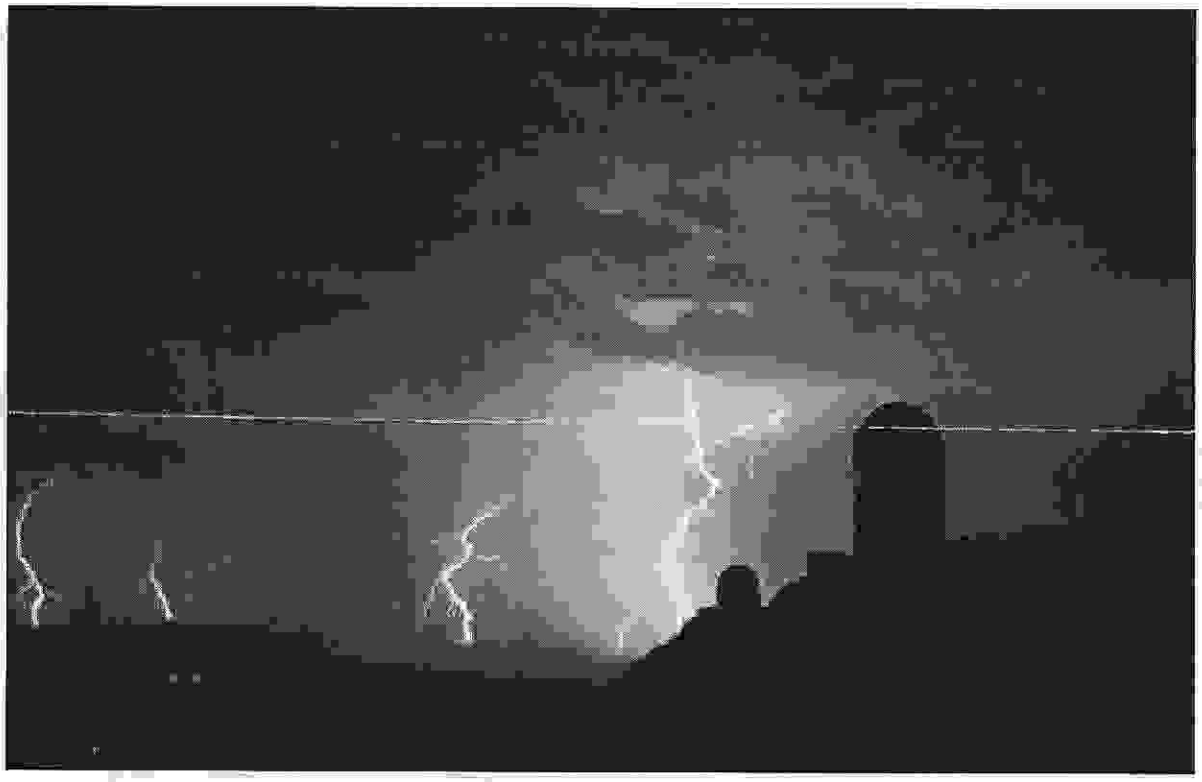
Desert Skies

Tucson Amateur Astronomy Association

Volume LI, Number 7 July, 2005



Weather Conditions Affect Astronomy

Cover Photo: Lightning over Kitt Peak. Credit and copyright: Adam Block (KPNO, AURA, NOAO, NSF). 2000 July 17 Astronomy Picture of the Day.

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Membership in the TAAA

Annual Dues

Individual membership.....$25.00
Family (includes two adults plus minor children).....$30.00

Youth under 18 years must join as a family upon parental or guardian acknowledgement of participation in TAAA events. Ask the Treasurer for the required form.

Discounts (only one discount allowed)

Seniors (over 60 years).....$2.00
College Students, Teachers (K - 12).....$8.00
Youth under 18 yrs (form required - contact the treasurer).....$13.00

Options (add to above membership rates)

Tucson society of the Astronomical League (TAL) dues$ 5.00
Sky & Telescope Magazine 1 year (12 issues).....$32.95
Astronomy Magazine 1 year (12 issues).....$29.00
2 years (24 issues).....$55.00
Postage for New Member Pack $ 3.85

Donations are accepted for the following funds: SA-IDA/Light Pollution, TIMPA, Education, 30" Telescope & Land, and General/Undesignated.

Renewal Information

- Your membership expires as indicated on your mailing label.
- TAAA members may join the Tucson society of the Astronomical League (TAL) at the time they join or renew.
- Discounted Sky & Telescope or Astronomy magazine subscriptions are available to members and can be started or renewed at anytime. Rates are given above. Allow 3 months for processing. Subscriptions must be sent through the TAAA. *Do not send money directly to the magazines.* To change an individual subscription to the group rate, pay the subscription amount to the TAAA treasurer. Include your magazine renewal notice.
- Please include a note explaining what you are paying for. Credit cards are not accepted. Write one check or money order for dues plus any options or donations. Make it payable to TAAA and send to:

Tucson Amateur Astronomy Association
PO BOX 41254 Tucson, AZ 85717

Mailing Address or Email Changes - Send to address above or email the treasurer.

TAAA Mission Statement - The mission of the Tucson Amateur Astronomy Association is to provide opportunities for members and the public to share the joy and excitement of astronomy through observing, education and fun.

Desert Skies Publishing Guidelines - All articles, announcements, news, etc. must be submitted by the newsletter deadline. Materials received after that date will appear in the next issue. The editor retains all submissions unless prior arrangements are made. Partial page submissions should be submitted in Word compatible files via e-mail or on a floppy disk. Full-page articles, artwork, and photos can be submitted camera ready. All material We will not publish slanderous or libelous material! Send submissions to:

George Barber
TAAA/Desert Skies Editor
15940 W Ridgemoor Ave
Tucson AZ 85736

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President's Message

Thanks to the efforts of Steve Ratts and Shawn Hermann, and a host of hearty individuals from the TAAA and friend A.J. Levy, we have the 16 foot Ash Dome down from Kitt Peak and at the TIMPA site. A.J. had a bodacious Hummer and large trailer, allowing us to transport the many pieces of the disassembled dome from the mountain to TIMPA in about 8 hours. What a great job everyone did! This really gets the 16-foot dome project rolling.

Please welcome new member of the Board of Directors Ken Shaver. We now have a complete Board. Bill Lofquist switches roles from Member-at-Large to that of Vice President. Congratulations to all.

Let's hope for clear skies for the July 3rd Deep Impact event. Get yourself a clear southwestern horizon at 10:30PM and keep watching Comet Tempel 1. Who really knows what we might see.

I will not be able to attend the August meeting, as I will be out of town. Bill Lofquist will be your host.

Thom Peck

Meeting Information and Calendar of Events

TAAA MEETING DATE: Friday, July 1 at the Steward Observatory Auditorium - Room N210

ASTRONOMY ESSENTIALS: 6:30 pm
Title: Observing Under Moonlight
Speaker: Andrew Cooper

The Moon is bright and you can't see your favorite galaxies... Now what? Put away the telescope for a few weeks? Or possibly enjoy what our nearest celestial neighbor has to offer.

GENERAL MEETING: 7:30 pm
Title: Weather Conditions and Astronomical Observing
Speaker: Jim Meyer, Meteorologist, National Weather Service, Tucson office

Jim Meyer, senior meteorologist at the Tucson National Weather Service, will discuss atmospheric conditions that affect cloud cover and types, as well as seeing, scintillation, dispersion, extinction and refraction at various times of year and in various weather patterns. He'll explain how changes in weather patterns can influence viewing conditions and habits above and beyond simple cloud cover. In addition Jim plans to briefly discuss access to available weather information on the Internet and will give a very brief introduction to the new NWS space weather branch.
Jim received a BS in Physics from Florida Southern College in 1987 and then attended graduate school at North Carolina State University where he studied plasma physics. He received meteorology training at Texas A&M University as an Air Force officer in 1989. He was Wing Weather Officer for the 33rd Fighter Wing at Eglin AFB from 1990 to 1992 with several deployments to Europe and the Middle East. He began his employment with the National Weather Service in 1993.

