



OBSERVER

October 2026

*Bringing Stars to the eyes of Tulsa
since 1937*

Editor – John Land



Ron Dunn



M 8 – Lagoon Nebula by Ron Dunn

Ron took this 93 min image (186 x 30 sec exposures) at the observatory with his new Seestar S50 Pro. The insert is a PixInsight enhanced color rendition.

The Lagoon nebula is a rich star formation region in Sagittarius. A 2006 study found its distance to be 4,100 light years away. That would make its true size 110 by 50 light years.

The [Seestar S50 Pro](#) is the next evolution of smart astrophotography telescopes with a 4-element APO lens, an 8.3MP main sensor with a 2.8° field of view. It also features a second wide-angle camera for scenic views plus many software updates.

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Friday Sept 25 – 7:00 PM – doors open at 6:30

TULSA ASTRONOMY CLUB meeting at our **NEW** location

Tulsa Air and Space Museum in the James E. Bertelsmeyer Planetarium



It's easy to locate on the north side of the airport [3624 N 74th East Ave, Tulsa, OK 74115](https://www.google.com/maps/place/3624+N+74th+Ave,+Tulsa,+OK+74115)

The entrance is a bit east of the entrance to the Tulsa Zoo

Stargazing Nights and Observatory Nights

Come enjoy an evening of star gazing at our observatory located in dark rural skies SW of Tulsa

Details, Times and Direction Maps are posted on our Website <https://www.astrotulsa.com/events>

Saturday Oct 17 – 6:45 to 9:30 PM

Public Telescope viewing at the Sand Spring Case Community Center.

[1050 W Wekiwa Rd, Sand Springs, OK 74063](https://www.google.com/maps/place/1050+W+Wekiwa+Rd,+Sand+Springs,+OK+74063)

Guest and member Observatory nights

SATURDAY Oct 3 - 6:30 PM Guest & Members Night

FRIDAY Oct 30 - 6:00 PM CDT Guest & Members Night

We moved to Friday because of Halloween on Saturday

Central Standard Time Hopefully returns on Sunday Nov.1

If our misinformed politicians foolishly keep us on Daylight time.

Sunrise will be AFTER 8:00 AM from Nov 16 to Feb 24 and after

8:30 AM later in the winter. DAWN – the coldest part of the day !

Kids are walking to school before dawn - Many school buses will be running an hour before.

ALL of the Morning RUSH Hour will be before DAWN It's even worse in northern states.

Check out the [Sunrise times for Tulsa](https://www.google.com/maps/place/Sunrise+times+for+Tulsa) for yourself. Remember if we stay on Daylight time

* If the table says the sun rises at 7:15 CST = 8:15 Daylight time.



Astronomy Club Members Nights

Our members are invited to come work on their observing goals, do some Astro imaging and share ideas.

Friday Oct 9 - 6:30 PM Members Observatory Night

Friday Nov 6 - 4:45 PM CST Members Observatory Night

If a Friday event must be cancelled due to weather, we will try on Saturday 30 minutes before sunset -

Always check the website for event updates

Check out our website [Events Section](#) for these and future events

Our **ANNUAL ASTRONOMY CLUB DINNER** for members and family will be on

Saturday Nov. 7 at the Jenks High school Science building meeting room.

The Time and information to RSVP will be posted soon.

Follow Us on Social Media

Facebook <https://www.facebook.com/AstronomyClubofTulsa>

Instagram <https://www.instagram.com/stories/tulsa.astronomyclub/>

Website <https://www.astrotulsa.com/>

Two popular daily astronomy websites are changing to become more accessible on phones and tablets. Astronomy Picture of the Day and Spaceweather.com

Astronomy Picture of the Day is moving to <https://science.nasa.gov/apod/>

APOD has been posting daily images since July 1995 ! Each image is accompanied by a description and often links to other related information. There is also an extensive search feature letting you search for previous images of a particular object or event. On a computer just typing APOD as a URL will likely take you to <https://apod.nasa.gov/apod/> which is the traditional display we are familiar with.

The NEW URL is a site configured to be more compatible with mobile devices. There are various icons in the corners to take you to other features or related websites. Bottom Left corner will let you hear the page audibly. The ^ near top right takes you to the archive of images, index, search and more. At the top Left 3 bars take you to a number of resources arranged by topics. You will also find the bottom the choice *Espanol* read the site in Spanish. Lee el sitio en Espanol. **You'll just have to explore them all.** <https://spaceweather.com/>

<https://spaceweather.com/> is site featuring daily updates on all kinds of solar activity. When you open the site on a mobile device it automatically gives you an abbreviated snapshot view. But it also lets you choose to see the original site configuration with expanded information.

This view also includes the current image of the sun's surface and its sunspots, aurora activity etc. They frequently feature other topics or images of space objects or events. Amateur astronomers all over the globe send in their images featuring eclipses, comets, meteor showers, interesting sky phenomena, aurora and more. They often feature space science topics. The post on Sept 24, 2026, had a story about how they are using atmospheric drag data from the orbits of the now 11,000 Starlink satellites to monitor and model how the Earth's upper atmosphere expands during solar wind events.



"Salutations club members !

What a busy few months it has been for the Astronomy Club of Tulsa!

As we head into October, I've been reflecting on just how much has happened over the summer and how much momentum we are carrying into the fall. From public observing events and community outreach to Astronomy on Tap, new partnerships, and our continued work at the observatory, it has been an exciting time to be part of this club.

September also marked the beginning of a new chapter for the Astronomy Club of Tulsa as we held our first monthly meeting at the Tulsa Air and Space Museum Planetarium on September 25. With the closing of the Jenks Planetarium, finding a new home for our monthly meetings was an important step, and I'm excited about what this partnership can mean for the club and the broader Tulsa astronomy community. Our meetings are an important part of who we are—not just for presentations, but for bringing members together, welcoming newcomers, and sharing our passion for astronomy.

