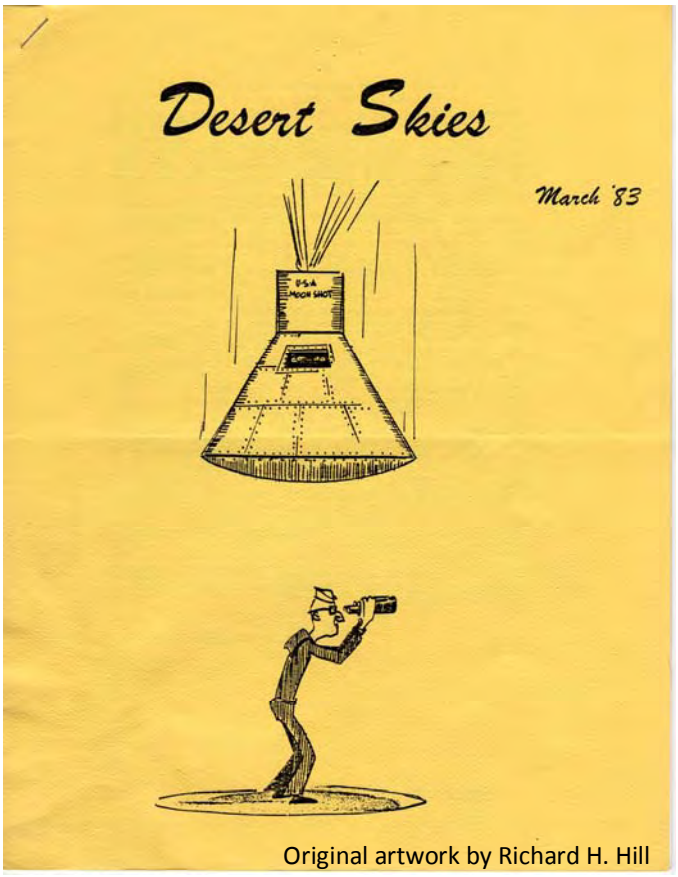
Desert Skies

Tucson Amateur Astronomy Association
Volume LVIII, Number 12 December 2012



Original artwork by Richard H. Hill

The cover of the first Desert Skies, 358 Issues Ago

Location Change!

General Meeting December 7th

Lunar and Planetary Lab Lecture Hall, Room 308

6:30pm

Open Mike Night—Astronomy Questions You Always Wanted to Ask

7:30pm

More Things in Heaven and Earth—The Movie — Dr David Levy (Jarnac Observatory) and Dr Gloria McMillan (UofA)

Affiliates

TAAA Meeting Friday, Dec 7th

Lunar and Planetary Lab Lecture Hall, Room 308, U of A campus
(Located immediately east of Flandrau Science Center)

6:30pm Astronomy Essentials Lecture

Title: Open Mike Night—Astronomy Questions You Always Wanted to Ask

We'll open the microphone to give audience members the chance to ask astronomy questions. Burning questions, like… Wouldn't a black hole eventually fill up? Why are there no green stars? (Maybe there are!) What is a "star party"? We'll do our best to answer your questions, so put on your thinking caps. What have you always wanted to know?

7:30pm Invited Lecture

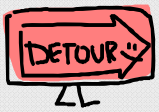
Title: *More Things in Heaven and Earth*—The Movie
Speaker: David Levy (Ph.D.) and Gloria McMillan (Ph.D.)

More Things in Heaven and Earth is a Univ of AZ-sponsored film project. TAAA member and Past President David Levy is Chief Collaborator for this film which uses innovative techniques to paint the advantages of increased collaboration between science and the arts. Four hundred years ago two people saw the dawn of a new age: Gallileo opened a whole universe with his telescope, and Shakespeare opened a new way of looking at the sky through his writing. Both men viewed a sky much as we see it today, thus connecting our modern culture to theirs. Gloria McMillan will talk about art as it meets science. David Levy will talk about the importance, fun, and inspiration in seeing the connection between the night sky and literature.

David Levy has discovered 22 comets (9 from his backyard) including Shoemaker-Levy 9 which collided with Jupiter in 1994. In addition to writing numerous books, he was the Parade magazine Science Editor from 1997 to 2006. He writes regular columns in *Sky and Telescope* and *Skynews* (Canadian). David received his doctorate in 2010 (Hebrew University of Jerusalem, Department of English). Gloria McMillan received her Ph.D. in Rhetoric and English from the UofA. An author and playwright, she co-founded the Arizona Theatre Company's Old Pueblo Playwrights, a group which works closely with ATC in developing new playwrights and play scripts. Her plays have been produced in Tucson and Chicago. She is a Research Associate at the UofA and teaches at Pima Community College. She is editor of a collection of essays by astronomers, literary and film scholars called *Mars is the Wild West: Ray Bradbury, Planetary Science, and the Southwest*, forthcoming from McFarland Press.

After Meeting Get-together: Following the meeting, join other members at the Village Inn on Speedway at Columbus for pie, shakes, whatever. Discussion is mostly astronomy, but many other subjects come up. All are invited.

Construction Alert!



Construction of the streetcar is progressing. The intersection at 2nd Street and Warren, a few blocks east of Steward Observatory is closed. Best access to Steward Observatory is still from Speedway, south on Cherry to parking lots at Speedway & Cherry, 1st & Vine, or the south side of 1st Street just east of Cherry. Pedestrian access is best along Cherry Avenue. There is plenty of parking on meeting nights. As always, obey any parking space signs indicating 24 hour enforcement. Streetcar construction updates including a map can be found on the UA Parking and Transportation website: http://parking.arizona.edu

President's Message

I'm writing this right after a fantastic weekend at the Arizona Science and Astronomy Expo. Our TAAA exhibit booth was a smashing success! We had a continuous stream of visitors stop by to learn more about the club. We processed new and renewal memberships on the spot, handed out a large amount of astronomy literature, and had a great time talking astronomy. Lunt Solar Systems generously donated a high-end Hydrogen-alpha solar telescope for us to raffle, and the lucky winner was club member Howard Bowen. The raffle proceeds will be used for TAAA's general funds, which means that the money will most likely go directly towards some of our many public outreach activities. We also received some very nice books for our library, donated by Springer, as well as a huge D&G 6" f/15 refractor, donated by a future club member! It may take a while to figure out what to do with this monster telescope - if anyone has a large mount available, please let me know. I was so pleased to have a large number of members volunteer at our exhibit booth, as well as in the hands-on activities area (see Terri's report elsewhere). Some of them worked the entire weekend but walked away with huge smiles on their faces - that's a side effect of sharing astronomy with others, it cheers you up! The ASAE is going to be an annual event, and for a very small entry fee it's one of the most valuable events an amateur astronomer could hope for.

Looking ahead, we've got some nice opportunities to further enhance your enjoyment of astronomy. December kicks off with our annual Holiday Party, which will be held at the Lofquist's home. We'll follow up with our general meeting the following Friday. While the myriad of TAAA activities throughout the month (Star Parties, Special Interest Group Meetings, Outreach Activities, etc.) are very important, our General Meetings might be considered to be the "hub" of the month's events. These are where you'll hear the latest buzz, meet new folks, and learn from the talks. We are incredibly fortunate to have an amazing facility provided to us by the University of Arizona's Astronomy Department and Steward Observatory, and I encourage each of you to join the fun on the first Friday of every month.

Keith Schlottman

Desert Skies is published monthly by the Tucson Amateur Astronomy Association, PO Box 41254, Tucson, AZ 85717.