BOARD OF DIRECTORS MEETING: Wednesday, July 13, 6:30 pm at Steward Observatory Conference Room N305

STAR PARTIES AND EVENTS:
02 July - TAAA Star Party at Las Cienegas
03 July - Comet 9P Tempel 1 Deep Impact at TIMPA
06 July - Beginner's SIG at China Rose
07 July - Astrophoto SIG at China Rose
09 July - TAAA Star Party/Beginner's SIG at TIMPA
30 July - TAAA Star Party at TIMPA

NEWSLETTER SCHEDULE: Deadline for articles: Sat, July 23. Printing: Mon, July 25. Folding Party: Tues, July 26. Mailing: Wed, July 27. The newsletter is mailed at least one week prior to the following month's General Meeting.

Club News

Member News

We welcome the most recent members to join the TAAA: Richard D. Grimaldi, Douglas Moll, John Ray, George Bruzenak, Kenneth Colbert, Shane and Laurel Inman, and H. Edward Stramler. Glad to have all of you join! New members should be sure to pick up a new members pack at a meeting. Hope you'll make it to our star parties or meetings so we can all get to know you. (Updated membership lists are available to any member at most meetings, so pick one up if you need it.)

Beginner's Special Interest Group

The Beginner's SIG will be meeting on Wednesday, July 6th at 6:30 p.m. at the China Rose Restaurant, 5101 East Speedway. ALL INTERESTED PERSONS ARE WELCOME. We will have dinner and discuss activities for TIMPA. A suggested observing list for TIMPA will be distributed at the meeting. We will discuss the list and any other activities that we wish to do at TIMPA.

The Beginner's SIG will then meet Saturday evening, July 9th, at the TIMPA site for observing. If you have a telescope, please bring it. If you do not have a telescope, you will have lots of opportunity to view objects through

the other scopes. Plan to arrive between 6:30 and 7:00p.m, and meet at the west end of the parking area.

Astro-photo SIG Meeting

July 7, 7pm
China Rose, NE corner Speedway/Rosemont

Our presentations feature CCD images, planetary webcams, and film. Come see some of the state of the imaging art over some Chinese food. Just show up and enjoy the show!

TIMPA Open for Deep Impact

The gate at TIMPA will be unlocked about sunset (7:30pm) on the evening of Sunday, July 3rd so that members who are interested can attempt to observe Comet 9P Tempel 1. Deep Impact is a mission that will culminate on July 3rd when an impactor will create a crater on the surface of the comet nucleus. This has never been done before so no one knows for sure how observable this is going to be but if you're up to the challenge come on out. The impact will occur at about 10:50pm. The comet will be about 20 degrees above the southwestern horizon and about 3-1/2 degrees northeast of Spica. The comet is faint; running about 9th magnitude but it could brighten to 6th magnitude after the impact. Even if nothing is seen, it will be nice to get together for observing; the moon will not be a problem. Please park at the west end of the parking area if you will be leaving before midnight so you don't disturb others who will be observing. Directions to TIMPA can be found on the last page of the newsletter. For more information about the Deep Impact mission, go to http://deepimpact.jpl.nasa.gov. General information can also be found on the Sky & Telescope website (http://skyandtelescope.com).

Share Your Ideas With a Member-At-Large

Ever have a thought suddenly come to you, an idea that might be of use to us all in the TAAA? Well, if you're like me, it almost certainly didn't come to you while you were at the meeting. Perhaps there were too many distractions or too many people to meet and greet. Or, likely as not this thought, observation, or grand idea came to you while driving home. Or you had that thought in the middle of the month, when it just popped in there while you were supposed to be doing something else (like working). So, what do you do? Wait until next month and hope to remember it that long? (Don't know about you, but in my case that would take a miracle!)

There's no need to wait. Log on the TAAA forum and send it out for all to see and consider. Start a conversation, and see where the idea or suggestion goes. Tell us all what you think of this group (in polite terms, of course...). I'll be watching the forum, and will see to it that these ideas and comments are brought up at a following board meeting.

To meet the needs of a group the size of TAAA we need feedback. Tell us something went well, or that it failed - and how you think things could have been done better. The online forum is the perfect way to do this, because you can use it anytime, from any computer at your disposal. No need to track down a member-at-large or club officer at a busy meeting, and no need to carry a note around in your pocket for a month to remind you to speak up at the next meeting.

If you don't have computer access, contact information for TAAA officers and members-at-large can be found on the first page of Desert Skies each month. And, if by some chance, your memory is fully functional, there are usually at least a few of us at every meeting. Take a moment to find an officer or member-at-large and talk to us if you have something you think we should hear.

However you decide to do it, don't be shy! Tell us what you really think. We can handle it...

Tom Watson, Member-At-Large

Upcoming Lecture Schedule

Below is our upcoming lecture schedule. Topics under consideration: Mars/Spirit & Opportunity and Solar Physics for General Lectures; The Color of Stars and Telescope Making for Astronomy Essentials Lectures. If you have a suggested topic or speaker in mind send an email to Terri at tklappin@earthlink.net or call her at 977-1290.

TAAA Speaker Schedule		
Aug 5	Astro Essentials	George Barber, TAAA Colors of Stars
	General	Open
Sep 2	Astro Essentials	Steve Marten, TAAA TAAA Outreach
	General	Ken Graun Charles Messier
Oct 7	Members Night No Astronomy Essentials Lecture	
Nov 4	Astro Essentials	Open
	General	Bill Stoeger Cosmology
Dec 2	Astro Essentials	Open
	General	Open

Club News (cont.)

Beginner's Eyepiece Evaluation Kit Available

The Beginner's SIG has a loaner kit consisting of several eyepieces, a barlow, and a star mirror diagonal. This kit is available for short-term loan to any member, but it is especially meant to assist beginners by providing a no-cost way to evaluate basic eyepiece alternatives for a new telescope, and also learn more about eyepiece characteristics and terminology.

If you are interested in borrowing this kit, contact the Beginner's SIG by sending an email to: novice@tusconastronomy.org.

Items of Interest

WEBSITES: TRIPS ON THE INTERNET SUPER-SKYWAY

By Rik Hill

If you have an email account you have no doubt been subjected to the hoax email in recent weeks that touts the next Mars apparition as the most spectacular in thousands of years. Well while this is not correct, we have a good apparition coming up that you should not miss. For our latitude, while Mars will be smaller (20" instead of 25") it will be much higher in the sky so we may actually get a better view.

There's a good FAQ type page on Mars observing for this apparition at:
http://www.shallowsky.com/mars.html

with lots of good links. Of course there's the Association of Lunar & Planetary Observers - Mars Section page at:
http://www.lpl.arizona.edu/~rhill/alpo/mars.html

with all it's links as well.

Veteran Mars observer, Jeff Beish (formerly with the ALPO for many years) has put a handbook of Mars observing on line in chapters:

http://www.tnni.net/~dustymars/Observing_Mars_1
http://www.tnni.net/~dustymars/Observing_Mars_2
http://www.tnni.net/~dustymars/Observing_Mars_3
http://www.tnni.net/~dustymars/Observing_Mars_4
http://www.tnni.net/~dustymars/Observing_Mars_5
http://www.tnni.net/~dustymars/Observing_Mars_6
http://www.tnni.net/~dustymars/Observing_Mars_7
http://www.tnni.net/~dustymars/Observing_Mars_8
http://www.tnni.net/~dustymars/Observing_Mars_9

This is a very comprehensive guide to the amateur Mars observer and I highly recommend it.
Another page you will want to visit is the home of The International Mars Watch for 2005:
http://elvis.rowan.edu/marswatch/

This group maintains an extensive library of on line Mars images that can be used as reference.

