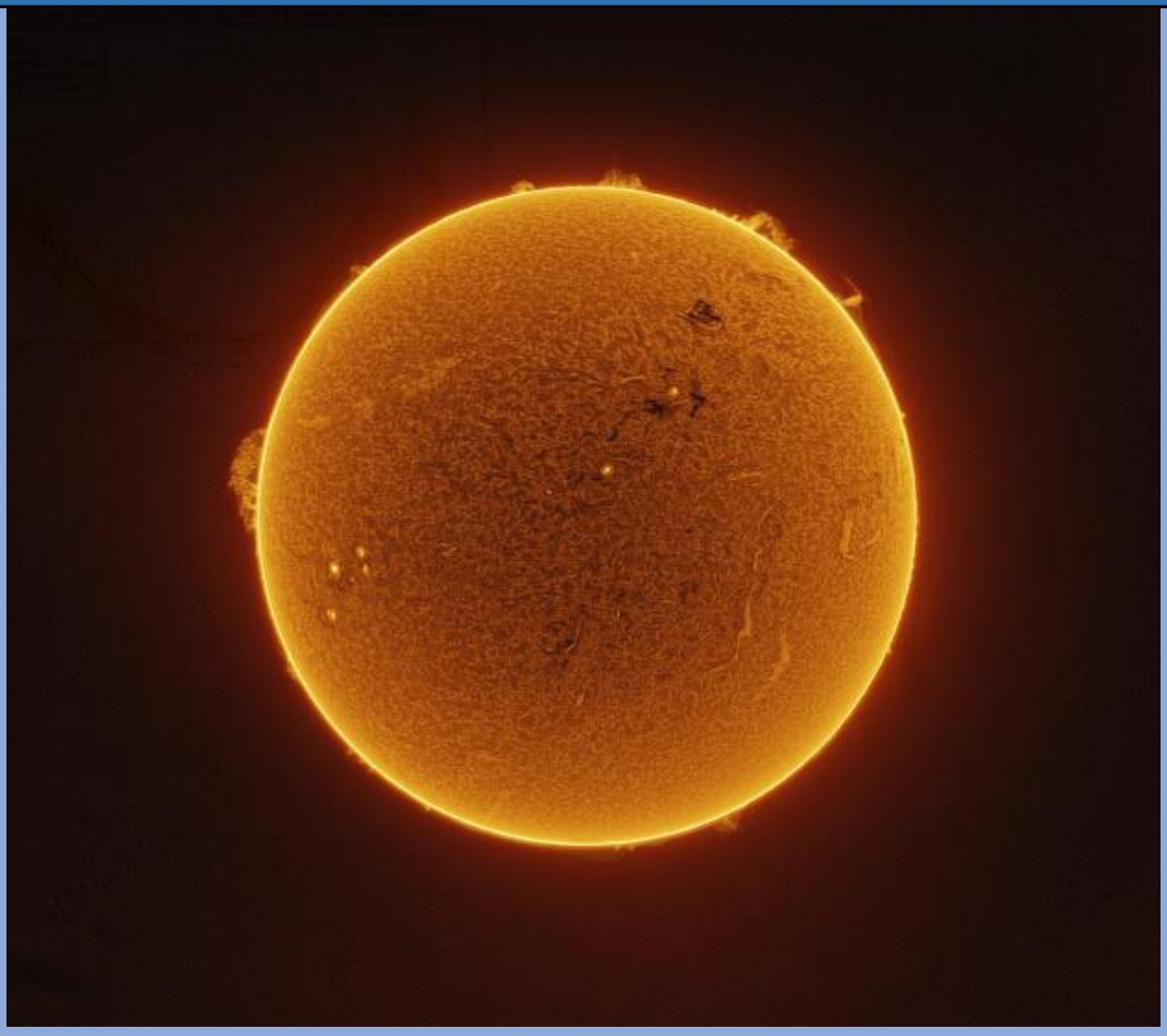
ASTRONOMY CLUB OF TULSA

OBSERVER

JULY 2025

Bringing Stars to the eyes of Tulsa

since 1937 Editor – John Land



Our Active Sun imaged in H-Alpha light May 18, 2024
Well defined prominences are visible on the solar limb
as well as superimposed over the photosphere.
By Tim Gilliland

Optics - Coronado SolarMax II 60mm Camera - ZWO ASI174MM
Mount - Astro-Physics 1100GTO
Software - Emil Kraaikamp AutoStakkert! - Filip Szczerek ImPPG &
Pleiades Astrophoto PixInsight

Stargazing Nights and Observatory Nights

Our GUESTS & Members nights are open to anyone. We do ask guests to try to RSVP.
Large groups need to make separate arrangements.

Members Only Nights are Open to members and their family
Details, Times and Direction Maps are posted on our Website
https://www.astrotulsa.com/events

Guest and member Observatory nights

Come enjoy an evening of star gazing at our observatory located in darker rural skies.
See details and directions on our Website Events Page Guests are requested to RSVP

Friday June 20 - 8:15 PM Guest & Members Observatory Night
Friday July 18 - 8:10 PM Guest & Members Observatory Night.
Friday Aug 15 - 7:40 PM Guest & Members Observatory Night

Astronomy Club Members Nights

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

Friday June 27 - 8:15 PM Members Observatory Night
Friday July 25 - 8:00 PM Members Observatory Night
Friday Aug 22 - 7:30 PM Members Observatory Night

If a Friday event must be cancelled due to weather,
we will try on Saturday at the same time
- Always check the website for event updates

See full Event details and directions at https://www.astrotulsa.com/events

President's Message
Jonathan Fussell

As we dive into summer, I want to take a moment to highlight two recent events that showcase the heart of our club—community outreach and educational impact.

Our Solar Observing Day on June 7th at Hunter Park was a tremendous success! The sun was active, and the crowd was fantastic. It was especially rewarding to see families, kids, and curious passersby stop and engage with us. I want to extend a huge thank you to all the volunteers who gave their time and energy to make that day so enjoyable and informative for everyone who stopped by. Events like these are what bring astronomy to the public in a meaningful and lasting way.

I'd also like to give special recognition to John Land and Don Bradford for joining me on the recent ORU Science Academy field trip to our observatory. Their support was invaluable in helping guide and inspire the students. This year's class was incredibly enthusiastic, and many of them had never looked through a telescope before—an experience they won't soon forget. The observatory left a strong impression on them, and I believe we lit a few sparks that could grow into lifelong curiosity or even careers.

Mars was, without question, the hot topic of the day. The students were brimming with questions, from the technical challenges of surviving on the surface to bold visions of what it will take to finally put boots on the Red Planet. Their excitement reminded me why we do what we do—to inspire the next generation of explorers.