This Month in Brief

Event *Contact Person*	*Date* *Location*	*Time*	*See Page*
Holiday Party Bill Lofquist	Dec 01 (Sat) Lofquist Residence Ina & La Cholla (see article)	5:00 PM	4
Astro Imaging SIG Meeting Larry Phillips	Dec 03 (Mon) Denny's Restaurant (Broadway) 6484 E Broadway	7:00 PM	4
Monthly General Meeting Keith Schlottman	Dec 07 (Fri) Lunar & Planetary Lab, Rm 308 1629 E University Blvd	6:30 PM	2
Board Meeting Keith Schlottman	Dec 12 (Wed) Steward Observatory Rm N305 933 N Cherry Ave	6:30 PM	4
AFSIG Meeting Benjamin Bailey	Dec 13 (Thu) USGS Building Room 253 520 N Park Ave	6:30 PM	4
CAC Star Party John Kalas	Dec 14, 15 (Fri, Sat) Chiricahua Astronomy Complex		5
Star Party at TIMPA Ben Bailey	Dec 15 (Sat) TIMPA 3250 N Reservation Rd	4:45PM	5

Items of Interest

Dec 3	Steward Observatory Evening Lecture (Page 10)

Future Dates

Jan 4	TAAA General Meeting (Steward Obs. as usual) AE Lecture: Seasonal Objects (Mary Turner) Invited Lecture: Palomar Observatory (Scott Kardell)
Jan 7	Astro-Imaging SIG Meeting
Jan 9	TAAA Board Meeting
Jan 10	Astronomy Fundamentals SIG Meeting
Jan 11-12	CAC Star Party
Jan 12	TIMPA Star Party
Jan 28	Starry Messenger Outreach SIG Meeting

TAAA 2013
Wall Calendar

Pre-order yours at the November meeting.
See Susan O'Connor at the apparel table or email her at .cyzeh[at]aol.com
Cash and checks only (payable to TAAA).

$10 each

Say Good Bye to the Old Desert Skies, Hello to the New Desert Skies

Contributed by Terri Lappin, Editor of Desert Skies

Desert Skies has served well as a monthly publication since March 1983. At that time, Rik Hill had just taken over as newsletter editor. Previously our newsletter was only a couple pages of announcements. One of the first things Rik knew we needed was a name for our newsletter. "Desert Skies" was chosen at the February 1983 meeting. He also thought we needed an interesting cover. His father's artwork adorned our newsletter for a few years. Later, then TAAA member Michael Sweetman provided original artwork. Every month, *Desert Skies* has had in interesting cover.

In that first issue, Rik described the new incarnation of our newsletter as an "esteemed journal". The first 9-page issue included a 3-page article about Solar Optics. Many articles have found their way into our esteemed journal since then. We can easily fill *Desert Skies* with several interesting articles written by TAAA members and others in the local astronomical community. With the ability to publish a newsletter online, we aren't limited by postage and printing costs. We can now publish a long article in a single issue rather than chopping it up into several issues as before.

In 2013, we're making significant changes to *Desert Skies*. We'll publish four issues a year. In each issue, you'll find longer articles and in-depth reports. There will be less "static" text, so that every page offers something new to read. If materials are available for young readers, we'll include a kid's section. All this will come in the March (Spring) 2013 issue of Desert Skies.

If you're a writer, observer, or astrophotographer, consider contributing an article for that first issue. The deadline for the Spring issue is February 10th with a publication date of March 1st. I hope to recruit assistants to help with the publishing, too. Maybe you can help with proofreading or page layout. If you're interested in taking part in producing a publication that we'll all be proud of, please contact me, Terri Lappin (see page 15 for contact info).

To keep our members informed of our monthly events, TAAA members will begin receiving a monthly bulletin in January 2013. This will be much like the first 4 or 5 pages of the current *Desert Skies*. The deadline for the monthly bulletin will continue to be the third Wednesday each month (but moved for major holidays).

With these changes, some items that have appeared in *Desert Skies* will move to the TAAA website. For example, the minutes of the monthly Board of Director's meeting will very likely be only available on the TAAA website. The details of which items will move to the website are still under consideration but will be decided by the board at their December meeting.

So, watch for some exciting changes in the first quarter of 2013. I certainly look forward to it.

Unless otherwise noted, contact information for individuals mentioned throughout this newsletter can be found on page 15—"How to Contact Us".

Astro-Imaging Special Interest Group (AISIG)

Meeting: Dec 3 (Mon) **7:00 PM**
Denny's Restaurant (6484 E Broadway)
Contact: Larry Phillips

The Astro-Imaging SIG now meets at Denny's on east Broadway. The meeting begins at 7 PM in the private meeting room. Or come any time after 6 PM and get a bite to eat before the meeting begins. Meetings end no later than 9 PM.

Denny's is located at just east of Wilmot on east Broadway, next to the La Quinta Motel.

Our program consists of members sharing their images, setups, problems, or suggestions. Bring your latest efforts at imaging and processing whether it is your first attempt and you still consider yourself a beginner, or you want to seek an answer to a problem, or you have been imaging a while. No one will ever completely master this phase of our astronomy hobby – so we can all learn.

Astronomy Fundamentals SIG (AFSIG)

Meeting: Dec 13 (Thu) **6:30 PM**
U.S.G.S. Building, Room 253 (520 North Park Ave)
Contact: Ben Bailey

On Thursday, Dec 13th, we will hold our regular monthly meeting. AFSIG is dedicated to helping expand astronomical knowledge. Please come out and help us succeed.

The USGS Building is on the northeast corner of Park and 6th Street. Free parking is available nearby after 5pm.

Starry Messengers Special Interest Group (SMSIG)

Next Meeting: Jan 28 (Mon) **6:30 PM**
Beyond Bread (3026 N Campbell)
Contact: Terri Lappin

The Starry Messenger SIG will spend the next few months planning our exhibit area at the Tucson Festival of Books. We'll be looking for volunteers to help us, so keep the weekend of March 9 and 10 open. If you want to help with the early planning, be sure to contact Terri Lappin, Starry Messenger Chairperson. There will likely be additional meetings or email discussions about our plans, so get involved if this is your sort of thing. Your ideas will be very appreciated.

The next meeting of the Starry Messengers will be on the evening of Monday, January 28th. It will be our last regular meeting before the Festival of Books.

Unless otherwise noted, all contact information can be found in the section called "How to Contact Us", found on page 15 of this issue of *Desert Skies*.

TAAA Holiday Party

Dec 1 (Sat) **5:00 PM**
Home of Bill and Mary Lofquist

The TAAA Holiday Party will be held this year at the home of Mary and Bill Lofquist. It will be on Saturday, December 1, 2012. We can begin to gather at 5:00 PM.

The meal is a potluck, so bring something with you to share. It could be appetizers, a vegetable, an entre, dessert, something to drink. We will have a grill available if you would like to cook something for yourself, and you can bring a crockpot.

Coffee and hot water for tea, hot chocolate and hot cider will be available.

We will have a raffle again, so bring any astronomy-related items you might have on your shelf that you think someone else might like to have.

Directions: From the intersection of Ina Road and La Cholla Boulevard (near Foothills Mall), go south on La Cholla Blvd to the traffic light at Omar Drive (Donaldson School is there). Turn left (east) on Omar Drive and then right on Amahl Drive. Go one half mile to where Amahl changes its name to Sesame Drive. At this point, turn left onto Harran Drive, and then left again onto Harran Circle.

The address is 1935 Harran Circle.

This is a great time for visiting and getting to know other TAAA members. We hope to see you at the Holiday Party.

Solar Observing Group

The Solar Observing group will not be meeting for group solar observing until further notice. Please ignore the Dec 15th Solar Observing date that appears on the 2012 TAAA wall calendar. Solar observers are encouraged to use the TAAA Forum to post their solar observations.

Next Board of Director's Meeting

Dec 12 (Wed) **6:30 PM**
Steward Observatory Conference Rm N305

Contact the president to have your topic added to the agenda. There may not be time for topics that are not on the agenda. The front doors at Steward Observatory will be locked. Be there by 6:30pm or call the cell phone number of someone you know is attending the meeting and they can let you in.

Newsletter Deadline

Desert Skies is changing to a quarterly schedule. Publishing Guidelines found on page 15. The deadline and publishing schedule is to the right.

Deadline	Published
Feb 10	Mar 1
May 10	Jun 1
Aug 10	Sept 1
Nov 10	Dec 1

Members' Star Parties

TAAA Star Party at TIMPA

Dec 15 (Sat) **Gate opens at 4:45PM**

Contact Person: Ben Bailey

The AFSIG is hosting the December 15th star party at TIMPA. An AFSIG representative will open the gates for an evening of viewing. The Gila Monster Observatory will be open for your viewing pleasure. The TIMPA site features a large parking area, and full restroom facilities. Be prepared for cool temperatures after sunset. Guests are welcome, accompanied by a TAAA member. We hope to see you there!

The Gila Monster Observatory houses a Meade 14" telescope donated to the TAAA by David Levy's Sharing the Sky Foundation. All members are encouraged to complete the training program to learn to operate this telescope.

TIMPA Site Notice

A gate card is required for TIMPA access. Please *DO NOT* ask the caretakers for entry to the TIMPA SITE. On scheduled TIMPA star party nights, a designated TAAA representative will provide access to the site. At other times, a gate card is available from the TIMPA Gate Card Controller.

