



OBSERVER

MARCH 2020

Bringing Stars to the eyes of Tulsa since 1937

Editor - John Land



Elephant's Trunk Nebula IC 1396

Member Michael Blaylock took this image over several nights in Nov 2019 at our club observatory. This image is the product of 54 – 20 minutes exposures totaling 18 hours of imaging. His telescope is a William Optics GT 81 Apochromatic refractor on a Losmandy G-11 Geminin II Mount. The camera was a SBIG STF 8300M using Baader SII, O III and Ha filters. Images processed with Pixinsight 1.8, Main Sequence Software SGPRO, PHD guiding PHD 2

The **Elephant's Trunk Nebula** is a concentration of [interstellar](#) gas and dust within the much larger ionized gas region IC 1396 located in the constellation [Cepheus](#) about 2,400 [light years](#) away from Earth https://en.wikipedia.org/wiki/Elephant%27s_Trunk_Nebula Located at RA 21h 34' 56" Dec +57° 31' 12"

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New Jenks High - Planetarium Show – Sat. Feb 29 & Mon. Mar 2 Details Page 13

UNDISCOVERED WORLDS: THE SEARCH BEYOND THE SUN

This show explores a timeless question: Do other planets like Earth exist?

Feb 29 10:30 to 2:00 Telescope 101 Workshop and Observing Night

Its not too late to Register - http://astrotulsa.com/Events_Details.aspx?id=1105

Astronomy Club Events

Details at <http://astrotulsa.com/Events.aspx>

Be sure to check the Website for Weather Cancellations before coming.

MARCH				
GENERAL MEETING		FRI, MAR 6	19:00	JENKS PLANETARIUM
OBSERVATORY WORKDAY		SAT, MAR 7	9:30 AM >	OBSERVATORY
DST BEGINS	FULL	SUN, MAR 8		
PUBLIC NIGHT		SAT, MAR 14	19:00	OBSERVATORY
ST PATRICK'S DAY	LAST Q	TUE, MAR 17		
JENKS P Sch SPRING BREAK		MON, MAR 16 - FRI, MAR 20		
VERNAL EQUINOX		THU, MAR 19		
MEMBERS' NIGHT		FRI, MAR 20	19:30	OBSERVATORY
MESSIER MARATHON	NEW	SAT, MAR 21	TBA	TUVA
OBSERVATORY WORKDAY		SAT, MAR 28	9:30 AM >	OBSERVATORY
APRIL				
GENERAL MEETING		FRI, APR 3	19:00	JENKS PLANETARIUM
SIDEWALK ASTRONOMY	1ST Q	SAT, APR 4	20:00	BASS PRO
EASTER		SUN, APR 12		
PUBLIC NIGHT	LAST Q	SAT, APR 18	19:30	OBSERVATORY
MEMBERS' NIGHT	NEW	FRI, APR 24	20:00	OBSERVATORY



Registration is now open for the 2020 MidStates Regional Astronomical convention

MSRAL is being cohosted by the **Astronomy Club of Tulsa** and the **Broken Arrow Sidewalk Astronomers**.

Friday 6/12 to Sunday 6/14
Time: 12:00 PM Friday to 11:30 AM Sunday

Jenks High School Planetarium
105 East "B" Street Jenks, OK 74037

More Details at <http://www.msral.org/>

Registration at <https://msral2020.wixsite.com/register4msral2020>



Friday evening activities include a meal and invitation to visit the ACT Observatory near Mounds, OK for a star party and observing scavenger hunt for the youth.

Saturday during the day there will be speaker presentations in the conference room for the adults. Visitation in the Lobby area with fellow astronomy enthusiasts. Also, astronomical vendors may have displays set up to show off their products. Drawings for door prizes will be held throughout the day.

A special feature this year, there will be a Student MSRAL Conference held in the Jenks High School Planetarium that is open to high school students 9th - 12th grades only. The student sessions will be run by Dan Zielenski, Planetarium Director and 2018 Horkheimer Smith Award winner and Co-Vice Chair of this event, Abby Bollenbach. The peer run conference will be accessible to all students - blind/legally blind, deaf/hearing impaired and non-ambulatory.