As we move forward into more summer observing nights and club activities, I'd like to put out a gentle reminder about guest night on June 20th, and Members night on June 27th.

Clear skies,

Astronomy Club of Tulsa

"Bringing Stars to the Eyes of Tulsa since 1937"

Jonathan Fussell - President

Click on these images to links on the Internet

*** The CLEAR OUTSIDE icon above is a link to an extensive site showing cloud cover %, Seeing, Transparency, Moon Phase, Temp in ^{O} C and many other useful tools

GOT A NEW TELESCOPE? Here are some sites to help you get started with you 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
https://skyandtelescope.org/astronomy-news/what-to-know-before-buying-a-telescope/

See Website Observation Station for a collection of Interactive Sky Watching Tools
Moon phases - Sun rise & Set - Make your own custom interactive sky chart and more
Great website for printable Finder Charts of Solar System objects https://in-the-sky.org/

JUNE - Moon Phases - -
1st Q Mon July 2 - - Full Thurs July 10 - - 3rd Q Thurs June 17 - - New Thurs July 24

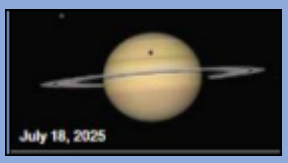
Lunar conjunctions – Evening Mercury June 27 Mars June 29 & July 28
Morning Saturn & Neptune July 15 -1:00 AM Venus July 21 Jupiter July 23
June 20 @ 21:42 CDT - SUMMER SOLSTICE- when Sun reaches its Maximum Declination North
Tulsa area will have 14 hrs 36 min of daylight and only 9 hrs 24 min of night

Mercury has its maximum evening elongation of 26 degrees on July 3. Search the NW horizon for its yellowish glow. On July 2nd & 3rd Mercury will pass just below M 44 the Beehive Cluster. MARS begins the month in the middle of Leo and continues drifting eastward toward Virgo by the end of July. Its much dimmer now at 1.6 magnitude. Saturn & Neptune continue their close encounter rising a bit after midnight in the ESE. Venus is our bright morning planet throughout the summer and autumn. It reaches it maximum solar elongation of 35^{O} on Aug 15th . Jupiter begins its predawn appearance by the middle of July rising ahead of the sun in the ENE.

Some Viewing Pleasures and Photo Ops in Taurus. The Hyades cluster gains a bright "star". On July 12 look for Venus lying opposite Aldebaran from 4:00 AM to dawn. On Sunday morning

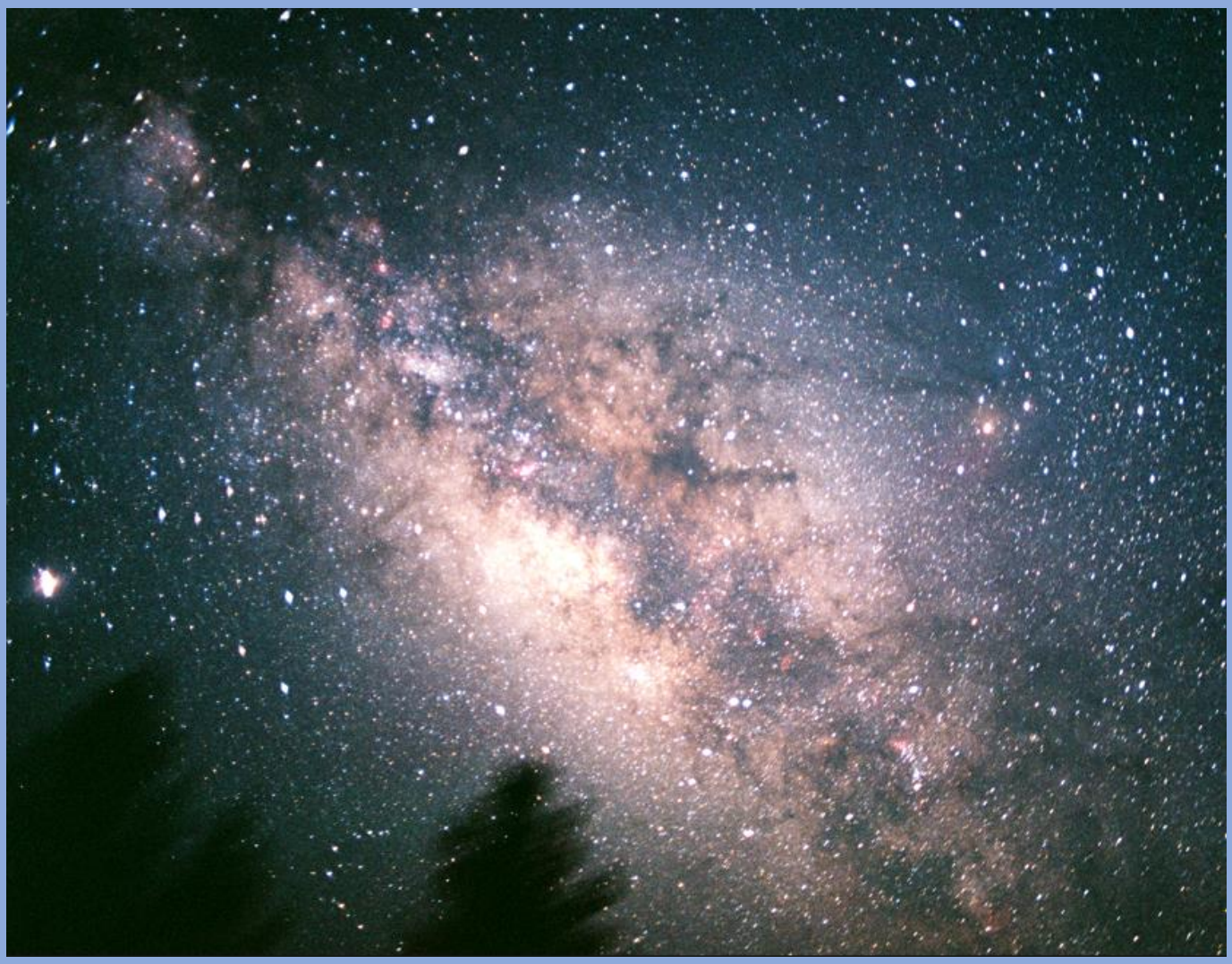
July 20 the waning crescent moon passes directly through the Pleiades cluster. Use your telescope to observe and time numerous occultations and reappearances as the moon slides through the cluster. The show begins around 3:00 AM and ends around 6:00 AM

Two Good opportunities to view Shadow Transits of Saturn's moon Titan on July 2 and July 18. See page 16 in our May Newsletter for a Table of Titan shadow transit dates.



