

# TAAA Desert Skies Bulletin

Observing Our

Desert Skies

Since

1954



November 2024

[www.tucsonastronomy.org](http://www.tucsonastronomy.org)

## Membership Meeting

Friday, November 1, 2024

TAAA's next general member meeting will be held on **Friday, November 1, 2024**. The Main Presentation will start at 6:30 P.M. This will be a hybrid meeting (both in person and on social media). TAAA members will receive a Zoom link should they wish to attend remotely. The public may attend in person at the **Steward Observatory Lecture Hall (Rm N210), 933 N Cherry Ave, Tucson** or stream from the TAAA [Facebook](#) page.

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### Main Presentation at 6:30PM AZT

#### **Title: Exploring the Moon with Seismology: From Apollo to Artemis**

**Presentation:** Over 50 years ago, Apollo astronauts installed the first extraterrestrial seismometers on the lunar surface. These instruments recorded thousands of moonquakes (earthquakes on the Moon). Now, we're heading back to Moon with modern seismometers as part of the Artemis missions. Lunar and Planetary Lab's Angela Marusiak will discuss what we learned from Apollo, what we can learn from Artemis, the implications for future exploration, and how the University of Arizona is involved.

**Biography:** Angela Marusiak is an Assistant Research Professor at the Lunar and Planetary Laboratory at the University of Arizona. She received her Bachelors in Geophysics & Planetary Science from Boston University, and her PhD in Geology from the University of Maryland. She spent two years at the Jet Propulsion Laboratory (JPL) as a postdoc

before joining the faculty at UA. Her research focuses on the science of planetary seismology and development of relevant instruments. Her mission involvement includes InSight (Mars), Dragonfly (Titan), and Artemis III (the Moon).



Credit: NASA

**Desert Skies Bulletin**  
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### October 2024

I have a quick update on Dark Skies that occurred after John Barentine's very interesting presentation at our October TAAA General Member meeting. After his October 4 presentation for TAAA, John pursued taking a recent look at some data that have been collected over the last year in and around the City of Tucson. Comparing those data with some previously collected data yielded a conclusion that light pollution in Tucson over the last few years has increased. This increase was likely enhanced by several factors including: increases in use of LED lighting, some significant increases in light at Davis-Monthan Air Base, and lack of monitoring/enforcement of the Tucson lighting Code. Although there was an increase in lighting, the greatest single area of increase is at and around Davis Monthan.

John Barentine on 10/23/24 sent TAAA this update regarding Tucson lighting: "One way that we can monitor changes in outdoor lighting on large scales is through the use of remote sensing data from sources like Earth-orbiting satellites. Recently, the Southern Arizona chapter of DarkSky International carried out a simple analysis of images from the NASA/NOAA Visible Infrared Imaging Radiometer Suite (VIIRS) instrument aboard the Suomi NPP satellite. This source provides nightly images of the Earth in its Day/Night Band (DNB), which shows lights on the planet's night side since the launch of the data collection effort in 2012. The chapter performed a Geographic Information System (GIS) analysis of monthly average images of Tucson and aggregated the results by city council ward. It included all but Ward 5, whose shape and size requires more intensive processing. Light emitted in most Tucson Wards follows a similar pattern, including a large (about 25%) reduction resulting from the City of Tucson's modernization of its street lighting system in 2016-17. Ward 4 deviated from this pattern significantly, returning to pre-retrofit conditions between 2021 and 2024. Further examination of images suggests that Davis-Monthan Air Force Base is the source of much of this light. The local Dark Skies chapter is considering reaching out to the base commander to learn more about lighting changes that may explain this sharp rise and to educate the local Air Force leadership about the effects of light pollution on military readiness. You may access the actual data for Tucson Wards 1,2,3,4, and 6 [here](#).

by Mae Smith

"The 'summed radiance' is the total amount of light collected by the satellite within the boundaries of each council ward as shown by the different colored symbols. The black line is a smoothed, three-month running average of the light in Wards 1-3. It excludes any three-month average involving a December — that month is almost always anomalously high because of holiday lighting. It also excludes discontinuities in the time series (i.e., months when there are no DNB radiances available.) There is an oscillation of up to approximately 10% in that average that has a period of about one year. We think that's real, but we don't know yet what causes it."

Thanks so much to John Barentine and Dark Skies for all their great dark sky efforts in Arizona and for their wonderful efforts to interface with TAAA!

In the President's Monthly Report this month I had planned to update you on some of our ongoing TAAA Strategic Planning efforts. However, since I have used my space, I will just hold that information for the next newsletter. I, do, however, just want to add one TAAA update for you: I have recently appointed Jeff Buzek to the TAAA position of CAC Maintenance Supervisor. Jeff's leadership will be an excellent addition to our CAC management team!

**Mae Smith, TAAA President**  
[president@tucsonastronomy.org](mailto:president@tucsonastronomy.org)  
(520 850-7137)

#### Other Elected Leader Contact Information:

Vice-President: Ed Foley  
[vice-president@tucsonastronomy.org](mailto:vice-president@tucsonastronomy.org)

Secretary: Bob Reynolds  
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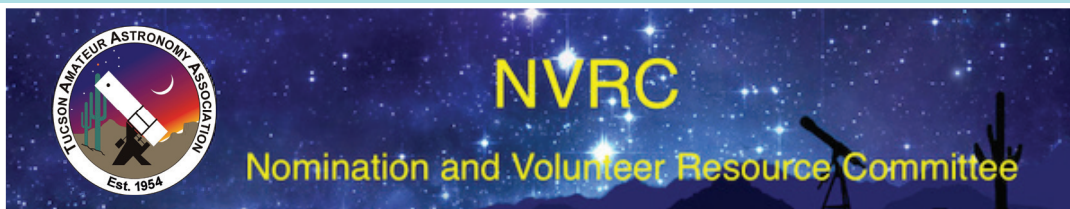
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TAAA Board: [taaabod@tucsonastronomy.org](mailto:taaabod@tucsonastronomy.org)

The TAAA Board of Directors meets the second Wednesday of every month at 6:30pm. Members are welcome to attend Board meetings. If you would like to attend, you may email [Mae Smith](#) to receive a Zoom link for that meeting. Please send your email to Mae the Monday prior to the meeting (by 5:00pm) and you will receive an email with the link on either Tuesday evening or Wednesday. ALL MEMBERS ARE WELCOME.