We also had the opportunity to participate in Gilcrease Museum's Harvest Moon Gathering in September. This was a particularly exciting partnership for us because it allowed the club to bring astronomy into a completely different setting, connecting the night sky with art, history, culture, and the community. Events like this demonstrate just how many different ways astronomy can bring people together.

Looking ahead, Fall is shaping up to be just as busy. We have our October Guest Night at the observatory, additional community outreach throughout the fall, and plenty of opportunities for members to get involved.

And, of course, October means Okie-Tex Star Party! To all of our intrepid adventurers making the journey out to the Oklahoma panhandle this year, please send me your stories and pictures. I'd love to share them with the rest of the club and let everyone experience a little bit of Okie-Tex through your eyes.

As for this astronomer, I'll be spending much of this fall gazing up from our home skies. Although, I have to admit, I'm already considering a winter trip west to experience some of the darker skies Oklahoma has to offer. There is something special about getting away from the city lights, setting up under a truly dark sky, and simply taking in the universe above you.

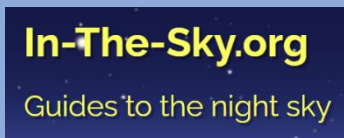
As we approach our 90th anniversary in 2027, there is a lot to look forward to. I'm excited about where this club is headed and, more importantly, about what we can continue building together.

Until next month, this is Jonathan Fussell, wondering if the universe might be filled with more echoes of the myths and stories we've told for thousands of years. We already have red giants and white dwarfs, names that somehow bring the giants and dwarfs of mythology into the language of astronomy. So perhaps there is room for a few more mythical creatures among the stars. A werewolf star? An elf nebula? Maybe somewhere out there, the universe has already written a few stories we haven't found the names for yet.

Until then, keep looking up, keep wondering, and I'll see you under the stars.

President Jonathan Fussell,

*Astronomy Club of Tulsa -
"Bringing Stars to the Eyes of Tulsa since 1937"*



Clickable Hyperlink Images

CHECK OUT OUR NEW SELECTION OF ONLINE SKY LINKS ABOVE

[Astronomy Calendar 2026: All Major Celestial Events of the Year](#)

Explore a Month-by-Month listing of Celestial Events – Many have links to Details or Videos

[Daily Moon Guide](#) | [Observe – Moon: NASA Science](#)

GOT A NEW TELESCOPE? Here are some sites to help you get started with your telescope.

Getting Started with Your New Telescope

<https://skyandtelescope.org/astronomy-news/getting-started-with-your-new-telescope-2/>

Astronomy for Beginners | Night Sky Facts, FAQs & Resources

<https://skyandtelescope.org/astronomy-information/>

[What to Know Before Buying a Telescope](#)

A collection of [Interactive Sky Watching Tools](#)

Explore Astronomical League has a wide variety of [Observing Certificate Programs](#)

August - Moon Phases - - Lunar Eclipse Aug 27 *

3rd Q Sat Oct 3 - **New** Sat Oct 10 - **1st Q** Sun Oct 18 - **Full** Sun Oct 25

Lunar conjunctions – **Evening Mercury** Mon Oct 12 **Saturn** Sat Oct 24

Before Dawn Mars Mon Oct 5 - 2:00 AM to Dawn

Mon Oct 5th the waning Crescent moon grazes the edge of M44 the Beehive cluster in Cancer.

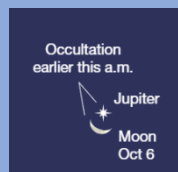


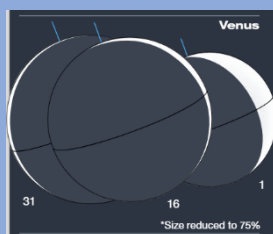
PHOTO Ops –

Jupiter Lunar Occultation Tues Oct 6 Disappearance 3:10 AM

just as the pair are rising. Reappearance 4:14 AM

(Time varies slightly with your longitude)

Sun Oct 11 Mars passed directly through M44 about 3:00 AM



Act early in October for your last chance to see **VENUS** crescent in western sky. Venus passes between Earth and the Sun (inferior conjunction) on Oct 24th. It will reappear in the dawn in November as or “Morning Star”

MERCURY reaches maximum evening elongation from the Sun Oct 12.

Use binoculars to search for it near the horizon soon after sunset. The moon will be nearby that evening.

URANUS reside nestled between the star clusters of Taurus. It rises about 9:00 PM but doesn't reach opposition until Nov 25. At 5.7 mag it can be seen in binoculars but a low power telescope will reveal its pale green color.

MARS is in Cancer and doesn't rise until 1:30 AM. It's not much of a telescopic sight yet. When it enters the evening December evening sky viewing will improve. Opposition is Feb 19, 2027



The Orionid Meteor shower peaks on Oct 22. The best time to observe is 3:30 AM to dawn. The bright waxing gibbous moon sets about 3:45. The Orionids originate from fragments of Halley's Comet. These sand grain to pea-sized fragments slam into Earth's upper atmosphere at 146,000 mph! Producing the meteors we love to see.

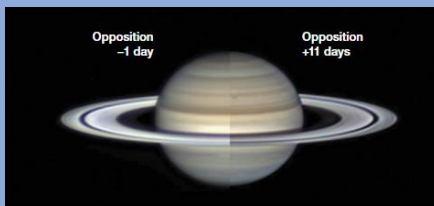
The Celestial Opposition Quartet - by John Land

Normally the thought of having opposition elicits negative thoughts. Someone or something is attempting to hinder our plans or goals. However, in astronomy, Opposition is the best time to observe a planet or asteroid. For solar system objects beyond the Earth's orbit, Opposition occurs when the Earth passes directly between the sun and the planet. This is the time when the object is closest to the Earth, appears largest and brightest. They rise near sunset, transit at midnight and set near dawn making them visible in the sky all night. (Objects inside of Earth's orbit are closest at Inferior conjunction with the Sun and are not visible unless they transit the Sun as Venus did June 5, 2012, <https://apod.nasa.gov/apod/ap120611.html>

Four solar system members reach opposition in the constellation CETUS within about a two-week span.