Our Milky Way Galaxy from Inside and Outside **by John Land**

One of my favorite vistas as an amateur astronomer are the rare opportunities to be far from city lights to see the board band of the Milky Way stretching overhead like a vast river of light. I took the image below in early June of 2008 at the Texas Star Party located in far SW Texas. It was taken on Fiji Chrome film with my beloved Pentax SLR camera. It shows the region of Scorpio and Sagittarius looking toward the center of our galaxy. Numerous dark dust lanes obscure portions of the stars. If you look carefully, you can trace out the constellation patterns. Antares in Scorpio is the bright orange star – center right. Between the trees note the "C" shaped handle of Teapot asterism in Sagittarius. Jupiter lies on the left.



We see our galaxy from the **INSIDE** from our position about 30,000 light years from its central bulge. With our telescopes we can see numerous other galaxies with a variety of shapes and orientations. Over the past century astronomers have deduced that our galaxy is about 100 to 120 thousand light years across and contains between 100 to 400 billion stars. Our solar system is located about 27,000 light years from the center on the spiral arm of Orion.

WHAT DOES OUR GALAXY REALLY LOOK LIKE?

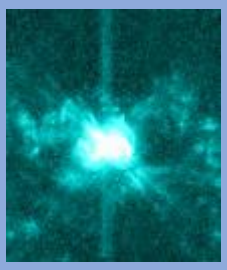
The **GAIA spacecraft** spent eleven years - July 2014 to January 2025 – making three trillion observations of two billion stars in our Milky Way to extremely precise measurements on the order of 1 / 500,000th of a degree - 7 milli arc seconds. Mapping their positions, motions, luminosity, temperature, and composition. Gaia's extraordinarily precise three-dimensional map will provide the data needed to tackle an enormous range of important questions related to the structure of our galaxy. Using this data astronomers have recently released reconstructed images showing views of our galaxy from the outside.

The April 13, 2025 Astronomy Picture of the Day – **APOD** – showed a reconstruction of what our galaxy would look like from an **OVERHEAD VIEW** looking down. This viewpoint reveals our Milky Way as a Barred Spiral galaxy with an elongated central region. The April 12 APOD shows an **EDGE on VIEW** with dark dust lanes running along its edge and slightly twisted ends.

For fun try your skills at doing some of the images at **Jigsaw Challenge:** Astronomy Puzzle of the Day

Solar Activity continues at a high level.

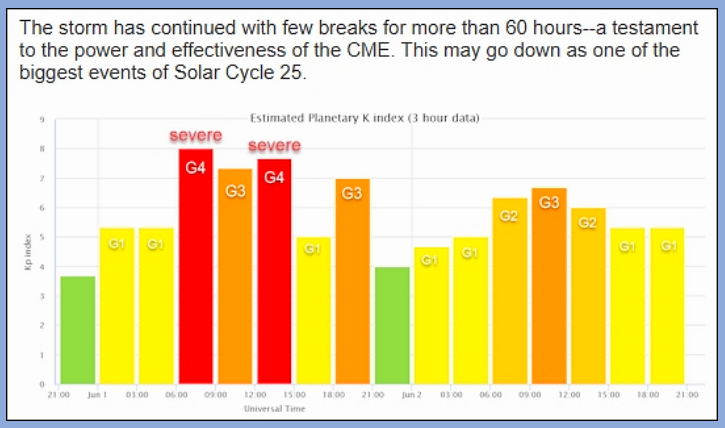
As announced in the fall of 2024 Solar Maximum is now under way. I fact as I am typing this (June 17) my phone app posted an alert that an X 1.27 solar flare had just been detected from the large sunspot 4114 on this image. This same region produced a M 8.3 flare on June 15. So, look for reports of Aurora sightings this week.

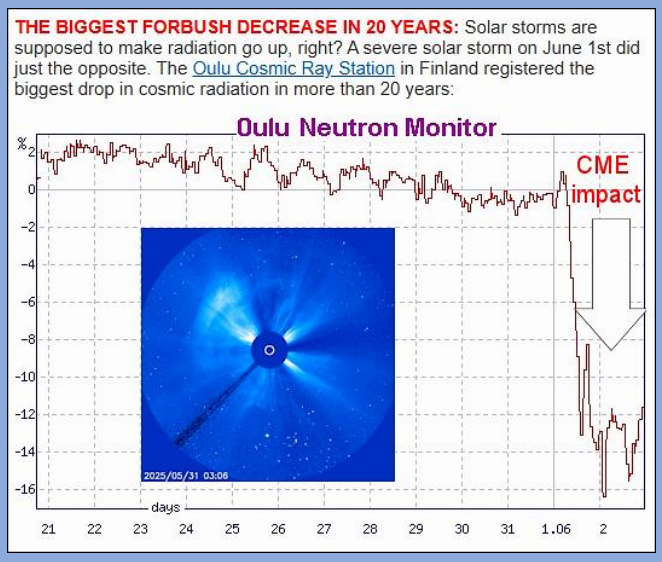


As many of you know, the number of visible sunspots goes through an approximate 11-year cycle from high to low and back to high activity.

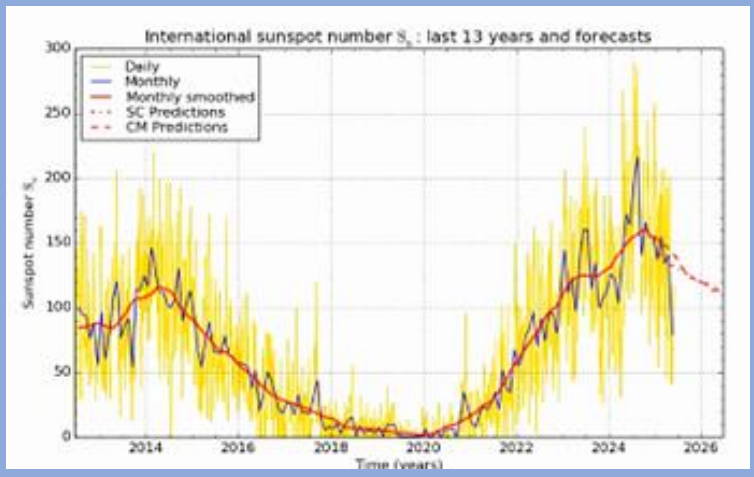
June opened with one of the longest lasting runs of elevated Aurora activity in 20 years. A series of three CME's began hitting the earth's magnetic field about midnight our time on June 1st (unfortunately it was cloudy here)

When the solar wind is strong it pushes back high energy cosmic rays coming from deep space. As illustrated by the graph below.





You can stay informed on current solar activity at https://spaceweather.com/ and https://www.spaceweatherlive.com/



Two Interesting Asteroid Occultations. By Skip Whitehurst

Significant scientific information about an asteroids size and orbit data can be measured by recording when an asteroid passes in front of a star – known as an Occultation.