## TAAA News & Activities



The NVRC is **seeking potential candidates for a vacancy on the Nomination and Volunteer Resource Committee.** This is an ideal position for anyone interested in making their first foray into club leadership, and as all meetings are conducted remotely, a good position for members who do not regularly reside in the Tucson area or are part-time residents.

The NVRC is also **seeking potential candidates interested in Apparel Coordinator** for presentation to the TAAA President for selection.

Members may review the position descriptions for both elected and appointed leader positions through their Member Planet accounts – from the main Tucson Amateur Astronomy Association web page (<https://tucsonastronomy.org/>) select “Members Only” from the tabs located near the top just below the main search bar; then login with your email/username and password; then scroll down to the 5th item “TAAA Docs and Videos”; select/click, from the “MEMBER ONLY INDEX” page, scroll down and select/click on the 6th item HANDBOOKS and REFERENCE MATERIALS; then finally, click or select on a specific “Job Position Descriptions – TAAA Board...” or immediately below, “TAAA Position Descriptions – Leader Descriptions”, which are the non-elected volunteer opportunities.

Please contact the [NVRC Chair](#) for additional information or if you have questions pertaining to a particular position.

The NVRC encourages **all members to update their Member Planet profile** particularly with respect to volunteer positions or activities they may be interested or seek to participate in.

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## TIMPA 16” Project

I’m thrilled to report that the construction on the observatory for the TIMPA 16” Meade is now finished. Thanks to everyone who contributed to this very successful program!

More details to come.

Steve Ferris





**The 2025 TAAA Wall Calendars  
will be available at the general meetings.**  
The cost is \$15 each, cash or check made out to TAAA.  
Please contact [Susan OConnor](#) for alternative delivery.

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### *TAAA Ladies' Night Out*

*by Susan O'Connor*

Ladies' Night Out is a social interest group for women members of the club. The group meets once a month at a restaurant for fellowship and conversation.

This month's meeting is:

Thursday November 21, 6:30pm

Bianchi's Italian Restaurant

1110 N Silverbell Rd  
( NE corner of Silverbell and Speedway )

[Preview Menu](#)

RSVP [Susan](#)  
520-780-0136

# 32-inch Eye on the Galaxy

By Ed Foley

The TAAA DFM 32 inch research grade Cassegrain telescope is another step closer to having a home. The foundation has been poured. The forms for the slab and more importantly, for the telescope pier, have been constructed. The telescope pier requires particular precision. The pier bolt jig (the bolts to which the telescope will be mounted) is to be embedded in the concrete pier. This jig needs to be placed accurately oriented to true north, and be at such an angle as to compensate for the telescope's move from Colorado to Arizona. Once the telescope is placed on the pier there is some, but only some, adjustment that can be done to have its axis point to the northern pole.

The project is moving smoothly, and we are expecting installation of the telescope to happen in the 1st quarter of 2025.



Pier Forms

Foundation from east looking over site



# New 18-inch Obsession Observatory

By Ed Foley

Among the instruments in the portfolio of permanently mounted telescopes available to trained and certified members at CAC, our eastern dark site, is an 18 inch Obsession Dobsonian telescope. This telescope has been available for use in the past, but because it has been stored temporarily in a container, or more recently in the Reynold-Mitchell Observatory warm room, it has not been convenient for members to use. With the building of the Stinger Pad multiple telescope area, CAC reserved space for a permanent, specially designed 'observatory' for this instrument. In August, member Ross Carnes assembled a team, with Bob Rose, John Kalas, Ed Foley and Jim Knoll, to design and build a structure to house this telescope.

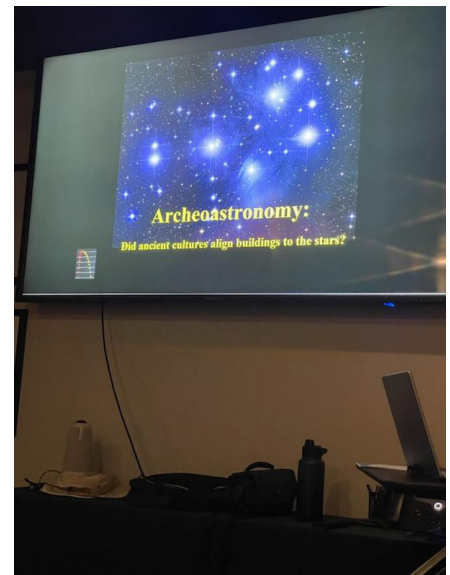
The planning and building construction work have now been completed. The structure was partially cut and then assembled on site. Coating of the building and assembly of some remaining hardware remain, but it is now substantially completed. The instrument as made by Obsession, has wheelbarrow like handles that allow the telescope to be rolled about. It will be rolled into its home for storage, and rolled out onto its 15x15 foot space on the Stinger Pad for use. Training for members who wish to become certified to use the telescope will be held in the coming months.



## Sabino Canyon Astronomy Talks

Prof. David G. Iadevaia

The third in a series of astronomy talks at Sabino Canyon was well received. The talk was about Archeoastronomy. An observing session was held after the talk.



# Save the Date December 7th – TAAA Holiday Party



It's that time again! The TAAA HOLIDAY PARTY will be at the home of Ed and Janet Foley on Saturday December 7th. Each guest will need to RSVP so the gatehouse can be informed to admit you. Please RSVP by December 1 - [Email](#) or by phone at (615)310-0701.

The party starts at 5:00 while it is still light. We will use both the house and poolside for gathering. The patio heaters will be going if it is on the chilly side.

The event is a potluck dinner. You can bring something that will feed at least 3 people such as:

\* Hors d'oeuvre \* An Entrée \* Bread \* A Dessert \* Vegetables

Soft drinks, coffee, tea and hot chocolate will be available.

We will have plates, utensils and cups.

**THE RAFFLE and AUCTION:** We will have the RAFFLE again featuring lots of donated goodies. Please bring any new or lightly used items you think other members might enjoy winning in the Raffle. We also expect to have some special items available for auction!

**DIRECTIONS:** The Address is: 4790 N Via De La Granja, Tucson, AZ 85718.

The party is held in the foothills in Catalina Foothills Estates. The entrance to the community is off Hacienda del Sol Road – 1 mile north of River Road on the right, or 1 mile south of Sunrise Dr on your left.

- Pass through the gate at Catalina Foothills Estates and continue one half mile along Entrada del Sol down the hill, going straight ahead at a stop sign (road becomes Circulo Sobrio) and up over the next hill to the end of that road.
- Turn right at the stop sign onto N. Camino Sumo for one tenth mile
- Turn left onto E. Sumo Quinto.
- Go up the hill to the end of that road. Our house is straight in front of you up the hill. Turn left and our driveway with mailbox 4790 is the first one immediately on your right. Parking will be along the side of the road of Via De La Granja.
- If you have any questions, please give Ed a call or send an [email](#).