Better references for comparison of your own images can be found on the web. Mars Watch maintains Jim Bell's old page that allows you to input time, date and several other parameter to get a view of Mars as it appeared at that time:
http://elvis.rowan.edu/marswatch/cgi-bin/marsview.cgi

I have used this page (when it was hosted at Cornell) extensively in professional Mars work. It's very good.

Lastly, there's another page that I have mentioned here before that deserves another mention. This is JPL's Solar System Simulator. This allows you to view any major body in the solar system from any other:
http://space.jpl.nasa.gov/

If you want to see what Mars would look like from Nereid, no problem. You can even get a view from 8 different spacecraft!

By learning what's on these pages and making good use of the interactive programs, you will be well prepared to make the most of this upcoming Mars apparition.

As always, if you know of a particularly good website you would like mentioned here, drop me a line at: rhill@lpl.arizona.edu

Kitt Peak To Host Special Evening Program For Deep Impact Comet Event On July 3

The Kitt Peak Visitor Center will host a special public program on July 3, 2005, the night of the expected encounter between the NASA Deep Impact spacecraft and Comet Tempel 1.

At approximately 10:52 pm Tucson time that evening, an 820-pound copper projectile released previously by the

Items of Interest (cont.)

Deep Impact spacecraft is expected to be run over by the comet in a high-speed collision of about 23,000 miles per hour. Planetary scientists and astronomers hope that this energetic impact will create a fresh crater on the comet as large as a football stadium, exhuming the pristine ice within the comet. Remote measurements of the resulting plume of ancient icy material and the interior of the crater will be made by the main Deep Impact spacecraft and from telescopes at nearly every major ground-based observatory around the world that can see the amazing event, including Kitt Peak National Observatory.

Advance reservations are required for this paid program at the Visitor Center, which will run from 6 p.m. to approximately 1 a.m. The program will include a cookout dinner, popular-level lectures on comets and the Deep Impact mission by astronomers who have been observing the comet on Kitt Peak in support of the project's science goals, and telescope viewing of the comet and other astronomical objects throughout the evening, until about 90 minutes after the comet impact encounter. Although scientists are uncertain exactly what to expect, Comet Tempel 1 and its surrounding cloud of material may brighten visibly by several magnitudes over this period, according to recent estimates.

Contact the Kitt Peak Visitor Center at 520-318-8726 or *kpinfo@noao.edu* to make a reservation for the event, which is weather dependent and limited to 50 people (age 12 and up) at a cost of $45 per person.

For more information about Deep Impact, visit the mission's Web sites at *deepimpact.umd.edu/* and *www.nasa.gov/deepimpact*

It's Contagious And Small Changes Do "Add Up"

In May of this year, SA-IDA (the Southern Section of the International Dark Sky Association) awarded a prize to Marlene Hilligoss for improvements to outdoor lights at her home. Although the changes were, by all accounts, quite modest, they did make a difference. She simply replaced the existing bulbs in her outside light fixture with smaller/dimmer ones.

What is quite remarkable is the fact that her neighbors have begun improving the outdoor lighting at their homes also! Marlene Hilligoss was quite surprised but also most pleased with her neighbors. Not only were they "converted", but they have actually begun to make physical changes Again, we congratulate Marlene.

By the way, have any TAAA members made changes to the outdoor lights at their homes? And, have your neighbors reciprocated yet?

BRIGHT IDEAS CAN PROTECT OUR DARK SKIES!

Submitted by John Polacheck, President of SA-IDA
jpolacheck@dakotacom.net

Star Parties & Events

TAAA Star Party at Las Cienegas (Empire Ranch)
Saturday, July 2

Las Cienegas (formerly Empire Ranch) has been our normal dark-sky observing site for quite a number of years. Please try to arrive before sunset. Stay as long as you like, but let everyone know when you are ready to leave; someone may be taking astrophotos. Bring a telescope if you have one, but you don't need one to attend. Any member would be glad to let you look through their telescope. There are no restroom facilities at the site, so be prepared. Las Cienegas is at 4000 feet so be prepared for cool temperatures after sunset. It's also a good idea to bring insect repellent. Attendees should park their vehicles either perpendicular to the airstrip facing toward the center of the strip, or parallel to the airstrip along either side facing west. That way, when you are ready to leave, you will not have to back up and turn on your bright white backup lights. See the directions to Las Cienegas on the outside flap of this newsletter.

Rattlesnake Alert!

Be alert for rattlesnakes! Rattlesnakes are generally aggressive only if disturbed. If you see one, keep a safe distance and DO NOT try to interact with it in any way. Snakes are much faster than our reflexes, and should be handled only by professionals. Wear boots and long jeans. For more information, go to http://www.friendsofsaguaro.org/rattlesnakes.html

TAAA Star Party at TIMPA
Saturday, July 9—with **Beginner's SIG Observing**
Saturday, July 30

Come on out and enjoy the summer skies! TIMPA star parties are great for both beginners and experienced observers. Our novice members can get help with observing issues or equipment problems, as there are many experienced members there who would be happy to help. If you don't own a telescope, come anyways, because there are lots of telescopes set up and everyone is invited to look through them. This is a great way to check out different telescope designs before you make that all-important decision to buy. There is no scheduled talk for this activity, just come out and enjoy. We'll do our best to get you the answers you need. If you have friends or relatives who are curious about amateur astronomy, feel free to bring them along. The TIMPA site features a large parking area, and full restroom facilities. Be prepared for cool temperatures after sunset. It's also a good idea to bring insect repellent. Directions to the

TAAA Board of Directors Meeting - June 15, 2005

Attending: TAAA Board members: Thom Peck, Terri Lappin, Steve Marten, George Barber, Ken Shaver, Tom Watson
Members: Steve Ratts, Ed Mattila
President's Call to Order: 6:40PM

- Review of May Minutes. May Board of Director Minutes accepted, unanimous.
- Announcements.
  - President Thom Peck welcomed new Board members, all serving as Members-at-Large: George Barber, Ken Shaver and Tom Watson.
  - The May Kitt Peak Star-B-Q was washed out.
- Member Feedback.
- Tom Peck assigned Tom Watson as Member Feedback Coordinator.
- Ken Shaver discussed suggestions for Project Astro to update teachers' addresses .
- General Meeting Music. Ed Mattila offered several music selections that could be played during meeting breaks. The Board agreed to play some of the selections at the next meeting and ask members how it is received.
- 16' Dome. Not as much progress as intended due to people away for the Grand Canyon Star Party and very hot weather. Steve Ratts is very concerned about getting the dome to TIMPA or storage as soon as possible. Better to bring it to TIMPA and skip the storage step; it is heavy enough not to be affected by wind if assembled or not. Next step is to gather a work party to disassemble dome, transport it off Kitt Peak and reassemble at TIMPA before the monsoons. He has determined that only county permits are required for construction of the dome. The Board asked Steve to obtain estimates for storage shed rental, purchase of a storage shed or "Mobile-Mini" and use of a crane for positioning the assembled dome. Steve will also check with TIMPA President Mike Cummins about the possibility of placing a storage shed at TIMPA.
- Publicist. The Board approved a suggestion to establish Publicist committee with chairman.
- TAAA Announcement List. Board agreed to retain rules considered.
- Run-Off Election. Steve Marten proposed a simple plurality for Member-At-Large multiple candidates. If a tie should occur on the first round then a run-off will be held until a plurality is reached for each position. Steve will draft a constitutional amendment and post it on BOD Group site.
- TIMPA Board Meeting Report. Terri reviewed current TIMPA projects and activities. Notable events include the TIMPA "Fall Shootout" to be held October 5-9. (TAAA will be hosting an Arizona-Sonora Desert Museum Star Party on October 8; TIMPA may suggest TIMPA members visit the ASDM event).
- Name Change. After discussion on use of "amateur" in our club name the Board agreed to include this question in the next survey.
- Calendars. Board decided on Sky & Telescope calendar for 2006 and approved order of 100.
- Deep Impact Observing. Board agreed to open TIMPA on Sunday evening July 3 for "Deep Impact" encounter with Tempel-1.
- Swap Meet. Thom Peck reported that an RV park could be a good location for a TAAA Swap Meet. Discussion followed on holding a swap meet closer to the center of town and possibly on a general meeting night in September. Thom and Tom Watson will investigate further for review at July BOD meeting.

