting prepared for a long night of viewing. *photo by Ted Finch*

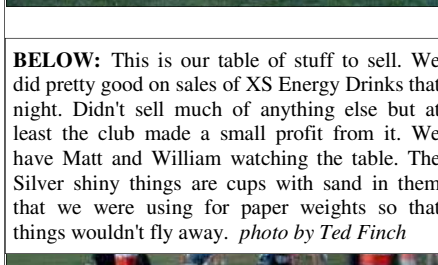
BELOW: Roger was setting up his scope. On the ground you can see the AVON box of handouts ready to go into the public's hands. The public was definitely ready to observe as soon, if not before, we were set up. *photo by Ted Finch*



BELOW: Richard had Ed helping him set up his scope. We sure had a great observing session that night. *photo by Ted Finch*



BELOW: Here we have the Doctor almost all set up, and we have Don in the background with a cooler. This is a beautiful park. *photo by Ted Finch*



BELOW: This is our table of stuff to sell. We did pretty good on sales of XS Energy Drinks that night. Didn't sell much of anything else but at least the club made a small profit from it. We have Matt and William watching the table. The Silver shiny things are cups with sand in them that we were using for paper weights so that things wouldn't fly away. *photo by Ted Finch*



ANTHEM, 2004

IN ATTENDANCE AT THE DECEMBER PAS MEETING

Special date: Friday December 3, 2004 7pm

Thank you all for attending this special meeting. Sometimes it is fun to take attendance with photos and show off our more active PAS members. Those not photographed were difficult to get in pictures (or the photo I took of them (close up) wasn't good enough for posting in the newsletter) and are listed here: Richard Guthrie, Matt Kohl, William Finch, Terri Finch, Ed Wurst, Bruce Wurst, Bette Wurst, Ryan Maughan, Barbara Hartman, & Amanda Sallas. Dan Heim opened the room and help us set up and then took off for the evening. I missed his photo totally.



Mark Stephenson - PAS President



Jerry Belcher - Vice President & Star Party Director



Nat White - Guest Speaker - Topic: Interferometry on Anderson Mesa



Susie Gannetson - She attended with our Speaker. She said she was the "Tag Along."



Disa Holly - PAS Member & Fantastic club promoter & Friend.



Mike Marron - P.R. Director and wonderful viewing partner.



Don Boyd - He's an awesome PAS Member and viewing partner.



Kevin Harcey - Currently a PAS P.R. Director and partner to Mike Marron, but also our PAS Cartoonist and other art work. He does some of the best cartoons for the Newsletter and for other events such as Astronomy Day.



Jim Conley - PAS Member



Jesse Romero - Hopefully a soon to be PAS member.



Adam Bloomer - Currently a PAS Member but was a past Treasurer. Also an excellent observing partner.



Ed Garbero - Past Treasurer but is now a much needed PAS Host. He teams up with John Pulis, who didn't make it to this meeting.

THE DECEMBER PAS MEETING ACTIVITIES

We had an awesome meeting and if you didn't get to attend it, at least the photos give you an idea of what fun we had.



Nat was very energetic in his presentation. He did an awesome job and had a lot of audience participation. We really enjoyed his talk and he made it simple enough that everyone could understand and enjoy it.



This is one of the slides Nat showed during his presentation while telling us all about the Interferometer.



Here we have the other side of the room. At the first table we have William Finch, then the next table has Don Boyd and Matt Kohl, and at the third table is Jesse Romero, and behind him is Richard Guthrie. Mark is standing up and everyone is watching something of interest.



Before we closed the meeting, Disa gave a brief announcement about her involvement with grade schools and the packets of PAS information she has been handing out to them. Thank you Disa, for all your promoting efforts.



Pictured here we have in the back row - Adam & Susie - and then the middle row is Disa, Mike, Ed & Barbara, and then the front row is Bruce, Ed's body without a head and Bette. We were all intently watching Nat give his presentation.



Here we have a room full of people after the meeting has ended who are just enjoying their time visiting. On the left is the PAS Snacks. We didn't have the usual location for them this time so they stayed towards the front of the room. We also see in this photo: Jim Conley talking to Disa, with Adam behind them. And on the right of the photo we see Jerry checking out the stuff for the Swapmeet at the back table.