**Happy Holidays! We'll see you then.**

# Special Observing Challenge for Saturn and its moons

By Doug Smith

Saturn is always an interesting object, both visually and imaging. During the next 18 months observers may be treated to some very rare observations of the Saturn system. Saturn takes roughly 29.5 years to orbit the Sun. It has an axial tilt similar to Earth's. As a result, twice during its orbit around the Sun the ring plane is exactly edge on as viewed from the Earth. This ring plane edge on is occurring very soon.

Saturn has many moons visible in modest telescopes. These moons orbit Saturn in the same plane as the rings (more or less). As a result, when the rings are edge on the moons orbital plane is also edge on as viewed from Earth. This allows observers on Earth to view a number of unique events. For example, the large moon Titan will transit across the face of Saturn. The transit itself is very challenging to see with most amateur instruments. But Titan will cast a shadow on Saturn's surface and this shadow is visible in even smaller telescopes. See the following image. This image was taken in 2010 during the last ring plane edge on occurrence.



All the other moons will also transit and cast shadows, but they are much more difficult to see with amateur telescopes against the face of Saturn. The shadows are also more difficult to see.

However, several of the other moons do get involved in so called mutual events. That is where one moon eclipses another moon, or one moon occults another moon. During the next 18 months a number of both types of events will occur. I will list them below. I encourage club members to observe and maybe image some of these events. I have been in discussion with the Astronomical League Observing Program coordinator about creating a special observing award for the Titan transits.

The table below lists the upcoming Titan shadow transits for 2025:

Start Date	Start Time	Mid Date	Mid Time	End Date	End Time
May 15, 2025	2:49 AM	May 15, 2025	5:58 AM	May 15, 2025	8:46 AM
May 31, 2025	2:05 AM	May 31, 2025	5:11 AM	May 31, 2025	7:54 AM
June 16, 2025	1:20 AM	June 16, 2025	4:23 AM	June 16, 2025	7:01 AM
July 2, 2025	12:40 AM	July 2, 2025	3:34 AM	July 2, 2025	6:03 AM
July 18, 2025	12:00 AM	July 18, 2025	2:42 AM	July 18, 2025	5:05 AM
August 2, 2025	11:24 PM	August 3, 2025	1:51 AM	August 3, 2025	4:04 AM
August 18, 2025	10:52 PM	August 19, 2025	1:00 AM	August 19, 2025	3:00 AM
September 3, 2025	10:25 PM	September 4, 2025	12:09 AM	September 4, 2025	1:51 AM
September 19, 2025	10:09 PM	September 19, 2025	11:19 PM	September 20, 2025	12:36 AM

Note: For the September 19 event, Titan is in transit very close to its shadow.

Times are listed as PST for a location near Seattle. Tucson times may be different so be prepared. For some of these events Saturn is below the horizon at event start. But for all the events Saturn is well above the horizon by event end.

Below is a table of Saturn's brightest moons. The table includes information such as orbital period and magnitude. All these moons can be seen with a moderate-sized telescope (I have seen them all in a 6").

Number	Name	Period (days)	Magnitude
1	Mimas	0.9	12.9
2	Enceladus	1.4	11.7
3	Tethys	1.9	10.2
4	Dionne	2.7	10.4
5	Rhea	4.5	10.0
6	Titan	16	8.5



**(Saturn Challenge Continued)**

The following table lists all the mutual satellite events that would be visible from Tucson. The table has 5 columns. The first three are the event date, event start time and event end time. All the times in this table are UT. The fourth column is the event type. The event is either an eclipse (E) or an occultation (O). The event type will tell you which satellite is doing what to which satellite. For example, a 1O2 means satellite 1 is occulting satellite 2 (Mimas is occulting Enceladus). A 1E2 would be satellite 1 eclipsing satellite 2. An eclipse is when the first satellite's shadow falls upon the second satellite. An occultation is when the first satellite passes in front of the second satellite as viewed from Earth. The last column in the table is the magnitude drop of the second satellite in the event. I shall limit the table to those events where the magnitude drop is at least 0.3 magnitudes (noticeable if watching).

Start Date	Start Time (UT)	End Time (UT)	Event Type	Magnitude Drop
11/16/2024	11:49:58	11:52:36	1E3	0.36
11/18/2024	9:9:48	9:13:39	1E3	0.36
2/18/2025	7:32:9	7:36:43	2E1	0.31
2/27/2025	2:42:1	2:48:0	3O4	0.36
3/14/2025	6:31:26	6:33:16	1E2	1.5
3/17/2025	1:1:11	1:2:14	1E2	0.55
3/18/2025	4:45:36	4:48:16	3E4	0.31
3/19/2025	8:31:21	8:33:6	4O3	0.77
3/23/2025	4:47:43	4:49:5	2E1	0.31
3/24/2025	8:10:51	8:14:2	4O5	0.33
3/30/2025	11:51:46	11:54:39	4E3	0.78
4/1/2025	2:51:49	2:52:54	1E2	0.84
4/8/2025	7:36:39	7:37:57	1E2	0.62
4/9/2025	8:1:14	8:2:35	1E3	0.43
4/11/2025	5:17:50	5:19:18	1E3	0.74
4/11/2025	9:58:4	9:59:25	1E4	0.38
4/13/2025	2:34:28	2:35:53	1E3	0.68
4/16/2025	4:42:14	4:43:23	1E2	1.51
4/18/2025	12:20:59	12:23:19	4E3	0.78
4/26/2025	3:8:41	3:12:38	1E2	1.0
5/1/2025	6:32:28	6:33:34	1E2	1.2
5/4/2025	3:14:2	3:21:23	4E5	0.5
5/12/2025	11:55:26	11:57:9	1E5	0.32
5/14/2025	5:56:33	5:58:35	3E4	0.38
5/16/2025	8:22:31	8:23:28	1E2	0.52
5/21/2025	9:57:48	10:1:3	4E5	0.84
5/21/2025	10:35:14	10:37:42	2E5	0.77
5/26/2025	12:57:28	12:59:32	4E3	0.44
5/30/2025	2:26:8	2:33:20	4E5	0.39
5/31/2025	10:12:16	10:13:11	1E2	0.45
6/2/2025	8:9:51	8:11:56	1E4	0.52
7/1/2025	3:19:0	3:39:47	3E5	0.39
7/5/2025	6:49:30	6:51:36	2E3	0.44
7/23/2025	11:25:28	11:33:32	3E5	0.76
8/9/2025	6:27:14	6:29:46	1E2	1.0
11/1/2025	4:44:18	4:46:25	4O3	0.56
12/1/2025	10:57:21	11:7:43	2E3	0.31
12/9/2025	11:17:19	11:17:54	1O2	0.6

Some notable dates:

March 14, 2025 and April 16, 2025. Mimas eclipses Enceladus with a magnitude drop of 1.5!

