ASTRONOMY CLUB OF TULSA

OBSERVER

SEPTEMBER 2018

Bringing Stars to the eyes of Tulsa since 1937

Astronomy Club goes "Public" in August

In this Issue

Important Message: Club officer and board elections are in October.
We will be electing a new treasurer and secretary as well as new board members.
Our club cannot exist without volunteers.
See President and Secretary sections for details.

Astronomy Club Events

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

SEPTEMBER			
PUBLIC NIGHT	SAT SEP 1	7:30 PM	ACT OBSERVATORY
MEMBERS' NIGHT	FRI SEP 7	7:45 PM	ACT OBSERVATORY
MEMBERS' night at TUVA near Checotah	SAT SEP 8	Leave 3:30 PM	TUVA observing area
GENERAL MEETING	FRI SEP 14	7:00 PM	JENKS PLANETARIUM
SIDEWALK ASTRONOMY	SAT SEP 15	6:30 PM	BASS PRO
AUTUMNAL EQUINOX	SAT SEP 22		
PUBLIC NIGHT	SAT SEP 29	6:45 PM	ACT OBSERVATORY
OCTOBER			
MEMBERS' NIGHT	FRI OCT 5	7:00 PM	ACT OBSERVATORY
MEMBERS' BACKUP NIGHT	SAT OCT 6	7:00 PM	ACT OBSERVATORY
OKIE-TEX STAR PARTY 2018	*OCT 6-14*	Western OK Panhandle	
GENERAL MEETING & ELECTIONS	FRI OCT 19	7:00 PM	JENKS PLANETARIUM
SIDEWALK ASTRONOMY	SAT OCT 20	5:45 PM	BASS PRO
NOVEMBER			
ANNUAL DINNER MEETING	FRI NOV 10	6:30 PM	JENKS PLANETARIUM

PRESIDENT'S MESSAGE

BY TAMARA GREEN

Hey Y'all!

We got to have some fun events this Summer, but there's more fun coming!

We will be holding a **member's observing night at TUVA Observatory on Saturday, September 8**. TUVA is at the rural home of Ron and Maura Woods a few miles west of Checotah, OK. Ron and Maura have hosted our annual Messier Marathon for many years. Since the spring session was clouded out this year, we are trying a fall event. There will be a caravan going to TUVA, just like for the Messier Marathons, and there will also be a potluck dinner before observing!

2018 Fall Messier Marathon 27th Annual Event
Saturday Sept 8 This is a MEMBERS EVENT
A Caravan will leave at 3:30 PM
From Burger King in Broken Arrow –
Take BA Expressway to Elm Pl exit –
Turn Right (South) about 1 block to first Light
Turn Right into Burger King Lot.

If you are going to follow the caravan Email – or TEXT Tamara Green
RSVP by sending your Name, Email and cell phone number to 918-851-1213 astrotulsa.pres@gmail.com

DO NOT FORGET TO REGISTER FOR OKIE-TEX 2018!!!! Registration is due by no later than Saturday, September 15. All registrations must be postmarked by no later than this date. That goes for both the star party registration and the meals registration. I am already registered, so I hope you will register too! I hope to see as many of you there as possible!

Public Night is Saturday, September 1, at the Observatory, starting at 7:30 PM. The Board have recently implemented safety and etiquette rules for guests that will hopefully keep them young'uns safe while visiting our observatory. And, as always, anyone who can volunteer to help out will be very much appreciated. More details on what is needed will be coming soon, via e-mail.

Labor Day is Monday, September 3. I hope all of you have a safe and happy Labor Day Weekend.

Member's Night is Friday, September 7, at the observatory, starting at 7:45 PM. I most likely will not be there due to having to cook and bake for the TUVA star party potluck.

Our General Meeting will be on Friday, September 14, at the Jenks Planetarium, starting at 7:00 PM. I do not yet have a program, but I am working on that. I hope to have one, and if I do, details will be coming soon.

Sidewalk Astronomy will be on Saturday, September 15. For now, it is planned to be at Bass Pro, but we have plans in the works to have a Sidewalk Astronomy event sometime at the Gathering Place. Details will be coming, so stay tuned!