At the end of his presentation, Nat took questions and they were some really good questions. This is the ending slide of his presentation.



Here we see Bruce munching on snacks. Bruce had a bag he was sharing around and Mark had one at the back of the room, too. At the table with Bruce is Ed and Bette. Jerry and Kevin are checking out the SWAPMEET Table.

SCIENTISTS CALL OFF DATE WITH ASTEROID

Space rock also will miss moon, calculations say

received from Bette Wurst

Additional observations have ruled out the chance that a recently discovered asteroid, believed to be about 1,300 feet long, could hit Earth in 2029, NASA scientists said. Asteroid 2004 MN4 had been given a small chance of strike, based on observations in June and December. Astronomers then began independent efforts to find earlier observations of the asteroid. The Spacewatch Observatory near Tucson found faint pictures of the asteroid in archival images dating to March 15, the Near Earth Object Program Office at the Jet Propulsion Laboratory said in a statement on its Web site. The pictures from March allowed scientists to refine the asteroid's projected trajectory, and "an Earth impact on 13 April 2029 can now be ruled out," the program office said. Scientists also ruled out a strike on the moon.***

Q: What did the North Star say to the Big Dipper?

A: "It's not polite to point!"

Q: What does the runner-up in the Ms. Galaxy contest receive?

A: A constellation prize

ASTRONOMY DAY AT THE ASC, 2004



Here we have Matt signing people in, Bruce with the Raffle tickets (which he ran very well), Bette working on the Mystery Bags, William on Centripetal Force, Disa with the Planet Hop and then a few folks down the end on the far right with the main display boards. The telescope you see there was given away to one lucky winner and it was donated by Charles Young.



Disa is helping two young kids identify the planets. In the background we see the three display boards and then the other set of tables where we had a Coloring Station, the Constellation Identification, a Constellation Find (Dan's page), and then Dan was down the end with the Laser Beam display. We had a great display at the Science Center.



Off to the left of our display area, I had Meteorite Man - Bob Holmes - set up his meteorite display. Mike is seen talking to Bob and they were chatting about meteorites. Mike had a display of his own just to the right off this picture. I didn't get a shot of it because Mike wasn't there when I went by to grab the photo of him in his display. Thank you Bob for joining us for this fun event!



We had Richard and Don up stairs on the third floor with the Telescope display. Barbara Hartman had set this up and she did an excellent job.



The Telescope display personality! Barbara and her husband Scotty set up and manned the telescope display with Richard Guthrie, Don Boyd, and Roger Scholl. They all did an awesome job. Thank you all!



Here is the fantastic telescope display. We have Roger's 8", A pair of binocs from Kevin, Don's white 4.5", The astro Scan that Don carries around now for public star parties, Barbara's 10" Dob and Richard's 10". In the background Barbara had a NASA film running with awesome space images and they kept the volume low yet loud enough for others to listen if they wished to.



Here we see Mike Marron doing his favorite thing... talking about astronomy and physics. He had set up, outside the Science Center, a display that he now uses every where he goes with the group. Someone joined the conversation on the left, and Matt Kohl is standing on the right. This is a rather impressive display.

Q: Why did the astronaut take a shovel into space?

A: To dig a black hole.



At the Arizona Science Center for Astronomy Day we had Dan with an awesome laser light set up within that 10 gallon aquarium. You can see some of the lasers within it. He was having fun showing everyone how the lasers bounce off items that are inside his aquarium with some smoke to make the beams more visible. To the right of Dan is Roger Serrato who recently helped to build the awesome new PAS Lectern.

Q: Why did the astronaut take an American flag into space?

A: It was a star-spangled banner.



Here we have Steve Dodder, in orange, who belongs to SAC but is a great person to observe with, working his telescope, which is shown in white on the left. He made his own mount for the scope, that's the white part, and if you look carefully, you'll see the black tube of his scope attached to the end of the white mount. We also had Sam Insana at this event with his telescope, but I didn't capture a good picture of him.

ASTRONOMY DAY AT THE ASC, 2004



Here are two of our wonderful volunteers for this day's events from Moon Valley High School. I really appreciate that group, as they did an awesome job. The table on the left was offering Dan's constellation finding page. The answers to that are posted on our website. The table on the right was doing the coloring pages for the younger kids.