April 11, 2025. Mimas eclipses Tethys, then a few hours later Mimas eclipses Dionne.

May 21, 2025. Dionne eclipses Rhea, then 35 minutes later Enceladus eclipses Rhea.

July 1, 2025. Tethys eclipses Rhea for 20 minutes!

You will notice most of the events' durations are 4 minutes or less so precise timing is essential.

There is a much larger set of events occurring with a magnitude dip < 0.3. I can provide the link to this data if anyone is interested.

These events are challenging to observe and/or image. But I encourage everyone to give it a try. These events are rare, occurring only every 15 years, so the next chance won't occur until 2040.

# Fundamentals of Astronomy Class

Open for Enrollment

**Place:** Armory Park Center, 220 S. 5th Ave, Tucson

**Date:** Three consecutive Saturdays: January 11, January 18, January 25, 2025

**Time:** 9 AM until 4 PM each day

**Synopsis:** This course is designed for anyone interested in learning the basic concepts in Amateur Astronomy. Topics covered (but not limited to) include the solar system, deep sky objects, stars, telescopes, eyepieces, mounts, star hopping, observation techniques, plus much more. The course is highly recommended for novice amateur astronomers and for anyone who may have just purchased a telescope for the first time. Taking this class will also aid the student in understanding the more advanced lectures often given during general membership meetings.

**If interested:** Contact Douglas Smith: 520-396-3233, [Email](#) or use sign-up sheet available at the October 2024 through January 2025 General Member meetings.

## Observing Sites

**TIMPA**

**by TIMPA Planning Group**

TIMPA (Tucson International Modelplex Park Association) is TAAA's dark sky site west of the Tucson Mountains.

**Location:** The TIMPA observing site is located a few miles beyond the Desert Museum (3250 N. Reservation Road, Tucson, AZ 85743).

TIMPA Star Party Dates this month:  
**November 1 - 2, November 29 - 30**



The TIMPA Planning Group will be offering assistance with telescope usage and observing during the monthly TIMPA Star Parties. You are invited to bring your equipment and questions to TIMPA on Star Party dates for assistance. Be sure to register using the link below.

The TIMPA site is only partially improved. There are no inside buildings provided other than restrooms. TAAA provides very limited seating (members are welcome to bring folding chairs). Please note that members visiting the TIMPA site may encounter things commonly found in partially improved desert areas such as desert creatures and/or their remnants (such as gopher holes or ant hills), uneven terrain, weeds, and desert pollens. Members using the site are encouraged to bring red lights and to move cautiously taking appropriate safety measures. The site does not have potable water, so bring your own non-alcoholic drinks.

Reservations for the TIMPA Site are made on the TAAA website at [TIMPA DARK SITE RESERVATIONS](#). Please fill out the form completely and be sure to indicate the date you desire to visit TIMPA.

# Chiricahua Astronomy Complex

by Jim Knoll

## Upcoming CAC Weekend Dates (Fri/Sat)

November 1-2 (New Moon November 1)  
November 29-30 (New Moon November 30)

Chiricahua Astronomy Complex (CAC) is the club's dark sky observing site, located in Cochise County approximately 100 miles southeast of the center of Tucson. If you would like to attend, you must make a reservation on the CAC Web page at [CAC Reservations](#).

**Chiricahua Astronomy Complex (CAC) Telescope Training.** We have quite a few telescopes that members can get trained and certified to use at CAC. They include: The Wally Rogers 14" Celestron, the Reynolds-Mitchell 9" Folded Refractor and the 40" Big Boy, and on the Stinger Pad, the Celestron 9.25" & 11", the Meade 12", and the 18" Obsession. We also have some small dobbs and an 8" Celestron members can use. For more information and to get on the training list, contact [Joe Jakoby](#).



Unless you are qualified to open and close the site, dates will be limited to those around the New Moon and are listed on the CAC web page. Hosted personnel are generally on site a few days before and after these dates. Those qualified to open & close the site can use it anytime but still need to reserve through the CAC Reservations process.

CAC Director: [Jim Knoll](#)

[CAC on the Web](#)

## Observing Sites Star Party Dates

2024 - 2025

TIMPA	New Moon	CAC
November 1-2	November 1	November 1-2
November 29-30	November 30	November 29-30
December 27-28	December 30	December 27-28
January 24-25	January 29	January 30–February 2
	February 27	February 27–March 2
	March 29	March 27–30
	April 27	April 24 – 27
	May 26	May 22 – 25
	June 25	June 26 – 29

# TAAA Astronomy Equipment For Sale

TAAA has an assortment of astronomy related equipment for sale. This equipment is available for members only at this time.



Celestron 8" XLT with NexStar

Comes with a couple of eyepieces, barlow, red dot finder, instruction manuals. **\$1000**

## Celestron 8" CPC

Dual fork arm mount, 9x50 finder, 2 eyepieces, telrad, finder rings, hand controller, user's manual, tripod, diagonal. Basically, new in original box. **\$2,000**

## Celestron 5" Omni XLT

Tripod, Celestron CG4 GEQ mount, 6x30 finder, diagonal, 1 eyepiece, user's manual. **\$600**

## 12" Dobsonian

Very large, Homemade. Crosshair finder. **\$500**

We also have an assortment of other items available at this time including: Finder rings, focusers, telescope rings of various sizes, mirror blanks of many sizes, a 6 inch Newtonian mirror set mounted in cells, several large mirrors and more.

To make inquiries about what is available or to express a desire to purchase one of items please contact: [Douglas Smith](#); 520-396-3233

# TAAA Equipment Loaner Program

## *Pick of the month*

The TAAA has a terrific Equipment Loaner Program. This gives you access to fine telescopes including computerized Schmitt Cassegrains from Meade and Celestron, Dobsonians from Orion, mounts, tripods, and cases full of fine eyepieces. Check out the [full list](#) with descriptions and photos.

This equipment is for TAAA members to checkout and use. Email [Ralph Means](#) for information or to schedule time for pick up.



