



BSERVER

OCTOBER 2020



Bringing Stars to the eyes of Tulsa since 1937

Editor – John Land



This lovely watercolor painting of our Astronomy Club Observatory

Was made by our very talented member KC Lobrecht

KC has earned her Master Observers Certificate from the Astronomical League for completing 10 or more observing projects from the Astronomical League.

To learn how you can begin an observing certificate go to

<https://www.astroleague.org/al/obsclubs/LevelObservingClubs.html>

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Astronomy Club Events

Sadly Our Public Observing Events are suspended til further notice

We hope to return to resume public events in 2021 when the pandemic subsides.
Check our website www.AstroTulsa.com events section for updates

Members ONLY Events continue with Social Distancing Guidelines in Effect

Member ONLY Observing Nights
Friday, Oct 9, 6:30 PM
Saturday, Oct 10, 6:30 PM (backup)

Member ONLY Observing Nights
Friday, Oct 16, 6:30 PM
Saturday, Oct 17, 6:30 PM (backup)

Our Next Zoom meeting will be Monday Oct 26 at 7:00 PM

Dr. Aaron Coyner - *Understanding the Active Sun through satellite observations including the Parker Solar Probe and Solar Orbiter.*

Now that CST - Central Starlight Time - has resumed in November.
Our observing nights will start at 6:30 which will be well after sunset.
We hope to continue with the backup night option if there is enough interest.

Friday, Nov 6, 6:30 PM
Saturday, Nov 7, 6:30 PM (backup)

Friday, Nov 13, 6:30 PM
Saturday, Nov 14, 6:30 PM (backup)

Check our website www.AstroTulsa.com events section for updates

Observatory ONLY OPEN for SCHEDULED EVENTS. [Click for Observatory Map](#)

CAUTION: DO NOT use GPS it will likely send you on some nearly impassible back roads.

Guidelines for Members Only Observing Night

No guests – other than immediate family – no large family groups.

Additional details will be sent via membership emails

These guidelines are in place to protect our members while also enjoying observing

Looking for Virtual Sky Events !!

Chabot Science center live and recorded streaming events.

Try the Videos and Facebook Live sessions from Chabot Space & Science Center

https://www.facebook.com/pg/ChabotSpace/videos/?ref=page_internal

Lowell Observatory – Flagstaff, AZ live and recorded streaming events.

<https://lowell.edu/giovale-open-deck-observatory/>

PRESIDENT'S MESSAGE

BY TAMARA GREEN



I hope that those of you who participated in our first ever Zoom club meeting Tues Sept 22 had a good time and enjoyed Robbin Jones' presentation about Electronically Assisted Astronomy. We will be doing all of our General Meetings over Zoom at least through the remainder of the year. We will eventually resume our meetings at the Planetarium, but that will be when the pandemic is under a lot more control than it is, if not over and done with.

We will be doing our elections via email this year. You will be receiving an email with a ballot attached to it. You can enable editing and then click on the candidate you want for an office or board position. You can save the completed ballot to your desktop and then email it to John Newton at astrotulsa.tres@gmail.com. There will be a PDF accompanying the ballot that will introduce you to the officer and board candidates for this coming year.

Unfortunately, due to the ongoing health crisis, we will not be having our Annual Dinner Meeting in November. We plan to do something similar in the Spring, so be on the lookout for details on that. I hope that we will be able to do a dinner or party of some kind at that time.

In the meantime, please keep enjoying our Members' Nights at the observatory. I hope to see you all soon.

Clear Skies, Tamara Green



Election coming soon Note from John Newton.

The time is nearing to cast your vote for Officers and Board of Directors for 2021. Ballots will be coming mid-October by email this year. Along with your ballot will be a PDF introducing our candidates for the coming year. Please take advantage of your voting privilege and respond quickly as polls will be open for a brief time from Oct. 18th thru Oct. 25th. Votes will be tabulated with results published in the next newsletter.

Access to our website to learn about event status and to links related to astronomical resources (www.astrotulsa.com).