Adjourned at 8:50pm.
Steve Marten, Secretary

Desert Skies Classified

For Sale	Celestron Firstscope #114 4.5" Diameter Newtonian reflector telescope on a German equatorial mount with adjustable wooden tripod. Includes: three eyepieces (4mm .96" dia., 20mm .96" dia. and 25mm 1.25" dia.), a 2x .96" dia. Barlow lens and a .96" dia. moon filter. Asking price: $100. Contact Matt at nowayout@earthcorp.com. [07/05]
For Sale	Stereo microscope by Accuscope. 10/40X, $150. Eric Schilling , 323-8435. [10/05]
For Sale	Celestron heavy duty wedge for GPS scopes $350. Celestron Pixcell255 320x240 CCD, use for guiding or entry imager $450. Meade ETX60 with tripod plate and power supply $100. Orion SteadyPix camera mount $25. Orion 7-21mm zoom eyepiece $60. 14mm Ifocus for SBIG 237 $80. Contact Richard at 721-0694 or email at richard.schulze@cox.net. [10/05]

Your ad will run for 4 months unless specified. Month and year of last appearance is last item of ad. For additions or changes to this list, call George Barber at 822-2392or e-mail at barbergj@flash.net.

TIMPA SITE NEWS

16' Dome Project Update

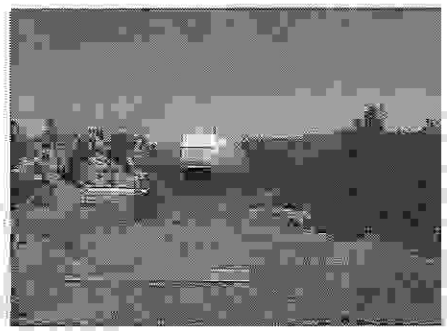
By Steve Ratts
Photos by Thom Peck

The 16' dome is now fully disassembled and down at TIMPA!

I would like to personally thank everyone who helped out in this effort. Without your help it could not have been done. Thanks especially to AJ Levy (who is not even a TAAA member!).

AJ brought his hummer and a huge flatbed trailer, which enabled us to load everything up right there and get it all down the mountain today. The job did turn out to be a bit bigger than I had expected (I had hoped to be heading down the mountain at noon, but it was closer to 2 PM). Nevertheless, with a lot of hard work from so many dedicated folks, it was possible to get the whole thing apart safely and without any damage to the dome.

There were definitely a few surprises along the way. The panels had collected enough dust and dirt in their joints that it was sometimes more difficult that we expected to separate them. The hardware holding the base ring together proved to be especially tough to disassemble, but our crew responded by being especially resourceful. Most of the rest of it went like clockwork. We even got to see a good-sized scorpion, just like when we took the support structure apart several years ago. Who knows, maybe this one was one of the babies we saw riding on their mother's back when we were pulling panels off the support structure.



Congratulations once again to everyone who were able to help out! You did a fantastic job and we couldn't have done it without you. Of course, now that you're familiar with how one of these babies comes apart, we'll really need you when it's time to

GRAND CANYON STAR PARTY

Grand Canyon Star Party - 2005

Yavapai Point, Arizona

In the beginning we were given light. I doubt that statement can be argued. What can be argued is how exactly we got to the point in time we currently reside within. Regardless, at one time we were not the superior species we consider ourselves to be today.

The past year has been very poor astronomically speaking as I think everybody living in the Southwestern United States can attest to. The weather has been just lousy! Between the poor weather and the combination of my high-stress level job, I realized the Grand Canyon was the perfect place for me to visit: a big depression. What I was counting on was that the friends I would see there would also be like the surrounding canyon landscape: a huge uplift!

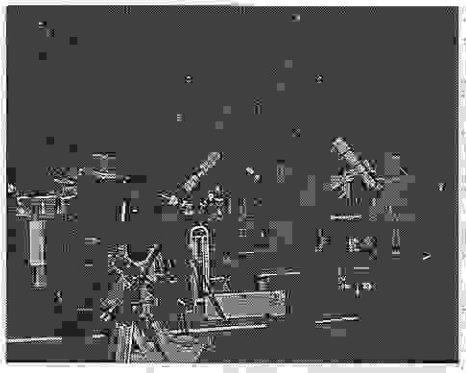
If you're like me, you started getting ready for the Grand Canyon Star Party months in advance. Excitement builds as the days get nearer and when it's time to leave you've hardly gotten any real sleep at all. That's what happens to me anyway and when I finally arrived at the Grand Canyon I'd been awake for nearly 36 hours.

The drive to the Canyon was uneventful - of course I had to cross Hoover Dam and with it came the obligatory "search" of my vehicle for "weapons of mass destruction" which in this case could be hiding in the big cardboard box in the bed of my truck. I know the "Dam Police" are just doing their job but really - would a terrorist really hide something in plain sight? And in a cardboard box to boot! Well, when the Guard saw it was really a telescope he had a ton of questions about it, where I was going and what I would see. We actually talked about astronomy for a good 15 minutes before I continued my journey. (Did I look that suspicious?)

The rest of the drive was very, very beautiful. The rains of the past winter and spring had really livened the countryside in stark contrast with how I'd seen it during the past few years. To me, it seemed like the trees might recover

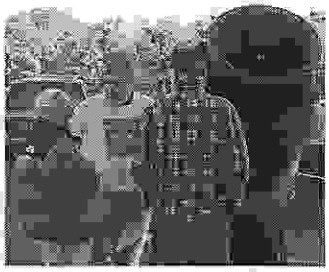
GRAND CANYON STAR PARTY (cont.)

from the "beetle" problem that has been inflicted upon the Northern Arizona forests.



When I arrived at the Grand Canyon I made a beeline for Mather Campground and found that the site I had last year was still open. Before unpacking I walked through the different camps and found my Arizona friends I have sorely missed. Oh yeah, and these guys from Las Vegas - it was good to see them too! With greetings all in order I made my way to Yavapai Point were our public observing sessions are held.

This year we had a very special treat: John Dobson is in the house! I had been looking for the opportunity to have words with him especially as I am a huge fan of the Dobsonian style telescope. One night I had been watching him walk through "telescope alley" with his entourage of people. He kept looking over at my 'scope but never approached me. There were many Dobsonian 'scopes that are larger then mine but they are all "truss" style: mine is the largest "tube" design. Out of nowhere, John appeared next to my 'scope. He gently reached out putting his hand against my telescope and asked: "Did you paint this? Is this white paint?" I told him "No, I'm pretty sure it's just wrapped with white colored paper." And that was the end of it. He made his way towards other 'scopes talking with their owners.



Later during the event I did have a few more conversations with John Dobson. At one point he returned to my 'scope and wanted to know how I liked it. We both agreed that the optics were top-notch but some of the design could easily have been improved with little cost by the company that makes the 'scope. He told me he had written the company with his suggestions but as to date the improvements have not been made. I find it puzzling they have not chosen to listen to the words of such a modern day icon. Just for the record, the 'scopes pictured above are not pictures of my 'scope. The first is John with Marilyn from PAC and the second with Jim and Paul from The Local Group in California.

I had one more personal moment with John Dobson. I was walking along the sidewalk (an ironic place to meet him!) where he stopped me to give me some advice on life. Here is what he told me:

1.) Don't smoke
2.) Don't drink and drive
3.) And whatever you do, don't bend over to tie your shoes while in the presence of a wild mountain lion!