15th Annual High Frontier Rocket Launches will be on Saturday, September 29 and Sunday, September 30, at the Pawhuska Airport. The Tulsa Rocketry Club will be doing the rocket launch during the daytime, and our club members will be doing a star party that evening. They have a 20,000 Foot launch clearance from the FAA. There are activities for kids to build and launch rockets. We usually get there at 9:00 AM each day to watch the launch and do solar observing, then we eat dinner at Bad Brad's BBQ, then come back to the airport for the star party. The event ends on Sunday, September 30 in the afternoon, I believe 5:00 PM. I hope to see you there as well.
More at **http://tulsarocketry.org/high-frontier/**

Our elections will be held at the General Meeting on Friday, October 19. I **WILL** be running for President again. But, we have two officers who are stepping down. John Newton has decided to step down as Secretary, and Tim Davis has decided to step down as Treasurer. If you know anyone who you would like to nominate for either of these two offices, or for a board position, please email John Newton at astrotulsa.secy@gmail.com with your nomination. The requirements for holding any office or board position are as follows:

You must be a fully-paid ADULT member IN GOOD STANDING of the Astronomy Club of Tulsa for a MINIMUM of ONE YEAR. Fully-paid memberships include individuals who have paid the full membership rate or family members who have upgraded to full membership by paying the additional $ 20 family rate. More Details in Secretary's message section.

As an Officer and Board member you should be willing to devote the time and effort to serve the needs of the club. This includes attending all General and Board Meetings, or at least as many as you can. Also, you would be expected to attend as many of our public viewing events as you can as well and helping at other planned club events.

WE NEED A QUORUM OF AT LEAST 20 MEMBERS WITH VOTING RIGHTS TO ATTEND THE OCTOBER MEETING!!!! So please make every effort that you can to attend!

I hope to see you at these events!

Clear Skies,

Tamara Green

August was a busy month for Astronomy Club Outreach Events *By John Land*

On Saturday Aug 11 we hosted a Planet / Meteor Watch night at Chisholm Events park in Broken Arrow. It was cloudy during the day Saturday and it looked like we might have to cancel. But a big open sky area cleared right about sunset to allow us to see four planets, Venus, Jupiter, Saturn and later Mars. We had about 20 club members and a dozen or, so telescope set up. Unfortunately, only a few meteors were sited.

Sixty to Seventy guests showed up during the evening. We were especially pleased to have several enthusiastic elementary aged kids attend. A couple of them even brought their own telescopes. Some of our club members were able to mentor them in setting up the scopes and locating the planets.

Timothy Ngo & Dad setting up his Meade DS 102 mm scope

Richard Brady – Ken Weikle help a young astronomer with her scope

This was an evening for “First Light” for new scopes. Ashton Yarbrough got to try out her newly acquired 8 inch Celestron and Tony and Jess Cagnolatti got to try their brand-new ATI RC6 for the first time.

On Saturday Aug 18 members of the Tulsa and Bartlesville club hosted an astronomy day at Woolaroc Museum and Wildlife Preserve located west of Bartlesville, OK. During the day solar telescopes were set up and the Bartlesville Youth had hands on activities for kids and guests that dropped by. That evening members of the Woolaroc Friends came for an evening session.
Tamara and Owen gave a talk on telescopes and afterwards telescopes were set up for viewing. Unfortunately viewing was mostly limited to viewing the moon through breaks in the clouds.
Thanks to Ed and Deana Underhill and Steve and Randi Farwell for helping out also.

Here in the Tulsa area we had a great group of guests drop by at our Sidewalk Astronomy session at Bass Pro. Clouds were an issue, but we managed to catch glimpses of the moon, Jupiter, Saturn and Mars.

Bartlesville Club and Youth activities

Showing the afternoon Moon in telescopes

Owen Green & friends discuss astronomy

Ed Underhill doing Solar viewing

Star Gazing in the Summer Triangle

by John Land

Labor Day weekend is the traditional "Last Gasp" of the summer vacationing season. Many people head out to the lake or other country locations for outdoor fun. For many city dwellers it's also one of the few times they get a chance to see the Natural Dark Starry Night Sky. This 2018 Labor Day weekend the waning crescent moon doesn't rise until midnight giving us three or more hours of dark sky.