Our First Ever Astronomy Club virtual meeting using Zoom in September was a success. Member Robbin Jones gave us a very enlightening presentation about how he uses Electronically Assisted Astronomy to capture amazing images from a telescope set up in his backyard in the middle of a Tulsa suburb. Here are some feedback responses

Craig - *Great presentation! Thanks for inviting us!*

Denise - *Thank you so much for inviting me to this! I enjoyed your presentation very much, as well as Robbin's!*

Stan - *Just watched the video. It was a great presentation. I am so glad that it was recorded, and you put it out for us to view. I was out of town and was not able to attend the meeting. This way I was able to attend. It was a presentation that I was very interested in. I hope the club keeps doing this. Now that I live farther from BA it is nice to have an alternative to attending the meetings. I really like this and hope you will continue this even after the pandemic issues slow down.*



Our next Virtual Zoom Club meeting will be Monday October 26th from 7:00 to 9:00 PM

Our guest speaker will be Dr. Aaron Coyner

Understanding the Active Sun through satellite observations including the Parker Solar Probe and Solar Orbiter.

Dr. Aaron Coyner is a solar physicist by trade and the physics faculty at Southwestern Oregon Community College in Coos Bay, OR. He is also an avid amateur astronomer, and a proponent for lifelong science exploration. Dr. Coyner has research experience having spent graduate school at Rice University, and a 3-year post-doctoral research term at NASA/Goddard Spaceflight Center. He has 6 years of teaching experience at the community college and university level. Dr. Coyner also has lifelong experience with amateur astronomy and many years of experience with astronomy clubs. His overall goal as a Solar System Ambassador is make space accessible to everyone, He hopes to instill a sense of wonder and an increased desire for exploration among audience members of ages and backgrounds. As a professor, Dr. Coyner relies on making tangible connections with audiences through comparisons to everyday life or familiar references.

Dr. Coyner grew up in Broken Arrow and graduated from BA High in 1999. He developed his avid enthusiasm for astronomy in his early elementary years. He became active in our Tulsa Astronomy club in high school and became a board member during his college years at TU. He served as Vice Chairman for the for the MidStates Convention our Tulsa club hosted in 2003. He was very instrumental in helping with publicity and obtaining door prizes

As a student at TU from 1999-2003, his team developed a Microgravity experiment called Grains to test how small particles coalesce in space. This was part of the Space Shuttle "Get Away" program to put small experiments in space. Their project was flown and tested with zero-G KC-135 in 2003 and 2004 (while he was at Rice). But unfortunately, didn't make the shuttle because Columbia accident happened in Feb 2003. After that the Shuttle program essentially stopped

What's Going on in the Night Sky this month? By John Land



Our friends from the Bartlesville Astronomical Society passed along this great resource night to night things to see and even a video link.

<https://www.beckstromobservatory.com/whats-up-in-tonights-sky-2/>

Also Sky and Telescope has an audio podcast you can listen to while under the night sky. <https://skyandtelescope.org/observing/sky-tour-astronomy-podcast/>

Both websites renew information each month

October nights bring early sunsets and cooler temperatures to enjoy an evening of observing. **Jupiter** and **Saturn** are still prominent in the early evening but set before midnight. Take advantage to observe them while they are still well placed. Watch as they draw closer together for an extremely close conjunction just before Christmas.

Mercury hugs the western horizon just after sunset but its low altitude prohibits useful observation. **Neptune** is just passed opposition and **Uranus** reaches opposition at the end of October. See finder charts on the next page. **Venus** rises 3 hours before sunrise and shines brightly in our predawn skies.

The **Orionid Meteor shower** reaches its peak Oct 21st in moonless skies with a peak of about 15 meteors per hour in dark skies. These meteors are fragments of Comet Halley. Screaming in at around 148,000 mph, these fast meteors often leave behind smoke trains visible in binoculars. Members of this shower can be seen for several days either side of its peak.

October is here and Mars is Center Stage ! This is best opposition until 2035.

Rising just after sunset ruddy Mars outshines Jupiter at magnitude -2.6 Its apparent size at 22.6" is 33% larger than the disk of Saturn. It will be closest to Earth on Oct. 6 and at opposition with the Sun on Oct 13th. At about 100x or so its tiny southern polar cap can be seen and some of its dark surface features can be seen. Filters of various colors can help bring out the details.

To improve your viewing your telescope needs to cool down to the outdoor temperatures. Wait until Mars is 30 degrees or more above the horizon. When possible try to avoid observing over hotter surfaces like roads and buildings. Be patient – wait for those moments of great seeing.

