TAAA Desert Skies Bulletin

Observing Our Desert Skies Since 1954

July 2025

www.tucsonastronomy.org

Membership Meeting

Friday, July 11, 2025 6:30PM

TAAA's next general member meeting will be held on **Friday, July 11, 2025**. This is the second Friday of the month due to Independence Day. 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 YouTube page.

Inside this issue:

Notes from the President - Page 2
TAAA News & Activities - Page 3
Observing Sites and Updates - Page 10
Special Interest Groups - Page 12
Astronomical League Programs - Page 13
Member Astro Images - Page 15
Equipment for Sale - Page 24
Skyward - By David Levy - Page 26

Main Presentation at 6:30PM AZT

Title: Beyond the First Look at The NSF-DOE Vera Rubin Observatory

Presentation: The NSF-DOE Vera C. Rubin Observatory recently released a first look at a sampling of data products, and now is preparing to begin a ten-year survey of the southern skies. The Legacy Survey of Space and Time will produce unprecedented amounts of data for many different types of science. Using the largest camera ever built, Rubin will repeatedly scan the sky from its location in Chilé and create an ultra-wide, ultra-high-definition, time-lapse record of our Universe. This will yield a treasure trove of discoveries: asteroids and comets, pulsating stars, and supernova explosions, as well as an immense amount of previously-undetected stars and galaxies. With Rubin data we will come to understand our Universe better, chronicle its evolution, delve into the mysteries of dark energy and dark matter, and reveal answers to questions we have yet to imagine. Ardis Herrold's presentation will offer information on the telescope, its science, and the ways everyone can explore the Rubin data itself. Learn what is happening right now, during commissioning (between first photons and the start of the survey), as well as how educators and citizen scientist projects can bring the data to a wide audience and encourage today's students to become tomorrow's scientists.

Biography: Ardis Herrold is the Senior Education Specialist for the NSF-DOE Vera C. Rubin Observatory. Formerly a high school teacher, Ardis was hired to design and lead the education program for Rubin. In this role, she works on designing and testing data-based classroom investigations, and provides teacher training and support. Ardis is an amateur astronomer and has been a member of TAAA since 2017.

Rubin Observatory stands on Cerro Pachón in Chile against a sky full of star trails in this long exposure night sky image.

Image credit: Hernan Stockebrand

Notes From The President

June 2025

by Ed Foley

The new TAAA board began its meetings this fiscal year getting down to business. The annual 2025-26 TAAA budget had been reviewed and recommended to the current board in the previous board's last meeting in May. The current board was able to review their work and approve the figures with only minimal discussion. The budget shows TAAA able to fund all anticipated expenses submitted by TAAA leaders for programs and our general needs based on our revenues from Membership, CAC operations, our TSA (Tucson Stargazing Adventures) star parties, interest from our investment accounts, and used equipment sales. The total resulted in an anticipated positive income for the coming year.

The board heard from leaders about the activities at our dark sites and was pleased to see the number of volunteers committed to making our sites functional, safe and accommodating. More about these significant activities will be reported by leaders later in the Desert Skies Bulletin.

One area of concern discussed was the shortfall in sales of our annual TAAA calendar. The calendar has been published for many years containing key dates for the coming year, graced with images and photos from members. A working group was formed to consider what changes can be made to make the calendar more relevant and in demand in our changing times.

We were pleased to hear a report from Sandy Nichols about the efforts of a new group meeting about Radio Astronomy. These members have met a number of times this year, discussed aspirations to further explore this subject, and established goals to further their study. They have requested Special Interest Group (SIG) status and the board approved their request. Under our constitution this status gives a group access to TAAA resources like our Zoom account, facilities, website space, emailing, and at some point may be granted a budget to operate and purchase equipment. I am pleased to see the addition of a SIG to our portfolio of member groups investigating special areas of Astronomy.

The organization remains on very good footing as it grows programs for members and performs activities for the community. As the fiscal year gets underway the board will turn its attention to looking further into the future. We will be discussing our direction, expecting to then set objectives and goals to improve your membership experience.

Ed Foley

President Ed Foley:
president@tucsonastronomy.org

Vice-President: David Rossetter
vice-president@tucsonastronomy.org

Secretary: Bob Reynolds
secretary@tucsonastronomy.org

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Stephen Ferris mal1@tucsonastronomy.org
David Eicher mal2@tucsonastronomy.org
John Kalas mal3@tucsonastronomy.org

Immediate Past President: Mae Smith

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 Ed Foley to receive a Zoom link for that meeting. Please send your email to Ed 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.

Desert Skies Bulletin
Contributions to Editor: David Rossetter by the 24th.
Astro-Images to our Image Editor: Gregg Ruppel
Proofreaders: Terri Lappin, Jeff Rothstein, Jim Knoll

TAAA News & Activities

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 local restaurant for fellowship and conversation.

Thursday July 17, 6:30

Tumerico

2526 E. 6th Street
(S side of 6th St, E of N Tucson Blvd)
Menu changes daily

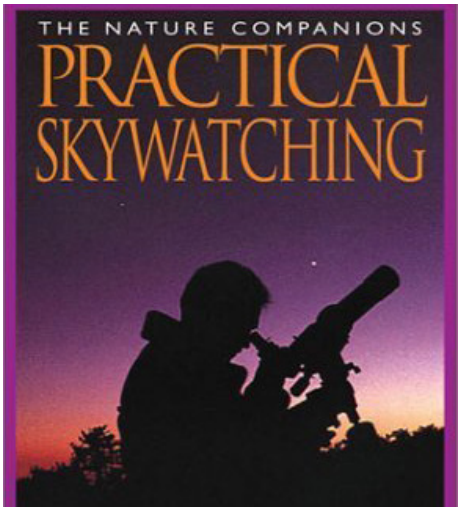
RSVP Susan 520-780-0136

Book Of The Month Review - by Douglas Smith (TAAA Librarian)

Book: "Practical Skywatching"

Authors: Burnham, Dyer, Garfinkle, George, Kanife and Levy

This book is loaded with information useful to the novice amateur astronomer. The book is basically divided into two parts. The first half contains history and equipment information along with observing tips for all the various types of objects an amateur might typically observe. But like any single volume trying to cover everything, it lacks details. For example, there are only two pages on eyepieces and only ten pages on astrophotography. The second half of the book is devoted entirely to star charts. The charts are actually pretty good. The first few charts are seasonal views of the sky, similar to the monthly charts you find in Sky and Telescope or Astronomy magazine. Then there are more detailed charts of each constellation. The charts are about equivalent to those found in a Norton's star atlas. Along with the charts are descriptions of the more interesting objects in each constellation.