The Summer Triangle is a large asterism composed to the three bright stars. *Here's a "HANDY" technique I used for many years to teach my students how to find the Summer Triangle. It may seem silly, but it works.*
Go out on a clear night during late August or early September around 9:30 to 10:30 PM. **FACE SOUTH** - Look almost **STRAIGHT OVERHEAD** for the **BRIGHTEST** star, **Vega.** Extend your **RIGHT** hand and **point to Vega**. Next take your **LEFT** hand moving left and point to the **next bright** star, **Deneb.** You now have the base of the triangle. Now take **both hands and draw them toward the south** in a **large "V"** shape to a bright star, **Altair** at the bottom of the triangle.
The Summer Triangle is really an Asterism *(simple star pattern)* made of the brightest stars in three constellations. Vega – in **LYRA** the Lyre, Deneb– in **CYGNUS** the Swan and Altair – in **AQUILA** the Eagle.

(Image from the Free App SkyPortal)

You can see the summer triangle from towns or suburbs but if you want to see the Natural Sky in all its wonder go to a dark rural location. Look carefully and you will see the whole triangle sits in the board band of light we call the **Milky Way.** You're really looking at thousands of stars in our galaxy from an edge on perspective. Take time to explore that area with binoculars or a wide field telescope.

MAGNITUDE is a numerical value we assign to stars to describe how bright they appear in the sky. The ***20 brightest stars*** *are called 1st magnitude.*
Vega is the 5th in that group, Altair 13th and Deneb 20th
Next are a 100 or so 2nd mag stars like the ones in the Big Dipper that average about 2.5 times dimmer. Each succeeding magnitude group becomes dimmer. The dimmest stars visible to the unaided eye in dark skies are 6th mag – 100x dimmer. Some planets and very bright stars are given a Zero mag or Negative Mag to indicate that they outshine the 1st magnitude stars.

So which star do you think might be closest to Earth? Most people would guess Vega because its brightest. The distance to stars is measured in **LIGHT YEARS** (LY)– the **DISTANCE** light can travel in one Earth year. Light travels an incredible **186,000 miles per second** taking only 500 seconds to travel from the Sun to Earth! That's 16 billion miles in a day! **One Light year is about 5.9 TRILLION miles.** When you look at Vega tonight you are looking at light the left **Vega** 25 years ago! - **25 LY** away. **Altair** is slightly dimmer than Vega, yet its distance is **16.6 LY** so it must be a dimmer star than Vega. Finally, we come to **Deneb # 20** in the list of brightest stars. Without "peeking" **make a guess how far away it is to Deneb.** 100 – 200 – 300 LY? Even with our modern distance measuring satellites, the distance to **Deneb is uncertain.** The best current distance is 1**,500 LY !** The light you see tonight left 1000 years before Columbus!

Comparing these stars to the Sun.

	Distance	Visible Mag	Size	Mass	Temperature	Luminosity
Sun	**500 sec**	**-26.7**	**1**	**1**	**5780 K**	**1**
Altair	**16.6 LY**	**0.931.7**	**1.7**	**1.8**	**7000 K**	**11 x**
Vega	**25 LY**	**0.02**	**2.5**	**2.1**	**9600 K**	**40 x**
Deneb	**1500 LY**	**1.3**	**200**	**19.0**	**8500 K**	**196,000 X !**

Evening Planets in September 2018

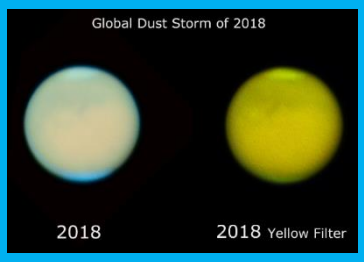
by John Land

As we approach the Autumnal Equinox on Sept 22, the sun sets earlier and earlier each evening. On Sept 1 sunset is 7:50 PM but by month's end it will set at 7:07 PM. The quartet of evening planets, Venus, Jupiter, Saturn and Mars we have enjoyed all summer continues into September.

Venus can be seen shining brilliantly in the west soon after sunset. Look for the star Spica in Virgo nearby the 1st of Sept. Bright **Jupiter** lays about 30 degrees east of Venus in the constellation of Virgo. Farther east is yellowish **Saturn** in Sagittarius and finally **Mars** near the edge of Capricorn. The moon will pass near Venus Sept 12, Jupiter Sept 13, Saturn Sept 17 and Mars Sept 19th.

Image from Celestron's free App - SkyPortal

Mars made its closest approach since 2003 as reached opposition July 27. For much of June through August it has even been brighter than Jupiter but is now becoming dimmer. Astronomers were looking forward to some great summer viewing Mars. Unfortunately, in late May a massive global wide dust storm began to brew obscuring most of its surface features.