Observe it on several nights and make sketches of what you see. To see different regions of Mars surface, observe at different hours of the evening as Mars rotates.



Tips for Observing Planets in our August newsletter.

https://www.astrotulsa.com/CMS_Files/08-2020.pdf

What side of Mars is visible?

<https://skyandtelescope.org/observing/interactive-sky-watching-tools/mars-which-side-is-visible/>

For a Detailed preview of the *THE 2020-2021 PERIHELIC APPARITION OF MARS* see the article by Jeffrey D. Beish http://www.alpo-astronomy.org/jbeish/2020_MARS.htm

Interested in “discovering” and observing the Ice Giants?

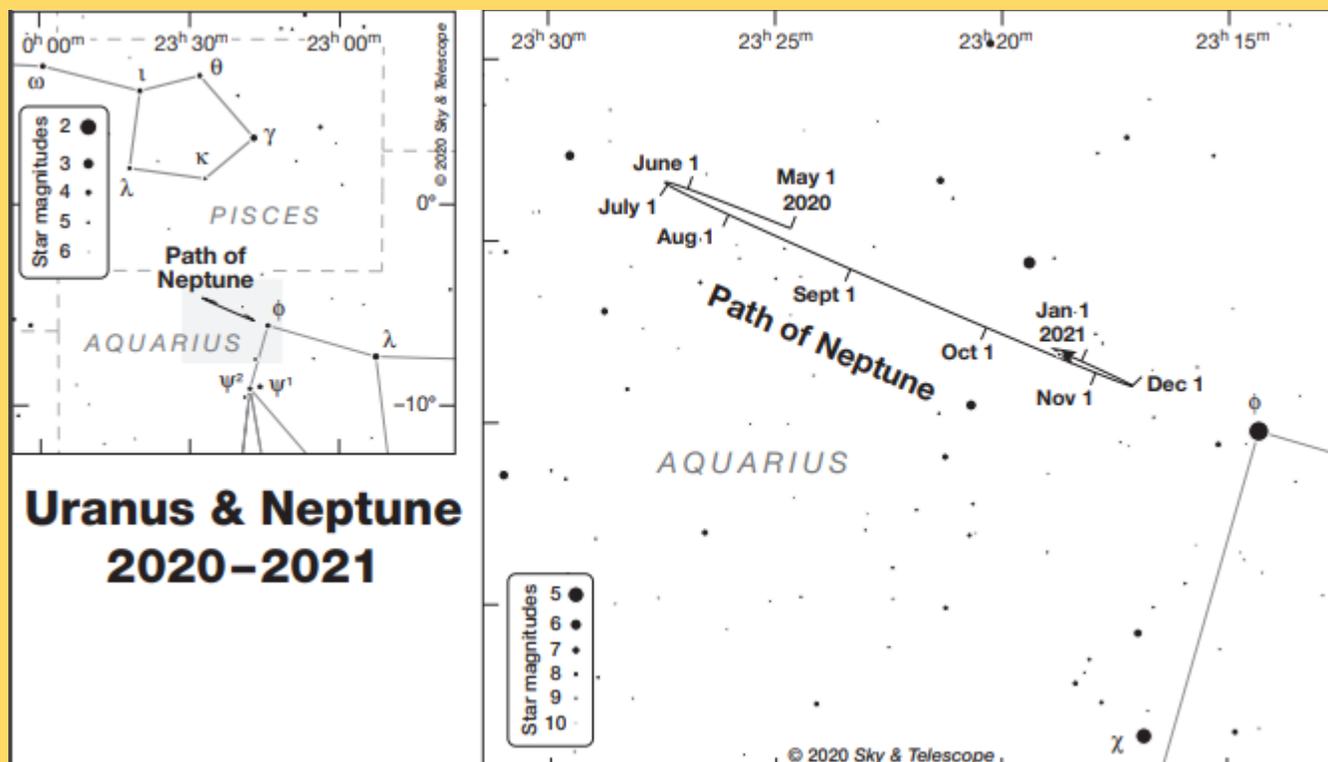
Uranus, mag 5.7, lies about 12 degrees east of Mars in Aries above the circlet of the tail of Cetus. Since there are few bright stars nearby it is the harder region to locate. It reaches opposition Oct 31st.