In summary this is a good book for the beginner with a starter scope but clearly not intended for the advanced amateur. While the information about equipment is a good starting place, further research would be required before purchasing equipment.

"Practical Skywatching" is available from a variety of sources. E-bay lists it for less than $20.

by Doug Smith

Astronomical League Workshop

Open for enrollment

Place: Woods Memorial Library, 3455 N. First Ave. Tucson
Date: Saturday September 6, 2025; **Time:** 10 AM until 1 PM

Synopsis: This workshop is designed for anyone who may be interested in pursuing one of the Astronomical League observing programs for the first time or anyone interested in learning about these observing programs. The workshop will cover how the various observing programs work, program requirements, selection of an appropriate program, recommended equipment, resources, logging requirements, and much more.

If interested, you can email or call the TAAA Astronomical League Correspondent (ALCOR) Doug Smith 520-396-3233 or sign up using the signup page on the website. There will also be a signup sheet available at the July and August General Member meetings.

BRAND NEW WORKSHOP!!!

Space Weather Workshop

Open for enrollment

Place: Woods Memorial Library, 3455 N. First Ave. Tucson
Date: Saturday September 20, 2025; **Time:** 10 AM until 1 PM

Synopsis: This workshop will teach the student how to construct a simple magnetometer out of commonly available household materials that will be used to monitor solar activity and how it affects the Earth's magnetic field. The Astronomical League's Space Weather Observing Program will be discussed. The student can use the magnetometer to complete the required observations for this program.

PLEASE NOTE: due to equipment limitations there is a strict limit of 15 students for this workshop.

If interested, you can email or call the instructor: Doug Smith 520-396-3233

Constellation Locating and Identification Workshop

Open for enrollment

Place: TIMPA; **Date:** Thursday, October 16, 2025; **Time:** 6:00 PM until completed

Synopsis: This is another workshop in the practical astronomy workshop series. The students will be taught how to locate and identify the constellations without having to memorize the night sky. Each student will use the supplied equipment to locate several constellations. Students will learn how to use a planisphere and star atlas. This program provides the methodology for the observing requirements of the Astronomical League's Constellation Observing Program (Northern and Southern).

PLEASE NOTE: due to equipment limitations there is a strict limit of 20 students for this workshop.

If interested, you can email or call the instructor: Doug Smith 520-396-3233

Learn how to Record Observations and Sketch Objects Workshop

Open For Enrollment

Place: TIMPA; **Date:** Thursday, October 2, 2025; **Time:** 6:00 PM until completed

Synopsis: This is another workshop in the practical astronomy workshop series. Students will learn how to record observations and how to sketch objects. The students will be taught proper recording techniques, what information to record, what sort of forms to use, etc. In addition, students will be taught techniques for sketching objects. The students will view, using a telescope, several different types of objects and perform recording activities and sketch different objects.

If interested, you can email or call the instructor: Doug Smith 520-396-3233

Star Hopping Workshop

Open for enrollment

Place: TIMPA; **Date:** Thursday, September 25, 2025, **Time:** 6 PM until completed

Synopsis: This is another workshop in the practical astronomy workshop series. It will teach Star Hopping. The students will be taught the proper star hopping technique and equipment usage. Each student will use the supplied equipment to locate at least two targets (maybe more if time permits). By the end of the workshop the student will know what equipment to use and how to use it in order to locate targets using star hopping.

PLEASE NOTE: due to equipment limitations there is a strict limit of 20 students for this workshop.

If interested, you can email or call the instructor: Doug Smith 520-396-3233

Library Telescope Program

by Jim Knoll

The Library Telescope Program is part of the Starry Messenger Special Interest Group (SMSIG). We have donated another three telescopes to the Pima County Library System, bringing the total number of telescopes to 17 (14 in Pima County and 3 in Cochise County).

Pima & Cochise County Library Telescope Locations			
Library Location	**Address**	**Phone**	**Website**
Ajo	15 W Plaza #179, Ajo, AZ	(520) 387-6075	https://www.library.pima.gov
Ekstrom-Columbus Library	4350 E 22nd St	(520) 594-5285	
Flowing Wells	1730 W Wetmore Rd	(520) 594-5225	
Kirk-Bear Canyon	8959 E Tanque Verde Rd	(520) 594-5275	
Main Library (Joel D Valdez)	101 N Stone Ave	(520) 594-5500	
Martha Cooper	1377 N Catalina Ave	(520)-594-5317	
Miller-Golf Links	9640 E Golf Links Rd	(520) 594-5355	
Oro Valley	1305 W Naranja Dr.	(520) 594-5580	
Sahuarita Library	670 W Sahuarita Rd, Sahuarita	(520) 594-5490	
Sam Lena South Tucson	1607 S 6th Ave	(520) 594-5265	
Southwest	6855 S Mark rd	(520)-594-5270	
Valencia	202 W Valencia Rd	(520) 594-5390	
W. Anne Gibson - Esmond Station	10931 E Mary Ann Cleveland Way	(520) 594-5459	
Woods Memorial	3455 N First Ave	(520)-594-5445	
Benson (Cochise Cnty)	300 S Huachuca St, Benson	(520) 586-9535	https://cochiselibrary.org/
Sunsites Library (Cochise Cnty)	210 N Ford St, Pearce	(520) 826-3866	
Sunizona (Ash Creek) (Cochise)	6460 E Highway 181, Pearce	(520)-824-3145	

They are still very popular with the Library Patrons and are constantly checked out. We have not had many issues with them either, so it appears they are using them with care. The telescopes are either an Orion StarBlast or Zhumell, both small 114mm reflector tabletop telescopes. They are modified with a Celestron Zoom eyepiece, a modified finder scope that uses AA batteries, and a cover over the collimation screws. TAAA provides support for the telescopes, and we are looking for member help.

The three latest telescopes are going to Martha Cooper, SW, and Woods Memorial libraries. These three were donated by Todd Hansen, Tom Sarko, and the Astronomical League. Thank you to our very generous donors. The Martha Cooper dedication was June 5, 2025. The SW Library will be July 2, 2025, from 2:30-4 pm. The Woods Memorial library dedication is on Monday, July 7, 2025 from 5:40-7 pm. For additional information, check out the TAAA Library Telescope webpage at: https://tucsonastronomy.org/community-services/libaryscope-program/. To help support the telescopes or for questions contact smsig@tucsonastronomy.org.