How can you argue with that!

Another person I was hoping to talk with was Brent. I've become very interested in catalogues of objects with varying names: i.e. NGC vs. Collinder, Melotte, Trumpler, Stock, King, Lynga, Haffner, Ruprecht, and Terzan – the list goes on. His book, *Star Clusters* is unbelievably informative and it was awesome to hear him talk of them first hand. Here is Brent pictured on the right talking with Doug from PAC. Doug is modeling this years GCSP shirt once again expertly designed by Joe Bergman.

As I mentioned before, the weather the past year for the most part has not been very conducive for serious astronomical observing. Why I thought this years GCSP would be any different is beyond me. However, as I've come to realize, this event is not for me: it is for the public. For the first few nights the wind was the topic of discussion. Sustained winds were at least 15mph while gusts had to be approaching 30mph if not higher. At one point I thought we would be better off if we toted the event as "The Grand Canyon Kite-flying Party"! To add insult to injury, after the winds calmed down, clouds and rain followed. Neither of these conditions put a damper on the public's interest and enthusiasm. People turned out in droves for a chance to look through our 'scopes. Our presence and endeavors were even acknowledged by Astronomy Magazine. They sent a very nice young lady, Liz Kruesi – Assistant Editor, who spent a few nights walking amongst our telescopes taking looks through them and talking to their operators.

Each night began just before sunset and just after the evening lecture with two objects that in the last few recent years were not very visible for public viewing: Jupiter and Saturn. The public is most interested in Jupiter's Moons and Saturn – well, they never believe it's really Saturn. I think most of them would bet money they were looking at an image implanted within the telescope. It's something that I've been accused of doing more than one time - the image is always just too surreal.

The last few days of GCSP also gave the public a third treat: a waxing crescent moon. Of all the objects that are visible telescopically, I think the moon gets the best reaction. Most people are amazed they can see the craters on the surface. In my opinion, it's the best object to get the general public interested in our hobby and aids in making them more aware of their surroundings as opposed to focusing on what's directly in front of them. Not that what's directly in front of you should be a thing ignored, but that there are other things out there that may need

GRAND CANYON STAR PARTY (cont.)

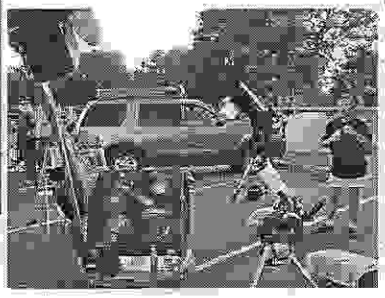
our attention as well.

Thursday is when the clouds came and with them rain. I spent the evening out on the canyon rim taking pictures of the gorgeous sunset.

That night was almost a bust. When I walked back to my truck with all intentions of returning to camp, I found the sky had opened to the south and west giving a nice view of Saturn, the Moon and Jupiter. I also found Dennis, Paul, Sim and one other astronomer (I'm sorry, I never caught your name and it was dark!) waiting around to see what the sky would do. We immediately set up our 'scopes (the 80 – 90mm ones) - Sim his Bino-chair and had a "Mini GCSP"! Despite the foul weather we actually had about 25 people come and take a look.

On Saturday at noon we had the traditional "Ranger Cookout". I must say I was a little out of it. Being a "night owl" in my everyday life turns noon into what would be 3am for normal people. I was with it enough to sing "Happy Birthday" to John Dobson. Apparently his 90th birthday is approaching and the group wanted to wish him well while we were all together. Before we sang to him he offered a suggestion: "If you plan on making me a cake with candles in it, you won't have to bother with baking it!"

The last day of the event, Saturday, brought probably the worst weather during the entire week. I know I spent most of the day huddled in my tent and in between breaks of rain and outrageously loud thunder claps dashing out to my truck trying to find better ways of attaching a tarp over the bed of my truck thus protecting my precious cargo. I believe most of us had given up hope for anymore stargazing and made contingent plans for the night. As far as I know, the Grand Canyon Star Party has been held for a straight 16 years, each event for 8 nights and each night without interruption; Saturday night that continuous record was threatened.



We had among us a true die-hard, and someone we all know. This person monitored the skies, used gut instinct from years of observing not only what is in front but all around and I'm sure received a little blessing from Mother Nature herself to carry the GCSP to the public into the last night. This person is Dennis Young.

During my last 3 years visiting the Grand Canyon I heard of other people talking of how they got to see Elk walking about the Canyon. This year, I finally got my chance. I was sitting at my campground and noticed Paul was backing up towards me taking pictures of something I could not see yet. Then I noticed what I thought was somebody carrying wooden chairs high above their heads while walking through the forest. I thought "how strange". So, I stood up to get a better look – what I saw absolutely floored me: it was an enormous Elk walking through camp! He walked within 10 feet of me, through my camp and proceeded to lie down not 20 feet from the picnic table and take a nap. It didn't take long for the other campers to notice this and we all sat at my picnic table taking pictures.

Sunday morning brought the irony of ironies to the sky: blue – right on schedule!

As you may have guessed already, this year's GCSP was not the "dark sky" event I had enjoyed in the past. It did provide that purpose for our visitors and guests but not so much for personal observations. I did however do a lot of observing - observing of my surroundings and of myself. What I noticed was how well nature adapts and balances while we on the other hand, as a "superior species", tend to manipulate, abuse and control rather than adapt. The Grand Canyon Park Service does an excellent job at putting a minimal strain on the environment while allowing the public to come and enjoy the beauty - it's a little give and take they share with nature which after all, we are part of. It would be nice if the rest of the world would follow the Park Services' example instead of abusing the land, water and air like it were an unlimited resource.

I'm sure all those who attended this year's 2005 Grand Canyon Star Party would like to thank the United States

GRAND CANYON STAR PARTY (cont.)

Department of Interior, the National Park Service, our Ranger – Russell Baker and the Grand Canyon Staff and mostly, Dean Ketelsen, without whose efforts none of this would be possible. Personal thanks from me would go to every one in attendance whom I consider my extended family. Your smiling faces, kind words, and open hearts are exactly what I needed and came at just the right time.

In the beginning we were given light. And that is what we seek at the Grand Canyon Star Party - light from our own and other distant Suns. Hopefully our species will use other gifts we have been given to keep that light clear and bright.

Thanks for reading,
Brad Campbell, Las Vegas, Nevada
brad@StarNevada.com

Grand Canyon Star Party 2005

Michael & Mary Turner

The title of this year's Grand Canyon Star Party should have been "See the stars through the swaying telescopes!"

Tuesday night was not a good viewing night. The winds continued to howl and we threw in the towel around 2200 hours. We did manage to tour the constellations Ophiuchus and Scorpius and their grand globular clusters; M107, M12, M10, M62, M19, M9, M14, M4and M80.

I would like to have taken a few images of the clusters later after the visitors departed, but the wind and the cold got the better of me, and the images would have looked like star trails on an *etch-a-sketch*!

We began Wednesday with 3 hours of solar viewing at West Rim Bus Transfer Point where the Blue Village Bus stops to transfer passengers to the Red West Rim Bus. Mary set up the 90mm Mak with the Thousand Oaks white light filter and entertained the first of approximately 400 visitors while I set up the refractor with the Coronado Solarmax 60 Hydrogen Alpha filter.

It is truly amazing to watch visitors as they take their first look at our sun through a telescope. In conjunction with a few selected solar books, having two different filters provides a nice introduction to the features of the sun.

We succeeded in converting one VERY doubting teenager who said the sun was nothing more than a "big yellow ball and it would destroy you eyes if you looked at it" into a mellow solar addict in just a few minutes. Our thanks to his mother for dragging him over to take a look.