Asteroid 319 Leona, April 18, 2025

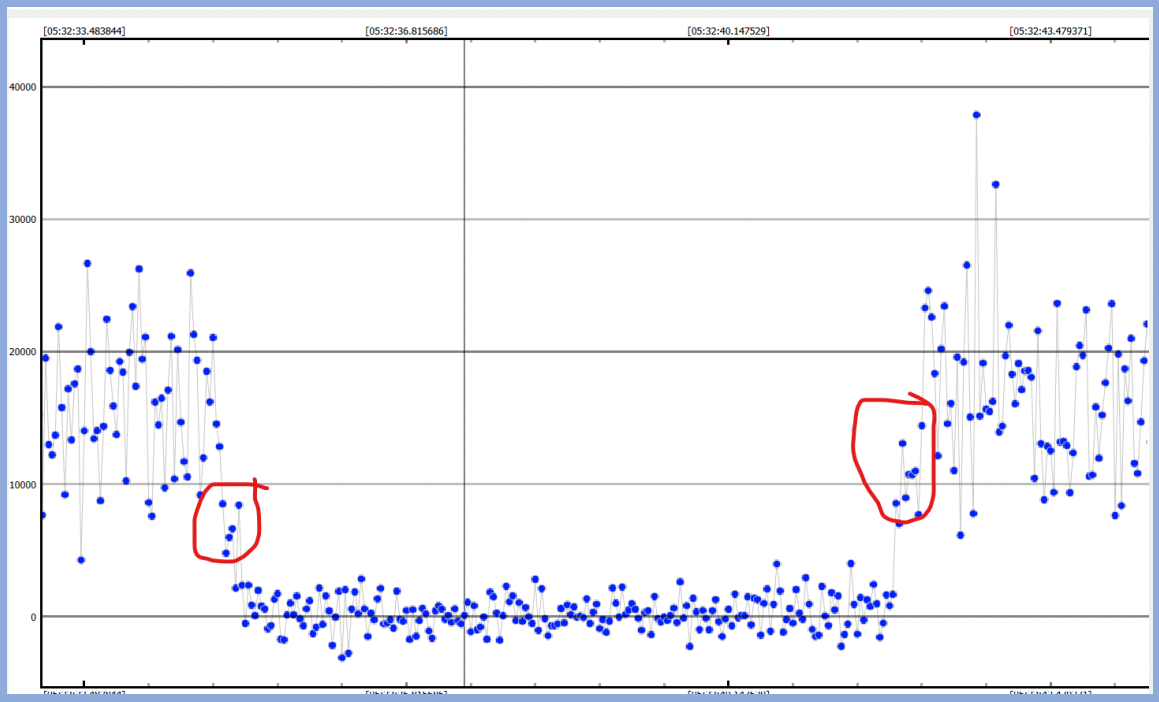
319 Leona is roughly 50 by 89 km in size and is a slow-rotating and tumbling asteroid – it rotates about a second axis that's not the same as its primary axis of rotation.

In December 2023 Leona occulted Betelgeuse. This event was visible from southern Europe and literally dozens of observers attempted to observe the occultation, and about 36 successful chords (instances of the asteroid transiting in front of the star) were recorded. These observations helped refine the size and shape of Leona, and also provided an opportunity to study the atmosphere of Betelgeuse, which has an angular size large enough that recorded light curves of the occultation could distinguish the progress of the asteroid transiting in front of the star.

Soon after midnight (CDT) the morning of April 18, 2025, Leona occulted a 9th magnitude star in Sextans along a path through the central US, passing in a N-S direction through western Missouri. The occultation community had mounted a campaign to acquire as many chords as possible from this event to further characterize the size, shape, and rotation of Leona. John Moore asked if I wanted to participate, so we scouted some suitable locations close to I-44 east of Springfield and joined the campaign. While looking on Google Maps for suitable sites, I noticed "Baker Observatory" north of Springfield marked on the map. Google was courteous enough to provide the name of the institution that owned it (Missouri State University) and the phone number of the Physics Department there. I called, and the man who answered the phone said the observatory would be gated, but I was welcome to observe from the large parking field adjacent. It's a nice facility!

I rode with John, and we set out Thursday afternoon (April 17) and arrived at my location around sunset. He dropped me and my equipment off and continued to his site, a cemetery about 20 miles to the northeast. Setting up my 90 mm refractor and AVX mount went pretty well and I spent a couple of hours enjoying the warm (but windy!) evening watching the video monitor, making occasional adjustments to keep the target star well centered, and fretting about threatening clouds. The clouds began to look much worse with about 20 minutes to go but, miraculously, mostly cleared in the part of the sky I needed as time was running out. I recorded a nice 6.8-second disappearance; John recorded 7.5 seconds from his position closer to the predicted centerline. One oddity was that the star seemed to fade from view instead of instantly disappearing as they always had for me before as I watched live. It turns out that the target star may be a double, which was not previously known.

Note the “shoulders” (circled) in the light curve that may indicate where each star of a double star system was individually occulted and then individually reappears.



Skip Whitehurst’s light curve for 319 Leona occultation of UCAC4 473-046221 showing evidence of the star being an unexpected double.

A total of at least five occultations were recorded for this event and there may be others not reported publicly yet. More analysis of the data submitted will be necessary to evaluate all that the recordings can tell us.

Asteroid 52246 Donaldjohanson, May 13, 2025 (CDT)

Asteroid 52246 Donaldjohanson imaged by the *Lucy* spacecraft on April 20, 2025. Image courtesy NASA/JPL-Caltech.

The ***Lucy* space probe** was launched from Cape Canaveral in October 2021 for a planned 12-year mission primarily to investigate six asteroids in the Trojan asteroid clouds at Jupiter's L_4 and L_5 Lagrange points, 60° ahead of and behind Jupiter in its orbit, respectively.

On its way out to L_4, *Lucy* made close flybys of two main-belt asteroids. On 20 April 2025, Donaldjohanson was the second of these. Lucy's close-up photos showed the asteroid to be about 8 km long by 3.5 km wide – somewhat larger than previously thought – and a contact double.

By happenstance, 23 days after *Lucy's* close approach, Donaldjohanson occulted a 9th magnitude star in Leo just before midnight Tuesday, May 13 CDT. The path of this occultation passed through the US from NW to SE starting in Oregon in twilight, through NE Oklahoma, to SC where it was low in the west. I had become skeptical of trying to record short-duration occultations by small asteroids like this one because after being skunked on several recent occasions because even a small prediction error can easily mean no occultation where predicted, but, again, a campaign had been mounted to observe this one.