The CAC 32 Inch DFM Telescope Observatory

Ed Foley, Project Team Leader

The observatory for our .8-meter DFM research-grade telescope is substantially completed. The rolling shutter on the south side has been installed. When the shutter is raised, there is enough clearance on the upper south wall for the roof to open and clear the 9-foot tall, parked telescope tube. The shutter and the roof have now been tested and are working smoothly.

In a big step toward assembling the telescope, a group of twelve TAAA volunteers moved the telescope from its storage location with member Warren Hensley to its new home at CAC. The move occurred over two days. The first day volunteers transported the smaller items to CAC for storage in our container or the Learning Center buildings for those items needing climate control. On the big day, Warren's neighbor Jim Graham, of Golden Rule vineyards, came over with his skid steer loader and moved the remaining four pieces onto our trailer. These large items weighed upwards of a quarter to half a ton each. When they arrived at CAC, each item was carefully unloaded with a rented skid steer, placed just inside the new observatory door onto dollies, rolled into place and lowered onto blocks. There they will remain during the monsoon season awaiting assembly at the beginning of October.

32" pieces in Warren Building

32" Tube Being Loaded Up

Volunteers: Bob Rose, Bob Reynolds, Ed Foley, Jim Knoll, Jim Long, Dan Chin, Bernie Stinger

Mirror Cell

Fork Mount

Dollies

Big Pieces in the Observatory

Open Observatory!

CAC Gravel Project

Busy weekend at CAC! June 11-15 we had 11 volunteers help complete two projects at CAC; The extension of the RV area to include gravel for RV #7 and the turnaround and the gravel for the Member Observatory Parking area. 150 tons of gravel were delivered and spread using the CAC Tractor, a rented Skid Steer, and volunteer labor! This will be a huge addition to the amenities at CAC.

Aerial view of the finished gravel around the new member observatories and RV sites.

Thank you to our wonderful volunteers!

RV rakers: Dan Chin, Jim Knoll, Susan Knoll, Scott Cooley, Jeff Buzek, Bob Reynolds, Jim Long, Ed Foley.

Also (not pictured): Joe Jakoby, Bob Rose, and Bernie Stinger.

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 (Friday - Saturdays)

Monsoon Season: No Dates Scheduled

Stay Tuned for Pop-up Observing Announcements!

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.

Questions? Contact the TIMPA Director: Stephen Ferris

Chiricahua Astronomy Complex

by Jim Knoll

Upcoming CAC Weekend Dates (Thursday - Sunday)

July 24-27 (New Moon July 24); Monsoon Season

During Monsoon (July-August) we do not plan to have hosts on-site, but if weather permits there may be members observing that will open the site. If you want to observe, contact Conrad Stolarski at cac-reservations@tucsonastronomy.org to check site status or use the standard reservation process on the reservations web page.

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. We have many large telescopes ranging from 40-Inch, 25-Inch and 18-Inch Dobsonians, a 9-Inch folded refractor, a soon-to-be completed 32-inch Cassegrain, and quite a few Schmidt-Cassegrain Telescopes (SCTs) of various sizes. The telescopes are configured for either visual observing or imaging.

You can be trained to operate any of these and observe or image from a dark Bortle 1-2 site only two hours from Tucson. To request training, please complete the request form here. We also have ten sleeping rooms with heat and air conditioning, a Learning Center/Classroom, seven RV sites with electricity, and a large tent camping area. We will discontinue allowing overnight sleeping in the Reynolds-Mitchell Observatory (RMO). Overnight accommodations will need to use the sleeping rooms, RV sites, or in the tent area. Members can also sleep in their vehicle if desired and the conditions permit.

TAAA members are welcome to attend our monthly Planning and Operations Zoom meeting, normally on the first Monday of the month at 6:30 pm. Email for the link.

If you would like to observe, you must make a reservation on the CAC Web page at CAC Reservations.

If it is your first visit to CAC, you need to attend on a CAC weekend when other members are present. Unless you are qualified to open and close the site, dates will be limited to those around the New Moon and are listed below and 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' 2025 Star Parties Dates

TIMPA	New Moon	CAC
Monsoon: No Dates	July 24 August 22	July 24–27 (Monsoon) August 21–24 (Monsoon) September 13 – *Evening Under the Stars – Public Event*
September 19-20 October 17-18	September 21	September 18–21
October 24-25 November 14-15	October 21	October 16-19
November 21-22 December 12-13	November 19	November 20-23
December 19-20	December 19	December 18-21

Special Interest Groups

Starry Messengers Special Interest Group

Opening Minds to the Universe

The Starry Messengers have one event taking place on Monday, July 7th at the Steam Pump Ranch in Oro Valley. It's a group of about 40 kids, 6 to 13 years old. Terri Lappin, Susan O'Connor, and Kay Lehman will cover and use activities from the Space Rocks Toolkit.

SMSIG is taking a hiatus from meetings over the summer months. **Our next meeting will be on Monday, September 8th.**

Questions about the Starry Messengers SIG can be directed to Terri Lappin email or 520-977-1290.

Astronomy Fundamentals SIG

by Connor Justice

Come join us for a presentation on 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, July 10, 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 YouTube Channel AFSIG on the Web

Radio Astronomy SIG (RASIG)

by Sandy Nichols

At their June 11th meeting the TAAA board approved a request to create a new Special Interest Group centered on radio astronomy. RASIG participants will meet on the third Wednesday of each month from 7-8 pm MST via ZOOM.

The next RASIG meeting will be **Wednesday, July 16th at 7:00 pm** via ZOOM.

Topics: History of Radio Astronomy – Vince Baker

Email Sandy Nichols for the ZOOM link or any other information about the new SIG.

Astro-Imaging SIG

by Gregg Ruppel

The next AISIG meeting will be **Monday, July 21st at 7:00 pm** via ZOOM.

Topics:
Beginners' Corner - Ask A Question
Monsoon Challenge 2025 - Image Sharing
Q/A, 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, click here.

View previous AISIG meetings on the TAAA YouTube Channel.

Also, we now offer a mentoring program. For details, see the AISIG Web Pages.

School/Public Star Party Requests

by Bernie Stinger

The non-profit star party program is on summer break!
Star parties will resume in September.