< Club member Bill Collier took these images of Mars in late July.

As of late August, the dust has cleared somewhat and the larger dark features on Mars are becoming visible. Try using colored filters to enhanced details. My favorite is a broadband Light Pollution filter that cuts the glare and gives a pinkest orange hue. Hopefully we will get a few more good days of Mars observing in before Earth and Mars move apart. At its closest Mars disk appeared 24" across and shown at Magnitude -2.8. Mars will shrink to 21" at Mag -2.1 on Sept 1st and 15.8" Mag -1.3 by Sept 30.

(The symbol " indicates the apparent size of the planet disk in arcseconds " or 1/3600 of a degree)

Calculate the Apparent Size and Phase of the Moon or a Planet with the **USNO Phase Calculator**

VENUS, Queen of the planets puts on a sparkling autumn show. If you haven't done much observing of Venus before, Sept 2018 will be the month to do so. In 1610 Galileo published his book *"Sidereus Nuncius"* (The Starry Messenger) in which he included detailed drawings and descriptions of his telescopic observations. His drawings revealed that Venus went through phases like the moon and therefore must be orbiting the Sun and not the Earth! Thus, providing observational proof that the Sun not the Earth was the center of motion.

You can repeat these earth-shaking observations yourself with binoculars or a low power telescope. Venus reached its greatest Eastern Elongation *(farthest east of the Sun)* on Aug 17 and is now circling back to *(inferior conjunction)* when if passes between the Earth and Sun on Oct 26. As it does so the apparent disk of the planet will swell from 29" on Sept 1 to 45" on Sept 30 and 60" on Oct 20. As Sept

begins Venus appears like a small first quarter moon but by mid-October it will swell to a large thin crescent easily seen in binoculars and telescopes. Some keen-sighted people have even said they can detect its shape with the naked eye.

Explanation of Venus phases **https://in-the-sky.org/article.php?term=Venus**

APOD montage of Venus Phase images **https://apod.nasa.gov/apod/ap170317.html**

Observing Venus – The best time to observe the phases of Venus is when it first becomes visible in the west after sunset while the background sky is still fairly bright. You can do it when the sky is dark, but the glare of Venus makes it harder to observe. You may want to try a neutral filter to decrease its glare. Once you've located it try different magnifications to see which shows its shape best. Make a sketch of its shape and size to compare to your later observations. Repeat your observations every 4 or 5 days. (**Note:** *Venus is completely covered in clouds and always appears brilliant white in telescopes. The orange false color images of Venus you see in books were taken from radar images from the Magellan spacecraft in the 90's*)

Observing Challenge:

Sighting Venus naked eye in the daytime. When I first joined the club, we had a gentleman named Gene Middlebrook whose "hobby" was observing the planets in the daytime. He had an observatory in his backyard near 51st and Peoria. Some of us in the club took up Gene's challenge to find planets in the daytime. In the early 80's the planets were all visible in the sky at the same time. On one particularly clear day I was able to find Venus, Mars, Jupiter and even Saturn in my 6" f 8 reflector. *(Long before GoTo scopes existed)* But the Real Challenge was to find Venus naked eye in the sky well before sunset !

You **MUST USE CAUTION** when trying this observation. Chose a time when Venus is well separated from the Sun and it is now in early Sept. Chose a day when the sky is CLEAR and FREE of thin clouds or haze. Right after a cool rain may help. **Find an Observing spot at the edge of a shadow** on the east side of a house or building. **Your head must be completely in the shade!** This will prevent you from accidentally looking toward the sun.

Use a chart or app to find out the approximate Altitude & Azimuth *(direction)* of Venus 2 or 3 hours before sunset. (Venus transits about 4 PM) Or you can observe where Venus appears after sunset a day or so before and estimate where it will be earlier.

Binoculars may help your search. Be sure they are focused at infinity. Search slowly and examine the whole field of view. Once you find Venus, carefully note its location with respect to a tree or other horizon object. Now you're ready to see Venus in the daytime! Look carefully and it should "pop" into view. Venus is easier to spot if the moon is nearby in the daytime, but unfortunately that won't happen this time. The first time I saw it I thought it looked like some kid had lost a silver balloon at the Fair except that it didn't move. *(Some UFO "sightings" seem to be associated with accidental sightings of Venus "hovering" over a city or house.)*

Make a record of your success in your observing journal and share it with the club for the next newsletter.