Celestron 11" CPC series Alt-Az fork mounted, with tripod and GOTO. We have 2 of these telescopes.

**November 2024 Star Party Volunteer List**

Thank you for volunteering your time and talents for our extremely important outreach mission. **Below is the Public/School Star Party list for November, 2024.**

Please let me know in return email if you are interested in volunteering for any of the events listed below. First come – first served. I will let you know in return if you are on it or that it was already filled. Some events go fast!

If you are new to Star Party outreach, let me know and we’ll be sure to help you get started. It is important you sign up for star parties if you plan to attend, whether you bring a scope or help in other ways, so I can manage who from TAAA will be on-site and for you to be included in any reminder or weather emails.

The PUBLIC Astronomy Events are also listed on the TAAA ([tucsonastronomy.org](http://tucsonastronomy.org)) and Night Sky Network (NSN) ([nightsky.jpl.nasa.gov](http://nightsky.jpl.nasa.gov)) calendars. Also, all PUBLIC star parties will be listed on the TAAA Facebook events page and will be updated based on weather, etc. in real-time. You can follow any of these events and get a notification when I update each event but this is only for PUBLIC star parties listed on Facebook.

The requests have been updated as of October 28th. **The first section, in RED, is a list of events where we still need volunteers.** If you can help out please contact me at: [astronomy-events@tucsonastronomy.org](mailto:astronomy-events@tucsonastronomy.org)

Thank you,  
Bernie Stinger  
TAAA Public/School/Non-Profit Star Party Manager

**November Events still in need of Volunteers**

**Wednesday – November 13 –WEST TUCSON**  
**Cooper Center for Environmental Learning**  
5403 W Trails End Rd  
Age/Grade Level: Grade 4  
# Participants: 45  
**1 Additional Scope Needed**  
**Setup Time:** 6:30 pm **Start Time:** 7:00 pm  
**End Time:** 8:30 pm.

**Friday – November 15 – – FAR NE TUCSON**  
**Hermosa Montessori School**  
12051 E. Fort Lowell Rd  
Age/Grade Level: Elementary through Middle School  
# Participants: 100  
**1 Additional Scope Needed**  
**Setup Time:** 5:30 pm **Start Time:** 6:00 pm  
**End Time:** 7:30 pm.

In need of volunteers - Continued

Thursday – November 21 -- WEST TUCSON  
Cooper Center for Environmental Learning  
5403 W Trails End Rd  
Age/Grade Level: Grade 3  
# Participants: 60  
**1 Additional Scope Needed**  
**Setup Time:** 6:30 pm Start Time: 7:00 pm  
End Time: 8:30 pm.

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Saturday – November 23 –CENTRAL TUCSON  
Tucson Masterworks Chorale  
@ United Methodist Christ Church  
655 N Craycroft Rd  
Age/Grade Level: Adults  
**2 Additional Scopes Needed**  
**Setup Time:** 6:30 pm. Start Time: 7:00  
pm (after concert) End Time: 8:30 pm.

Saturday – November 23 -- FAR SOUTH --  
GREEN VALLEY  
Pima County Natural Resources Parks &  
Recreation (NRPR) – Canoa Ranch  
5375 S I-19 Frontage Road  
Age/Grade Level: All Ages  
# Participants: 75-100  
**2 Additional Scopes Needed**  
**Setup Time:** 6:00 pm. Start Time: 6:30 pm  
End Time: 8:30 pm.

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Saturday – November 30 — ORACLE AZ  
Oracle State Park  
3820 E Wildlife Dr, Oracle AZ  
Age/Grade Level: All Ages  
# Participants: 125 – 150  
**1 Additional Scope needed**  
**Setup Time:** 5:30 pm Start Time: 6:00 pm  
End Time: 8:00 pm.

**November Events Filled—No Volunteers Needed**

Saturday – November 2 –FAR WEST TUCSON  
Pima County Natural Resources Parks &  
Recreation (NRPR) – Juan Santa Cruz Picnic  
Area  
2000 N Kinney Road  
Age/Grade Level: All Ages  
# Participants: 75-100  
**0 Scopes Needed**  
**Setup Time:** 6:00 pm. Start Time: 6:30 pm  
End Time: 8:30 pm.

Saturday – November 2 -- EAST TUCSON  
Congregation Anshei Israel  
5550 E. 5th Street  
Age/Grade Level: K-8th graders and fami-  
lies  
# Participants: 50  
**0 Scopes Needed**  
**Setup Time:** 6:00 pm. Start Time: 6:30 pm  
End Time: 9:00 pm.

**Monday – November 4 -- WEST TUCSON**  
**Cooper Center for Environmental Learning**  
5403 W Trails End Rd

Age/Grade Level: Grade 4 & 6

# Participants: 50

**0 Scopes Needed**

**Setup Time:** 6:30 pm. Start Time: 7:00 pm  
End Time: 8:30 pm.

---

**Thursday – November 14 -- NE TUCSON**  
**Sabino High School**

5000 N. Bowes Rd.

Age/Grade Level: High School students + families

# Participants: 200

**0 Scopes Needed**

**Setup Time:** 5:30 pm Start Time: 6:00 pm  
End Time: 8:00 pm.

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**Wednesday – November 20 –WEST TUCSON**  
**Cooper Center for Environmental Learning**

5403 W Trails End Rd

Age/Grade Level: Grade 3

# Participants: 30

**0 Scopes Needed**

**Setup Time:** 6:30 pm Start Time: 7:00 pm  
End Time: 8:30 pm.

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**Friday – November 22 -- EAST TUCSON**  
**Saguaro National Park EAST**

Saguaro EAST is located at 3693 S Old Spanish Trail.

Age Group: All Ages

Estimated # Participants: 100+

**0 Scopes needed**

**Setup Time:** 6:00 pm Start Time: 6:30 pm  
End Time: 8:30 pm

**Friday – November 8 –NORTHEAST TUCSON**  
**Pima County Natural Resources Parks & Recreation (NRPR) @ Agua Caliente Park**

Agua Caliente Park is located at 12325 E Roger Rd.