Bernie

Astronomical League

by Doug Smith

Observing Programs - What's Up List for July and August 2025

Many of the Astronomical League observing programs can be done from our backyards. The following is a list of objects visible in July and August for the more common observing programs.

Constellation Hunter Program – The following constellations are well placed in the Northern sky for July and August: Aquila, Böotes, Corona Borealis, Draco, Hercules, Lyra, Sagitta, Serpens Caput, Serpens Cauda, Ursa Minor, Vulpecula.

Messier Observing Program - The following Messier Objects are well placed for observation during July and August (listed in ascending RA): M5, M80, M4, M107, M13, M12, M10, M62, M19, M92, M9, M14, M6, M7, M23.

Urban Observing Program
The following **deep sky objects** are good for observing in July and August: M5, M4, M13, NGC 6210, M12, M10, M62, M92, M6, IC 4665, M7
The following **double star** is well placed for observing in July and August: Beta Scorpius

Continued

Lunar and Observing Program
The following is a list of dates for lunar phases in July and August:

New Moon: July 24, August 23
40 Hours waxing: July 26, August 25
72 hours waxing: July 27, August 26
4 days old: July 28, August 27
7 days old: July 2, August 30
10 days old: July 5, August 4
Full (14 days old): July 10, August 9
Gibbous: July 17, August 16
72 hours waning: July 21, August 20
40 hours waning: July 22, August 21

Solar System Observing Program
The following is a list of planets that can be observed during July and August:

Mercury is an early evening object during the first three weeks of July. It then becomes an early morning object for the rest of July and August. On August 19, Mercury rises almost 1.5 hours before sunrise. This is its best apparition until 2026.
Venus Venus is an early morning object for all of July and August. It rise around 2.5 hours before sunrise.
Mars Mars is still visible in the early evening sky. It is setting earlier with each night. On July 1 it sets around 10:30 PM. On August 31 it sets around 8 PM.
Jupiter is now an early morning object. On July 1 it rises around 30 minutes before sunrise. By August 31 it is rising around 1:30 AM.
Saturn is becoming better placed for evening observation but is till a late night object in July. On July 1 it rises around 11:30 PM. On August 31 it rises around 7:30 PM. Several Titan transits and mutual satellite events occur and will be visible from Tucson during this period (see notes below).
Uranus is becoming better positioned for evening viewing. On July 1 it rises around 2 AM. On August 31 it rises around 10 PM.
Neptune is becoming better placed for evening observation. It rises around the same time as Saturn during the entire period.

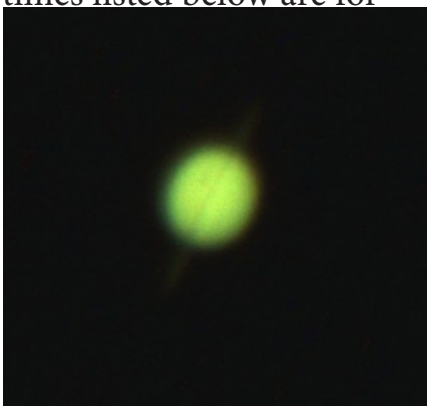
SPECIAL EVENTS: During July and August it is still possible to observe Saturn's moons involved in mutual events (occultations and eclipses).

Mutual Saturn satellite events:

July 1, 2025: Tethys eclipses Rhea, Start: 3:19:00 UT, End: 3:39:47 UT
July 5, 2025: Enceladus eclipses Tethys, Start: 6:49:30 UT, End: 6:51:36 UT
July 23, 2025: Tethys eclipses Rhea, Start: 11:25:28 UT, End: 11:33:32 UT
August 9, 2025: Mimas eclipses Enceladus, Start: 6:27:14 UT, End: 6:29:46 UT

Also, during July and August, several transits of Saturn's moon Titan occur. During these events Titan may be difficult to see if it is in front of Saturn. The dates and times listed below are for the transit of Titan's shadow:

July 2, 2025. Start: 7:40 UT, End: 13:03 UT
July 18, 2025. Start: 7:00 UT, End: 12:05 UT
August 3, 2025. Start: 6:24 UT, End: 11:04 UT
August 19, 2025. Start: 5:52 UT, End: 10:00 UT



To the right is an image of Saturn taken around 3:45 AM June 16, 2025, showing Titans shadow just above and to the left of the ring shadow, near the central meridian. (Photo by Doug Smith)