Here is another awesome volunteer working from Moon Valley H.S. at the constellation finding area. I had made, with many donations of our group, constellation tubes out of toilet paper tubes and construction paper. I created the constellation down the end of the tube by making holes in the construction paper in the place where stars would be. It had been set up

so that these were examples, and the kids could identify the constellations, and then make their own using mine as the master copy. Things weren't set up as planned, I improvised, so I cut out the "make your own" version and just went with "identify these." It turned out well.



Our main table had several Moon Valley volunteers. We had a display board, three boards long, set up so that the public could read and try to figure out the distances to planets, around planets, etc.



Here we have William playing around with the Centripetal Force demonstration he was supposed to be sharing with the kids, and the Disa is on his right. Disa is running the Planet Hop display. I had planets that are loosely laying on the table, and the kids make themselves a Cricket and then have the cricket hop to a planet, identify it and get a prize. Disa was excellent at this display. Thank you so much Disa!



Here we have our main table where we had Matt off the screen to the left to sign in our volunteers. Then we had Bruce running the Raffle Tickets. The bags in front of the raffle ticket shuffler were in case someone didn't get one when they were roaming around the center. I had 2 people giving out the bags and telling everyone to come by and see if they won with the raffle ticket inside the bag. To the Right of Bruce is Bette and then William. Disa is standing up with the telescope in the way of her view and she was helping one kid make a Cricket. All my volunteers did an awesome job that day and I thank them all!



It is so hard to get a good image of someone and their scope during the evening hours, but this one came out pretty well. I have here Don and his scope set up outside the Science Center for the evening portion of Astronomy Day. Yes, not only did most of us get to the

Science Center by 8am, but we didn't leave till around 11pm that night. It was a long day but I think most of us feel we accomplished quite a bit in promoting astronomy to the public.

ASU West Open House Star Party, March 2004



Richard is setting up his telescope behind the Doctor which is on the right. The Cart in the center is brought out by the Astronomy department and had a TV monitor on it to show what the telescope next to it was on. This all happened last March at the ASU West Open House Star Party. These open houses happen every 6 months, one in March and one in October. If you can attend this month's event, please come join us. We have an awesome time!

Q: Why did the astronaut take a broom into space?
A: To clean up the stardust.



Here we show Don collecting things from his white car, the PAS Table with the Doctor set up near by, William collecting things from our car, and Don's scope set up on the far right. In the background are the (then) newly built dorms for the ASU West students. We can always use more scopes out there and we usually have an awesome turnout of the public.



For those of you who haven't had the chance to see the comet but would like to, I've borrowed this awesome photo from Jon Christensen's website <http://members.cox.net/jonc97/> and here is the caption he included with it. "**Comet Machholz** Taken January 14, 2005 Takahashi Epsilon 210 Astrograph SBIG STL11000M Camera 3min Each LR." The photo is awesome in color, so if you get the chance to go see it on this website or in person, please do. It is worth your while.