Age Group: All Ages

Estimated # Participants: 75 – 100

**0 Scopes needed**

**Setup Time:** 6:00 pm Start Time: 6:30 pm  
End Time: 8:30 pm

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**Friday – November 15 -- Mountain Vail**  
**Esmond Station Elementary/Middle School**

9400 S Atterbury Wash Way

Age/Grade Level: K – 8th Grade

# Participants: 300

**0 Scopes Needed**

**Setup Time:** 5:30 pm. Start Time: 6:00 pm  
End Time: 8:00 pm.

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**Thursday – November 21 -- SW TUCSON**  
**Lynn/Urquides Elementary School**

1573 W Ajo Way

Age/Grade Level: K–6

# Participants: 100+

**0 Scopes Needed**

**Setup Time:** 5:30 pm Start Time: 6:00 pm  
End Time: 7:00 pm.

---

**Sunday – November 24 -- CENTRAL TUCSON**  
**– SOLAR VIEWING**

Tucson Masterworks Chorale

@ Grace St. Paul Episcopal Church

2331 E Adams St

Age/Grade Level: Adults

**0 Scopes Needed**

**Setup Time:** 1:30 pm. Start Time: 2:00 pm (after concert) End Time: 3:00 pm.

# Special Interest Groups



Starry Messengers Special Interest Group

*Opening Minds to the Universe*

SMSIG will meet on Nov 11th by Zoom and the link will be sent to all TAAA members.

Questions about the Starry Messengers SIG? Contact Terri Lappin [email](#) or call 520-977-1290

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## Astronomy Fundamentals SIG

*by Connor Justice*

Come join us for a presentation from the fundamentals of amateur astronomy. Learn your way around the night sky to add to your observing enjoyment. Meetings are on the second Thursday of each month.

The next AFSIG meeting is on **Thursday, November 14, 6:30pm to 8:30pm**. Topics to be determined.

Contact [Connor Justice](#) for Zoom link and more information.

Access videos of previous meetings in the TAAA's [YouTube Channel](#)

[AFSIG on the Web](#)

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## Astro-Imaging SIG

*by Gregg Ruppel*

The next AISIG meeting will be **Monday, November 18 at 7:00 pm** via ZOOM.

*Topics:*

**Beginners' Corner - Ask A Question**

**Comparing Imaging Control Systems: ASIAir and NINA** - Jeff Rothstein and David Stearn  
**Image Sharing, Discussion**

Email [Gregg Ruppel](#) for the ZOOM link or any other information. Gregg and the AISIG folks are very active on the [TAAA groups.io](#) forum. Check out all the helpful advice and amazing images there. For more information or instructions on how to join the forum, [check here](#).

Submit your entries to the **TAAA's 2024 AISIG Astrophotography Contest** now through **December 15!** The contest offers three categories - Solar System, Deep Sky, and Nightscapes - and is open to all members of the TAAA. You may enter one, two or all three categories, one image per category. Our judges will name 1st, 2d and 3d places in each category. Starizona has generously agreed to donate a \$100 gift certificate as a prize for the 1st place winners in each category. Please see all the details and rules [here](#). Join us as we celebrate beautiful images of the night sky!

Look for previous AISIG meetings on the [TAAA YouTube Channel](#).

**Check out AISIG's new [Web Pages!](#)** We've refreshed our landing page with current meeting info,



**Highlights from the Astro-Imaging SIG**  
**All Images are of Comet c2023 A3 Tsuchinshan-ATLAS**



*Nextstar S50 Smartscope 1 min, 7:13 PM, 10/14/24*

**Bernie Stinger:** From Gates Pass, 10/13 6:50pm, iPhone 12 pro

**Richard Spitzer**

**Matt Penn:** Dwarf2 23mm smart telescope untracked, 100x1sec.



**Randy Smith**

iPhone 2 seconds hand held  
from Saddlebrooke.



**Mike Mulcahy**

Modified Canon 6D  
[Astrobin](#)





**Alan Rockowitz**

From Windy Point  
on Mt. Lemmon  
with my iPhone 15

2023 A3 Tsuchinshan-ATLAS  
2024-10-18-0200UT  
exp. 64s  
eVscope eQinox 1  
Seeing: 8/10



**Rik Hill**



**Gregg Ruppel:** FSQ106, Canon 50D, ISO 1600, stack of 6 images (15"x3 + 20"x3). 10/19

**Casey Good**



October  
15, 2024  
from CAC  
observatory.  
Rokinon 135  
f/2, ZWO  
2600mc,  
20x30" for the  
comet and  
180x12 for the  
background.

**Craig Harding**

40 images of 15  
seconds each  
with a 2600mc  
and an Askar  
FMA230 scope



**Kevin Cook**

Nikon ZF and Voightlander 35mm/F2.0 lens, exposure 1 second at F2.0 at ISO3200. Taken approx one hour after sunset.

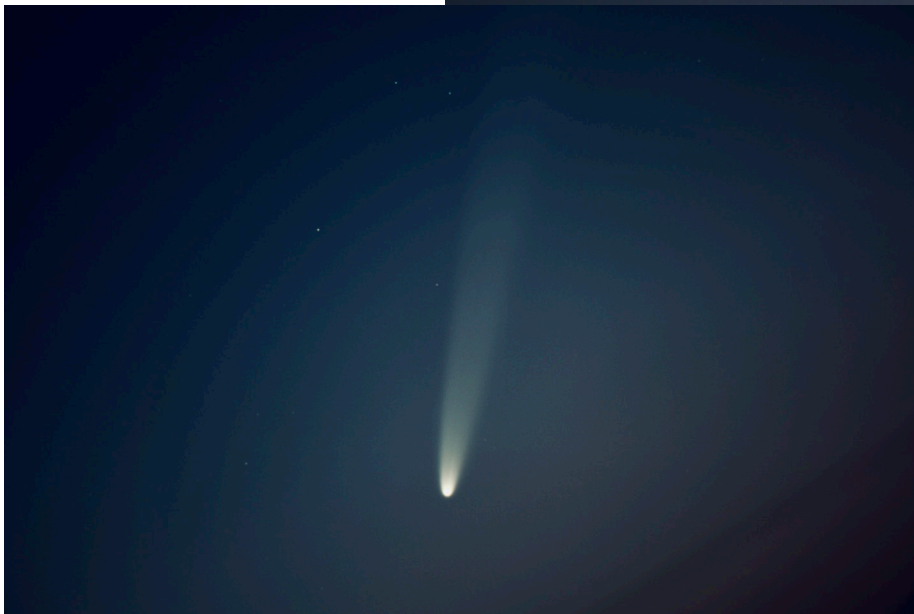
**Tom Eby**

4 sec snapshot over roofs  
2 nite, iso800, Nikon  
D810a, 135mm at f/2.5



**Martin Hale**

October 2, 2024, 5:14 AM, C11  
HyperStar f/1.9 2600 MMC Duo, 5  
seconds single shot.