Saturday night features a full-service banquet held at the nearby Crowne Plaza Hotel.



Our keynote speaker for the banquet is Dr. Kathryn Garner-Vandy, Assistant Professor of Aviation and Space at Oklahoma State University in Stillwater, OK. She has a PhD in Planetary Sciences from the University of Arizona and a BS Geology summa cum laude from the University of Oklahoma, where she also learned how to fly. Dr. Kat's two main loves are space and flight. Her research interests include the study of meteorites, planetary differentiation, commercial space flight, student pilot flight training, and STEM education in underrepresented groups. She lives in Tulsa with her husband and four children and in her spare time, she enjoys boxing and weightlifting.

PRESIDENT'S MESSAGE

BY TAMARA GREEN



Hey Y'all,

March is going to be a BUSY month for us! We have observatory workdays and our annual Messier Marathon to go along with our usual monthly events.

Our General Meeting will be on Friday, March 6, at the Jenks Planetarium, starting at 7:00 PM. Our own Brad Young will be our guest speaker! He will be doing a talk on observing satellites and an app called TruSat, which was produced with input from him and others!

There will not be a Sidewalk Astronomy event at Bass Pro in March, due to Telescopes 101 and Star Party at TASM on Saturday, February 29. We are having this special event at TASM in lieu of our regular Sidewalk Astronomy event.

We have two WORKDAYS scheduled at the observatory to get it (hopefully) ready for MSRAL 2020. They will both be on **Saturday mornings, March 7 and March 28. Both will start at 9:30 AM. ANY AND ALL VOLUNTEERS TO COME HELP WILL BE VERY MUCH APPRECIATED!!!** There is quite a lot to do to get the observatory nice and prettied up for MSRAL, so if you are interested, please **contact Tamara Green at astrotulsa.pres@gmail.com or Facilities Manager James Taggart at astrotulsa.obs@gmail.com** Again, we need all the help we can get!

Daylight Saving Time begins on Sunday, March 8, so remember to set your clocks forward one hour on Saturday Night, March 7, before you go to bed!

Public Night will be on **Saturday, March 14** at the Observatory, starting at 7:00 PM. We need volunteers to come out and help in various areas to make the event go smoothly and to ensure our guests will have an enjoyable evening. If you are interested in volunteering, contact me astrotulsa.pres@gmail.com

Members' Night is Friday, March 20, at the Observatory, starting at 7:30 PM. We will need keyholders to open and close the observatory, so if you are available, contact me at astrotulsa.pres@gmail.com

Our annual **Messier Marathon is scheduled for Saturday, March 21 at TUVA**. The Messier Marathon is for our members only. There will be a potluck dinner and group photo before the marathon begins, plus there will be a caravan to TUVA planned. Details and a Messier Marathon packet will be coming soon, so please watch your emails!

If you are planning of going to TUVA for the Messier Marathon it would help with communication if you would send me your name – a phone # and email at astrotulsa.pres@gmail.com

There will be contingency plans in place this year for the marathon. The first plan is to have the marathon at TUVA, with the potluck, group photo and caravan to TUVA. The caravan will ONLY be going to TUVA. After the marathon is over, or when you decide to leave TUVA, you are on your own going back home. However, chances are, you will be able to find someone to follow back or to follow you back if you need it.

In the event that the weather will be conducive to a marathon, but Ron and Maura determine that the ground at TUVA is too muddy to have the marathon there, then it will be held at the Observatory. If this is the case, there will not be a caravan, but we will still have a potluck dinner and group photo before the marathon begins.

In the event that the weather just outright turns to doo-doo, and is cloudy and/or rainy, then instead of a marathon we will do a social dinner, restaurant TBA.