Directions to TIMPA Site

GPS coordinates: 32 deg 15.868' N, 111 deg 16.390' W

The TIMPA site is about 25 minutes from Speedway & I-10, about 7 miles west of the Arizona-Sonora Desert Museum.

From the North:

1. Take Ina Road west about three miles past I-10.
2. Turn south (left) onto Wade Rd. Wade Rd becomes Picture Rocks Rd as the road turns to the west (right).
3. Take Picture Rocks Rd west to Sandario Rd.
4. Turn south (left) onto Sandario Rd. Go to Manville Rd.
5. Turn west (right) onto Manville Rd. Go to Reservation Rd.
6. Turn south (left) onto Reservation Rd (a dirt road) and go about two miles. The TIMPA entrance is on the left.

From the East:

1. Take Speedway Blvd west. It turns into Gates Pass Rd.
2. Go over Gates Pass and continue west to Kinney Rd.
3. Turn north (right) onto Kinney Rd and continue past the Arizona-Sonora Desert Museum.
4. At the entrance to Saguaro National Park West, go towards the left onto Mile Wide Rd. (This is easy to miss so watch for the park entrance sign.)
5. Take Mile Wide Rd west about five miles to Reservation Rd. Mile Wide Rd ends at Reservation Rd and you must turn north (right) onto Reservation Rd.
6. Take Reservation Rd (a dirt road) north about one mile. The entrance to TIMPA will be on the right.

Star Party at Chiricahua Astronomy Complex

Dec 14 & 15 (Fri & Sat)

Contact Person/RSVP to: John Kalas

The Chiricahua Astronomy Complex (CAC) is the club's dark observing site. Located in Cochise County approximately 100 miles from the center of Tucson, the site includes a full bathroom facility. At an elevation of 4800 feet, be prepared for cooler temperatures. Try to arrive before sunset. Unlike the TIMPA site, members are required to make reservations for both monthly club star parties and private member use. We are restricted to 60 persons and 30 vehicles maximum at any time. If you would like to attend, you must contact CAC Director John Kalas. Reservations will be on a first come – first serve basis. You need to reserve for both nights if observing both nights. Depending on the number of members interested in attending, guests may not be allowed.

CAC Site Notice

Reservations are required at all times including scheduled star parties. On scheduled CAC star party nights, a TAAA designated representative will unlock the gate. At other times, access can be granted by the CAC Director.

Directions to Chiricahua Astronomy Complex Site

GPS coordinates: 31 deg 52.07' N, 109 deg 30.9' W

The Chiricahua Astronomy Complex is about 90 miles and a 1½ hour drive from the TTT Truck stop at Craycroft Road and Interstate 10.

1. Take I-10 east from Tucson past Benson.
2. Exit I-10 at Dragoon Road (Exit #318) . Turn right onto Dragoon Road at bottom of exit ramp.
3. Travel 13.5 miles southeast to the intersection with Route 191. Turn south (right) onto Route 191.
4. Travel 17.9 miles south (past Sunsites and Margie's Corner Café at High St on the right, and the Border Patrol checkpoint) to the intersection with Route 181 at Sunizona.
5. Turn east (left) onto Route 181 and travel 10.9 miles east to the intersection with South Price Ranch Road. Turn south (right) onto South Price Ranch Rd. This is a dirt road just before you reach mile post 49 (cluster of mailboxes on right side of Route 181).
6. Travel ½ mile south on South Price Ranch Rd to the intersection with East Perseus Way. This is a wide dirt road marked with a street sign on left. Turn east (left) onto East Perseus Way.
7. Travel east on East Perseus Way slightly more than ¼ mile to the entrance of the Chiricahua Astronomy Complex on the right. The address is 9315 E Perseus Way. It is marked with a TAAA sign and twin brown gates flanked by white rail fences set back 50 feet from road.

Inaugural Arizona Science and Astronomy Expo—Two Days of Work and Fun

Astronomers from all over came to Tucson last month for the first Arizona Science and Astronomy Expo. The TAAA had booths in both the vendor area and the hands-on educational kid's area. Over 70 vendors and organizations were present. It was a huge success. If you missed it, plan to attend next year.

Thank you to all the volunteers who helped at our two booths. Apologies if anyone was missed.

Cathy Anderson	*Mary Helen Kaser*	*Bill Lofquist*
Paul Anderson	*Catt Kestler*	*Keith Schlottman*
Angela Cardot	*Jim Knoll*	*Ken Shaver*
Edward Eastburn	*Steve Koerber*	*Mae Smith*
Bob Gilroy	*Lyle Kolze*	*Brian O'Connell*
Chuck Hendricks	*Terri Lappin*	*Susan O'Connor*
Liz Kalas	*Karen Liptak*	*Tim Van Devender*

And members who entertained guests at the star parties held at TIMPA and CAC.

TAAA Vendor Booth. Left to Right: Ken Shaver, Liz Kalas, Keith Schlottman

TAAA Educational Booth. Cathy Anderson talks to a young boy who knows his galaxies. He identified Andromeda, Whirlpool, and the Sombero from the CD models.

Lunt Instruments and the Charlie Bates Solar Astronomy Project offered free solar viewing both days.

All photos taken by Terri Lappin.

Several views of the Vendor area including Tele Vue, Oceanside Photo & Telescope and some mighty big models of the planets. (Note the Earth model being held by the woman in white shirt.)

Night Sky Network Outreach Toolkits


Components from several toolkits

Night Sky Network Toolkits can be used for any event that puts you in the position of explaining astronomical concepts to non-astronomers. This can be at a community outreach event like a star party at a school, or a scout troup you're leading. They can be used as a backup to bad weather or to complement telescope observing. These toolkits, developed by the Astronomical Society of the Pacific, are anchored to a particular NASA mission and can be used to explain such basic concepts as gravity, phases of the moon, or the scale of the universe. Several projects are contained in each toolkit, all in a handy, easy to carry box. Project Cards help in the selection of which project to use according to venue and audience/age group. Some projects are better suited for K-4, others for older audiences including adults. Creating moon phases using Styrofoam balls just before sunset will help instill the reason for the phases in anyone's mind, regardless of age.

There are only a handful of members who have worked with our toolkits. We need more trained members to meet the high demand for hands-on activities that take place at our star parties. You'll have a chance to look over one of our toolkits at this month's meeting. One-on-one training is also available. We allow toolkits to be checked out for a month at a time, giving you plenty of practice time before using a toolkit at an event,. Contact Terri Lappin who coordinates the Night Sky Network toolkit program to check out a toolkit.

Outreach Resources Available for Borrowing

Our Magnetic Sun: sun model, solar magnetic storms and their impact on Earth, sun protection

Life in the Universe—Are We Alone?: origin of and search for life

Space Rocks – Asteroids, Comets, and Meteorites: meteorite samples, asteroid detection

Exploring the Solar System: scale model of solar system

Our Galaxy, Our Universe: scale model of the Milky Way galaxy and the Universe

Shadows and Silhouettes: lunar phases, eclipses, transits

Black Hole Survival Kit: gravity concepts

Supernova!: life cycle of massive stars, earth's protective atmosphere

Mirrors and Glass: how telescopes work

Telescopes – Eyes on the Universe: basic principles of optics, the human eye, and observing

PlanetQuest: demonstrate planet detection techniques

SolarScope: provides a white light image of the sun suitable for small group viewing.

Dark Skies Education Kit: light pollution principles, includes a Sky Quality Meter

Comet Chef: an apron (with a comet on it) and chef's hat to wear when mixing up comets

Moon Globe: 12" diameter with stand

DVDs: A Private Universe; Cosmic Collisions

(Items in Italics are Night Sky Network Outreach Toolkits)

For our young members...

NASA's Space Place

A fun website with games and resources for kids to learn about astronomy and space sciences.
http://spaceplace.nasa.gov

NASA Kid's Club: Games and other interesting items for young kids.

http://www.nasa.gov/audience/forkids/kidsclub/flash/index.html

Star Child

Information about all things spacey. A service of NASA/ Goddard Space Flight Center. Has links to other websites.
http://starchild.gsfc.nasa.gov

Imagine the Universe

For older kids, age 14 and up.
http://imagine.gsfc.nasa.gov/

AFSIG Observing Clubs

- ✶ Open to all TAAA members
- ✶ Join at any time
- ✶ Guided or work on your own
- ✶ Certificate at completion
- ✶ Stepping stone into the Astronomical League Observing Clubs

Solar Observing Club helps those interested in observing solar activity — like sunspots, solar flares and other interesting features — and recording those observations. The beauty of this observing program is that our Sun offers great flexibility in observing and recording the different features – you don't have to be concerned about light pollution, night vision, or traveling great distances to find dark skies. The Solar Observing Club is taking a temporary hiatus from their regular observing schedule. Watch the newsletter for future observing dates. If you want to be added to the solar observing email list, please email Ben Bailey at fundamentals[at]tucsonastronomy.org.