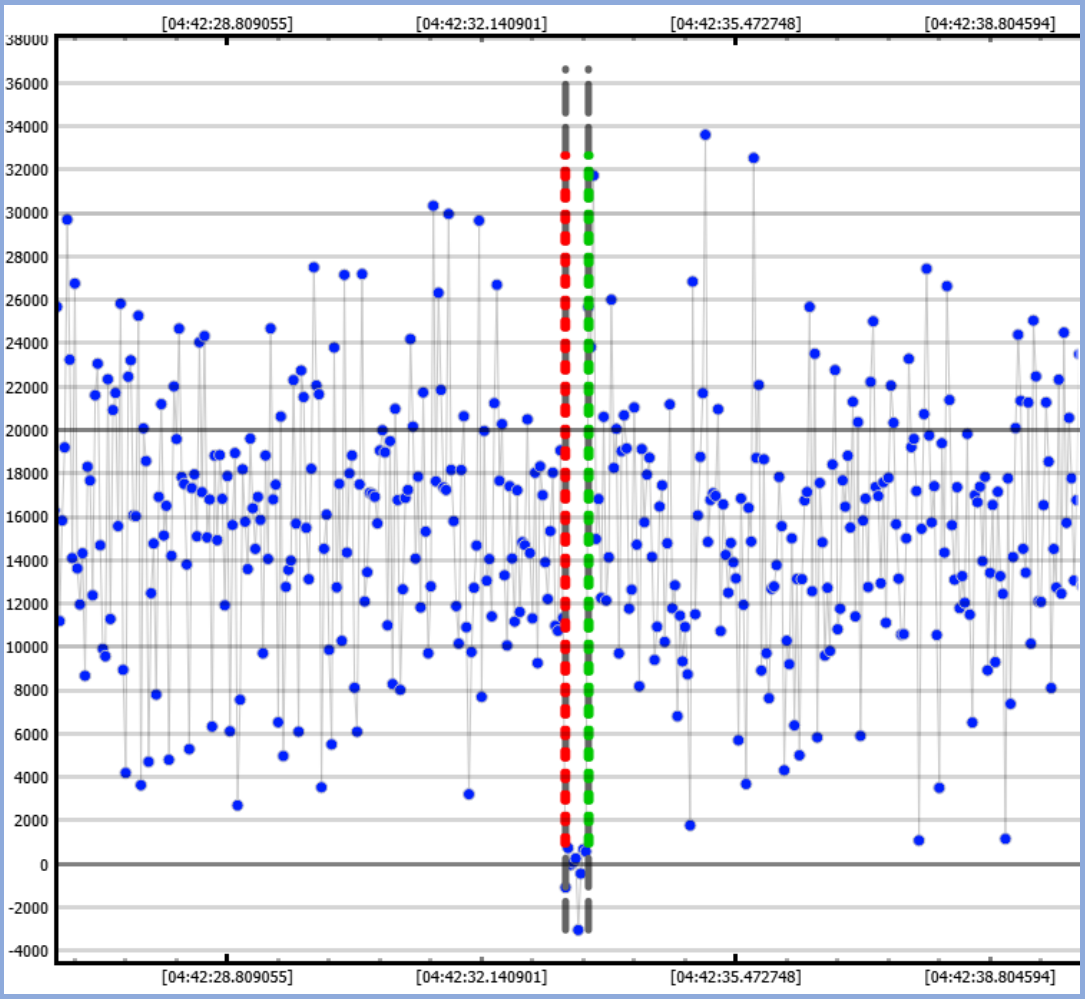
I found a good spot inside the southern edge of the predicted shadow zone between Afton and Fairland, OK, about 80 miles from my house near downtown Tulsa and registered to record this event from there. Because Google satellite view showed what looked like another potentially good spot in Fairland, inside the northern edge of the shadow, about two miles away (remember, this asteroid is only about two miles wide and five miles long) if I set up stations at both locations I could straddle most of the predicted path and improve the chances of recording a positive event from at least one station. I did have some questions about the second location, so my wife and I took a pleasant drive out to Fairland on Friday, May 9 to scout both locations and verify their suitability. Both looked good, so I signed up to cover both sites. I'm glad I did. Due to the interest, there were a total of five stations (including my two) registered in or near the shadow path and a sixth well (10+ km) north of it.

After the ACT meeting that Friday night, Don Sailing volunteered to accompany me, so I picked him up on the way out of town Tuesday evening. The cloud forecast was for the early part of the night was iffy, with more than 60% cloud cover predicted at around sunset but some clearing expected as the night progressed. We arrived at our first location at about sunset, with near overcast sky. Undaunted, we set up the first station, an 80 mm f/5 refractor on a lightweight photo tripod my dad bought in the 1950s. We pointed the telescope in the general direction of where the event would happen later that night and waited until it was dark and clear enough to plate solve so we could pre-point the equipment at the exact spot the occultation would happen. We were completely stymied for a while by clouds, then started getting brief opportunities clear enough long enough to get an image that could be solved, then made adjustments and waited for the next clearing. Because of the difficulty with clouds, it took more than an hour to get the station pre pointed, but once it was good enough, we set the system up for automatic video recording, packed up the stuff that didn't need to stay, and moved on to our second station, leaving the first unattended and, hopefully, unnoticed.

About two hours before event time, we started setting up the second station. For this one we used my 90 mm f/6 refractor and AVX mount. By now it had cleared enough that Polaris was visible most of the time, so I polar aligned and did a quick 2-star alignment. Since we were going to stay with this station, I planned to let the AVX track the target star instead of pointing where it would be at event time and not tracking; any polar misalignment could be dealt with by watching the live video feed and making corrections as needed. After alignment and pointing generally toward where our target star was, we did a plate solve (easier this time since it was clearer) and let the system sync the mount and command the mount to go to the target from there, which put the target in the camera's FOV on the first try.

The predicted maximum time for this occultation was a mere 0.2 seconds – six video frames at 30 frames/second – and we were not particularly close to the center of the path where it was expected to be longest. In addition, the star was flickering a lot due to seeing conditions, so we expected the event to be difficult or impossible to see in real time. In other words… don't blink. After recording automatically started and the moment of truth approached, our eyes were glued to the screen, and we both saw what we thought was a distinct and surprisingly long disappearance of the star.
After the recording ended, we packed up (much faster than setting up), picked up the unattended station (it was still there, undisturbed, and camera battery power was still good), and drove home, wondering what the recordings would show when analyzed.

Preliminary results: our second station recorded a definite 0.3-second occultation. The unattended station recorded a miss – no occultation. Results from the six stations registered to record the event, from north to south, are: the station well to the north of the path reported a miss (no surprise there); a station further north than our position in the path did not observe (clouds or some other problem; our positive; the station closer to the centerline than we were also recorded an occultation; the next station south has not reported results; last, our southern station was a miss. So, two positives, two negatives, a no-observation, and no report.