## November-December 2024

Fellow amateur astronomers, many of the Astronomical League observing programs can be done from our backyards. The following is a list of objects visible in October and November for the more common observing programs.

### Constellation Hunter Program – Northern Sky

The following constellations are well placed for observing for November and December: Andromeda, Aquarius, Aries, Cassiopeia, Cepheus, Lacerta, Pegasus, Pisces, Triangulum

**Messier Observing Program** - The summer Milky Way is setting early. The winter Milky Way is not rising until late. Now we are looking away from Milky Way so objects are more sparse. The following Messier Objects are well placed for observation during November and December (listed in ascending RA): M52, M110, M31, M32, M103, M33, M74, M76

### Lunar and Binocular Observing Program

The following is a list of dates for lunar phases in October and November:

New Moon: Nov 1, December 1, 30	10 days old: November 11, December 11
40 Hours waxing: November 3, December 3	Full (14 days old): November 15, Dec 15
72 hours waxing: November 28, Dec 27	Gibbous: November 22, December 22
4 days old: November 5, December 5	72 hours waning: November 28, Dec 27
7 days old: November 9, December 8	40 hours waning: November 29, Dec 28

### Solar System Observing Program

The following planets are visible during November and December:

**Mercury** is an early evening object in November reaching greatest elongation and brightest on November 16. Then it goes around the Sun and becomes a early morning object starting around December 5, reaching its greatest elongation and brightest around December 24.

**Venus** is an early evening object through November and December. It is moving further from the Sun and getting brighter each night. It is getting larger and the phase is shrinking each night. By the end of December it will be setting almost 4 hours after the Sun.

**Mars** is rising earlier each night, heading towards opposition in early 2025. On November 1 Mars rises around 10 PM and transits around 5:30 AM. By December 31 it rises around 6:30 PM and transits around 1:30 AM.

**Jupiter** is well placed for viewing during November and December. It transits around 2:30 AM on November 1 and around 10 PM by the end of December.

**Saturn** is still well placed for early evening observation during November and December. It transits around 8 PM on November 1 and around 5 PM on December 31. The rings are nearly edge on as viewed from the Earth and the satellites orbital plane is also nearly edge on. Look for interesting satellite events such as satellites casting shadows onto Saturn or mutual satellite events such as one satellite occulting another, or eclipsing another.

**Uranus** Uranus is well placed for evening observation during November and December. It transits around 12:30 AM on November 1 and around 9 PM on December 31. It reaches opposition on November 16.

**Neptune** is well placed for evening observation during November and December. It transits almost 1 hour after Saturn's transit.

### Urban Observing Program

The following **deep sky objects** are well placed for observing during November and December: NGC 7662, NGC 7789, NGC129, M32, M31, NGC457, NGC663, Cr 463, NGC 752

The following **Double Stars** are well placed in November and December: Eta Cassiopeia, Gamma Aries

## Public Astronomy Events



### DEPARTMENT OF ASTRONOMY AND STEWARD OBSERVATORY

### Public Evening Lecture Series Fall 2024

Public Evening Lectures will **begin at 7:30 p.m. in Steward Observatory Room N210.**

All of the lectures and the use of the telescope are free of charge and open to the general public.

For more information, check out the [Web Page](#).

You can watch each lecture live on [ZOOM](#). To stream recordings of previous lectures, [click here](#).

- |                |   |   |
|----------------|---|---|
| <b>Nov. 4</b>  | Christa DeCoursey<br>Steward Observatory                        | <i>Discovering the Most Distant Supernovae Thus Far with JWST</i> |
| <b>Nov. 18</b> | Dr. Alfred McEwen<br>Regents Professor<br>Lunar & Planetary Lab | <i>Jupiter's Insanely Volcanically Active Moon Io</i>             |
| <b>Dec. 2</b>  | Dr. Dominika Itrich<br>Steward Observatory                      | <i>Born in the Spotlight: the Mysterious Proplyds</i>             |



COLLEGE OF SCIENCE  
**LUNAR & PLANETARY  
LABORATORY**

### LPL Evening Lecture Series

All Lectures are at the Kuiper Space Sciences Building, Room 308 and Zoom from 7:00pm to 8:00pm. Check out the LPL Evening Lecture Series [Page](#).

- |               |                                     |   |
|---------------|-------------------------------------|---|
| <b>Nov 20</b> | <a href="#">Dr. Angela Marusiak</a> | <i>What's shaking on the Moon?: What we can learn from earthquakes on the Moon.</i> |
|---------------|-------------------------------------|---|

TUCSON MASTERWORKS CHORALE  
OUR 75TH YEAR PRESENTS

# MEASURE ME, SKY

A CELEBRATION OF MUSIC OF THE SPHERES

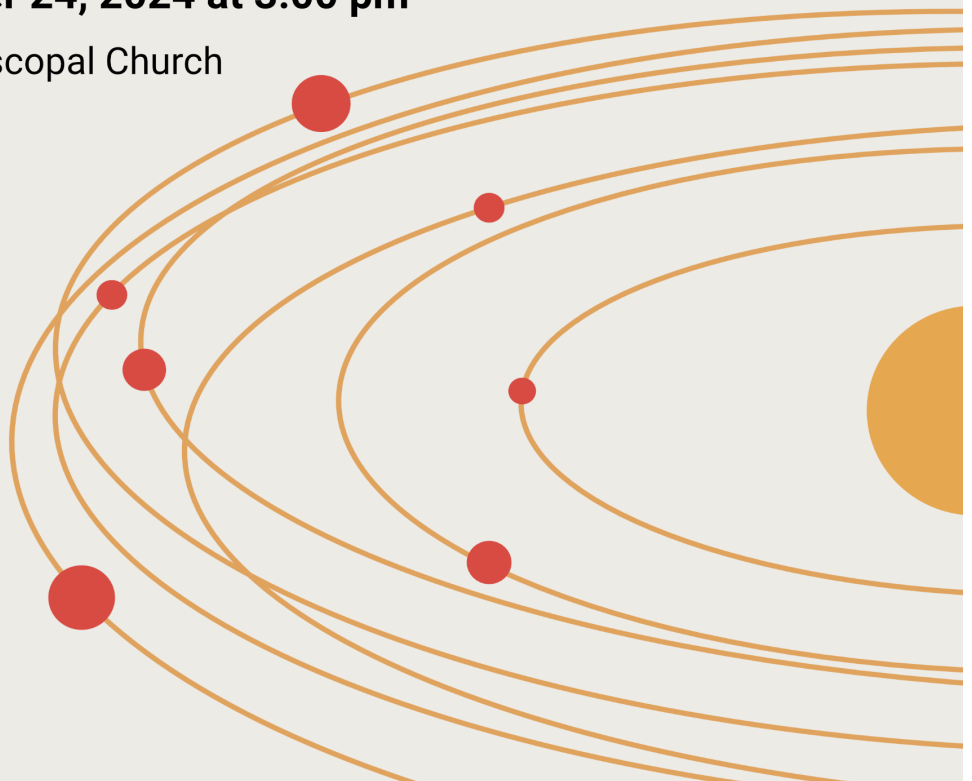
## Two Concerts

**Saturday, November 23, 2024 at 6:00 pm**

Christ Church United Methodist  
655 N. Craycroft Rd.