Lunar Observing Club meets sporadically depending on schedule compatibility and the moon cycle. The purpose of this club is to identify and log 30 specified lunar features – some of which are easy while others are more difficult. This is a great club in which to participate as it is ideal for observing from your back yard or patio. Dark skies are not really necessary and some features are even visible through light clouds. If you are interested in participating in the Lunar Observing Club or if you just want to be added to our email list to keep posted about our activities, email Robert Gilroy at bobgilroy[at]tucsonastronomy.org.

Constellation Observing Club meets monthly on our regularly scheduled TIMPA night. The purpose of this club is to identify and log 20 constellations, their brightest stars and deep sky objects. This is a great way to learn your way around the night sky. If you are interested in participating in the Constellation Observing Club or if you just want to be added to our email list to keep posted about our activities, email Paul and Cathy Anderson at paulanderson[at] tucsonastronomy.org.

Solar System Observing Club meets monthly on our regularly scheduled TIMPA night. The purpose of this club is to observe and log the different features and actions of the planets and their moons and other interesting solar system objects. If you are interested in participating in the Solar System Observing Club or if you just want to be added to our email list to keep posted about our activities, email Brian O'Connell at boc7[at]inbox.com.

Double Star Observing Club meets monthly on our regularly scheduled TIMPA night. The dark night sky is filled with millions and millions of stars. Some are close by (relatively speaking) but most are far away. Some are single stars (like our sun) but others are multiple star systems. Of these multiple star systems, we can detect and split many double stars with our equipment. The purpose of this club is to observe and log the different types and colors of double stars. If you are interested in participating in the Double Star Observing Club or if you just want to be added to our email list to keep posted about our activities, email Tom Watson at watson1987[at]cox.net.

Dark Skies for December 2012

Data provided by Erich Karkoschka

No twilight, No moonlight
for Tucson in 24-hour MST
18hrs=6pm, 20hrs=8pm
22hrs=10pm, 0hrs=midnight

Day	Date	Dark Time		
Fr/Sa	30/1	18:45	-	19:16
Sa/Su	1/2	18:46	-	20:10
Su/Mo	2/3	18:46	-	21:04
Mo/Tu	3/4	18:46	-	22:00
Tu/We	4/5	18:46	-	22:57
We/Th	5/6	18:46	-	23:54
Th/Fr	6/7	18:46	-	0:54
Fr/Sa	7/8	18:46	-	1:56
Sa/Su	8/9	18:47	-	3:01
Su/Mo	9/10	18:47	-	4:08
Mo/Tu	10/11	18:47	-	5:17
Tu/We	11/12	18:47	-	5:48
We/Th	12/13	18:48	-	5:49
Th/Fr	13/14	18:48	-	5:50
Fr/Sa	14/15	19:14	-	5:50
Sa/Su	15/16	20:22	-	5:51
Su/Mo	16/17	21:28	-	5:51
Mo/Tu	17/18	22:31	-	5:52
Tu/We	18/19	23:31	-	5:52
We/Th	19/20	0:29	-	5:53
Th/Fr	20/21	1:25	-	5:53
Fr/Sa	21/22	2:20	-	5:54
Sa/Su	22/23	3:15	-	5:54
Su/Mo	23/24	4:08	-	5:55
Mo/Tu	24/25	5:01	-	5:55
Tu/We	25/26	5:51	-	5:56
We/Th	26/27	-	-	-
Th/Fr	27/28	FULL MOON		
Fr/Sa	28/29	-	-	-
Sa/Su	29/30	18:56	-	18:59
Su/Mo	30/31	18:57	-	19:55

Support Our Sponsors

Rik Hill's Website Trips on the Internet Super-Skyway

Oh, the colors!

If you did not go to the Arizona Science & Astronomy Expo., you missed a great opportunity to see a lot of new toys available to for our hobby. I enjoyed talking to opticians, telescope engineers, planetarium specialists and many people that had only been email addresses for years.

Among the people I was able to talk with was Tom Field of Real-Time Spectroscopy or RSpec. I had been looking forward to this after he was recommended to me by several of my good friends in astronomy. There also had been many emails between us the last month or two.

Basically, RSpec is a software and "spectrum analyzer" that consists of a plane (flat) grating in a filter ring that will screw on to a 1.25" t-mount for use in a telescope or with an adapter that mounts it to the front of any camera.

The RSpec main page is at:

http://www.rspec-astro.com/

This site should keep you busy for a few evenings as there is a lot there to educate and inform.

My main interest was with the software. As readers of this column know I built my own spectrograph and have been using my DSLR with it to build a library of spectra of the brighter stars. In this way when something unusual happens, like Delta Sco in recent years, I have some comparison spectra ready at hand:

http://www.lpl.arizona.edu/~rhill/spect/newspect.html

The RSpec website is a library in itself and Tom has a whole archive of videos to take you through the analysis of your spectra. A UK user of RSpec has written up his results in a very inspiring article at:

http://www.threehillsobservatory.co.uk/astro/spectroscopy_11.htm

While a number of the links off this page are broken the page is worth some time by itself.

Imbedded in the RSpec software are folders of comparison spectra making the job of modeling your spectra pretty easy. You can also model the response of your camera and save that model to be applied to every spectrum you take. This was my problem as I have a pronounced "hump" in the red of my spectra caused by the camera.

If you are an educator RSpec has a website special for you and your classroom at:

http://www.rspec-explorer.com/

If your school does not have the money for such equipment, I would refer you to an article I wrote over 15 years ago:

http://www.lpl.arizona.edu/~rhill/spect/cdspec.html

which gives instructions on how to build a classroom spectroscope using a CDROM as your grating (not a DVD however).

If you have some money (<$20) and are a little handy with tools try this:

http://www.lpl.arizona.edu/~rhill/spect/spect.html

These are instructions on how to build a prism spectrograph with which you can do star classifications and other explorations.

Lastly, there is a nice interview with Tom Field on line at:

http://shareastronomy.com/2011/05/11/tom-field-rspec-and-real-time-spectroscopy/

He's a very dynamic character, and one you should get to know !

Now go make a spectrum of yourself!

As always, if you have some feedback (other than rude comments about my droll humor), a topic you'd like explored or have some interesting URLs you've turned up, please feel free to drop me a line at: rhill@lpl.arizona.edu

Volunteer Needed to Assist with Apparel

Mae Smith has been doing an excellent job with the TAAA Apparel Program, but she would like some help. The responsibilities include helping with sales of T-shirts and other items at the monthly meetings, managing the inventory, and placing orders for new items.

Contact any Board member if you are interested in filling this need. Contact information is found on page 15.

TAAA Apparel

Looking for a special gift or a way to make that fashion statement? Try on something from our fine line of club apparel. We have hats, T-shirts, denim shirts, and patches. We take cash and checks. Available at most monthly meetings. Coordinated by Mae Smith.

TAAA Loaner Telescope Program

Don't own a telescope?

Our Telescope Loaner Program is your answer!

Beginners, here's your chance to learn and observe the sky before buying any equipment. The Loaner Program is available to any current member after meeting requirements detailed in the TAAA Loan Policy. These are some of the telescopes in the program:

Meade 90mm ETX

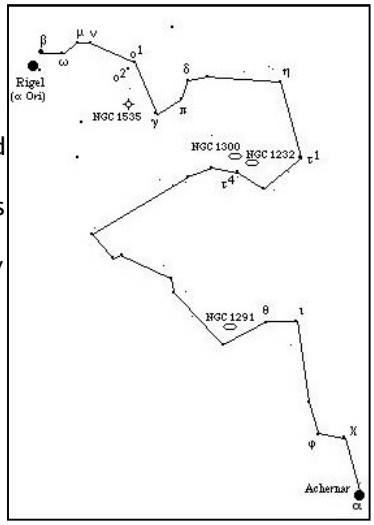
Coulter Odyssey 8" f/4.5 Dobson

Meade 10" LX200 GPS (requires training)

For members only. Contact the Equipment Loan Coordinator for details about these telescopes.