Neptune, Mag 7.8, is easier to locate as it lies just off the top of the water jug in Aquarius. It reached opposition September 11th, so this is a great month to observe it.

You'll find detailed finder charts at <https://skyandtelescope.org/observing/ice-giants-neptune-and-uranus/>

The equipment you'll need are a good pair of binoculars or a small telescope. A star chart such as the one shown from the links below. “(Most good phone apps or computer programs can show you where to look). A pencil and paper to make sketches of your observation star fields over a period of nights. The best way to confirm you have located the correct “star” is to make a sketch of the suspected star field in a low power. Then return to that same field a night or two later and see which object has changed position and make another sketch. If you continue that quest over a period of weeks, you'll learn how planets move among the stars.

Once you think you have identified the planet take a look at it with magnifications of 80 to 100x. Uranus should look like a tiny blue-green disk. There aren't any green stars so it's easy to identify. Stars don't get larger with magnification, but a planet will (except for Pluto of course) Neptune is a bit more of a challenge. To me it looks like a tiny steel blue disk. Reminds me of my “Steely shooter” marble I had in grade school.



How Unique is 2020 ?

By Brad Young

You may have heard that there will be a rare full moon on Halloween this year. Since we have not had enough strange things happen this year, we need one more “never before seen” natural phenomenon to cap off what has been a banner year. We may not have had enough pestilence, disease, fire, smoke, hurricane, tornado, drenching rain, and parching drought to satisfy man's constant need for wonder.

Luckily, we have a “never seen” full moon right around the corner. You will probably see this story all over the news and in some articles, but I wanted to really drill down to discover what makes this particular full moon so special, perhaps even unique. So, I set up a filtering system, looking at each way the 2020 Halloween Moon is different than others, working back from the previous time that kind of moon phenomena occurred to the first time it ever occurred.



Full Moon

I started off with how often a full moon occurs. This seems trivial; we all know the Lunar Cycle (synodic) is 29 or 30 days, but you must start somewhere. Before this Halloween there will be a full Harvest Moon on October 1st, 2020. As for the first occurrence of the Full Moon, I doubt anyone was around to see it, or at least is not still around to tell us about it.

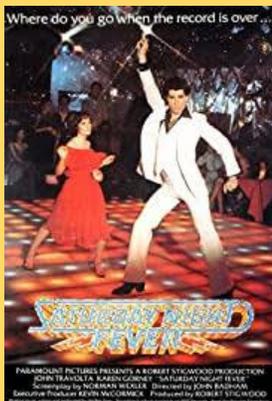
Halloween

Maybe another “given”, but when did Halloween start? If you’ve ever watched “Drunk History” you know that it came into its current form in 1914 when Ms. Elizabeth Krebs of Hiawatha Kansas got sick of her garden being trampled. But Halloween as a pagan festival dates to at least the birth of Christ when Picts and Celts celebrated Samhain. They lit bonfires and wore costumes to trick and spook the spirits to go away and leave them alone.



Saturday Night

Halloween falls on Saturday night, not surprisingly, every few years. In fact, the last one was only in 2015. My next filter was when was the last full moon on a Saturday night? That occurs often too, as anyone who has ever tried to observe on a weekend knows. If you are not too picky about exactly what Saturday night means then the last such full moon was at 1:33 a.m. on February 9th, 2020, just a bit over into Sunday morning. I didn’t bother with tracking down when we started calling it Saturday, because it was a long time ago. Besides, what we call Saturday has always been, in some fashion, extant as long as there have been weeks. The first full moon on a Saturday night is probably also lost to antiquity.





Blue Moon

Well then what about the fact that this year, the Halloween Full Moon is also a “blue moon”? After all, a second full moon in one month is uncommon. Unfortunately, there have been several different definitions of what a “blue moon” is. The earliest example I can find of a blue moon was the older definition of it when it appeared blue to the eye. This subjective report first seems to be documented in 1883 when the island volcano of Krakatoa blew up. Sunsets and the rising full moon appeared blue because the red light was scattered by trillions of tons of ash, blown clear around the world by the jet stream and trade winds.

Boy does that sound familiar...

If you want to wait until people started defining the blue moon as a second full moon in a month or fourth full moon in a season, that wasn't really clarified until the 1980s. There seems to still be some doubt as to when the seasonal use started, but that doesn't really affect this study. And blue moons aren't that rare, the last one occurring on March 31st, 2018.