Member Astro-Images

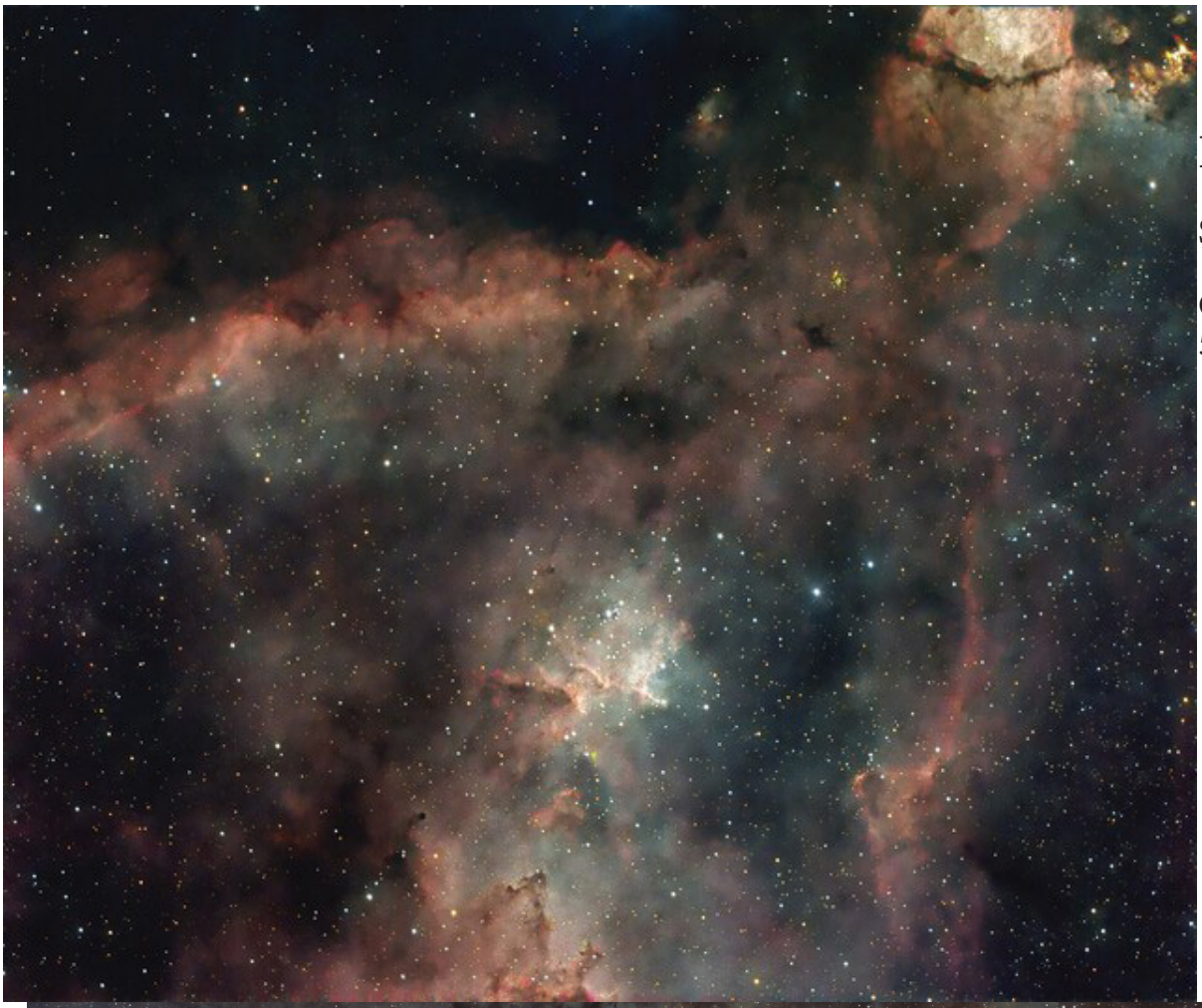
Rik Hill

Copernicus and Environs.

Three days past First Quarter Moon, the grand crater Copernicus (93km in diameter) is just clear of the terminator and you cannot help but be drawn to this sight. The central peak of this monster crater rises 4,100m or 13,500 feet above the surrounding crater floor. At the bottom of the image is another good sized crater, Reinhold (48km) and above it the shallow (infilled) crater Reinhold B (26km). Then to the right (east) of Copernicus is the crater Eratosthenes (60km) holding down the south end of the Montes Apenninus. Between Eratosthenes and Copernicus, the ghost crater Stadius can just be made out under a peppering of small secondary craters made from the ejecta of the Copernicus impact only North of Copernicus are the Montes Carpatus and north of them, directly north of Copernicus, are the twin craters Draper C (7.4km) and above that Draper itself (9km).

South of Copernicus is another pair of small craters, Fauth (12km) to the north, and Fauth A (8.7km) adjacent to the south. If you were following space activities in the 1960s you may recall the Lunar Orbiter II image of Copernicus from Nov. 24, 1966 that ran in many newspapers as "Photo of the Century". In the foreground of the photo were two seemingly large craters as seen from the orbiter altitude of 28 miles. These fascinated me and I took pains to figure out which ones they were. These were Fauth and Fauth A and I have remembered this first sight of them every time I see them in a photo of this region.

This image is made from 4 AVIs stacked with AVIStack2 and then assembled with MS-Ice. Final processing was done with GIMP 2 and Irfanview.