We set up the LX200GPS in the Yavapai parking lot around 1700 hours. I continued the globular cluster sojourn with M4, M80 and NGC 6144 in Scorpius. M4 was still a dazzling handful of diamonds on a piece of black velvet. I was able to show M22 in Sagittarius as a comparison to the less bright globulars in this region. I was about to check out some of the wonders of Sagittarius and the Milky Way when the wind suddenly became very cold and biting. We closed up shop around 2230 hours.

Thursday, the wind and rain continued during the day and into the evening, so we stayed bundled up in our trailer at the Trailer Village. An interesting cloud formation occurred at about 1730. I believe this type of cloud is known as . [Editor's note: Mammatus clouds]

The weather cleared around 2200 hours and several folks did set up their scopes at Yavapai Point for the evening. The reports that we received said that about 25 visitors showed up. So, not a total loss of the night!

Friday morning dawned with nary a cloud in the sky. What a wonderful change from the previous 3 days. We set up both telescopes at the West Rim Bus Transfer Point at 0900 hours for a morning of solar viewing. Mary counted at least 7 major prominences.

The highlight of the morning was a large prominence at about 4 o'clock that became a solar flare around 1015 hours. I convinced myself that I could actually see the breakaway of the prominence from the Sun. The flare was visible for about 20 minutes and provided quite a show for our visitors.

We headed over to Yavapai Point Observation Station around 1600 hours. This night had all of the makings of a great observing session - no wind, not too cold, and not too overly bright moon. I decided to leave the globular cluster sojourn behind and concentrate on some faint fuzzies tonight. The session started out with the moon. OK, it's not a faint fuzzy. Again, it looked like the other 30-35 telescopes were all pointed at the daytime moon.

The next target of opportunity was Jupiter. My observing neighbor from Atlanta had used his Meade LX200-10 Classic to observe the Great Red Spot Wednesday evening. As the first wave of visitors disappeared, I head a shout of "Saturn, get your Saturn here!" The voice could only be coming from one person, our host Dean Ketelsen. He had set up his C14 in the custodian parking spot, which had a beautiful view through the trees to Saturn.

We recognized quite a few folks that had observed the Sun earlier in the day. Looking at the same object that has

GRAND CANYON STAR PARTY (cont.)

been viewed earlier in the week may be a repeat for us, but it is a new beginning for the visitors. Mary took over operation of the scope and visited M57 and cranked up the magnification to 208x using the Nagler 12mm Type 2 in 2-inch mode. About 30 visitors had a long look at the Ring and were quite impressed. Mary's next target was the M81/M82 pair of galaxies using the Televue 35mm Panoptic eyepiece (71x). Both galaxies just fit into the field of view. The hard part of about showing galaxies is that some visitors have problems "seeing" the faint fuzzies. They have been looking at the Moon and Jupiter or other bright objects, so it takes awhile for them to feel comfortable with the galaxies. Once adapted, they were thrilled at seeing the objects. Mary inserted the 12mm Type 2 again and zeroed in on each galaxy, to the delight of the visitors. We closed up shop at 0030 hours and headed back to the Trailer Village to await whatever weather Mother Nature would provide for Saturday.

Saturday – It rained all day...

As we were contemplating going to the picnic were treated to a small herd of Elk that decided to take advantage of the new grass shoots that were emerging in the Trailer Village. The rain was so bad that we decided to skip the picnic. Dean officially called off the night's observing around 1400 as the weather forecast called for the same all day and into the night.

Recap. The Grand Canyon Star Party is really about giving the public a chance to observe our magnificent Arizona skies under almost perfect conditions. We find that we only have about 4 hours a day to ourselves, but that is ok. We really enjoy talking to the park visitors from around the world and showing them a little piece of serenity.

Thank you Dean...

Dark Skies for July 2005

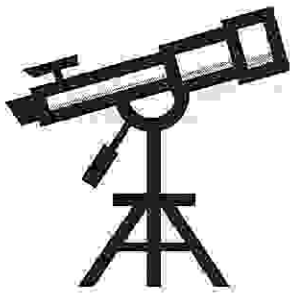
DARK SKIES (no twilight, no moonlight) for Tucson in 24-hour MST: 18=6pm, 20=8pm, 22=10pm, 0=12am
RISE, SET, VISIBILITY for sun and bright planets: rise for morning object, set for evening object

Th/Fr	30/ 1	21:15 - 1:35	Su/Mo	10/11	22:26 - 3:47	Th/Fr	21/22	- - -
Fr/Sa	1/ 2	21:15 - 2:09	Mo/Tu	11/12	22:52 - 3:48	Fr/Sa	22/23	- - -
Sa/Su	2/ 3	21:14 - 2:47	Tu/We	12/13	23:17 - 3:49	Sa/Su	23/24	21:02 - 21:35
			We/Th	13/14	23:42 - 3:50			
Su/Mo	3/ 4	21:14 - 3:31	Th/Fr	14/15	0:10 - 3:51	Su/Mo	24/25	21:01 - 22:07
Mo/Tu	4/ 5	21:14 - 3:43	Fr/Sa	15/16	0:42 - 3:51	Mo/Tu	25/26	21:01 - 22:36
Tu/We	5/ 6	21:14 - 3:44	Sa/Su	16/17	1:21 - 3:52	Tu/We	26/27	21:00 - 23:06
We/Th	6/ 7	21:13 - 3:45				We/Th	27/28	20:59 - 23:36
Th/Fr	7/ 8	21:13 - 3:45	Su/Mo	17/18	2:08 - 3:53	Th/Fr	28/29	20:58 - 0:09
Fr/Sa	8/ 9	21:29 - 3:46	Mo/Tu	18/19	3:06 - 3:54	Fr/Sa	29/30	20:57 - 0:47
Sa/Su	9/10	21:59 - 3:47	Tu/We	19/20	- - -	Sa/Su	30/31	20:56 - 1:29
			We/Th	20/21	Full Moon			

Weekend	Sun	Sun	Mercury	Venus	Mars	Jupiter	Saturn	
Sa/Su	Set	Rise	Set Vi	Set Vi	Rise Vi	Set Vi	Set Vi	Vi=Visibility
2/ 3	19:32	5:20	21:08 3	21:09 -1	0:22 0	0:11 -2	20:37 6	-3 brilliant
9/10	19:31	5:23	21:00 4	21:09 -1	0:08 0	23:45 -2	20:13 9	0 conspicuous
16/17	19:29	5:27	20:42 6	21:08 -1	23:53 0	23:19 -2	19:48 -	3 moderate
23/24	19:25	5:32	20:12 9	21:05 -1	23:37 0	22:54 -1	Rise: -	6 naked eye limit
30/31	19:21	5:36	19:33 -	21:00 -1	23:22 0	22:29 -1	5:06 -	9 binoculars limit

By Erich Karkoschka

Telescopes for Borrowing



Don't own a telescope?
The TAAA Loaner Program is your answer!
There's no cost to you.
We have the following telescopes:

Sears 60mmf/15 on equatorial mount
Unitron 62mmf/14.5 on equatorial mount
Meade 90mm ETX
Coulter Odyssey8 8-inch f/4.5 Dobson
Meade10-inch f/4.5 on equatorial mount
Meade 10" LX200 GPS (requires training session)

New members, here's your chance to begin learning and observing the sky before buying any equipment. Loaner Program is available to any current member after meeting requirements detailed in the TAAA Loan Policy. Contact the Equipment Loan Coordinator listed in the "Desert Skies" for details about the telescopes.

Object of the Month by Alfredo Garcia

Wow! Here we are at Summer 2005 already! As those of us who live in Tucson know, July is typically the start of our monsoon season, which means limited summer stargazing gazing opportunities in the month's ahead. If, however, the monsoons don't start till after the first week in July all of us will have a great event to witness over the 4th of July weekend. This event will involve a visitor to our solar system. The ancient Greeks referred to visitors such as this one as long-haired stars.