Note: if you ever want to go down a “Wikipedia hole” just start by googling blue moons.

Blue Moon on Halloween

But requiring it to be a blue moon on Halloween narrows it down to be the same as the last full moon on Halloween. Every full moon on Halloween must be a blue moon, if you use the second full moon in the month definition. Since the lunar cycle is only 29.5 days, any full moon on Halloween would, by this definition, always be blue. The last blue Moon on Halloween on a Saturday night was October 31st, 1925. It's arguable whether that full moon was called blue, but just in case someone somewhere had adopted that tradition by then, I counted it.

Blue Moon on Halloween with Mars Near Opposition

I guess having to look back to the days of flappers surprised me a bit, but then I thought what about the fact that Mars is very near opposition and will be a big red bright light near the full moon? It turns out that you only have to go back to 2005 to find a Mars closer to Earth on Halloween. In fact, it was closest to Earth on October 30, 2005 for that opposition, so it was closer than it will be this year. I didn't bother looking up when the last time Mars was at opposition on a full Halloween Moon. That promised to take me to a whole bunch of astrology sites that I really didn't want to look at.

Blue Moon on Halloween on Saturday with Mars Near Opposition and Daylight-Saving Time Ends

So finally, I looked at my last filter. This year the full blue Moon on a Saturday Halloween with blazing red Mars right near it also happens to occur on the night we turn our clocks back at the end of daylight-saving time. This my favorite day of the year because daylight saving time is finally over, and we can observe at decent hours. This year's unique lineup of cycles means that Halloween night will also seem to be an hour longer, in a way. So, I wondered when the last time that happened in conjunction with a full moon on a Saturday night. Of course, the end of daylight-saving time always happens on Saturday night / Sunday morning, so that was a given.

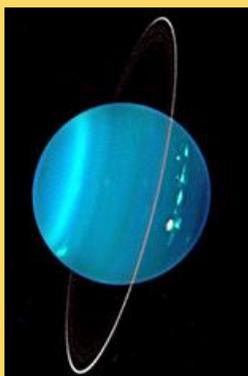
Much to my delight I finally found something that makes this year's situation completely unique in all human history. We didn't start using daylight saving time, except during wars, until 1966. So, since the last Saturday Full Blue Halloween Moon was in 1925, that would have been the first chance to have it on a change the clocks night. But we weren't at war in 1925, hence not on daylight saving time. In fact, it had recently been abolished, despite a veto by President Wilson, because it was so unpopular. This was one of the few times a bill has bucked a presidential veto – driven mainly by farmers, who hated the shifting time. Besides, in all cases during both world wars, the clocks were not turned back on the first Sunday in November, it was always the last Sunday of October.

Resolved: 2020 is Unique

So it comes down to the fact that this full Hunters Moon, which happens to be blue, occurs on a Saturday night, which happens to be Halloween, and happens to be the Saturday night that we turn our clocks back in 2020.

Now you will be able to tell your grandchildren that you saw something happen in 2020 that no one has ever seen before. And that's when they will turn to you and say,

"You're going to have to be a lot more specific, Grandpa!"



Editor Note: In addition to all these cosmic coincidences that Brad found, the planet **URANUS** is in **OPPOSITION** on **Oct. 31, 2020**. The **FULL BLUE MOON** is also at its opposition to the Sun / Earth line and only 3 ½ degrees from the moon at 11:30 AM CDT. You won't be able to observe Uranus that night with the full moon so close by, but it will still be there.

So, I got to wondering when was the last time Uranus and the full moon were close together on a Halloween night? And was that near opposition? The Synodic period of a planet is the time it takes the Earth and the planet to arrive at the same approximate position to each other and the Sun. In racing terms, the time it takes the Earth to lap the planet around the Sun. The Synodic period of Uranus is 370 days. So if you divide

$365/5 =$ about every 73 years Earth and Uranus line up for opposition near Halloween.