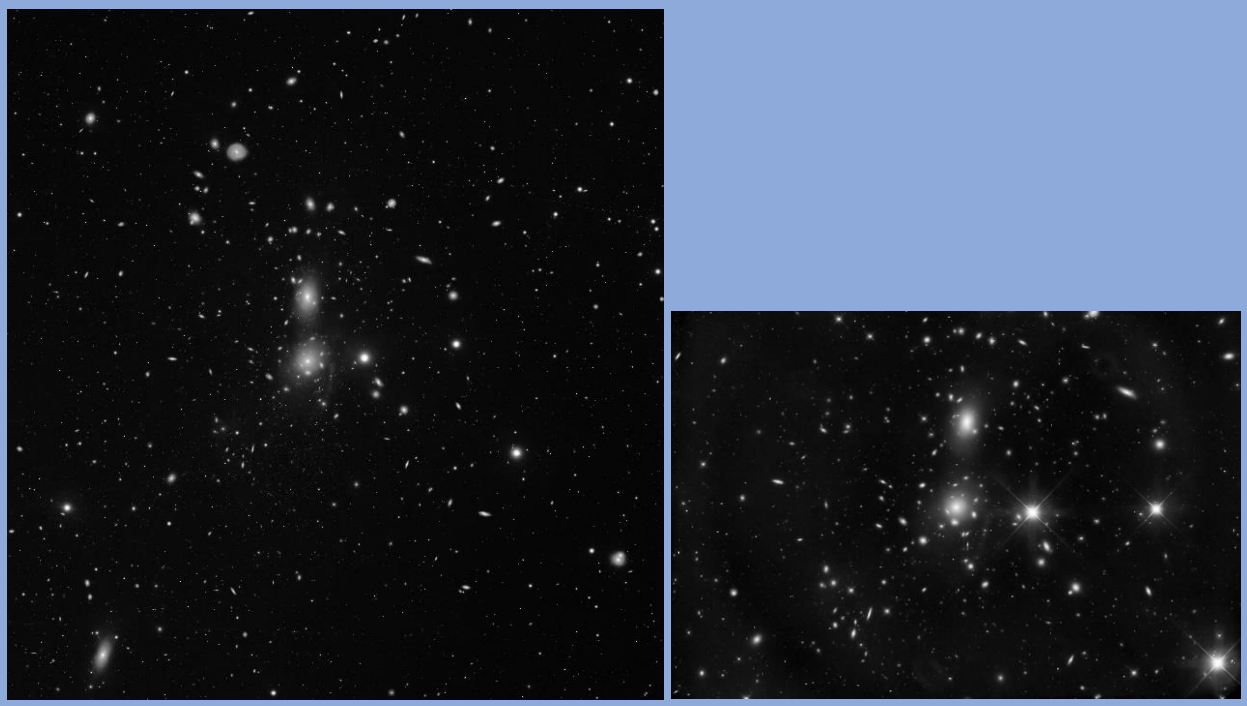
Light curve of Asteroid 52246 Donaldjohanson occulting HIP 48380 May 14, 2025 (UTC). Despite the high noise level (flickering) of the unoccluted star, the occultation is still very evident.

Observing Chairman
Brad Young

Imaging and Sketching – Coma Cluster

As I write this, Tulsa is having a rare spring season in that we are having one. It was the wettest April since records have been kept. Wonderful weather for walking the dogs, smelling the flowers and enjoying cool evenings. But the cloudy skies and rain were a bane, and my astronomy fun suffered quite a bit. In fact, I only have records for two observing nights in dark skies through the whole spring (vernal equinox to Memorial Day). On two of these nights, my friend Don Bradford imaged a galaxy cluster and asked if I had ever sketched it. Both Don and I enjoy comparing results from imaging and sketching, in many combinations of subject, equipment, and composition. Many others in the Astronomy Club of Tulsa share their work also, mainly images. This symbiosis builds confident amateurs who know how to enjoy the way different media portray our sky.

With Don's images, we can see right away that he is able to pull up many more faint objects than I could see, even on the best night. This is no surprise, of course, as imaging often does this. Note that his images were taken at the same location albeit on different nights. The technical data for these images are listed below. Don's intent was to compare the smaller scope head to head with the 6-in and he is quite happy with the results.

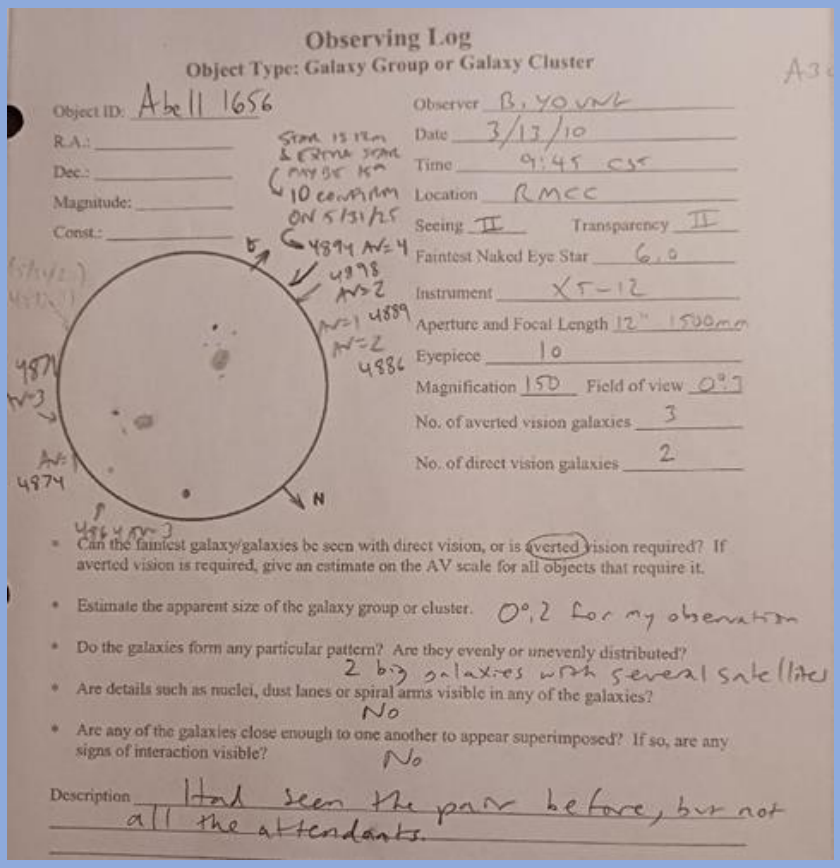


Don – "Above are two images of Abell 1656, one with the 6" RC (right) and one with the 75mm (Apertura 75Q) refractor. The 6" RC has FL of 1375mm, at f/9, and FOV of 0.8 deg X 0.54 deg. The 75Q has FL of 405mm, at f/5.4 and FOV of 2.7deg X 1.85deg. The image from the 75Q was cropped substantially, and I think the one from the 6"RC may have been cropped slightly. [Images] were taken with the ZWO ASI294MM monochrome camera; 10min exposures on the 6" RC, and 5min exposures on the 75mm refractor; and at least 15 stacked and processed images from the RC and 24 from the 75mm refractor."