MARS WATER, ROBOTS TOPS IN 'SCIENCE' FOR 2004

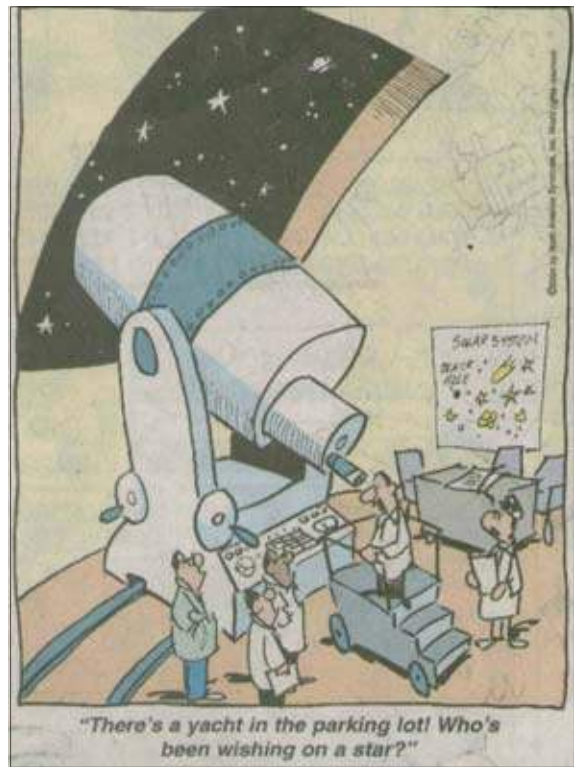
by Paul Recer

The conclusive discovery by a pair of wheeled robots that Mars once had vast pools of water and possibly could have harbored life was chosen by the editors of the journal *Science* as the most important scientific achievement of 2004. NASA's two Mars rovers, Opportunity and Spirit, landed on the Red Planet early in 2004 and have since found clear and conclusive evidence that Mars was drenched with water at some time in its history. The editors of *Science*, one of the world's leading publishers of peer-reviewed, original research, judged the robotic feat as the top scientific "Breakthrough of the Year." "Inanimate, wheeled, one-armed boxes roaming another planet have done something no human has ever managed," *Science* reported. "They have discovered another place in the universe where life could once have existed." Nine other scientific achievements, including discovering another species of human, were selected as runners-up, but *Science* editor-in-chief Donald Kennedy said, "There wasn't much doubt about this year's winner." Opportunity and Spirit found unmistakable proof of Martian water: rippled sediments that were once at the bottom of a shallow sea, and rock that was once so water-soaked that "it had rotted," the journal said. Kennedy said it is clear that the National Aeronautics and Space Administration must not abandon its robotic exploration while gearing up for President Bush's program to send humans to the moon and later Mars. "To do one at the expense of the other would be a mistake," Kennedy said. "It remains to be demonstrated what a human exploration could do that we can't do now or couldn't in the next 10 years with robotic technology."***

STAR TALES

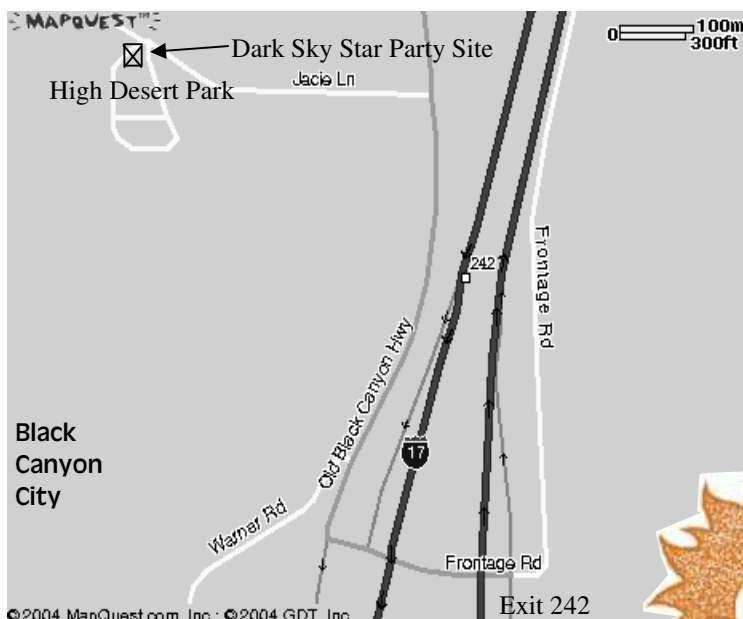
received from Bette Wurst

Every 20 years or so, astronomers discover a new "nova," an event in which a large nuclear eruption occurs on the surface of a star in a binary system, causing the star to become much, much brighter for a few days or weeks.***