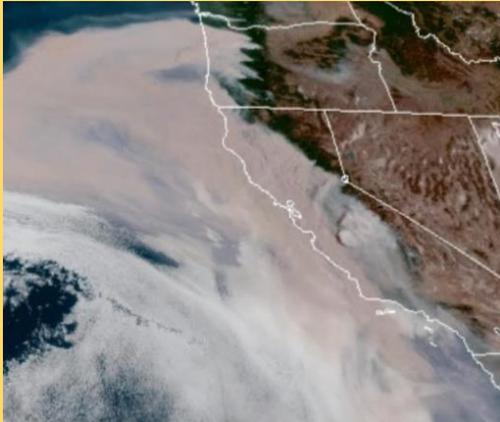
To my amazement that was Oct 31, 1947 – the night my Dad was racing through the night with my Mom to a small rural hospital in western Oklahoma with a baby, ME, on the way! Even got stopped by the police on the way! Some of you have heard the *"Rest of my story"* about my birth on November 1st. The Moon was full on Oct 29, 1947 but Uranus didn't reach opposition until Dec. 16

I did some more poking around on my phone App and found that Uranus was at opposition on Oct 30, 1936 with the Full Moon only 4 degrees way. That made astronomical sense too since Uranus' Sideral Year is 84 or our years. The Sideral year is the time it takes a planet to reach the same point in the sky in relation to the stars. So, every 84 years Uranus will be in Pisces again as the Earth passes it in late October. The next Uranus opposition in Pisces will be Nov 1, 2104 and the Full Moon is Nov 2, 2104.

Now some of you math whiz kids can have fun doing more "digging" into astronomical "ghostly tales"

Well Enjoy your Spooky FULL BLUE MOON, MARS, URANUS SATURDAY NIGHT HALLOWEEN

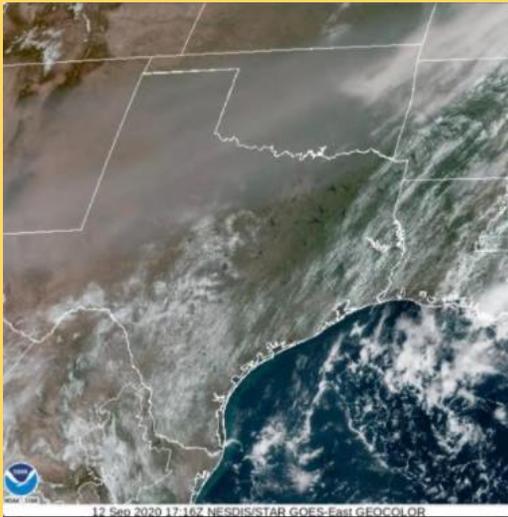
We've all seen the news about west coast fires. But we didn't expect them to affect us here in Oklahoma. However, smoke obscured our skies for both our observing weekends in September. Many people even reported smelling the smoke in the air. Smoke caught up in the jet streams more than 34,000 feet overhead was eventually seen as far as New England and Norway.



West Coastal fires Sept 9th



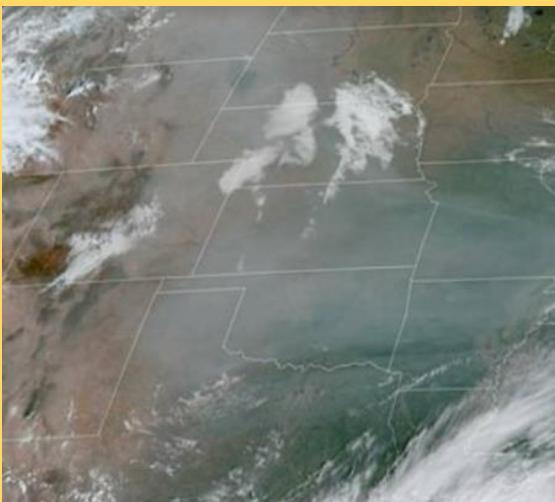
Golden Gate bridge with Pumpkin skies Sept 10th