Chris Lancaster's Constellation of the Month

Eridanus—The River



This is the great celestial river that winds its way from the western foot of Orion to the southern star Achernar, which translated from Arabic means "the end of the river." This line of stars first heads west, takes a turn to the south, flows back to the east, and finally makes its final journey southwest behind the horizon. To be fair, from Tucson's latitude, Achernar (the 9th brightest star seen from Earth) can theoretically be glimpsed for a couple of hours when it is on the meridian, but since it only climbs half a degree in the sky at most, any hill or shrub will successfully hide it from view, and it can never be seen north of a latitude line connecting such cities as San Diego, Casa Grande, Dallas, and Charleston, SC. This constellation has been seen as a river since ancient times, most often the Nile or Euphrates.

An interesting target with which to start is the triple star system Omicron2 Eridani. The A component (mag 4.5) is separated from the B/C pair by an expansive 83", while B and C (mags. 9.7 and 10.8 respectively) stand about 9" apart. The group is only 16 light years from Earth, making the brightest star the 8th nearest of the naked eye stars. B is an important object simply because of what it is--a white dwarf. It's one of the most easily observable stars of its kind. The 0.44 solar masses it contains are squeezed by gravity into a body which is less than 2.5 times the diameter of Earth, making its density 90,000 times that of water. A golf ball sized chunk of this star would weigh close to 3.5 tons. The C star is a red dwarf and a featherweight among its stellar counterparts, weighing in at only 0.2 solar masses.

Another double star important for its visual appearance is Theta Eridani. Easily seen with the naked eye at magnitude 2.9, it appears through a telescope as a pair of brilliant white stars of magnitudes 3.5 and 4.5 separated by about 8.5".

There are dozens of galaxies in Eridanus, but three that take center stage are NGC1300, NGC1232, and NGC1291. The first two happen to be close to each other, forming a triangle with Tau4 Eridani. NGC1300 is a barred spiral of magnitude 11.2 and measuring 6.2'x 4.1'. You may not notice the two spiral arms but you should see the nucleus and bar making a thin oval structure. NGC1300 is found 2.4 degrees north of Tau4, or RA 3h 19.7m Dec -19d 24.7".

Moving 2.6 degrees to the southwest will reveal NGC1232, a slightly brighter galaxy of magnitude 10.6 and larger than NGC1300, covering 7.4'x 6.4'. This one has closely wrapped multiple arms which seem to merge with each other to give this galaxy the appearance of a soft circle of light. You will find NGC1232 at RA 3h 9.8m Dec -20d 34.9'.

Near the far southern regions of the constellation is NGC1291, another bright spiral galaxy with tightly wound arms. It glows comparatively brightly at magnitude 9.4, and it is significantly larger than the other two galaxies, measuring 9.7'x 8.1'. However, it sits well down in the sky toward the southern horizon 3.7 degrees ESE of our double star Theta Eridani. Any significant dust or haze in the air will compromise your view of this galaxy. Look at RA 3h 17.3' Dec -41d 6.5' for this object.

A fairly easy deep sky object to view is NGC1535. It's a planetary nebula of magnitude 10 and 20" in size. Move 5.5 degrees south of the triple star omicron2, or zoom in to RA 4h 14.2' Dec -12d 44.5'.

Steward Observatory Public Evening Lecture Series Fall 2012

Steward Observatory Lecture Hall (Rm N210)

933 N Cherry Ave 7:30pm

Dec 3 (Mon) James McGaha

2012 Doomsday! World Apocalypse?

For information:
http://enterprise.as.arizona.edu/~taf/pubeve/pub_lect.html

International Dark-Sky Association

Southern Arizona Section

Meets 2nd Wednesday

5:30 - 7PM

3225 N First Ave

www.sa-ida.org

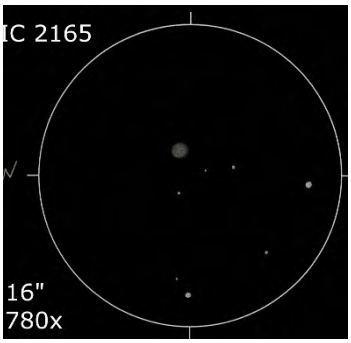
To preserve and protect the nighttime environment and our heritage of dark skies through quality outdoor lighting.

Christian Weis' Planetary Nebulae of the Month

IC2165 and Jones-Emberson 1

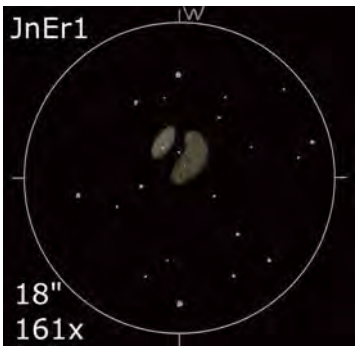
Planetary nebulae (PN) are fascinating objects that come in numerous forms of appearances. Besides the well known grand four Messiers (M27, M57, M76 and M97), there are hundreds more to explore. This article suggests two PNs, a pretty bright and easy-to-observe one and a harder one for the more ambitious observer who is equipped with a bigger scope.

IC 2165
RA: 6h 21.7min
Dec: -12° 59´
Constellation: Fornax
Brightness: 10m6
Central star: 15m1
Size: 30 arcsec
Distance: 10.000 ly (8.500 ly)



IC 2165 is quite a bright object situated in Canis Maior. There is different data on its distance varying from 8500 ly to over 10.000 ly. Assuming that latter one is correct, it is the brightest PN beyond 10 kly. The original IC description reads that IC 2165, that was discovered by Williamina Fleming in 1898, is stellar. But using a high-power eyepiece proofs the opposite. I observed this planetary nebula in November 2010 from Geology Vista with a 16" Newtonian having mediocre conditions and noted: bright circular nebula, well-defined, no structures, homogeneous in brightness, stellar with low power, no central star; 780x, fst 6m2 (Gem)

Jones-Emberson 1 sounds a little bit like a comet but it actually is quite a famous planetary nebula that is located in the constellation Lynx. It was discovered by Rebecca Jones and Richard Emberson in 1939. Its alternate name is Headphones nebula and one can easily understand that naming when looking at pictures of that beauty. However, when I observed this object whose size is about a fifth of that of the moon it did not remind me of headphones but more of a liver – at least the bigger part of it. This object will require a filter to be seen in full glory. A dark sky will be necessary as well. When I observed JnEr1 in March 2011 in Austria with my 18" Donsonian telescope having very good conditions I noted: Big but faint, without filter barely seen, deep-sky-filter helps a little, UHC helps very much, separation is hard work but definitely seen it, circular structure with averted vision, assumed CS is bright but hard to say if it really is the CS [annotation: it is NOT the central star], foreground stars in nebula, not suitable for magnifications much higher than 161x; 161x, fst 7m0 (And)



JnEr 1
RA: 7h 57.9min
Dec: 53° 25´
Constellation: Lynx
Brightness: 12m
Central star: 16.8
Size: 7 x 6 arcminutes
Distance: 1600 ly

The Visible Planets this Month

Data provided by Erich Karkoschka

Weekend	Sun		Mercury		Venus		Mars		Jupiter		Saturn		Visibility (Vi)	
Sa/Su	Sets	Rises	Rises	Vi	Rises	Vi	Sets	Vi	Rises	Vi	Rises	Vi	Code	
1/2	17:17	7:06	5:27	3	4:53	-2	19:24	3	17:17	-3	4:23	1	-3	brilliant
8/9	17:17	7:12	5:36	3	5:07	-2	19:22	3	**Sets**	-3	3:59	1	0	conspicuous
15/16	17:19	7:16	5:55	4	5:21	-2	19:20	3	6:11	-3	3:35	1	3	moderate
22/23	17:22	7:20	6:17	6	5:35	-2	19:19	3	5:40	-3	3:10	1	6	naked eye limit
29/30	17:26	7:22	6:40	8	5:49	-1	19:18	4	5:09	-3	2:45	1	9	binoculars limit

Program Coordinator Advance and Nightly Observing Programs

Kitt Peak National Observatory

Kitt Peak National Observatory Visitor Center, outside of Tucson AZ, is searching for a full-time dynamic individual to coordinate its Advance and Nightly Observing Programs. The Coordinator is expected to supervise, train and schedule, review, program staff. The Coordinator develops and conducts educational programs/workshops and maintains all public telescopes. The candidate **must be** extremely proficient in CCD imaging and image processing. Night hours and weekend work with flexible days. Minimum three years experience required. Ideal candidate must have excellent public speaking skills, be a team player, and be well organized and be good at multi tasking. Strong knowledge in Astronomy is required. Bachelor degree or higher in Astronomy, Science Education or related field is required. Amateur astronomers are encouraged to apply. This is an exempt position with excellent benefits. Please apply online upload resume, three references, and image samples to http://www.aura-astronomy.org/hr/joblist.asp

Hubble and Spitzer Confirm A New Candidate for Farthest Galaxy

Compiled by Loretta McKibben

NASA's Hubble Space Telescope and a natural cosmic "zoom lens" have helped scientists spot the farthest known galaxy to date in the Universe. Observations from NASA's Spitzer Space Telescope, which provides images in infrared wavelengths, helped confirm the discovery.