I've compared visual and imaged observations before, using Don's and work by other imagers, and he has done the same using his own images and visual experiences. Many books have been written about the subject, and if you ever want an opinion, just walk up to an imager and say, “Visual observing is the only thing that’s real astronomy”, or a similarly divisive quip to a visual observer. Regarding Abell 1656, Dave Tosteson has a good article “Abell’s Galaxy Clusters” Sky & Telescope, June 2024, p.58. You may not be using his 32-inch telescope to try to visually match what can be done with much smaller imaging equipment, but it's important to realize that this comparison is more than just proving photon integration favors the imager.

Although electronically assisted astronomy is trending towards real time, there's a visceral and instant experience that only visual observing can give us at this point. You're seeing it with your own eyes, using only glass and mirrors, not screens and electronics, as it happens. This may be more important to some than others, but I enjoy sketching subjectively and then verifying my sketch with catalogs or guides. Most of the time, I find that I can see a great number of objects - it's sorting them out that can become quite confusing. Look at my sketches for this article with erasure marks, notations and confirmations made as much as 15 years after the fact.

2010 Visit



Observing Log

Object Type: Galaxy Group or Galaxy Cluster

Object ID: Abell 1656
R.A.:
Dec.:
Magnitude:
Const.:
Observer B. YOUNG
Date 3/13/10
Time 9:45 CST
Location RMCC
Seeing II Transparency II
Faintest Naked Eye Star 6.0
Instrument XT-12
Aperture and Focal Length 12" 1500mm
Eyepiece 10
Magnification 150 Field of view 0°.7
No. of averted vision galaxies 3
No. of direct vision galaxies 2

- Can the faintest galaxy/galaxies be seen with direct vision, or is averted vision required? If averted vision is required, give an estimate on the AV scale for all objects that require it.
- Estimate the apparent size of the galaxy group or cluster. 0°.2 for my observation
- Do the galaxies form any particular pattern? Are they evenly or unevenly distributed? 2 big galaxies with several satellites
- Are details such as nuclei, dust lanes or spiral arms visible in any of the galaxies? No
- Are any of the galaxies close enough to one another to appear superimposed? If so, are any signs of interaction visible? No

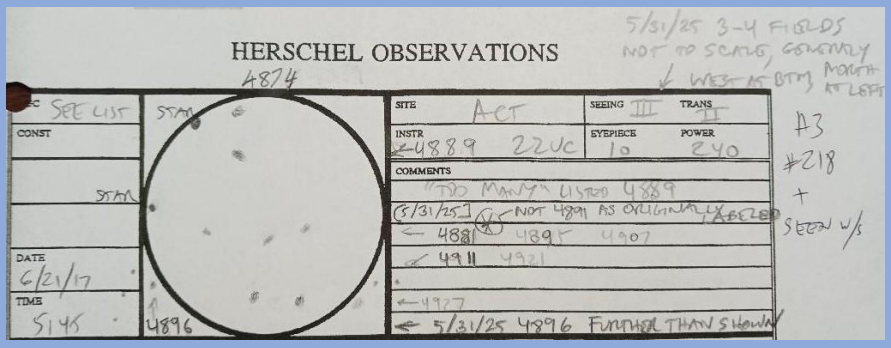
Description Had seen the pair before, but not all the attendants.

A quick note on the notes and annotations dated from 2025 throughout this article. On occasion I have verified or lately identified some of these galaxies as shown. Also, without changing the galaxies I saw, I cleaned up the pencil sketches and tried to make up for my apparent spatial dyslexia where necessary.

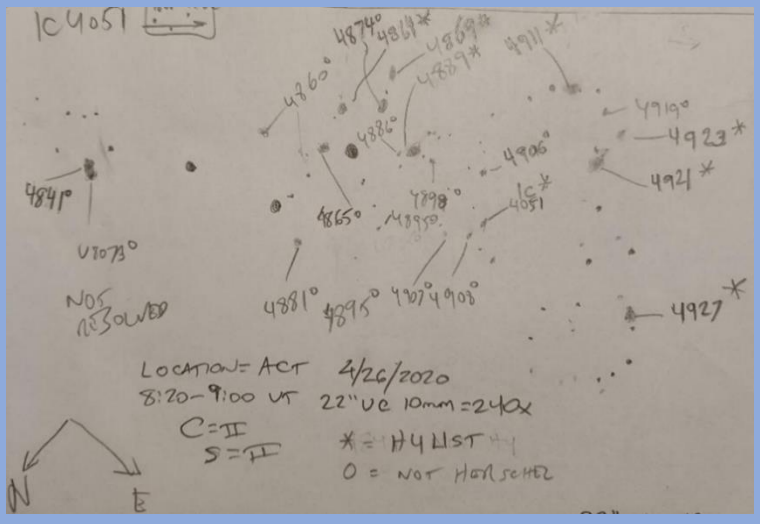
To compare Don's 2025 images, I revisited my sketches beginning 2010, done as part of the Astronomical League Galaxy Groups and Clusters Observing Program. At first, I did not recognize the Abell 1656 label, but its notoriety brought back the many times I have seen this

galaxy cluster visually. This cluster has NGC 4874 and 4889, two bright objects that anchor the group. In 2010, I was using my 12-inch Dobsonian, at a Bortle 3 site; therefore, I thought initially that might be all I could coax out. They were all that was required, but I usually try to push it to see as much as I can as shown on the sketch below, I was able to pick out quite a few more. This adds to the richness of observing this cluster and adds to my list of NGC (New General Catalog) objects seen. I am within about a hundred sketching all ~7500 of them, located all over the sky. With my recent review of the 2010 sketch, I noticed that the “star” seen near NGC 4889 was NGC 4894, making seven total galaxies seen that night.