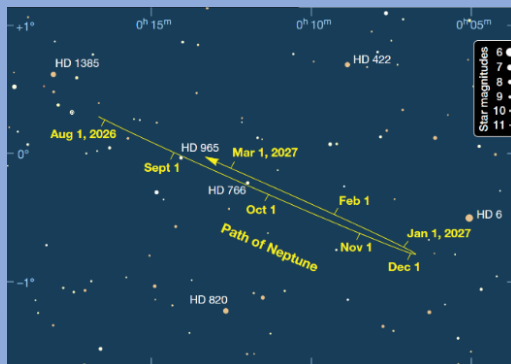
[Neptune](#) Fri Sept 25, [Saturn](#) – Sun Oct 4, [Asteroids 2 Pallas](#) on Sun Oct 4 & [4 Vesta](#) Tues Oct 13

plus a bonus one on Sept 27
[Comet 161P/Hartley-IRAS](#)



This month is a great time to enjoy spectacular views of Saturn, its rings and its moons. The southern are now tilted 7.5° toward our view. For 2 or 3 days before and after its Oct 4 opposition, the rings surge in brightness as all the billions of ring particles become tiny “full moons”. This brightening is called the Seeliger Effect.

(Image from Oct 26 Sky & Telescope) Opposition is also a great time to locate Saturn's many moons. Look for them on either side of the ring plane. Its largest moon, +8.4 mag Titan, can be easily seen in small telescopes. Moderate sized scopes will reveal its moons - Rhea +9.6 mag, Dione +10.4 and Tethys +10.2 mag. Make sketches of the moon's positions over several nights to watch them revolve around Saturn. The [Sky Live Website](#) provides a nice view of Saturn and its moon positions. Do a Google search to find a Saturn's moons app compatible with your phone or tablet. Don't expect to see all of Saturn's moons – as of June 2026 the count was 274 with official designations.



Neptune reached opposition on September 25th. At magnitude +7.8 Neptune can be seen in small to moderate telescopes. It appears slightly blue in color as the methane in its atmosphere absorbs red causing Neptune to appear a soft blue color. Magnifications 100x or more will reveal it as small 2.4” disc. Make a sketch of the star field a couple of nights apart to reveal its motion.

When I was new to the astronomy club in the late 70's, our observing chair Louis Desjardins, verbally guided me how to find Neptune with my binoculars. Louis eyesight was failing but he knew the sky so intimately he could tell me how to star-hop directly to it. Louis had hand drawn monthly sky charts specifically for Tulsa. He would hand plot planet positions on our monthly newsletter mailings. He used data in the annual Naval Observatory Ephemeris tables long before computer apps. It's one of my most cherished memories as a novice observer.

Two bright asteroids are also at opposition. 2 Pallas and 4 Vesta. The number indicates their order of discovery, Pallas in March 1802 and Vesta March 1807 – both by German astronomer Heinrich Olbers. Vesta is the brightest asteroid +7.8 mag is easily seen in binoculars. A small telescope will reveal Pallas at mag +9.8. Locate them and make a sketch of your field of view. Then visit the same location a day or two later to show their motion among the stars. You might try the same with one of the new smart telescopes. You might want to use these observations as your start in earning the Astronomical League's

[Asteroid Observing Certificate.](#)



This star field in the Cetus shows the locations of our four opposition objects as well as the +9.4 mag comet 161P/Hartley-IRAS.

Here are links to printable October detailed daily location charts.

Note: Be sure to specify your location if you generate charts for other objects. Phone apps will also show object locations.

[Saturn Finder Chart](#)

[Neptune Finder Chart](#)

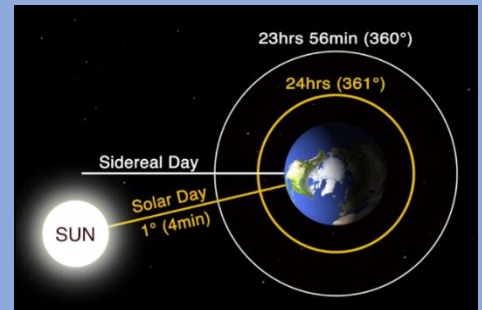
[Pallas Finder Chart](#)

[Vesta Finder Chart](#)

[Comet 161P/Hartley-IRAS](#)

Allow me to digress a bit to the basic definitions of **Rotation vs Revolution**. It's common to hear someone ask "How long does it take the Earth to **Rotate** around the Sun?" Sounds right but the words they should ask are, "How long does it take Earth to **Revolve** around the Sun?"

So how do we measure a planet's Rotation or Revolution. Rotation is fairly simple. Astronomers used a stationary transit telescope pointing at the meridian and that does not move left or right. To measure Earth's rotation, they marked when a distant star was on the center crosshairs of the telescope and timed how long it took before the Earth has made one full rotation to again line up with the star. Earth's Rotation period on its axis is **23 hours 56 minutes and 4 seconds**. "Hey what's the deal?" Isn't Earth's day 24 hours ?! As Earth makes one Rotation (360 degrees) around its axis it is also moving along its orbit around the Sun traveling about an average 1.6 million miles in space as it also revolves around the sun. So, it must rotate about one more degree to line up in relation to the Sun. The difference causes stars to rise about 4 minutes earlier each night. Roughly two hours each month. This allows us to enjoy seeing different constellations in the sky at different months of the year. The rotation of the Earth with reference to the stars is called a [Sidereal Day](#) (star day) A Sidereal Day is the period of Earth's rotation in reference to the fixed stars. We observe time using the Solar Day – the period of Earth's rotation in reference to the Sun. (Solar Noon Transit to Next Solar Noon)



Measuring Revolution is a bit more complicated. The **Period of Earth's revolution around the sun relative to the fixed distant star** is a [Sidereal year](#). Its length is 365 days, 6 hours, 9 mins, 9.54 seconds in units of mean solar time. Our calendars, however, are based on the [Tropical Year](#). The length of time it takes for the Sun to appear at the same position relative to the celestial coordinates. Confusing ??