UPCOMING EVENTS

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
JAN. 23 Full Moon - 5:32 A.M. EST; Moon at apogee	24 Saturn 5° S of Moon	25	26	27 <i>Meeting of the Minds</i> 7pm Denny's I-17 & Dunlap	28	29
30	31 Jupiter 0.9° N of Moon, occultation	FEB. 1	2 Last Quarter Moon 2:27 A.M. EST; Jupiter stationary	3 <i>PAS Meeting</i> 7pm Foothills Academy, Speaker - Jack Farmer; Neptune in conjunction with Sun; Antares 1.1° S of Moon, occultation	4 <i>Adult Night Out at Arizona Science Center</i> - Topic: Titan - Volunteers Needed	5 <i>Lake Pleasant Deep Sky Star Party</i> ; Mars 4° N of Moon
6	7 Moon at perigee	8 New Moon 5:28 P.M. EST	9	10	11	12 <i>Lake Pleasant Shallow Sky Party</i>
13	14 Valentine's Day; Pallas stationary; Mercury in superior conjunction; Venus 1° S of Neptune	15 <i>Deadline</i> for submissions to April Newsletter; First Quarter Moon 7:16 P.M. EST	16	17	18	19 Moon at apogee
20 Saturn 5° S of Moon	21	22	23 Full Moon 11:54 P.M. EST	24 <i>Meeting of the Minds</i> 7pm Denny's I-17 & Dunlap; Juno in conjunction with Sun	25 Uranus in conjunction with Sun; Mercury visible in evening skies at sunset (until March 23)	26
27 <i>AZ Biltmore Star Party</i> - Volunteers needed - see article/map, p. 7; Jupiter 1.2° N of Moon, occultation	28	MAR. 1	2	3 <i>PAS Meeting</i> 7pm Foothills Academy - see map page; Last Quarter Moon 12:36 P.M. EST; Antares 0.8° S of Moon, occultation	4 <i>Adult Night Out at Arizona Science Center</i> - Dance of the Fertile Universe: Chance and Destiny - Volunteers Needed	5 Sally Ride Festival at ASU Tempe Campus - Volunteers needed, see article/map, p. 7; <i>Lake Pleasant Shallow Sky Party</i>



PHOENIX ASTRONOMICAL SOCIETY

Terri & William Finch
PAStimes NL Editor & HP Editors
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PAStimes
Feb./Mar 2005 Issue

STAMP

BRING A FRIEND

Next Meeting: February 3, 2005
Speaker: Jack Farmer
Topic: Robotic Field Geologists on Mars - The Mars Exploration Rover Mission

TO:

MAILING LABEL

THIS ISSUE:

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Mar. 3, 2005, 7 pm
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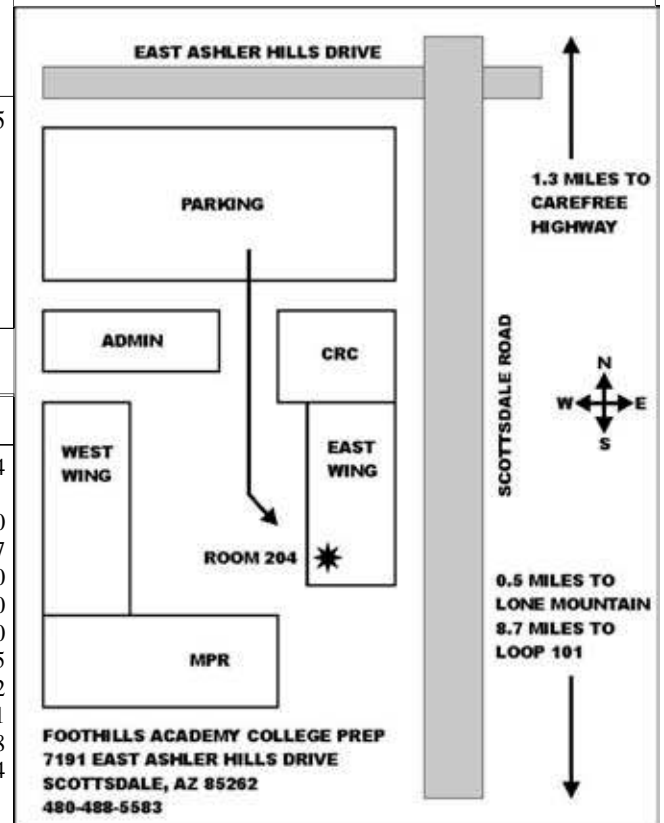
MEETING OF THE MINDS 2004/2005

Jan. 27, 2005, 7 pm
Feb. 24, 2005, 7 pm
Mar. 31, 2005, 7 pm
Apr. 28, 2005, 7 pm

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