Please keep in mind that I will not know UNTIL THE DAY OF THE MARATHON which way this is going to play out. Ron will have to call me on that day to let me know what the plan is. He usually calls me in enough time for me to make announcements to the club. I will be sending an email to everyone in plenty of time for all of y'all to make plans accordingly, so please keep an eye on your emails on that day!

I hope to see you at our events this month.

Clear Skies,

Tamara Green

OBSERVATORY CLEAN UP WORKDAYS –

Come one come all, for the great 2020 spring cleaning to great ready for MSRAL . We have scheduled **TWO Observatory Clean Up and Work Days on Saturday March 7 and March 28. Starting at 9:30 AM** . On **March 7th** we will be having an **Outdoor Cleanup** day. We shall be cutting down plants around the fence line, road and clean up our parking lot. If you have wide brooms, weed eaters, pruners or chain saws bring them. **March 28th** we will be having an **Indoor Cleanup** day. We will be painting, cleaning and some minor construction work. Pizza will be provided to the workers on both days. If you have any questions, please don't hesitate reaching out to me. **To volunteer - Contact our Observatory Manager James Taggart**

- astrotulsa.obs@gmail.com



March Sky Happenings *by John Land*

The Planets - Venus dominates western sky after sunset. In early March Venus stands 40 degrees high in the western sky shining at -4.2 On the weekend of March 8 it lies just 2 degrees right of Uranus. By month's end its apparent size has increased from 19.1" to 24.6" and its magnitude has risen to -4.4 On the evening of April 2 & 3 Venus will pass through the Pleiades cluster. The best time to view Venus in your telescope is before twilight ends to reduce the contrast between the planet and that sky

With Daylight Savings time arriving on March 8th we get an extra hour of observing before dawn. On March 8 the planets Mars, Jupiter and Saturn form a line 15 degrees long in the SE sky before dawn. On the morning of March 18, the moon forms a tight triangle with Jupiter and Mars. Jupiter and Mars are in conjunction on March 20 and Mars with Saturn on March 31. Later in the month, Mercury joins the predawn show. Rising an hour before sunrise Mercury reaches its greatest morning elongation on May 23rd 28 degrees west of the Sun. It will be a difficult to find as it is on 11 deg high at sunrise.



Observing Challenge – Observe Venus Naked Eye during the Daytime. Yes, Venus can be seen naked eye before sunset if you know where to look. On Mar 24th Venus reaches its greatest evening elongation from the sun, lying 46 degrees east of the sun. A good date to try to locate it during daylight is Mar 28 when the crescent moon is nearby. Binoculars will help you locate Venus. To avoid accidentally looking toward the Sun, stand in a shadowed area to decrease the sun’s intensity. Look for it 7 deg to the right of the moon. The times I have seen it – it appeared like a tiny silver balloon sitting still in the sky. In fact a few “UFO” sightings have been attributed to someone accidentally seeing Venus “Hovering Silent and Motionless” over their town.

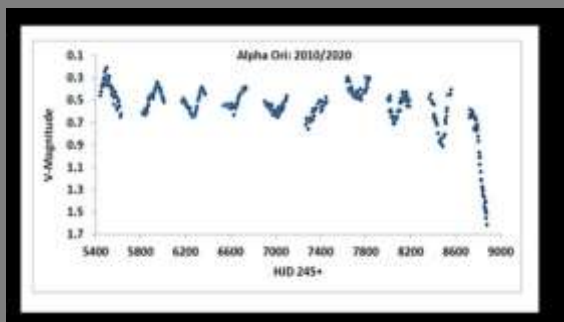
Will Betelgeuse recover its brilliance?

In our [February newsletter](#) I wrote about the unprecedented dimming of Orion’s bright red giant star Betelgeuse that had dimmed from a bright 0.5 mag to +1.7 in just a few months.



Astronomers worldwide were speculating whether this might be a sign that the star might go Super Nova in the near future. Telescopes worldwide turned toward the star. The European Southern Observatory’s Very Large Telescope (VLT) took images showing not only how much the star has faded but also that its shape has changed.