**Sunday, November 24, 2024 at 3:00 pm**

Grace St. Paul's Episcopal Church  
2331 E. Adams St.



tucsonmasterworkschorale.org

**Tickets are now on sale! General Admission \$20 Student Ticket \$10**  
Purchase online [HERE](https://www.tucsonmasterworkschorale.org) or at the door



# Skyward

By Dr. David H. Levy

November 2024

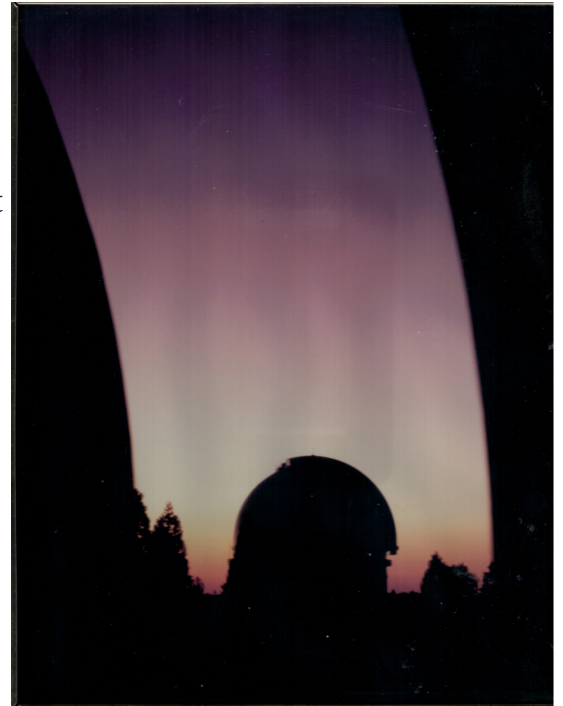
## Palomar Mountain Observatory

Last month I drove all the way from my Vail, Arizona home to Palomar Mountain Observatory. As most of this column's readers know, I have visited this place many dozens of times from my first encounter in March of 1974, and regularly from the late summer of 1989 to the late spring of 1996. I have always loved this magical place. Each visit, as I would drive in, I would pass the expansive dome of the mighty 200-inch Hale Telescope. As I drove by, I felt the telescope waving at me. It and I are the same age. The telescope was officially inaugurated on June 3, 1948, just thirteen days after my birth on May 22 that year. We are both 76. (I was probably too young to give a speech, with a poetic quotation, at that event.)

The purpose of this visit was to watch the September 16th partial eclipse of the Moon with my close friend Jean Mueller. I have known Jean for decades. Jean operated telescopes at Palomar, mostly the 48-inch Samuel Oschin Schmidt telescope which opened just before the giant 200-inch. While there, she exposed many photographic plates for the second POSS (Palomar Observatory Sky Survey). Mueller would scan the plates for stars that appeared in and around galaxies and mark a galaxy. She would then compare that galaxy with a picture from earlier to see if the star had newly appeared. If it had, she would measure the position of the star, and then an astronomer would confirm her discovery on the 200-inch. This meticulous work enabled Mueller to discover 107 supernovae in addition to fifteen comets and thirteen now-numbered asteroids. Jean Mueller is a prime, absolutely first-rate astronomer and observer of the night sky, and she is admired and highly respected around the world.

It has been thirty years since I last visited Palomar, and I was overdue for a return. I cruised by the colossal dome housing the 200-inch Hale telescope, at one time the largest in the world. However, this telescope was not my reason for visiting Palomar all those years ago. Instead, I drove some meters on to see the 18-inch Schmidt camera telescope. This beautiful instrument was the first and is the oldest telescope on this mountain, and its record of discovery is dazzling. It helped Fritz Zwicky discover 121 exploding stars, or supernovae, in distant galaxies. It has a historic record of discovery of asteroids and comets, by far the most important of which is Comet Shoemaker-Levy 9 on March 23, 1993. In July of 1994 the pieces of this shattered comet slammed into Jupiter. Colliding at a velocity of 37 miles per second, each fragment left a very bright flash and a large brownish cloud that persisted for months.

During my March visit I learned how the 18-inch was moved to the observatory museum where it has become a lovely exhibit. When I saw my old friend again; I almost cried. I then visited the outside of the dome that was our home for so long, and while there the treasured memories of working with Gene and Carolyn flooded back like an incoming ocean tide. This time I could not hold back the tears of joy.



The 200-inch dome photographed from the open dome of the 18-inch. By David Levy

With the possible exception of our discovery of Comet Shoemaker-Levy 9, this was by far the most emotive visit I've ever had to Palomar. For the first time in my long association, the overwhelming history of the place really struck me. I felt I was standing next to Russell Porter as he drew a sketch of the telescope, even before its mirror was installed, pointed towards the north. He even flashed me his legendary grin. Porter became famous long before he helped design the 200-inch. In the November 1925 issue of Scientific American, he published its lead article "The Heavens Declare the Glory of God." That piece of writing also marked the opening of Stellafane, the telescope makers conference still held every year atop Breezy Hill in Vermont. Last year Stellafane celebrated 100 years of its legendary pink clubhouse.

On that incredible evening of September 17, we watched a wonderful partial lunar eclipse. Only 7% of the Moon was covered in the Earth's central or umbral shadow, but the outer penumbra shadow dimmed much of the rest of the Moon. And just five weeks later, mighty Comet Tsuchinshan-ATLAS painted its rosy picture across the evening sky. May these haunting events add to our joy in the night sky that shall be remembered forever.



Comet Tsuchinshan-ATLAS By David Levy

Dr. David H. Levy is a long-time member and former President of the TAAA. He is a well known astronomy writer and discoverer of comets. He writes this monthly "Skyward" column for the Vail Voice and generously allows us to publish it here.