The farthest galaxy, named MACS0647-JD, is very young and appears as a tiny blob that is only a tiny fraction of the size of our Milky Way galaxy. However small, it offers a peek back into a time when the universe was only 3 percent of its present age. The newly discovered galaxy, named MACS0647-JD, was observed at a time of only 420 million years after the Big Bang. The Big Bang is the theorized beginning of the Universe and occurred 13.7 billion years ago.

The light of the newly discovered galaxy has traveled for 13.3 billion years to reach Earth. The inset in the image shows a close-up of the young dwarf galaxy.

This find is the latest discovery from a program that uses natural zoom lenses to reveal distant galaxies in the early universe. The Cluster Lensing And Supernova Survey with Hubble (CLASH), an international group led by Marc Postman of the Space Telescope Science Institute in Baltimore, Md., uses massive galaxy clusters as cosmic telescopes to magnify distant galaxies behind them, an effect called gravitational lensing. The massive gravitational pull of a faraway galaxy cluster bends and concentrates even more distant light much like a giant natural telescope mirror.

The image above is a composite taken with Hubble's Wide Field Camera 3 and the Advanced Camera for Surveys. The observations were taken on Oct. 5 and Nov. 29, 2011. Credit: NASA

About 8 billion years into its journey, the ancient light from MACS0647-JD was magnified by the massive galaxy cluster MACS J0647+7015, allowing astronomers to capture an image of the young, distant galaxy.

The research team successfully captured three magnified images of MACS0647-JD with the Hubble Space Telescope's Wide Field Planetary Camera 3 (WFPC3) and Advanced Camera for Surveys (ACS). The cluster's gravity helped boost the light from the galaxy, making the image appear about eight, seven, and two times brighter than they otherwise would have appeared without the help of the cluster. "This cluster does what no manmade telescope can do," Marc Postman of the Space Telescope Science Institute said. "Without the magnification, it would require a Herculean effort to observe this galaxy."

The new galaxy is so small that it may be going through the steps of forming a larger galaxy. "This object may be one of many building blocks of a galaxy," said the study's lead author, Dan Coe of the Space Telescope Science Institute. "Over the next 13 billion years, it may have dozens, hundreds, or even thousands of merging events with other galaxies and galaxy fragments." It is less than 600 light-years wide, where a typical galaxy of a similar age would be about 2,000 light-years wide. For comparison, the Large Magellanic Cloud, a dwarf galaxy companion to the Milky Way, is 14,000 light-years wide. Our Milky Way galaxy is about 150,000 light-years across.

The galaxy was observed with 17 filters and was discovered in February, 2012, while looking over a catalog of thousands of gravitationally lensed objects found in Hubble observations, but appeared only in the two reddest filters.

(Continued on page 13)

(Farthest Galaxy, continued from page 12)

"Either MACS0647-JD is a very red object, only shining at red wavelengths, or it is extremely distant and its light has been 'redshifted' to these wavelengths, or some combination of the two," Coe said. "We considered this full range of possibilities." The team spent eight months systematically ruling out other alternative explanations for the object's identify, including red stars, brown dwarfs, and red galaxies, and determined that a very distant galaxy was the correct explanation.

The CLASH team identified multiple images of eight galaxies lensed by the galaxy cluster. Their positions allowed the team to produce a map of the cluster's mass, which is primarily composed of dark matter. Dark matter is an invisible form of matter that makes up the bulk of the universe's mass. "It's like a big puzzle," said Coe. "We have to arrange the mass in the cluster so that it deflects the light of each galaxy to the positions observed." The team's analysis revealed that the cluster's mass distribution produced three lensed images of MACS0647-JD at the positions and relative brightness observed in the Hubble image.

Redshift is a consequence of the expansion of space over cosmic time. Astronomers study the distant universe in near-infrared light because the expansion of space stretches ultraviolet and visible light from galaxies into infrared wavelengths. Coe estimates MACS0647-JD has a redshift of 11, the highest yet observed.

Images of the galaxy at longer wavelengths obtained with the Spitzer Space Telescope played a key role in the analysis. If the object were intrinsically red, it would appear bright in the Spitzer images. Instead, the galaxy barely was detected, if at all, indicating its great distance. The research team plans to use Spitzer to obtain deeper observations of the galaxy, which should yield confident detections as well as estimates of the object's age and dust content.

MACS0647-JD is too far away for any current telescope to confirm the distance using spectroscopy, which spreads out an object's light into thousands of colors. Nevertheless, Coe is confident the fledgling galaxy is the new distance champion based on its unique colors and the research team's extensive analysis. "All three of the lensed galaxy images match fairly well and are in positions you would expect for a galaxy at that remote distance when you look at the predictions from our best lens models for this cluster," Coe said.

The new distance champion is the second remote galaxy uncovered in the CLASH survey, a multi-wavelength study of 25 hefty galaxy clusters with Hubble's ACS and WFC3. Earlier this year, the CLASH team announced the discovery of a galaxy that existed when the universe was 490 million years old, 70 million years later than the new record-breaking galaxy. So far, the survey has completed observations for 20 of the 25 clusters.

The team hopes to use Hubble to search for more dwarf galaxies at these early epochs. If these infant galaxies are numerous, then they could have provided the energy to burn off the fog of hydrogen that blanketed the universe, a process called re-ionization. Re-ionization ultimately made the universe transparent to light.

The CLASH researchers will be publishing their findings in the December 20 issue of The Astrophysical Journal.

References

Gutro, Rob, "NASA Great Observatories Find Candidate for Most Distant Object in the Universe to Date," NASA press release of November 15, 2012.
Web: http://www.nasa.gov/mission_pages/hubble/science/distance-record.html

"Astronomers Spot Most Distant Known Galaxy," Spitzer space telescope article, November 15, 2012.
Web: http://www.spitzer.caltech.edu/images/5508-ssc2012-16a-Astronomers-Spot-Most-Distant-Known-Galaxy

Rannals, Lee. "Newly Discovered Galaxy Breaks Most-Distant Record," for redOrbit.com. Nov. 15, 2012.
Web: http://www.redorbit.com/news/space/1112733087/most-distant-galaxy-macs0647-jd-hubble-spitzer-111512/

TAAA Board of Directors Meeting—10 October 2012

(Editor's Note: Minutes edited for space)

Attending Board members present (6): Keith Schlottman, Bob Gilroy, Al Anzaldua, Vern Dunlap, iBill Lofquist, Tim Van Devender.

Members present (2): Ben Bailey, Terri Lappin.

The President called the meeting to order at 6:39 pm.

Board Minutes: The Board approved the September Board Meeting minutes.

Upcoming Meetings: Terri Lappin reported that we have speakers set up for November meeting.

Treasurer's Report and Issues: Treasurer Al Anzaldua provided Profit & Loss and Balance Sheet reports for the Board. The Board discussed the details of the reports. Our net income for the month of September was $1928.26, and the total amount the club had in checking and savings is $40,569.65.

Al reported that he had recently renewed TAAA's annual membership in the Metropolitan Tucson Convention and Visitors Bureau (MTCVB) for $252.00, and that John Kalas had promised to inquire into the benefits of our membership in MTCVB and give the Board a report on the whether it is worth continuing beyond this year.

After some discussion with the Board on the benefit of paying for a multiyear domain name renewal, Al made a motion to update the domain name for another five years. The motion carried.

Al asked the Board for an opinion as to the renewal of TAAA Sky and Tel subscription and the International Dark Sky Association (IDA) membership. The Board decided not to renew the Sky and Tel subscription, but to renew the IDA membership at the organizations level at $100.00 annually.