Astronomers have long known that the star was a variable going thru cycles goes through several months to 6 years. With a sharp peak at 430 days. One suggestion for the dimming was a conjunction of several of these cycles coming to a peak at the same time.



Above shows a 23 year record of the stars variability



Above shows the decline from Nov 11, 2019 to Feb 19, 2020

Astronomers Ed Guinan and Richard Wasatonic of Villanova University recently suggested that Betelgeuse might "bounce back" within a week of Feb. 21st. The graph on the right from Feb 19 indicates a upsurge of its brilliance around Feb 14, 2019.

Resources to learn more.

<https://www.skyandtelescope.com/astronomy-news/observing-news/is-betelgeuse-approaching-a-crossroads/>

<https://spaceweather.com/archive.php?view=1&day=20&month=02&year=2020>

TRUSAT

A New Approach to Space Sustainability By Brad Young

Citizen Science and Astronomy

Citizen science has always been a part of astronomy. Amateurs have made critical discoveries, observations, and derived important conclusions throughout the history of the science. However, much of this activity was limited to a few wealthy or connected people. Things have changed with the availability of formerly professional level instruments within the budget of the amateur. Good thing, as amateur support has become a necessary part of astronomy over the last few decades. As governmental investment has waned, institutions have had to tighten their budgets and curtail the number of professional astronomers. Meanwhile, we are gathering more and better scientific data than ever before, from various sources. We are blessed with space probes and ground-based instruments that search and record everything from photons to gravitational waves. But all those wonderful instruments must be operated, scheduled and maintained. That reduces the time to go through the data and derive conclusions from what is obtained.

That's where we can help. Amateur astronomers have always been ready and willing to help increase scientific knowledge and advance the use and exploration of space. New ways to help are being developed all the time, and I have had the pleasure of being an adviser on the development of a new one, TruSat.