Sept 22, 2026, was the Autumnal Equinox. This was the date that the sun's position as seen from Earth crossed the celestial equator moving south. Its position in the sky was Declination 0 degrees (on the equator) and Right Ascension 12 hours in the constellation of Virgo. The mean **tropical year** is 365 days, 5 hours, 48 mins, 45 seconds. To correct for the extra 1/4 day, we add a Leap year day in February on years evenly divisible by 4. For my astro geek friends - explore the [Three types of Earth years](#).

Since I started this series of articles talking about planets at opposition – there is one more way to measure motions of planets relative to the Earth and Sun. It's called a **Synodic Period** – **The period of time for two celestial objects to appear in the same position relative to the Sun.** In simpler terms the time from one Opposition to the next.

Here's an analogy. Two cars are racing on an oval track in different lanes. The inner car is moving faster than the one on the outer track. They both start at the starting line – each time they cross that line they have made one revolution around the track. The faster car crosses the start line and continues to race around the track eventually it is going to catch up and pass the outer car. The period of time it takes the fast car to catch up and lap the slower car is its "Synodic period"

Now let's use Mars and Earth as an example. Earth takes 365.25 days to orbit the sun and Mars takes 687 days. On Nov 24, 2026, Mars passes near the star Regulus in Leo. It continues around the sky and completes its revolution trip relative Regulus on Oct 23, 2028. Mars reaches opposition in Leo on Feb 19, 2027, it passes through Leo again in Oct 2028, but it doesn't reach opposition again until Mar 25, 2029, when it will appear in Virgo. It has taken over two years for Earth to lap Mars in its orbit. This period of time between Mars oppositions is its Synodic Revolution That has big implications for human missions to Mars. A space mission to Mars may take as short as 4 to 5 months to reach Mars, but by that time Earth is millions more miles away from Mars moving away at 66,000 mph (much faster than any rocket.) A human Mars mission team will have to survive on Mars with no resources from Earth for well over a year before they can start the 4-to-5-month trip back to Earth.



Playground Solar System activity by John Land

So how can we simplify the concepts of Rotation and Revolution as they relate to the sky for the common person.

In your mind - **imagine you are in Second Grade** - and the teacher is doing a lesson on **Earth's Rotation**. The class is all out on the playground, and you are sitting on edge of the Merry Go Round.

Twelve of your classmates are standing in a big circle, each holding up the name of a Zodiac constellation. Starting with Gemini. Moving to the LEFT (counterclockwise) the next constellation would be Cancer. The order of the constellation signs Right <<< to Left <<< is Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricorn, Aquarius, Pisces, Aries, Taurus. The teacher is standing next to Virgo holding a Large Yellow Ball to represent the Sun. Sit on the Merry Go Round so that you are facing Gemini. Someone then **SPINS** the Merry Go Round **Slowly to your left**. As you turn you will soon see the Yellow Sun Ball "coming up to your left. As it spins you see the sun moving to your right and different classmate constellations as the Merry Go Round spins. About halfway around the Sun ball is now "Setting" by your right shoulder. As you continue to turn you don't see the Sun. Finally, it appears again as it "Rises" again on your left. When you are again facing Gemini. You have made one **ROTATION**. The Merry Go Round spun on its axis, but you didn't go anywhere. You are still sitting on its edge. The teacher with the Yellow Sun ball is still standing next to Virgo. This represents the **EARTH'S ROTATION in One Day**. Facing East, we see the sun come up and move across the sky. At night we watch various star patterns rising and setting and finally the Sun appears again in the east.

ROTATION is the SPIN of an object around its axis.

Next let's do a playground demonstration of **REVOLUTION**. The teacher places the yellow Sun Ball in a box at the center of the Merry Go Round. Your classmates are still standing in a big circle holding their constellation signs. You stand in front of the one holding Gemini. Looking back toward the yellow sun ball you see the sun ball toward the constellations of Scorpio and Sagittarius. Next move around the circle to your LEFT and stop at Virgo. Looking toward the yellow sun ball you now see Pisces on the opposite side. Continue walking around to the left watching how the sun appears to change its direction with the opposite constellations. Once you arrive back at Gemini, you have made ONE REVOLUTION as you walked around the Sun which stayed in the center. **You did the moving** not the sun.

This represents Earth's YEAR – the time it takes to Earth to make one full trip (*orbit*) around the Sun. . As the Earth REVOLVES around the Sun the sun appears to be in a different constellation each month as the Earth is moving around its orbit.

REVOLUTION is the motion of an object along its orbit around the Sun.

Oops, there's the end of recess bell - so back to the classroom.

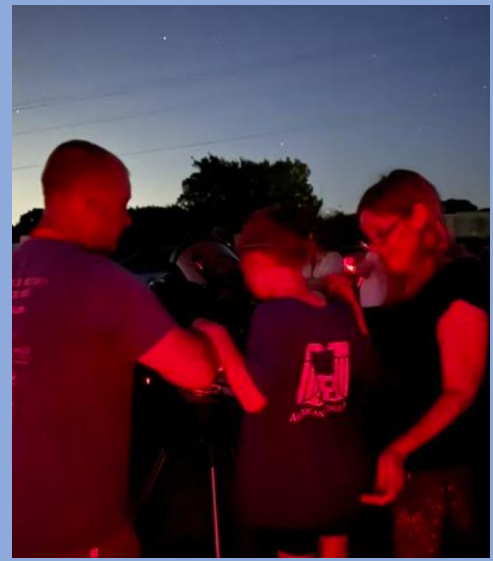
Well, if you waded through all of this – I would appreciate some feedback on the Playground activity.
I might write it up a bit better and share it with some of my education friends.