David Gale

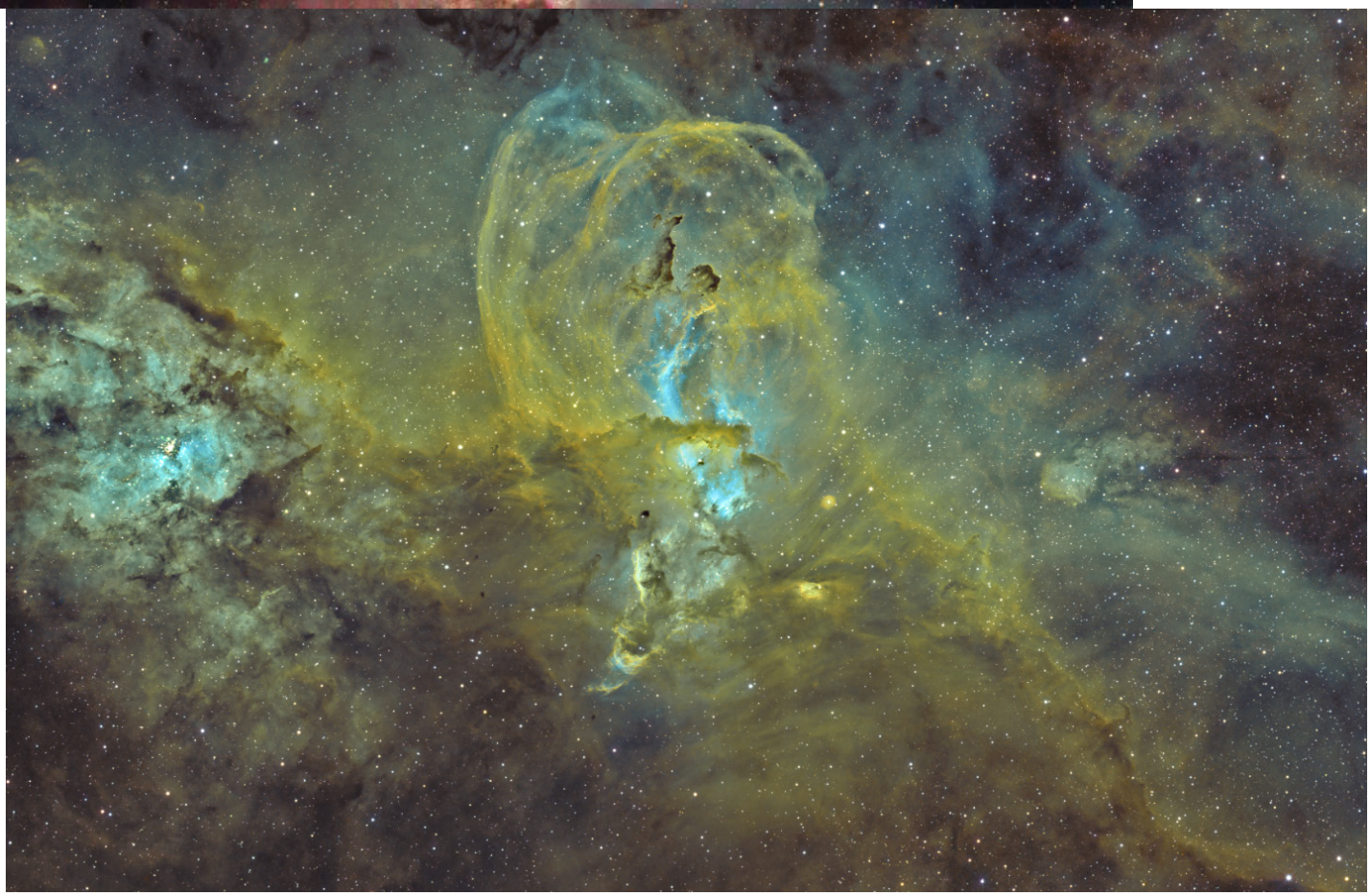
Sh2-190

C8 Hyperstar,
533MC Pro

Allen Force

NGC 3576

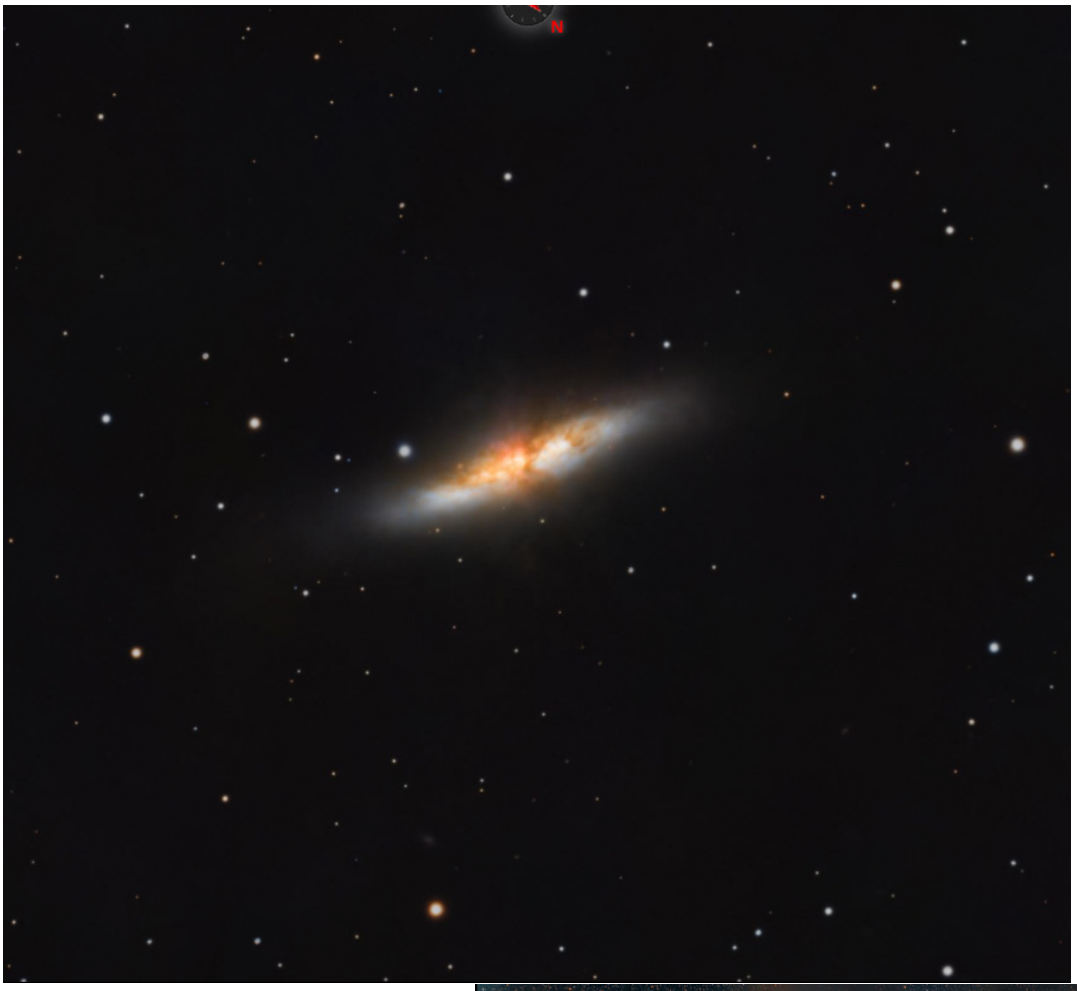
Astrobin



Sh2-101

Michael Mulcahy SHO, Foraxx

Sh2-91



M 82

2700 10s subs over two nights.