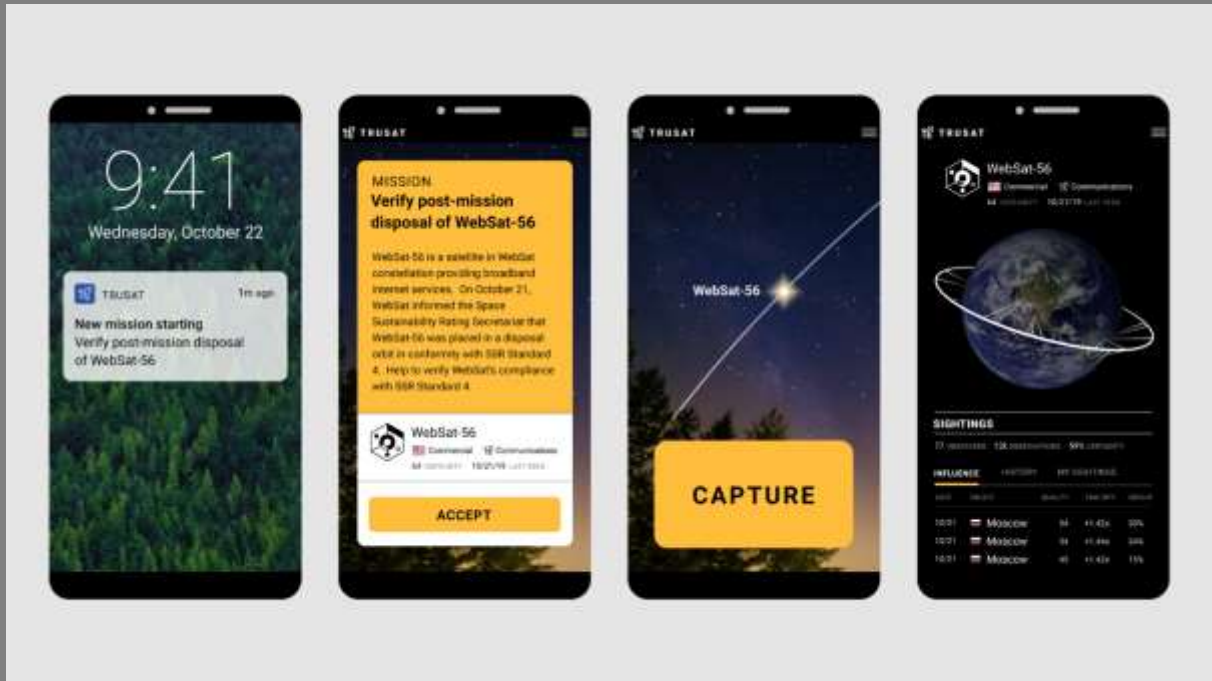
TruSat

TruSat is software platform for assembling observations of artificial satellites made by amateurs around our planet into an independent record of satellite orbits, which can eventually be used to measure satellite operator performance against emerging sustainability standards for space. Many of us are interested in satellite tracking, but to be frank, the software and apps out there now require quite a steep learning curve to become useful to the average amateur astronomer. Many of the resources available were developed years ago and have not been updated to match what people today consider a user-friendly tool. TruSat has as its goal a point-and-click functionality that makes satellite tracking and reporting more of a sport and less of a hassle. As an open source project, progressing TruSat toward this goal will depend on the ideas and efforts of a global community of contributors.

But you may ask, why track satellites at all? Doesn't the Air Force track all of them and report orbits? How can I really contribute to the scientific community by tracking satellites? The answer is that you can contribute, and there isn't a better time than now to start. A sort of perfect storm has been brewing with our orbital infrastructure. As government funding has tightened, the number of satellites in space has grown quite steeply over the past few years. Instead of big rockets with big payloads as in the past, most launches today consists of several small payloads, some only a few inches in diameter. The expanding use of near-earth orbit infrastructure has certainly benefitted mankind, as we have been able to provide critical services such as GPS, weather forecasting, and worldwide communications. And with the use of smaller devices, launches require less fuel, reducing costs and emissions. But there is the effect of crowding the orbital space available with more and more objects.

TRUSAT

A New Approach to Space Sustainability By Brad Young



Example of a hypothetical future mission for TruSat. For a recent one, see Resources below.

Add to this the increasing problem of debris from both accidental and purposeful destruction of satellites, and the expected small parts from launches such as fairings, hatches, etc., and you have a steadily increasing threat of damage to crucial space infrastructure. Even things such as paint chips have caused damage to the International Space Station (ISS), and items too small to track with radar can cause destruction to satellites worth millions of dollars, and interrupt services we have come to rely on.

TruSat has been developed by ConsenSys Space to provide a crowdsourced, independent method of tracking satellites and predicting their orbits to ensure that we know where things are. This critical information may perhaps one day even predict and avoid a disastrous collision in orbit. A division of ConsenSys, which was founded by the co-creator of the Ethereum blockchain, ConsenSys Space is building collaboration platforms to democratize, diversify, and decentralize space endeavors. All programming and database information is open source and uses blockchain technology to ensure complete transparency throughout the process of data gathering and data analysis. That way, any political agenda, secrecy, or inability of government institutions to provide data on our space resources can be mitigated.

The timely, accurate derivation of the orbits of functioning satellites and "space junk" is called Space Situational Awareness. With our civilization now dependent on satellites, this has become an issue we all need to consider. The loss of crucial satellites in orbit may affect you in ways you don't even realize when you can't order anything via the web, don't get an accurate weather report, or find your GPS is unable to provide you map data or directions.

One function of TruSat is to provide a list of *PRIORITY* items for users to consider tracking preferentially. These are orbiting targets that have not been tracked for a while or are known to be undergoing swift changes or unusual behavior.

Getting Involved

So, how do I get involved with this effort? It's simple. If you have a pair of binoculars and a stopwatch or a smartphone, you have everything you need. You don't need to know the constellations perfectly, just be able to follow a star chart and pick out a few bright stars. And, best of all, you don't have to have dark skies; I observe all the time from downtown Tulsa. If you are already tracking satellites, this provides a way to report what you see and make useful citizen science input. And, as a member of the Astronomical League (if you're a member of ACT, you automatically are in the AL) you can earn a Citizen Science certificate for this work.