These longhaired stars belong to the class of objects known as comets. The word comet has its derivation from the ancient Greek word "aster kometes", meaning longhaired star. Most recently, Comet C2004 Q2 Machholz graced the skies and put on a fine show. I can still remember when the comet passed within a couple of degrees of M45, the Pleiades Cluster. Wow! What a view that was! Though this OTM is currently not visible to the naked eye, it may (if current predictions hold up) be a great view in telescopes and even quite possibly to the unaided eye!

Without a doubt you most likely know by now what comet and event I am writing about. If you don't, then you will soon get all kinds of information on it in the news and on the Internet. And quite possibly observe it for yourself! So without any further introduction, I present to you the July 2005 OTM, Comet 9/P Tempel 1. And the event of course is the NASA Deep Impact Mission, which is to occur on the 4th of July.

First, a little bit about the NASA Deep Impact mission. The mission was first proposed back in 1999 and once approved by NASA, the Deep Impact spacecraft was successfully launched on January 12, 2005 atop a Delta II Rocket from the Eastern Test Range (Kennedy Space Center), FL. The mission will involve a "collision" between this comet and part of the Deep Impact spacecraft known as the "Impactor", an 820-pound craft imbedded with a copper catering mass of 113 kilograms. The "Impactor" will smash into Comet 9/P Tempel 1's nucleus at >23,000 MPH and produce a sizable impact crater (about 330' wide and 85' deep) that will provide valuable data and insight into the true nature of comets. The spacecraft will release its "Impactor" about one day prior to the rest of the spacecraft reaching the comet. The predicted time of impact at the time of writing this article (June 14, 2005) is within an approximate 45-minute window between 05:49 and 06:34 Universal Time, July 4, 2005. Of course, as the impact date nears, the time will become more specific. So make sure you keep abreast of the exact impact time. For us here in Tucson, this current window translates to July 3, 2005 sometime between 10:49 PM and 11:34 PM. For much more detailed information on the Deep Impact Mission, you can surf the Internet and go to NASA's official Deep Impact web site at: http://deepimpact.jpl.nasa.gov/home/index.html. Also, the June issue of Sky & Telescope magazine has an outstanding article on the event.

Now, back to the comet! Comet 9/P Tempel 1 is a short-period comet that was discovered by the French astronomer Ernst Wilhelm Liebrecht Tempel (Marseille, France) on April 3, 1867. The comet was found in the constellation of Libra and at the time had an estimated size of 4 to 5 arc minutes and a magnitude of about 9.0. Tempel is credited with 13 original comet discoveries (of which 9/P Tempel 1 is one) and 5 independent co-discoveries. In addition, he made 8 first rediscoveries of periodic comets. He also made many contributions to the NGC object list. Comet 9/P Tempel 1 itself has a very interesting history and you can read more about it at the Cometography.com website at: http://cometography.com/pcomets/009p.html.

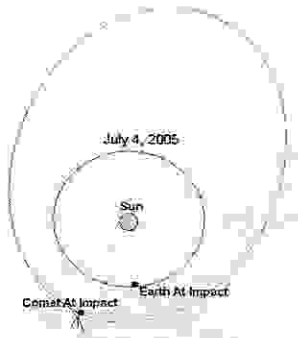


Figure I.
Impact Date Orbital Geometry

Comet 9/P Tempel 1 is a short-period comet with an orbital period of about 5.5 years. Using space and ground measurements, researchers now estimate that Comet 9/P Tempel 1 is about 8.7 by 2.5 miles in size with a rotational period of about two days. Like all comets, it loops around the Sun. As it approaches the Sun, gas and dust burn off of at an increasing rate. Sunlight reflecting from this material makes the comet's head, or coma, grow brighter. The gas and dust are pushed away by charged particles known as the solar wind, possibly forming tails. Dust particles cast off the comet form a broad tail known as a dust tail while ionized gas makes a finer tail known as an ion tail. These tails mostly point away from the Sun. Currently, Comet 9/P Tempel 1 is sporting a short, broad tail and has a brightness of about magnitude 9.5. The "Impactor" will hopefully produce a much brighter and bigger tail(s) and significantly increase the comet's brightness. Figure I shows the orbital geometry of the comet and the NASA mission on the date of impact. At this date, the comet will be about 83,000,000 miles from Earth and near it's perihelion.

Comet 9/P Tempel 1 will be well placed for observation throughout the month and easy to find, particularly if it reaches the possible magnitude increase. Look for the comet traversing the constellations of Virgo for the first three weeks or so of the month and Libra towards month's end (See Figure II). At the date of impact, the comet will be easy to find using star hopping techniques. Figure III provides a star-hopping map to use in locating the comet and represents an uninverted view of the sky on the impact date. Also, remember that the comet is best observed from a dark site and when

Object of the Month by Alfredo Garcia (cont.)

there is no moonlight.

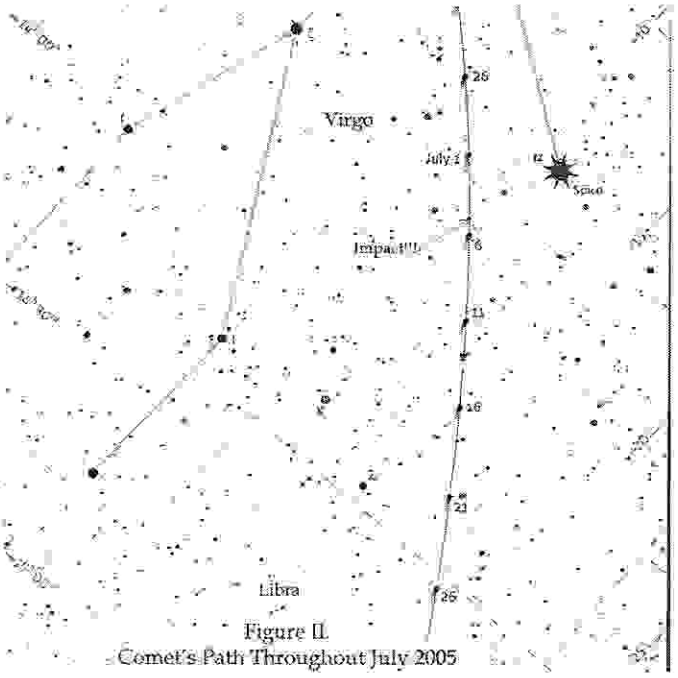


Figure II.
Comet's Path Throughout July 2005

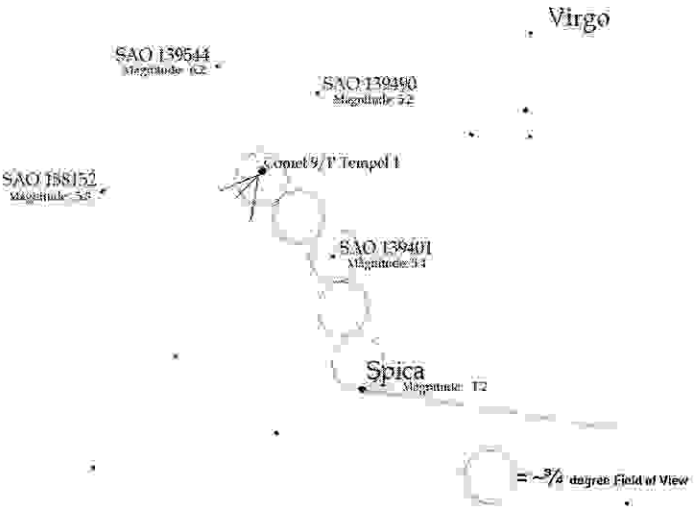


Figure III.
Comet Star-hopping Map

For those with setting circles and automated go to scopes, see Table I to locate the comet a few days before and after the impact. The Altitude (Alt) was determined using an arbitrary time of 2000 MST from Tucson, AZ. The altitude at the time of impact on July 3, 2005 will be about 23 degrees above the southwest horizon. If no change is observed shortly after impact on that night, then the comet will be well placed for observation in the days that follow. The known magnitude is provided right up to the impact date. What happens after is anyone's guess, but let's hope the comet reaches at least some of the predicted magnitudes values of 5 to 6 post impact.