Astrobin

David Stearn

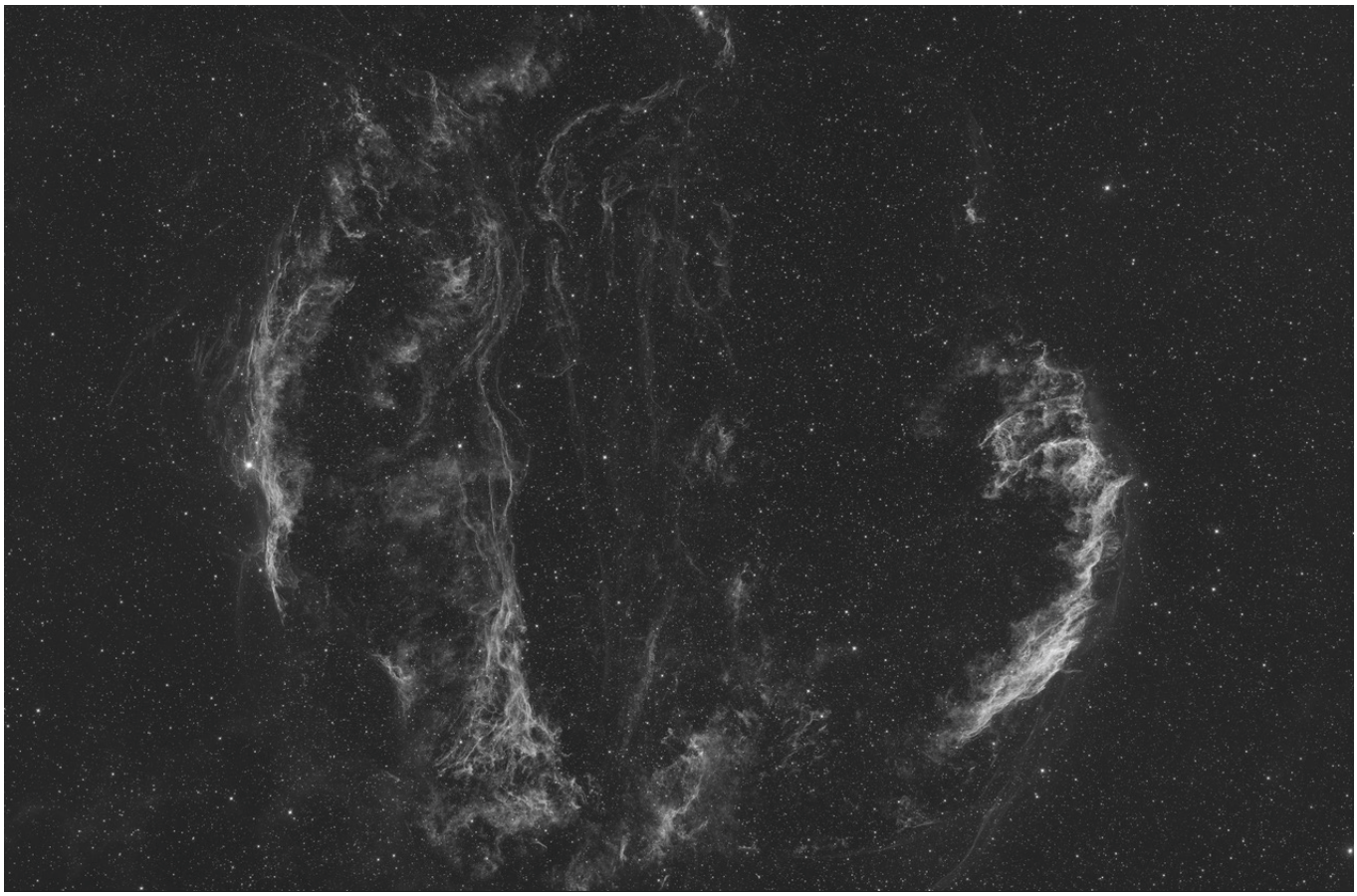
Rho Ophiuchi

Astrobin

Sh2-129 - Takahashi Epsilon 180(mm)ED f/2.9 Newtonian astrograph, 4 hrs of 5 minutes subs

Alan Rockowitz

Cygnus Loop - Takahashi 180mm f/2.8 Newtonian reflector, Baader Fast filter, 1 hour.



Randy Smith - **Rho Ohpiuchi and Blue Horsehead.** 4 panel mosaic captured with the FMA 180 and 2600 MC PRO. Astrobin

Vincent Goetz - **Sh2-274 Medusa nebula.** Celerstron 11, Hyperstar, 200 45 second subs. NBZ filter.

M5

RC 10" f/6.4 / ZWO 2400MC PRO Gain 0 Offset 30 / AP Mach2 mount unguided, Dec arc tracking model / 45m exposure

Tom Eby

NGC 5746

RC 6, 2.1 hrs and 0.75 "/px scale after 1x drizzle, 2600MC PRO and A-P CCD67 reducer.

M17

About 9 hours of integration time.

John Tsantes

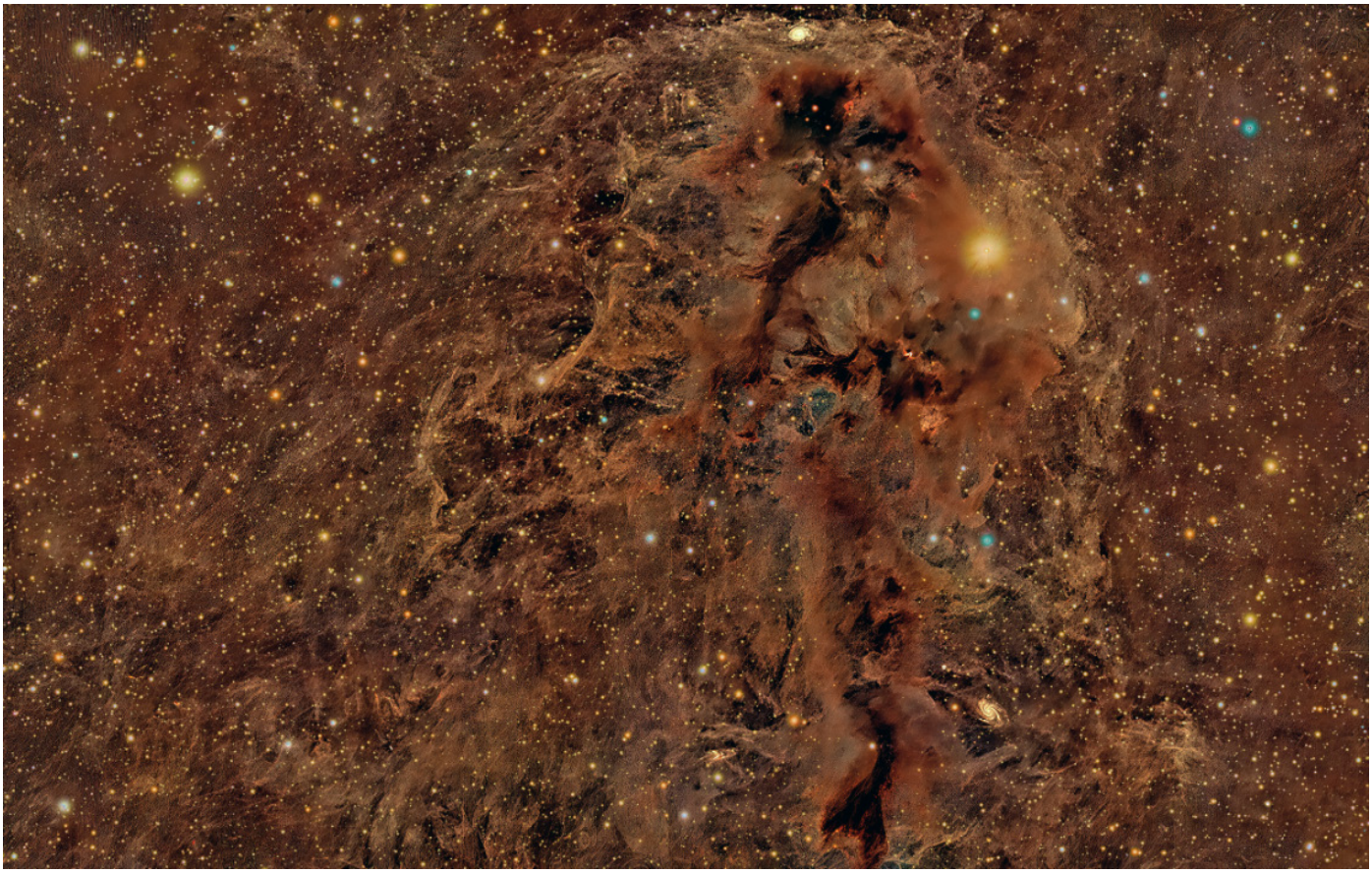
NGC 6334

Sky-Watcher Quattro 200p at full 800fl and the ZWO Asi 2600 MC PRO camera, 4.5 hours integration time.