If you are interested in knowing how to use the app, and how to get started (or get better) at tracking satellites, please attend my presentation at the Astronomy Club of Tulsa General Meeting, March 6th at 7 p.m.

And if you want to get started before that or can't make the talk, go to the TruSat.org website and check out some of the material there. I have listed a few things from their site below for convenience, along with a few other sites you might be interested in looking at to get started and what I think is a very exciting branch of amateur astronomy.

If you have any questions before the meeting, feel free to contact me at my email address below. See you March 6th, and clear dark skies. My contact info: Brad Young allenb_young@yahoo.com

Resources

TruSat Main Website: <https://www.trusat.org/>

A recent TruSat Mission: [Mission #1](#)

A short video by TruSat: <https://www.youtube.com/watch?v=H-J7zngl6xE>

Astronomical League Citizen Science Program:

<https://www.astroleague.org/content/citizen-science-program>

Refer also to:

<https://www.astroleague.org/content/earth-orbiting-satellite-observing-program>

Daniel's Deep Sky Dozen

by Daniel Smith



This month's observing list will be centered around the Orion constellation, with objects being located in the Orion constellation or close to it. Orion has some of the best objects for viewing, including magnificent M42, the Great Orion Nebula. Indeed, the Great Orion Nebula is the favorite subject of many amateur astronomers for visual or imaging. All of the easy objects on the list can even be seen with binoculars.

Located close to M42 is the elusive Horsehead Nebula. To see it, you will need a very large telescope, filters, dark skies, excellent transparency, good eyes, and lots of patience. Even many experienced observers with the right equipment still have not seen the Horsehead. But this month, I want to challenge you to use imaging equipment along with your binoculars and telescopes. Many of this month's objects are easily seen in a wide-field image of the Orion constellation, including the Horsehead

Check out this tutorial on imaging Orion with a DSLR.

<https://petapixel.com/2015/01/18/tutorial-photographing-processing-orion-constellation/>

EASY

M42, The Great Orion Nebula - Orion

M43 - Orion

Collinder 70 - Orion

M41, Open Cluster - Canis Major

M47, Open Cluster - Puppis

M50, Open Cluster – Monoceros

MODERATE

M79, Globular Cluster - Lepus

NGC 2238, Rosette Nebula - Monoceros

DIFFICULT

SH2-276, Barnard's Loop - Orion

M1, Crab Nebula - Taurus

NGC 2024, Flame Nebula – Orion

VERY DIFFICULT

IC 434, Horsehead Nebula – Orion

Flame & Horsehead Nebula



Joshua Rhoades

Sky & Telescope Jan 2018



This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Dim Delights in Cancer

David Prosper

Cancer the Crab is a dim constellation, yet it contains one of the most beautiful and easy-to-spot star clusters in our sky: the **Beehive Cluster**. Cancer also possesses one of the most studied exoplanets: the superhot super-Earth, **55 Cancri e**.

Find **Cancer's** dim stars by looking in between the brighter neighboring constellations of Gemini and Leo. Don't get frustrated if you can't find it at first, since Cancer isn't easily visible from moderately light polluted areas. Once you find Cancer, look for its most famous deep-sky object: the **Beehive Cluster**! It's a large open cluster of young stars, three times larger than our Moon in the sky. The Beehive is visible to unaided eyes under good sky conditions as a faint cloudy patch, but is stunning when viewed through binoculars or a wide-field telescope. It was one of the earliest deep-sky objects noticed by ancient astronomers, and so the Beehive has many other names, including Praesepe, Nubium, M44, the Ghost, and Jishi qi. Take a look at it on a clear night through binoculars. Do these stars look like a hive of buzzing bees? Or do you see something else? There's no wrong answer, since this large star cluster has intrigued imaginative observers for thousands of years.