September Astronomy Club Activities

Our Astronomy Club has been has had another busy month enjoying the sky. We had over 80 guests join us at our Sept 4 observatory night. The parking lot was overflowing. On Sept 10th Jonathan made a presentation at the 2nd Astronomy on Tap evening. A large group of members came out on Sept 11. On Sept 18 the public was invited to our telescope viewing night at Keystone Ancient Forest. A few of our members will be participating at Gilcrease Museum for their Harvest Moon museum patron's event. And our first fall club meeting will take place at our new Tulsa Air & Space Museum planetarium location. (images courtesy of Kit Bratt)

“Bringing Stars to the Eyes of many New Generations of Tulsans”





On the next page are two great images our brand-new student member, Sophie Markman, took with her [Dwarf Mini smart imaging telescope](#). The Dwarf Mini is small enough to fit in a handbag and weighs less than 2 pounds. Sophie took the wide view of the Veil Nebula Friday Sept 11 at the observatory. The 2nd image is a close up of the western Veil with the star 52 Cygni. She took both with the Dwarf Mini's duo-band filter and processed with the free [AstroWizard](#) software.

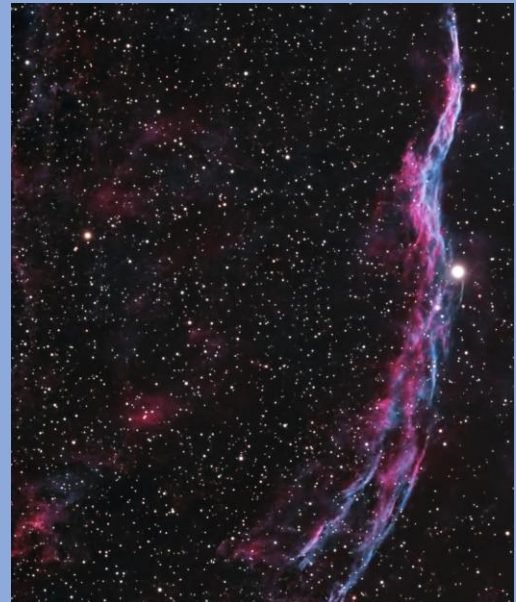
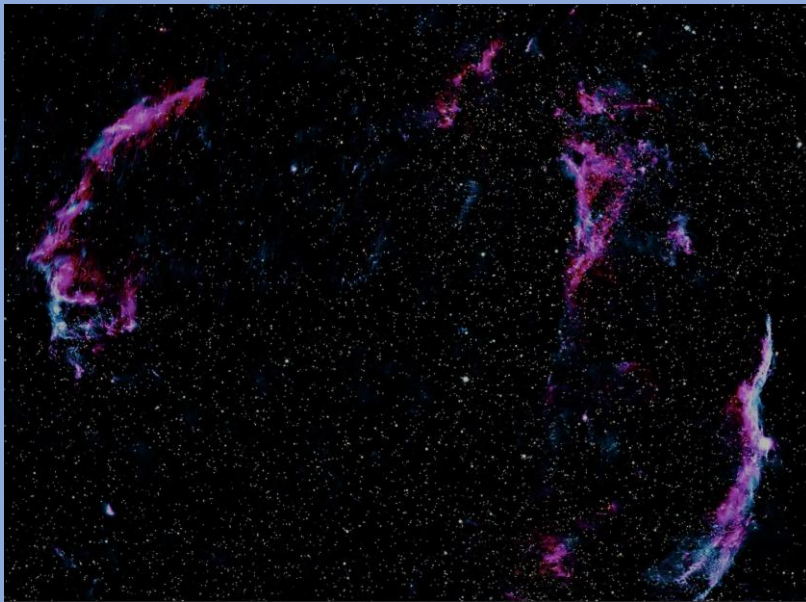
Wide Field Veil Nebula

60 sec exposures 60 frames 1 h 4 mins.

Close Up of Western Veil Nebula

Witch's Broom Nebula

60 sec 140 frames 2 h 24 min



Observing Chairman Brad Young



Starhopping in the Era of Smart Telescopes

Witness the man who raves at the wall, making the shape of his question to Heaven

Whether the sun will fall in the evening, will he remember the lesson of giving?

"Set the Controls for the Heart of the Sun" –

performed by Pink Floyd written by William Orbit / Laurie Suzanne Mayer / George Roger Waters

Believe it or not, as recently as 2011 I was still star hopping. I used star hopping all along in my hobby of astronomy and would often make fun of people who didn't because they didn't know how to find things in the sky. Of course, with a larger scope it became tedious to try to find things that way and so I have relied on digital setting circles ever since I got my 22" Obsession. Now that I also have a Seestar, I don't use star hopping at all to try and find targets with it. For common objects, I just scroll through what's available or type in the one I want, and it will go right to it (if I have aligned it properly to begin with). After all, now that I'm imaging after 46 years of purely visual observing, starhopping is not a method I would use anymore with EAA (electronically assisted astronomy).

Besides the patience needed to "hop" from one star or field to the next, a minimum knowledge of how the sky works and the coordinate systems we use in the sky is needed. It's a feedback loop; because you don't need to star hop any more with go-to and push-to systems, few learn the basics of celestial mechanics (how the sky works). Then, lack of knowledge of the system discourages using starhopping. Like a train without windows, you go effortlessly to the target, but don't see any of the sights along the way. And if something's wrong, you may not find the destination if the setup of your scope is off, and you will not have any idea how to correct alignment errors if you don't know the sky you're under.

Though I have fond memories, I certainly don't plan on going back to starhopping regularly. It was time-consuming, and often frustrating, searching for dim objects using dim stars that didn't always provide a good path to follow. But there was feeling of accomplishment whenever you started at a bright star and began moving along lines and triangles and other shapes based on what your star chart showed you. Without star hopping, you don't get to find points of interest along the way. Often, along the path shown by the chart, you'll find uncharted curly cues and wide pairs of stars in the path. There may even be even a deep sky object you didn't know was along the way that you run into by mistake and can enjoy for a while before moving on to the intended target.