Table I
Comet 9/P Tempel 1's Position And Magnitude/2000 MST, Tucson, AZ

Date	1 July 2005	2 July 2005	3 July 2005	4 July 2005	5 July 2005	6 July 2005	7 July 2005
RA	13 34 04.77	13 35 50.60	13 37 38.24	13 39 27.67	13 41 18.88	13 43 11.84	13 45 06.53
Dec	-08 43 41.0	-09 07 22.8	-09 31 02.7	-09 54 40.2	-10 18 14.9	-10 41 46.5	-11 05 14.5
Alt	47.77 deg	47.26 deg	46.74 deg	46.23 deg	45.72 deg	45.20 deg	44.68 deg
Mag	9.47	9.48	9.49	?	?	?	?

Though Comet 9/P Tempel 1 will likely present itself as a great view in a telescope at time of impact/post-impact, it will be an even greater view in an astrophotograph or CCD image. Figure IV is a collage of two separate comet images taken during late May 2005. The smaller one was taken through a 120mm f/5 Orion ShortTube Refractor piggybacked on a 10" f/6.3 LX200 and the larger one with a Meade 10" LX200 SCT at f/6.3. Both were imaged with a Starlight X-Press SXV H9 monochrome CCD camera and are composite exposures comprised of 8 x 2 minute single exposures. So you astrophotographers and CCDers get your cameras ready for what should be a great imaging opportunity. Let's hope the comet brightens significantly as a result of the impact. We may be provided with some early 4th of July fireworks display! Good luck on your imaging endeavors!

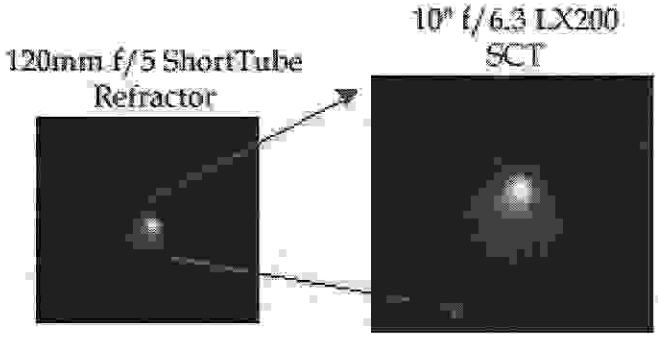


Figure IV.
Late May Comet 9/P Tempel 1 Images

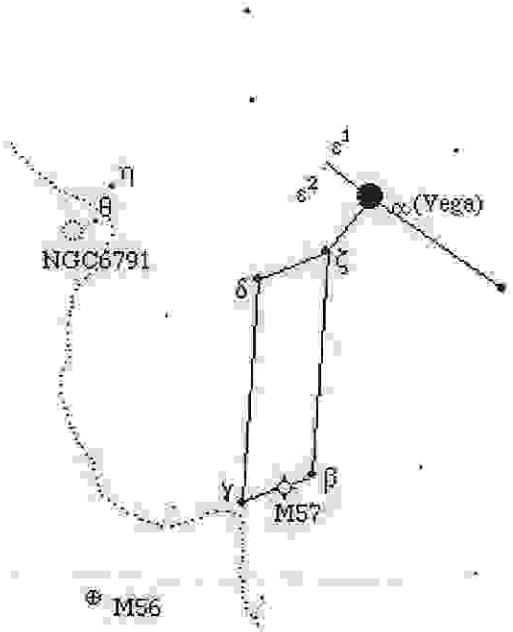
Constellation Report by Chris Lancaster

Lyra

The Harp

This is a small constellation, but due to its bright star Vega, it has attracted the attention of many different civilizations over the millennia. As a result, it carries many different mythical stories as well. Originally, those ancients inhabiting the Middle East saw the shape of a vulture in the stars of Lyra. The Greeks came up with the idea that the stars represented a kithara, what we would call a harp. Over the centuries these two concepts were combined so that some artwork shows the harp held by a vulture.

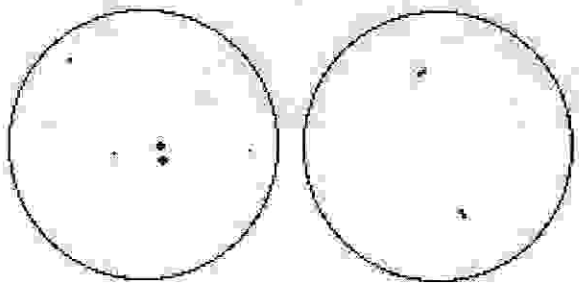
The Greek god Hermes is given credit for inventing the kithara. He found an empty tortoise shell, set some strings across it, and discovered that it made beautiful music. Over time, the kithara passed from Hermes hands, to Apollo's, and finally to Apollo's son, Orpheus. It was Orpheus who's talent allowed him to play the instrument the most skillfully. The wild beasts were mesmerized by the music and even the stones of the Earth stopped to listen. When Orpheus died, Zeus placed the kithara in the sky.



Asian cultures saw Vega as a princess who fell in love with and married a shepherd, represented by Altair, the brightest star in the nearby constellation Aquila. They were so enamored with each other that they neglected their duties, and the princess's father banished them to the heavens to spend the rest of time separated by the great celestial river, the Milky Way.

Vega, which means "vulture" in Arabic, is the first of the three stars forming the "Summer Triangle" to rise during the early evenings of April and May. The other two are Deneb, in Cygnus, and Altair, in Aquila. At 9pm during the middle of August, Vega and its constellation Lyra are straight overhead. Vega is a blue-white star of spectral type A0 and is a mere 26 light years from Earth.

Near Vega (a bit more than 1.5 degrees to the northeast) is an intriguing object, Epsilon Lyra. This is a double star, which is commonly called the double-double. Viewing it at low power will show you a typical double star separated by a very wide 209", but using high power will show you why it has this unique name. Each component of this wide double is itself a double star, separated by about 2.7" and with position angles turned roughly 90 degrees with respect to the other. The graphics show Epsilon Lyrae at 55x magnification (on the left) and 500x magnification.



55X 510x

Between Beta and Gamma Lyrae is the most famous object in Lyra- M57, or the Ring Nebula. This is one of the finest examples of planetary nebulae in our sky. It is visible in any size scope due to its strong surface brightness, and its ring shape is easily recognizable. However, it's not truly a ring. Instead, we perceive a ring structure because of the thicker expanse of material along the periphery of the gaseous bubble which is slowly expanding from the central star, which, at close to magnitude 15, is invisible in scopes smaller than 18 inches. The brightness of M57 is 9.0, and its diameter spans 2.5'. Look not quite halfway from Beta to Gamma Lyrae, or RA 18h 53.5m Dec +33d 02', for this striking nebula.

Just less than 1 degree east southeast of Theta Lyrae is NGC6791, a wonderfully rich galactic star cluster, 16' across and of magnitude 9.5. Since it sits in a rich part of the Milky Way, it is difficult to recognize the boundaries of this star cluster. There is a gradual increase in stellar density toward the center of the cluster of several hundred faint stars. Of course the larger the telescope you have, the more stars it will pick up, and thus the more impressive this cluster will be. You can find NGC6791 at RA 19h 20.7m Dec +37d 51'.

All by itself in the southeast part of the constellation is M56, a globular cluster weighing in at magnitude 8.3 and a size of 7.1'. This is a fairly rich, condensed globular with stars ranging in individual brightness from 11 to 14. If your telescope is accurately polar aligned, dial in this cluster at RA 19h 16.6m Dec +30d 11', or start at magnitude 4.3 Theta Lyrae and move directly south 8 degrees. (The difference in RA of Theta and M56 is only 22 seconds.)