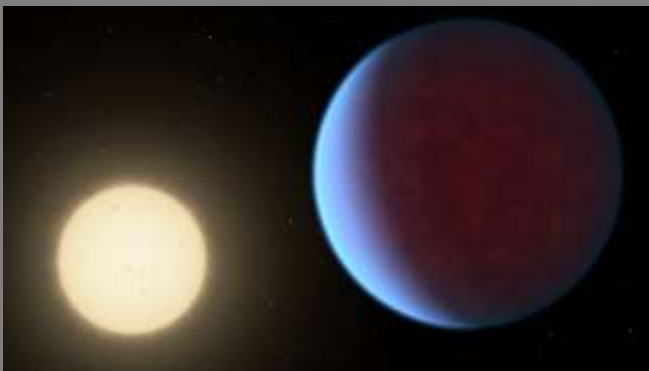
55 Cancri is a nearby binary star system, about 41 light years from us and faintly visible under excellent dark sky conditions. The larger star is orbited by at least five planets including **55 Cancri e**, (a.k.a. Janssen, named after one of the first telescope makers). Janssen is a "super-earth," a large rocky world 8 times the mass of our Earth, and orbits its star every 18 hours, giving it one of the shortest years of all known planets! Janssen was the first exoplanet to have its atmosphere successfully analyzed. Both the Hubble and recently-retired Spitzer space telescopes confirmed that the hot world is enveloped by an atmosphere of helium and hydrogen with traces of hydrogen cyanide: not a likely place to find life, especially since the surface is probably scorching hot rock. The NASA Exoplanet Catalog has more details about this and many other exoplanets at bit.ly/nasa55cancrie.

How do astronomers find planets around other star systems? The Night Sky Network's "How We Find Planets" activity helps demonstrate both the transit and wobble methods of exoplanet detection:

bit.ly/findplanets. Notably, 55 Cancri e was discovered via the wobble method in 2004, and then the transit method confirmed the planet's orbital period in 2011!

Get the latest NASA news about worlds beyond our solar system at

nasa.gov.



Artist concept of 55 Cancri e orbiting its nearby host star. Find details from the Spitzer Space Telescope's close study of its atmosphere at: bit.ly/spitzer55cancrie and the Hubble Space Telescope's observations at

bit.ly/hubble55cancrie Credit: NASA/JPL-Caltech

TREASURER'S and MEMBERSHIP Report

BY JOHN NEWTON



As Feb 21, 2020, the Astronomy Club has **159 members**

Welcome to new members – **Scott Englund, Joanna Ford, Patricia and Abby Allen, Alexander Foley, Katie Wright and Stefanie Niven**

We look forward to seeing you at our meetings and at club event gatherings. Also, a special 'Thank You!' goes out to our long-term members for their continued membership, commitment to the club and support.

Accounts as of Feb 21, 2020

Checking: \$ 6,757.58

Savings: \$ 5,783.33

Investments: \$ 26,292.29 (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 <http://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 2018 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.

<http://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 www.skyandtelescope.com

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.**



Jenks Planetarium Shows

Enjoy the Stars Indoors Rain or Shine
Great Family Outing opportunity

Reserve tickets Online at

<https://www.jenkscommunityed.com/search-for-a-class&cat=19>

Hint – Click the DATE column to resort by date.



Two New Shows using live streaming over the Internet
UNDISCOVERED WORLDS: THE SEARCH BEYOND THE SUN Feb 29 & Mar 2

This show explores a timeless question:
Do other planets like Earth exist?

EXPEDITION REEF April 4 & 6

Expedition Reef show reveals in exquisite detail the breathtaking beauty and biodiversity of coral reefs—and the scientists taking action to restore them.



SHOWS FOR ALL AGES!