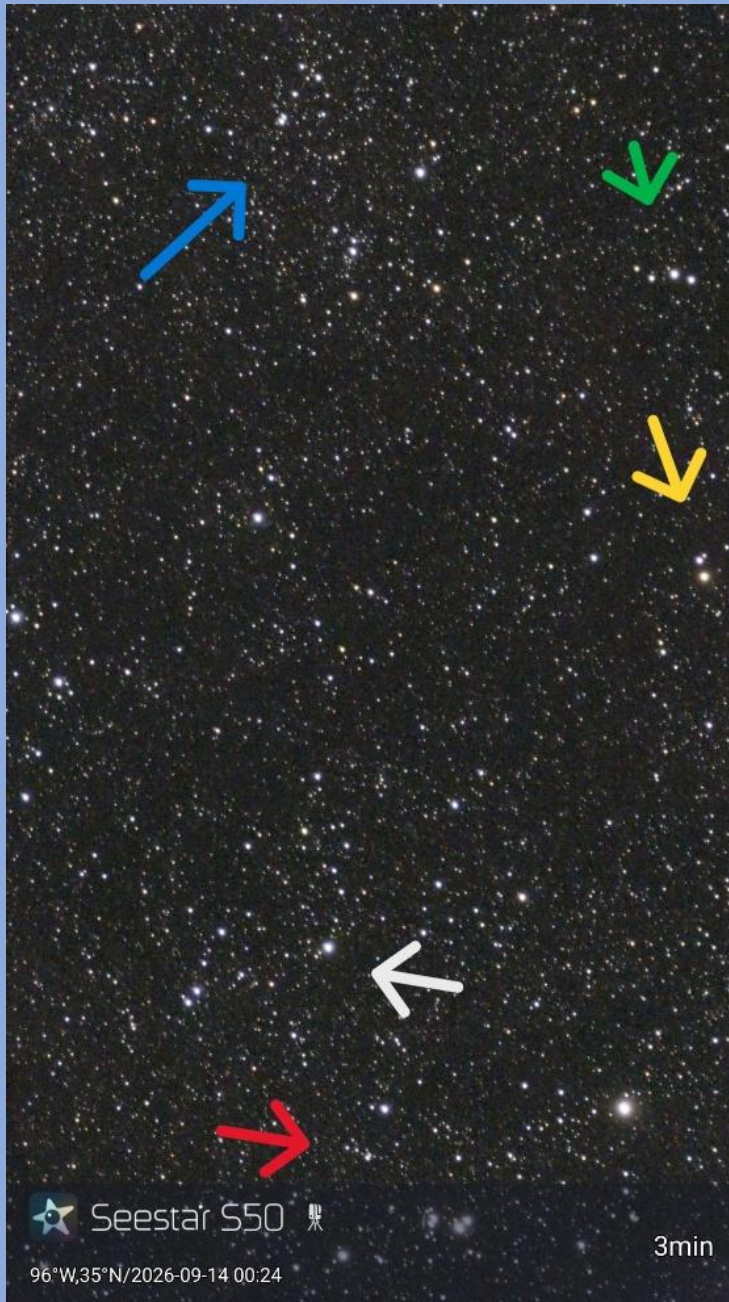
Starhopping also taught me skills I used for subjects other than deep sky searches. When I took up satellite hunting in 2001, I learned the best way to try to find a satellite that you wished to observe is to look at its path among the stars and see where it passes between a pair of stars or along the side of a triangle or whatever pattern that catches your eye.

Both kinds of uses of the stars in the sky to find objects are similar and complement each other in developing a skill set.

As I say this, I'll admit that it's not a skill that very many people are learning at this point. It is way too easy to type in the object name or number and let the scope find it. But it is fun to look back at some of the things that I "discovered" while star hopping. There, for just a moment, I thought might be an unknown

cluster or another new object and I had found it. Of course, that never did turn out to be the case. It wasn't a real cluster, or it was known in a rare catalog. But that didn't take away from the fun of enjoying the feeling of discovery out under the sky.

Are we all lost stars trying to light up the dark? – performed by Adam LeVine, written by Gregg Alexander / Nick P. Lashley / Nicky John Southwood / Danielle A Brisebois



One field that I remember from very early on when I was still in high school was finding a group in Cygnus. While looking for a double star with my cheap little refractor, I found a field full of them and nice groups of faint stars between two small open clusters. I've included an image of it here taken with my Seestair 50.

Blue arrow = NGC 6883 open cluster
Green = variable star V1769 Cyg in a nice group
Yellow = HD191493, wide double star
(one of many in field)
White = HD191201 another double
Red = NGC 6871 edge, obscured by timestamp

A few of the objects have official names, e.g., the two clusters, but this field is not remarkable otherwise. It just sticks out in my mind as one of those areas that was fun to find one night when I was out enjoying looking through a telescope in my backyard Instead of being inside listening to the TV drone on and on.

You can, at least with a Seestair, use the star chart feature and joystick to move from field to field, but this is unlikely to be a popular way to observe. If you have a visual scope of course, you can always turn off or ignore your digital setting circle system if you have one, and star hop any time.

A great book for learning how to star hop, and one that includes several examples to find deep sky objects with step-by-step charts is

[Star-Hopping Your Visa to Viewing the Universe](#) by Robert Garfinkle. Most astronomy periodicals also include monthly star hops and they are practically ageless, since the stars do not move in our lifetimes.

As you star hop, you will come across interesting patterns that are not constellations, but are recognized as asterisms, such as the Coathanger in Vulpecula:



By Petr Novák <https://commons.wikimedia.org/w/index.php?curid=60397521>

For these groups, Pattern Asterisms – A New Way to Chart the Stars by John A. Chiravalle provides sketches, images, and other resources to identify the ones documented in the sky. There are plenty of others, and you may find one of your own that you like.