(Continued on page 14)

(Oct BOD Meeting Minutes, continued from page 13)

SIG Status Reports:

AFSIG Report: Ben Bailey reported that classes were finishing up with much less participation than expected (18 people signed up, but only 8 showed up at last class).

There is a 3-day TIMPA event scheduled. There was discussion about whether it would interfere with AFSIG events on Saturday and Sunday? The Board decided to go ahead with AFSIG event.

SMSIG Report: Terri Lappin reported that SMSIG members want to add more capabilities to website and Tim van Devender agreed to work with Terri Lappin on that.

SMSIG members will be manning "hands on" exhibits at the upcoming AZ Science and Astronomy Expo.

Arizona Science & Astronomy Expo Nov 10-11: TAAA will have 10' & 10' booth. Exhibit tables will be for separate activities. Keith Schlottman will put out a call for volunteers to form a committee to organize the booth. SMSIG will have a separate booth.

Non-profit Star Party Report: Bill Lofquist reported that we will be likely able have a sufficient number of club volunteers for our seven upcoming events.

Webmaster Report: Tim Van Devender reported that he is working with the Treasurer and the Membership Coordinator to bring our membership list current.

Membership Coordinator Report: Vern Dunlap reported that our renewal rate is about 40%. Eight-eight people have not renewed over the last 1.5 years. The Board decided to continue reaching out to those folks to see if we can bring them back into the fold. Bob Gilroy reported that John Kalas volunteered to lead a telephone campaign to contact all of the 88 whose membership has lapsed. As per board approval, Bob will contact John and tell him to proceed.

Fundraising: Bill Lofquist reported that the Fundraising Group recommends proceeding with the engraving of bricks for the recognition patio. There was a lengthy discussion because it was previously agreed that no action would be taken and no funds would be disbursed until we had the full cost for the ramada and patio covered. However, the board did approve funds for the first 27 bricks to be engraved, but the patio is not to be constructed. Bill volunteered to store the bricks at his house until needed.

Meeting adjourned at 10:10pm.

Leftover Photos For-Sale

Contributed by John Kalas

Some of you old-timers may remember the TAAA Photo Fundraiser that I coordinated for four years from 1996 through 1999. The concept was to select five impressive photos taken by TAAA Members and sell them as a fundraising project. The photos were selected by the TAAA Membership and printed in bulk. When the project ended, we had sold about 375 photos and the club made approximately $716 after covering costs.

While cleaning out my closet recently, I came across the remaining unsold photos. These photos are beautiful 8"x10" professionally printed film shots taken by noted TAAA Members, Paul Lorenz and Dean Ketelsen and they are listed below:

1. "The Omega Nebula – M17" taken by Paul Lorenz in 1988
2. "Sunset Over Kitt Peak" taken by Dean Ketelsen in 1987
3. "The Great Orion Nebula – M42" taken by Paul Lorenz in 1988
4. "Comet de Vico" taken by Dean Ketelsen on October 5, 1995
5. "Total Solar Eclipse" taken by Paul Lorenz on July 11, 1991

Four of the five photos are shown in this article. The scans do not do justice to the photos.

Originally, the photos were sold for $5.00 each or any five photos for $20.00. Since the club has already paid for these excess photos (and I would really like to get them out of my closet), we will be selling eleven complete sets of five photos for $10.00 per set and the remaining photos for $2.00 each. These photos frame beautifully and would make great gifts. Each photo has an information sheet explaining all of the details of the shot.

I will have the photos for-sale at the December monthly meeting. Don't miss this great opportunity.

Membership in the TAAA

Annual Fees

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 (one qualified discount allowed, subtract from above rates)

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)

Astronomical League (AL) fee $7.50
Sky & Telescope Magazine 1 year (12 issues, group rate) $32.95
Astronomy Magazine 1 year (12 issues, group rate) $34.00
.....2 years (24 issues, group rate)
..... $60.00
Postage for New Member Pack $4.95

Donations are accepted for the following funds: SA-IDA/Light Pollution, TIMPA, Education, Chiricahua Astronomy Complex, and General/ Undesignated.

Renewal Information

You'll get an email reminder when it's time to renew.
TAAA members may join the Astronomical League (AL) 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 any time. Allow 3 months for processing. New subscriptions must be sent through the TAAA treasurer. Renewals can be paid online through magazine websites. To change an individual subscription to the group rate, pay the group rate to the TAAA treasurer. Include your magazine renewal notice.
Include a note about what you're 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

Mail changes to address above, or email them to the treasurer. Changes that are made to your Night Sky Network login account at http://nightsky.jpl.nasa.gov/login.cfm have no affect on TAAA records..

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

Send submissions to taaa-newsletter[at]tucsonastronomy.org 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. Submissions should be Word compatible files sent by e-mail or on recordable media. All copyrights retained by Tucson Amateur Astronomy Association or specific author. No reproduction without permission, all rights reserved. We will not publish slanderous or libelous material!

How to Contact Us

TAAA Website: www.tucsonastronomy.org Mailing Address: PO Box 41254 Tucson 85717 TAAA Phone Number: 520-792-6414

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Space Exploration SIG	Al Anzaldua	520-409-5797	sesig[at]tucsonastronomy.org.
Club Apparel Sales	Mae Smith	520-850-7137	taaa-sales[at]tucsonastronomy.org
Equipment Loan Coordinator	Al Dohner	520-297-7118	elc[at]tucsonastronomy.org
Librarian	Hunter Bailey		librarian[at]tucsonastronomy.org
Grand Canyon Star Party Coordinator	Jim O'Connor	520-546-2961	gcsp[at]tucsonastronomy.org
General Information	Keith Schlottman	520-250-1560	taaa-info[at]tucsonastronomy.org

Space Place Partners' Column *November 2012*

It Takes More Than Warm Porridge to Make a Goldilocks Zone

By Diane K. Fisher

The "Goldilocks Zone" describes the region of a solar system that is just the right distance from the star to make a cozy, comfy home for a life-supporting planet. It is a region that keeps the planet warm enough to have a liquid ocean, but not so warm that the ocean boils off into space. Obviously, Earth orbits the Sun in our solar system's "Goldilocks Zone."

But there are other conditions besides temperature that make our part of the solar system comfortable for life. Using infrared data from the Spitzer Space Telescope, along with theoretical models and archival observations, Rebecca Martin, a NASA Sagan Fellow from the University of Colorado in Boulder, and astronomer Mario Livio of the Space Telescope Science Institute in Baltimore, Maryland, have published a new study suggesting that our solar system and our place in it is special in at least one other way.

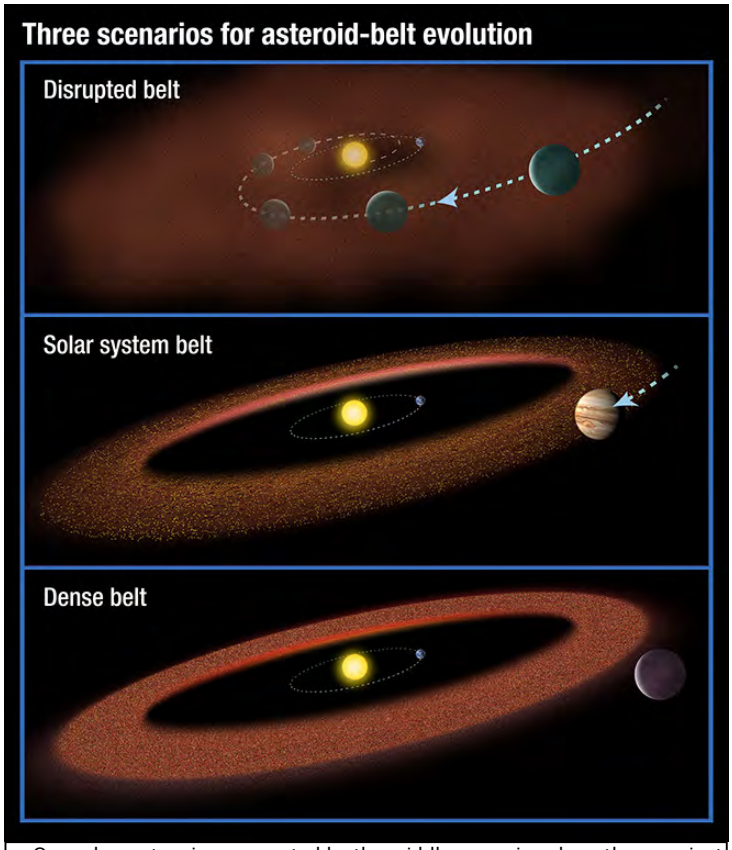
This fortunate "just right" condition involves Jupiter and its effect on the asteroid belt.