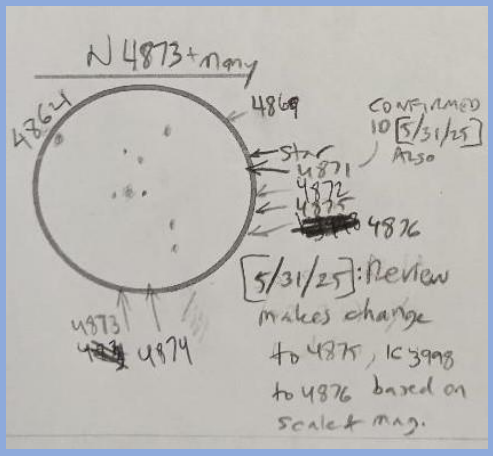
Later Visits



The 2017 sketch was made with my 22” UC Obsession Dobsonian. With the larger scope, I was able to bring in some of the peripheral galaxies and look for details in the bright ones. This overall sketch is 3-4 fields wide (1-1.5 deg total) and seems to be fundamentally correct. However, checking it in 2025 shows that NGC 4891 is the incorrect label for that galaxy and I have changed it to 4881. Also, looking at the Aladin images online, it appears that NGC 4896 and its field stars are further away from the main bulk of the cluster than in my drawing. I did not try to correct it other than adding a note.



The 2020 drawing is a large scale using several fields to cover the area involved with Abell 1656. Again, this is useful to allow identification using comparison stars from Guide 8, Aladin charts online, even variable star charts. With this attempt, I have nearly exhausted all the NGC objects in this cluster.



7-4-21 22in 240X C=II S=II 5:55 UT

The last sketch attached (2021) is centered again on NGC 4874 and is used to verify the smaller, fainter galaxies in that area. Notice that even 15 years after my first encounter with this group, I'm still teasing out galaxies from this one cluster and refining my sketches and impressions of many of them. In his article, Dave Tosteson states he has visually seen about 700 galaxies in the richest part of the cluster, and that photographic survey plates hint at as many as 5000 total. Don said that he suppressed the stars in post processing and therefore any count might be difficult. Altogether, I sketched 26 NGC, an IC, and an UGC (28 total):

NGC	4864		NGC	4881		IC	4051		NGC	4923
NGC	4871		NGC	4895		NGC	4841		UGC	8073
NGC	4874		NGC	4896		NGC	4860		NGC	4869
NGC	4886		NGC	4907		NGC	4865		NGC	4872
NGC	4889		NGC	4911		NGC	4906		NGC	4873
NGC	4894		NGC	4921		NGC	4908		NGC	4875
NGC	4898		NGC	4927		NGC	4919		NGC	4876

As my scope got bigger, and the skies and my eyes got worse, there was a point where I may have seen my maximum members of this galaxy cluster visually. Teasing some of these small, very faint background galaxies can be quite difficult, and identifying and confirming each in a slew of others reminds me of a miniaturized version of working out the same issues with the larger Virgo Cluster. Even so, revisiting the same patch of sky repeatedly can give you not only familiarity but also often brings out new ways of looking at it either by picking up more of the fainter galaxies or perhaps picking up detail on a brighter one that you see easily. And, of course, it's always nice to revisit and compare standard images or your friends' images that can show you those patterns match up and confirm and sort out which galaxies you've seen. What the eye brings out is also subtly different than imaging equipment. This may not be apparent when you're just able to use averted vision to see the faintest hint of light on tiny background galaxies. But it is noticeable when looking for details in galaxies, globular clusters, etc., where the effect of experience, sky conditions

and other factors will change your experience nearly every time. Imaging may not be as varied either in experience or results.

Now add the individual fun of trying to “catch up” with your imaging friends by observing all the targets they get in the shot. Then share your sketches, showing levels of detail that they can only best record with several different exposure times, post-processing and other non-linear methods. Astronomy, visually and imaging, is a hobby best enjoyed with both open eyes and an open mind.

Earn an Observing Certificate this Summer ! By John Land

A great way to enjoy and grow your knowledge of the night sky is to choose one of the **Astronomical Observing Certificate programs** and with to completion. Programs are available for all levels from novice to veteran observers. There are levels for naked eye, binocular and telescope observer levels. The website has many resources to develop the skills you will need. Also, we have several members who can mentor you on your journey to discover the mysteries of the night sky. Brad’s article above illustrates that developing a system for recording and organizing your observations can build a lifetime of memories. In November we have our annual club dinner. **We would like to be able to recognize several of our members who have completed a certificate program.**

Set your goal now to be one of them?

Our **June newsletter** featured 10 observing targets near the Big Dipper.

This chart from the July 2025 **Sky and Telescope magazine** features **15** more. These objects lie in the direction near the center of the Milky Way which is rich in star clusters and nebulae. In early July this region rises in SE as it is getting dark and is well placed for observing throughout the summer months.

Explore these Observing Programs

Messier Observing Program

Universe Sampler Observing Program

Sky Puppy Observing Program

Youth Astronomer Observing Program

Urban Observing Program

Deep Sky Binocular Observing Program

Asterism Observing Program

Lunar Observing Program

Double Star Observing Program

Constellation Hunter Observing Programs – Northern and Southern Skies

Congratulations to Liam Yanulis who won the Astronomical League's 3rd place Sketching award for his sketch of the Milky Way the Okie-Tex Star party last fall.

(It came with a plaque and $75 cash prize)

Treasurer Report
Cathy Grounds

As of June 15, 2025, we have 165 members with 23 new members so far this year!
Please welcome our newest member Brad Jensen

FAQ: How do I know when to pay my dues? You will receive a notice by email that 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 you are always welcome to check with the treasurer.

1. PayPal (click "join/renew" on the website) and follow the prompts, there is small fee.
   (You can use any major credit card - you don't need a PayPal account)
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 postal address has changed please email me at: AstroTulsa.Tres@gmail.com

Membership rates for 2024 - 2025 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 **includes 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. You will need to do so directly using their web links below to make your subscription

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 come 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/

During the school year our club holds a
Monthly General Club meetings at
Jenks Public Schools Planetarium
205 East B St, Jenks, OK
Located North of the intersection of
1st and B St

Meetings begin at 7:00 PM

When you enter the building lobby,
take the elevator to the 3rd floor.

Click for Google Map Link

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

ASTRONOMY CLUB OFFICERS:

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astrotulsa.pres@gmail.com

SECRETARY – SKIP WHITEHURST
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TREASURER – CATHY GROUNDS
astrotulsa.tres@gmail.com

You may also contact club officers or board members using the CONTACT tab on our website

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JERRY CASSITY
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SIDEWALK ASTRONOMY – TIM GILLILAND

PR AND OUTREACH – Open Position
GROUP DIRECTOR – Open Position

NIGHT SKY NETWORK – Jonathan Fussell

Enjoy at Planetarium Show at Jenks High School

JENKS PLANETARIUM

Jenks High School Campus
205 East B Street, Jenks

TICKETS are $7

See our Current Shows Schedule and ticket purchase links at
Shows and Ticket Link

Shows take place on Tuesday evenings or Saturday mornings
Must purchase tickets online in advance
Shows and Ticket Link