NGC 4945 Astrobin

Alex Woronow

LDN 1251 Astrobin



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" CPC
(No Photo)

Dual fork arm mount, 9x50 finder, 2 eyepieces, telrad, finder rings, hand controller, user manual, tripod, diagonal. Basically new in original box. **$1600**

Celestron 6 NexStar
3 of these.
Some are black tube some are orange. All come with Tripod, eyepieces, finder. All are single fork rail mount, NexStar (tested), 1.25" visual back, 1.25 diaganol, 2 1.25" eyepieces. One comes with 6x30 crosshair finder, one comes with a telrad and one come with red dot finder. **$600**

Celestron 8
Single Fork Arm rail mount, NexStar, Tripod, 1.25" visual back, 1.25" diagonal, 1.25" eyepiece (25mm), crosshair finder, carrying case for optical tube. **$1000**

Homemade 8 inch Newtonian telescope. Sturdy GEQ mount. Solid tripod. 2-inch focuser (with 1.25" adapter), 6x30 crosshair finder. **$100**

12" Dobsonian
Another great deal!
Very large, Homemade.
Crosshair finder. **$500**

12-inch Skywatcher Collapsible Dobsonian scope.
2" focuser, large 8x50 finder, and 2 eyepieces. **$900**

16 inch Meade Lightbridge Truss Tube dobsonian. 2" focuser (with 1.25" adaptor), crosshair finder, mirror cooling fan, shroud, dust cover. A steal at **$1100!**

TAAA Astronomy Equipment For Sale (continued)

Celestron 5" Omni XLT Tripod, Celestron CG4 GEQ mount, 6x30 finder, diagonal, 1 eyepiece, user's manual. **$500**

We have numerous **tripods**. Celestron, Meade and others.
Heavy duty, light duty, etc.
If interested please inquire.

Several full aperture **white light solar filters**. Most are 'film type'. We have one 'glass type'. Various sizes. All checked out okay. If interested please inquire for available sizes and prices.

Small camera tripods - $10

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

Skyward

By Dr. David H. Levy

July 2025

Of Minerva the Telescope, Edward Fitzgerald's Translation of The Rubáiyát of Omar Khayyám of Naisháṕur, and Messier 40

To the right is a photograph of Eureka, the 12-inch Dobsonian reflector that I claimed I now use for most of my comet hunting. That statement, I am afraid, is not entirely true. Since May 18, 1967, the day after I very nearly got expelled from the Royal Astronomical Society of Canada for arguing with Miss Isabel Williamson, its Director of Observational Activities, I have enjoyed and loved this little 6-inch f/4 reflector for more than 58 years. Even though I have not found a comet with it, I have used it to sight many known comets, and I must say that I use it for at least half of my comet hunting. I was using it while I was a student at Acadia University in Nova Scotia, where, in Dr. Roger Lewis's Victorian Literature class, I was introduced to The Rubáiyát of Omar Khayyám. Omar was a resident, probably the most famous resident, of Nishapur, a city in northeastern Iran, and there exists a beautiful mausoleum in his memory. I concentrated on the first stanza only, and it was well worth my trouble, and I add to it the penultimate 100th stanza:

> Wake! For the Sun, who scatter'd into flight
> The stars before him from the Field of Night,
> Drives Night along with them from Heav'n, and strikes
> The Sultán's Turret with a Shaft of Light.
>
> Yon rising Moon that looks for us again—
> How oft hereafter will she wax and wane;
> How oft hereafter will she look for us
> Through this same Garden—and for one in vain!

At the time this poem's translation appeared, interest in science was at a height, especially with the appearance of Darwin's The Origin of Species in 1859, the same year as the Fitzgerald translation and reinterpretation. Academically, this poem attracted most of the members of the Pre-Raphaelite movement, though the English population of the time thoroughly embraced the poem's thought and feeling. Even today, this poem encourages many people to enjoy both the poem and the Sun, Moon, and stars that it embraces.

A few years before I began my time at Acadia, and before my near-expulsion, I was completing my observations of Messier's 109 object catalogue. "It was Messier's mistake," Miss Williamson explained. "When you locate the rest, we credit you with M40."

I saw Messier 40 the last three nights. Messier himself found it in 1764 while searching for a nebula discovered near Megrez, in Ursa Major, by Johannes Hevelius. Hevelius, who was not using a telescope, noticed a touch of nebulosity. Messier could not confirm this but he did record two faint stars. Today most of us call M40 Messier's mistake, but I disagree with this. He probably understood his friend's naked eye view of the two stars, which even to him could show some nebulosity, and left the pair in his catalogue. Could the pair look nebulous to us when viewed without a telescope, just as groups of stars like the Beehive and Pleiades look nebulous to today's viewers when seen without a telescope?

To find M40, simply locate Megrez and move a little more than one degree to its northeast. There will be 70 Ursae Majoris. Continue another quarter degree to the two stars that form Messier 40. Remember that this is not a double star, but instead two stars at different distances from Earth.

Finally, Messier 40 offers a bonus. Close to the east of the two stars lie two very nice spiral galaxies, NGC 4290 and NGC 4284. You need a very dark sky to catch these, but they are lovely.

So, what do Minerva, the The Rubáiyát, and Messier 40 have in common? Nothing, you might say. Minerva is a pile of metal and glass loosely held together with glue and pressure. The Fitzgerald is a poem. Messier 40 is a mistake.

No. Not at all. Minerva has given me 58 years of passion and pleasure being under the sky, whose rising Moon only adds to the joy. And over centuries, people like Charles Messier and Hevelius shared that same incredible craving for the stars, including the tiny pair of distant suns collectively called Messier 40.

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.