Many other solar systems discovered in the past decade have giant gas planets in very tight orbits around their stars. Only 19 out of 520 solar systems studied have Jupiter-like planets in orbits beyond what is known as the "snow line"—the distance from the star at which it is cool enough for water (and ammonia and methane) to condense into ice. Scientists believe our Jupiter formed a bit farther away from the Sun than it is now. Although the giant planet has moved a little closer to the Sun, it is still beyond the snow line.

So why do we care where Jupiter hangs out? Well, the gravity of Jupiter, with its mass of 318 Earths, has a profound effect on everything in its region, including the asteroid belt. The asteroid belt is a region between Mars and Jupiter where millions of mostly rocky objects (some water-bearing) orbit. They range in size from dwarf planet Ceres at more than 600 miles in diameter to grains of dust. In the early solar system, asteroids (along with comets) could have been partly responsible for delivering water to fill the ocean of a young Earth. They could have also brought organic molecules to Earth, from which life eventually evolved.

Jupiter's gravity keeps the asteroids pretty much in their place in the asteroid belt, and doesn't let them accrete to form another planet. If Jupiter had moved inward through the asteroid belt toward the Sun, it would have scattered the asteroids in all directions before Earth had time to form. And no asteroid belt means no impacts on Earth, no water delivery, and maybe no life-starting molecules either. Asteroids may have also delivered such useful metals as gold, platinum, and iron to Earth's crust.

But, if Jupiter had not migrated inward at all since it formed father away from the Sun, the asteroid belt would be totally undisturbed and would be a lot more dense with asteroids than it is now. In that case, Earth would have been blasted with a lot more asteroid impacts, and life may have never had a chance to take root.



Our solar system is represented by the middle scenario, where the gas giant planet has migrated inward, but still remains beyond the asteroid belt.

The infrared data from the Spitzer Space Telescope contributes in unexpected ways in revealing and supporting new ideas and theories about our universe. Read more about this study and other Spitzer contributions at spitzer.caltech.edu. Kids can learn about infrared light and enjoy solving Spitzer image puzzles at spaceplace.nasa.gov/spitzer-slyder.

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

TAAA Classifieds

For Sale	Nagler 7mm eyepiece $140. 2-inch ring to make a 2-inch eyepiece parafocal (same focus) with other eyepieces $4. SAO Star Atlas (151 charts to mag 9 with all NGC objects but no labels) $40. The Observer's Sky Atlas $20. Deep-Sky Observer's Handbook Vol. 1-7 $8 each. Hipparcos and Tycho Catalogues Vol. 2-13 $1 each. Call Erich at 520-621-3994. First Offered September 2012
For Sale	Bound Astronomical Journals from the 1960s and 1970s FREE. You pick up. Contact Rik Hill at rhill24[at]cox.net or leave a message at 520-721-0123. First Offered September 2012
For Sale	28" scope for sale. Also willing to sell just the 28" primary mirror to build your own scope. Folded-Newtonian optics: 28" Nova F/4.5, standard coating, 2" thick Pyrex. 8" secondary flat mirror with enhanced coating, 3" elliptical. Scope transports in a mid-size car or small SUV. Eyepiece height: at 45 degrees is 5.5 ft; straight up is 7 feet. $5800 for scope w/ all optics, eyepieces & finderscope. $4800 for 28" mirror by itself. 5" elliptical available to make mirror set for a dobsonian. Trade or partial trade OK. Contact: Gary Vecere (520) 207-2898 or writetoogary[at]gmail.com. Located midtown near UA. First Offered November 2012
For S ale	Huge ATM's projects Garage sale! ① 10" f/8 Newtonian system, sono tube, 4" pipe-part GEM. Very beefy! ② 10" f/5.9 ultra beefy thick fiberglass tube, 3 inch focuser, tube is a three-part system, top spins! 2" pipe-part GEM, collapses. ③ 8" f/8 newt system with old tracking mount. ④ 8" f/ 6 Newt optics, tube, assort. stuff to make telescope. ⑤ 6" f/8 and f/ 5 optics and stuff to make scope. Some 4.25" optics, old mounts and stuff. ⑥ 2.50" ID pillow block bearings, brand new, beefy, two sets for both axies. ⑦ 12" worm drive. ⑧ 12.50" mirror grinding kit, two full thickness blanks, lots of abrasives, pitch, even the 55 gal. drum grinding stand. ⑨ Lots of books, old S&T and Astronomy magazines, charts, atlases. Plus many additional items. All prices negotiable, make offers. Call for appointment to look it over. I will be set up for my neighborhood on Halloween night, weather permitting, northwest corner of Cloud and Sabino Canyon roads, so drop by then to see telescopes in actual operation. Free candy and other treats! Contact James Lehr Miller, 520-751-4961(after 10 am, please), starman1000[at]msn.com First Offered November 2012
For Sale	Celestron C4-R 102HD 102mm (4") Refractor Telescope. Mounted on Celestron CG-4 German equatorial mount with slow motion controls on both axes. Includes counterweight, latitude scale, setting circles. Price $300. Contact Larry Lof at 520-881-2523 or email at larry.lof[at]loflopez.com. First Offered December 2012
For Sale	Losmandy G-11 Equatorial Mount, non go-to. Has been a real workhorse for me, but I've upgraded, so time to find it a new home. Included are AC and DC power adaptors, 7, 11 and 18 pound weights, shortie Newtonian legs plus adjustable legs, Polaris alignment scope. Recently cleaned and lubed tuned by D. Koenig at Starizona. Looking for $1200 from TAAA members, $1600 non-members. ketelsen[at]email.arizona.edu, or 520-419-6209. First Offered December 2012
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For Sale ads run for 4 consecutive months. Upon request, the ad will run an additional 2 months but only if the asking price is reduced. All other ads will run for 4 months. Beyond these limits, an ad can be resubmitted provided 30 days have passed since the previous ad ran. For additions or changes to this list, call or e-mail the newsletter editor.

New Policy

Join the TAAA Forum

General astronomy discussions
~75messages/month posted by TAAA members
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CAC RECOGNITION PATIO AND WALKWAY PROGRAM

We are raising money to help pay for the Ramada/Outdoor Education Center at the Chiricahua Astronomy Complex (CAC). The patio will be adjacent to the handicapped parking spaces. The 4x8 brick requires a donation of $120 and the 8x8 brick a donation of $150.

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Yes, we'd like to reserve a permanent brick. Please engrave our brick as follows:

TYPE WILL BE IN CAPS. ANY SYMBOL IS CONSIDERED ONE SPACE (PERIOD, COMMA, DASH)
ALL TEXT IS CENTERED UNLESS OTHERWISE NOTED

4 x 8 Brick

8 x 8 Brick

4 X 8 EXAMPLE

T	H	A	N	K	S		T	O		B	O	B		S	M	I	T	H	,	
M	Y		A	S	T	R	O	N	O	M	Y		M	E	N	T	O	R	.	
Y	O	U		G	O	T		M	E		S	T	A	R	T	E	D	!		
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P. O. Box 41254
Tucson, AZ 85717

Name: _____ Phone: (_____) _____

Address: _____

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Email Address: _____ Payment Included: _____

If you have any questions, please call Bill Lofquist at (520) 297-6653 or billlofquist@tucsonastronomy.org.

Benefits of Night Sky Network Membership

All TAAA members are eligible for a Night Sky Network account. There is no additional cost to you and it gives you access to these and more services. If you haven't activated your Night Sky Network account, contact the treasurer or Terri Lappin. To log into your Night Sky Network account, visit http://nightsky.jpl.nasa.gov/login.cfm

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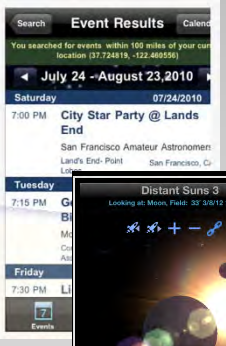

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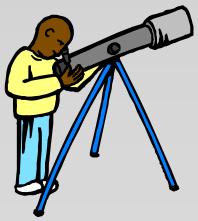

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