This article is distributed by NASA's Night Sky Network (NSN).

The NSN program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

This article appeared in 2021. Unfortunately, Congress slashed funding for many public educational information outlets in 2025 funding

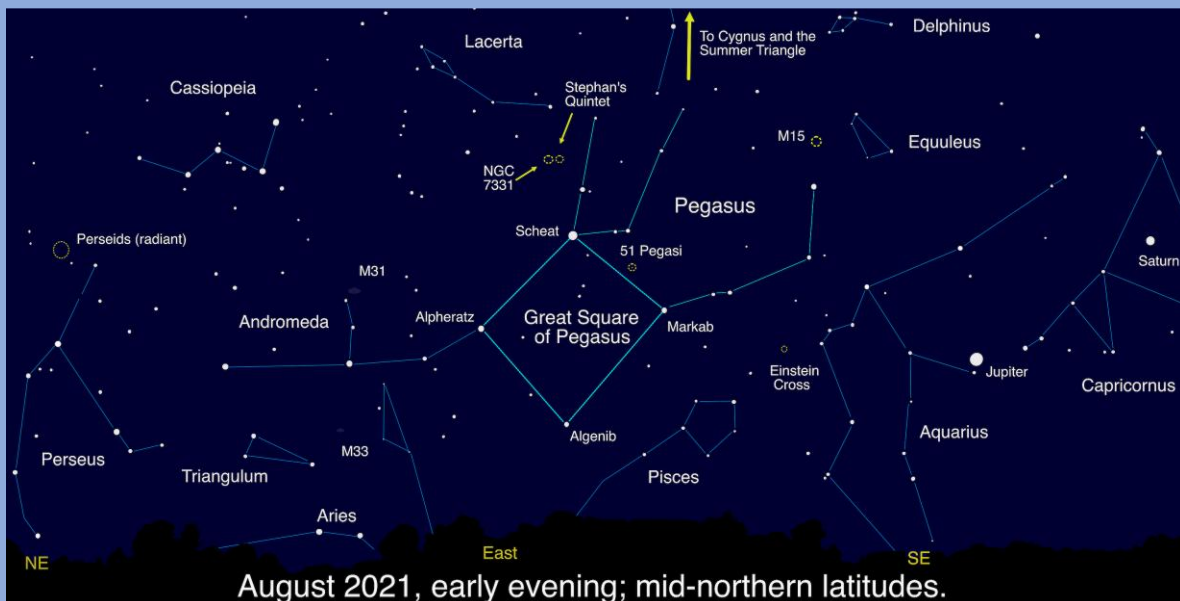
Corner the Great Square of Pegasus David Prosper

The Summer Triangle may be the most famous seasonal star pattern, but during early August evenings another geometrically-themed asterism rises: the Great Square of Pegasus. This asterism's name is a bit misleading: while three of its stars - Scheat, Markab, and Algenib - are indeed found in the constellation of the winged horse Pegasus, its fourth star, Alpheratz, is the brightest star in the constellation Andromeda!

October evenings are an excellent time to look for the Great Square, as it will be rising in the east after sunset. If not obvious at first, wait for this star pattern to rise a bit above the murky air, and remember that depending on your point of view, it may appear more like a diamond than a square. Look for it below the Summer Triangle, or to the southeast of nearby Cassiopeia at this time. As the Great Square rises in prominence during autumn evenings, it becomes a handy guidepost to finding more constellations, including some of the dimmer members of the Zodiac: Aries, Pisces, Aquarius, and Capricornus. Like the Summer Triangle, the Great Square of Pegasus is also huge, but Pegasus itself is even larger; out of the 88 constellations, Pegasus is 7th in size, and feels larger as the stars in its neighboring constellations are much dimmer.

There are many notable deep-sky objects found within the stars of Pegasus - ranging from easily spotted to expert level targets - making it a great constellation to revisit as your observing skills improve. Notable objects include the densely-packed stars of globular cluster M15, a great first target. The potential "Milky Way look-alike" galaxy NGC 7331 is a fun target for more advanced observers, and expert observers can hop nearby to try to tease out the much dimmer interacting

galaxies of Stephan's Quintet. A fascinating (but extremely difficult to observe) object is a gravitationally-lensed quasar famously known as the Einstein Cross. Pegasus has quite a storied history in the field of exoplanet research: 51 Pegasi was the first Sun-like star discovered to be host to a planet outside our solar system, now officially named Dimidium. Pegasus truly holds some fantastic astronomical treasures !



NOTE: Now that it's 2026, Saturn has moved into western Pisces and Jupiter is much further east in Leo. ***While the stars of the Great Square of Pegasus are not as bright as those of the Summer Triangle, they still stand out compared to their neighbors, and make a great foundation for exploring this area of the night sky. Note that the brightness of the stars near the horizon is exaggerated in this picture.***



Stephan's Quintet is one of the most famous deep-sky objects in Pegasus. First discovered in 1877, it contains the first galaxy group discovered (which includes 4 of the 5 galaxies making up the Quintet) – and has been studied extensively ever since. One day this group will merge into one supergalaxy! While famous, these galaxies are hard to spot in all but the largest backyard telescopes – but are a favorite target of astrophotographers.

Take a virtual flyby of these galaxies with a tour created from Hubble data at: bit.ly/quintetflyby

Credit: NASA, ESA, and G. Bacon, J. DePasquale, F. Summers, and Z. Levay (STScI)

Where the Angels play Baseball! by John Land

Baseball Fans eagerly look forward to the month of October anticipating the World Series ! Hoping their favorite team will make it through the playoffs to win the league pennant and advance to the World Series.