TICKETS

\$5 online or \$7 at the door

Purchase online at
jenkscommunityed.com

or call **918-298-0340**

Dr. Kirby Lehman Center for the Study of Math & Science,
3rd Floor
Jenks High School Campus

WINTER/ SPRING SCHEDULE NEW! SHOWS

Monday Evening Shows

Feb 3	Earth Quake: Evidence of the Restless Planet (Ages 8 & up)	6:30pm
Mar 2	Undiscovered Worlds: The Search Beyond Our Sun (Ages 8 and up)	6:30pm
Apr 6	Expedition Reef (Ages 8 and up)	6:30pm

Tuesday Evening Shows

Feb 11	Earth, Moon & Sun (Ages 4 & Up)	6:30pm
Feb 18	From Earth to Saturn (Ages 8 and up)	6:30pm
Feb 25	Animals of the Sky (Ages 4 & Up)	6:30pm
Mar 10	Spacepark 360 (Ages 6 & Up)	6:30pm
Mar 24	Apollo 11: Man's First Step onto the Moon (Ages 8 & Up)	6:30pm
Mar 31	Solar System Protection Agency (Ages 4 & Up)	6:30pm
Apr 14	From Earth to Saturn (Ages 8 & Up)	6:30pm
Apr 21	My House Has Stars (Ages 4 & Up)	6:30pm
Apr 28	The Sistine Chapel (Ages 8 & Up)	6:30pm

Saturday Morning Shows

Feb 1	Earth Quake: Evidence of the Restless Planet (Ages 8 & Up)	11am
Feb 29	Undiscovered Worlds: The Search Beyond Our Sun (Ages 8 & Up)	11am
Apr 4	Expedition Reef (Ages 8 & Up)	11am

Saturday Evening Shows

Feb 1	How to Use a Telescope (Ages 6 & Up)	7pm
Feb 29	The Winter Sky (Ages 6 & Up)	7pm
Apr 4	How to Use a Telescope (Ages 6 & Up)	7pm

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

Check our Events Page of Dates [Link to Events Page](#)



During the school year our club holds a **Monthly General Club meetings** at **Jenks Public Schools Planetarium**
105 East B St, Jenks, OK
Located North of the intersection of 1st and B St
Meetings begin at 7:00 PM

Take the elevator to the 3rd floor.

[Click for Google Map Link](#)

2020 See the [Fall Planetarium Show Schedule](#)
Then click the **Date Column** to sort them by show date



Sidewalk Astronomy Night

East side of Bass Pro in Broken Arrow near the lake.
101 Bass Pro Drive, Broken Arrow, OK

[Click Map Link here](#)

On a Saturday evening near the 1st Quarter moon Astronomy Club volunteers set up telescopes to share views of the moon, planets and other bright objects. It's a come and go event where shoppers and restaurant goers get a chance to experience glimpses of the universe with their own eyes.



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.

PUBLIC OBSERVING NIGHT on a Saturday

This event is open to individuals and families.
Club members set up telescope 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. [Link to Events Page](#)

[Click for Observatory Map](#)

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

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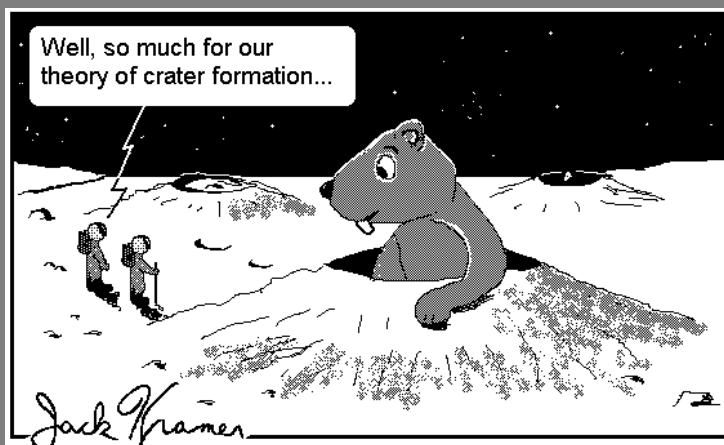
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WEBMASTER JENNIFER JONES



Lake Country Astronomical Society

Tired of Jokes ReRUNS

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

**Riddle – When can you add 2 to 11
and the correct answer will be 1 ?**

Hint >



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