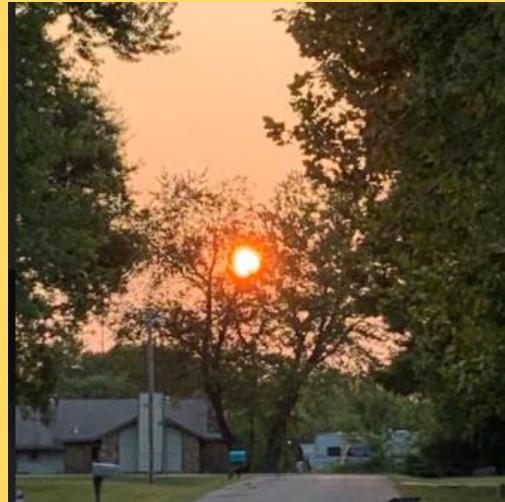
GOES satellite Image Sept 12



Observatory "Sun" 6:00 PM Sept 12



Observing Night Smoke again Sept 18



Smokey Sunset Sept 20

TREASURER'S and MEMBERSHIP Report

BY JOHN NEWTON



As of September 25th, we have added **8** new members bringing the total to **185** members.

We welcome this month our newest members since my last monthly report, including **Duane Verrett, Phillina Godden, Eric Erler, Brett Emerald, Jamie Mears, Brad Gibson, Michael Lunsford and Roger Jolliff**. Hello and welcome to ACT! We look forward to seeing you all at our meetings, even if virtual, and at club events throughout the year when they resume. We also recognize all our long-term members who continue to be the foundation of the club.

Accounts as of September 25, 2020

Checking: \$ 6,895.64

Savings: \$ 7,784.53

Investments: \$ 24,549.87 (Value tends to fluctuate with markets).

The club now has **PayPal** available for you to start or renew memberships and subscriptions using your credit or debit cards. Fill out the registration form at <https://astrotulsa.com/page.aspx?pageid=16> **Click Submit** and you will be given the choice of either **mailing in your dues** with a check **or using PayPal** which accepts most major credit cards. A modest processing fee is added to PayPal transactions.

You may also renew your membership or join at one of our club events using your credit card by seeing one of our officers. We can take payments with the Square card reader. A small fee is also added on to these transactions.

ALSO NOTE: For our current members who are renewing their memberships, you can now go to a new link on the website to start your renewal process. On the home page, hover over the "Member" tab on the ribbon menu near the top of the page. Then select the "Membership Renewal" link and this will take to a page to fill out your information. Fill this out, submit it, then pay your dues by whatever method you choose.

NEWS NOTE: Both Sky & Telescope and Astronomy have free Digital subscriptions available with print subscriptions, or Digital subscriptions may be purchased separately. Details - Contact their websites

Membership rates for **2020** are as follows:

Adults: \$ 45 per year, includes Astronomical League Membership.

Sr. Adult: \$ 35 per year for those 65 or older, includes Astro League Membership.

Students: \$ 30 with League membership; Students: \$ 25 without League membership.

Additional Family membership: \$ 20 with voting rights and League membership.

\$ 15 with voting rights but without League Membership.

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

Join Online – Add or renew magazine subscriptions.

<https://www.astrotulsa.com/page.aspx?pageid=16>

Magazine Subscriptions: If your magazines are coming up for renewal, try to save the mailing label or renewal form you get in the mail. Forms are available on the club website.

Astronomy is \$ 34 for 1 year, or \$ 60 for 2 years. www.astronomy.com

To get the club discount you must go through the club group rate.

Sky & Telescope is \$ 33 per year <https://skyandtelescope.org/>

Sky & Telescope also offers a 10% discount on their products.

You may renew Sky & Telescope subscriptions directly by calling their number -**be sure to ask for the club rate.**



Comic Clip sent in by KC Lobrecht

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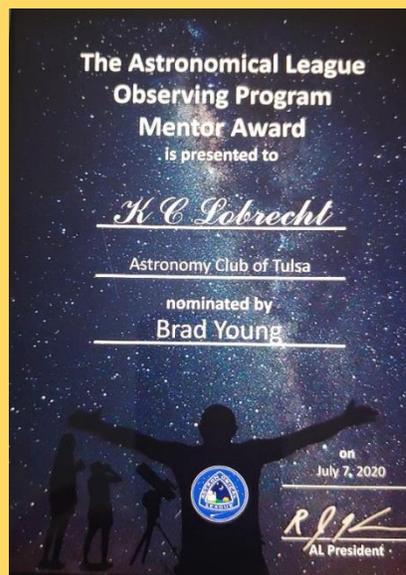
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WEBMASTER JENNIFER JONES



**Create a Cartoon or Funny line
 with an Astronomy theme
 and Send in your Best Ones !**

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