When I am doing one of my guest night laser guided sky tours in the autumn, I love to ask the kids in the group --- *Did you know there is a Baseball Diamond in the Sky where the angels play ball?* The asterism known as the Great Square of Pegasus stands about halfway up in the east. Its four corners made up of 2nd magnitude stars are easily seen even in suburban skies. With just a bit of imagination one can easily trace out a large baseball diamond shape. The top corner is **Home Plate**. Moving around counterclockwise to the left the next bright star is **First Base**. Then move down to **Second Base**, up toward **Third Base** and finally return to home plate. Looking above "Home Plate" is the Umpire star. Looking a little more closely to the right of home you can see the batter and bat boy on deck. You'll need darker sky and keen vision to make out the Pitcher and Catcher having a chat just off the pitcher's mound. It's a fun pattern in the sky that is easily remembered.

The Orion meteor shower is active from mid to late October. On a few occasions we have been lucky enough to see a "Fly Ball" zipping through the square. The Orionid meteors are fragments of Halley's comet. The shower peaks around October 22 but can be seen for several days.



The Great Square provides a memorable pattern to guide the viewer to the Andromeda Galaxy. A favorite “must see” object for any fall observing session. Using a pair of binoculars or a telescope’s finder scope, locate First base. Then follow a line to the second star to the left. This star, **Mirach**, has a distinct orange hue. From there move your binoculars up two stars and look for a faint oval smudge on the sky. This will be the Andromeda galaxy – M 31. It is visible with the unaided eye under dark rural sky. Its distance is 2.5 million Light years away and is a bit larger than our Milky Way at 152,000 Light year diameter and an estimated mass of 1 trillion suns.

Using a wide field eyepiece, you can see two other galaxies alongside – M 32 and M 110 . A keen observer can find the small elliptical galaxy NGC 404 nestled within 6’ arc mins of Mirach. Moving your view about 7 degrees south of Mirah look for the nice spiral galaxy M 33 in Triangulum. In dark sky M 33 can also be seen with the unaided eye. M 33 is listed as +5.79 mag and lies at distance of 2.8 million light years.



Treasurer Report

Cathy Grounds



Note: While Cathy is enjoying her vacation, John Land is preparing this month's report

As of Sept 24, 2026, we have **180** members with **59** new members this year.

Please welcome our **12** newest members, Cheyenne Smith, Micah Edwards, Norm Hughes, Josh Schrock, Kit Bratt, Clifton Adcock, Michael McCready, Ryan Clark, Frank Duca, Haniel Goertz, Henry Barrientos and Sophie Markman

FAQ: How do I know when to pay my dues? You will receive a notice by email when it is time to renew your membership. Look for it on or around the 1st of the month in which your membership expires. If you are not sure just check with the treasurer.

Don't forget these easy methods to Join or Renew your membership:

<https://www.astrotulsa.com/join> – see the “join” tab at the upper right

1. PayPal (click “join/renew” on the website) and follow the prompts, there is small fee.
2. Mail in a check or money order to
Astronomy Club of Tulsa, PO Box 470611, Tulsa, OK 74147.
3. Direct your bank's bill pay service to send payment to our PO Box address above.
4. Pay cash at any club event or swipe a credit card (there is roughly a 3% service charge).

As always if you have any questions or concerns or if your email, phone, or mailing address has changed please email me at: AstroTulsa.Tres@gmail.com

Membership rates for 2025-2026 are as follows: All include an Astronomical League Membership and you will receive their magazine *The Reflector* each quarter.

Adults: **\$50 per year**

Sr Adult: **\$40 per year** (65 or older).

Students: **\$40 per year**

Additional Family membership: **\$30 including voting rights.**

The regular membership allows all members in the family to participate in club events but only ONE Voting Membership and one Astronomical League membership.

Magazine Subscriptions- You can see subscription info on the “Join” tab at www.astrotulsa.com.

You can get a discount rate as an Astronomy Club member.

However, you will need to do so directly using their discount rate web links.

Both have options for DIGITAL as well as PRINT subscriptions.

To learn about [Sky and Telescope magazine](#) see their home page

Digital \$ 37.05 Print & Digital \$ 45.75 includes a \$ 10 club discount

Use this [Sky & Telescope Subscription Link](#)

To learn about [Astronomy magazine](#) see their home page

Use this [Astronomy Subscription Link](#) Digital \$ 39.95 Print & Digital \$ 49.95 no club discount

**You are invited to join us to learn more about
Astronomy and view the wonderful sights in the night sky.**

Check the EVENTS section at <https://www.astrotulsa.com/>



ASTRONOMY CLUB OBSERVATORY

Located on a hilltop about 25 miles SW of Tulsa
Features: classroom, restroom, dome with 14-inch telescope
and an acre to set up your telescopes.

Weather permitting, we host two types of observing nights.

GUEST OBSERVING NIGHT – RSVP requested

This event is open to our Guests – both individuals and
families as well as our regular members. Several of our club
members set up telescopes for public viewing.

* Groups need to make separate arrangements.

MEMBERS OBSERVING NIGHT usually on a Friday near new moon

Reserved for club members and their families to allow them to pursue observing projects.

The Observatory is ONLY OPEN for SCHEDULED EVENTS.

Check the EVENTS section at <https://www.astrotulsa.com/>

Follow our map directions DO NOT USE GPS

Two Options for travel to the observatory

MOSTLY PAVED ROADS – Hwy 75 to 201st St S – through Mounds OK

Most **DIRECT ROUTE** – Hwy 75 to 241st St S – some coarse gravel & dirt roads



Join us for one of our Monthly Friday evening in town club
meetings. Our meetings are free and open to both guests
as well as our members.

Specific Dates are posted on our website

We will be meeting at the Tulsa Air & Space Museum Planetarium

Located at [3624 N 74th East Ave, Tulsa, OK 74115](#)

On the road a bit east of the entrance to the Tulsa Zoo

The [Tulsa Air & Space Museum](#) hosts many indoor and outdoor exhibits and events
commemorating Tulsa's rich history in Air and Space.

Check out the schedule for other full dome shows presented in the
James E. Bertelsmeyer Planetarium. Use this link for [Show Times and Tickets](#)

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