Comet 21P/Giacobini-Zinner is making a nice appearance in Sept. On the night of 03 September, the comet will lie just over 1 degree from bright star Capella in Auriga making it much easier to locate. The comet reaches closest approach on the night 10/11 September, 2018 after which it rises after midnight. **Current predictions peak at magnitude 6**, so only just within the naked eye threshold and easy in binoculars. Through the summer months, comet 21p passes within close visual proximity to quite few deep sky objects during its journey through Cygnus, Camelopardalis, Auriga and Monoceros.

Finder Charts at **http://www.cometwatch.co.uk/comet-21p/**

SECRETARY'S MESSAGE

BY JOHN NEWTON

A Letter from the Astronomy Club Secretary

The elected officers and directors of the Astronomy Club of Tulsa (ACT) held its regularly scheduled Board Meeting on Saturday, August 4th, 2018 with all officers and most board members in attendance.

The basis for this meeting included discussions on upcoming events, status to the created committees, and general topics on ACT business-at-hand.

The intent of the formed committees is to help improve the club member's experience. We encourage and welcome club member's participation within each committee, or for public and member's nights. If you are interested in volunteering your time on behalf of the club please reach out to committee chairpersons listed in this letter, or with any its board members.

Upcoming Events and Activity Awareness:

Tulsa's newest waterfront park located on Riverside Drive and 31st Street South, known as A Gathering Place for Tulsa, will being opening their doors on September 8th to the public. The first phase transformed over 66 acres of Tulsa's waterfront along the Arkansas River into a dynamic and active space. A Gathering Place for Tulsa will combine nature with an urban setting providing Tulsans and visitors more space to play, relax and gather together along the river.

As an opportunity to expand the awareness of our Astronomy Club, Tamara has contacted someone who seems very interested in expanding the use of the park with educational programs, particularly those that we can offer to the public. In exchange, we see The Gathering Place as a secondary or alternate location to the already successful Sidewalk Astronomy session held at Bass Pro at regular intervals. There should be more news and information posted in our newsletter as this exciting opportunity continues to develop.

There's still plenty of summer left for one of the best naked-eye planetary viewing of **Venus, Jupiter, Saturn and Mars**. **Venus** is the brightest planet, dazzling this month in the west just after sunset. It's impossible to miss as the evening "star", you can find Venus as it sets roughly about 1 1/2 hours after sunset.

As the second brightest, **Jupiter** remains bright and beautiful throughout the month of August. It's now slowly shifting westward at each night's sunset. Jupiter can be found in the northern hemisphere highest up for the night around dusk or nightfall, appearing a bit west of due south.

Saturn and Mars decorate the eastern half of the sky at dusk and nightfall. During the last few weeks of August, **Saturn** will transit at roughly 8 p.m., **Mars** will transit about two hours after Saturn does.

The Public Meteor Watch Night held on Saturday, August 11 at the BA Chisholm Trails Park had a good turnout. Although there were only a few bright meteors that buzzed the sky, many night watchers took advantage of using their scopes to spot more distant objects.

Many thanks go to those volunteers, especially John Land, for helping to organize this public event with the city of Broken Arrow.

ACT Business-at-Hand:

REQUIREMENTS for Officers or Board member candidates

Want to help shape the future of this wonderful club? As board member you can become involved with setting direction and tone being directly involved with evolving activities. Opportunities for holding an ACT board position are now open to our members.

- ACT Treasurer, Tim Davis has announced that after having served as club Treasurer for 5 years, he plans to step down at the end of the year.
- ACT Secretary, John Newton has announced that after having served as club Secretary for 2 years, he plans to step down at the end of the year.

Per ACT Bylaws, member qualifications include that the nominee be an eligible member in good standing for at least one (1) year. And, the nominee must be the minimum legal age for signing legal contracts and documents. Ideally, for treasurer we are looking for someone with recent accounting experience or experience in using electronic records and bank transactions.
General club elections are held in October. For any member who wish to be considered for a position on the ballot please contact Tamara Green (President), or John Newton (Secretary) if you have an interest.

Improvements at the Observatory
In the past few months, volunteers and board members combined have been working towards providing a better experience to our members and non-members alike. Beginning with the recent facelift improvements around the observatory. If you visited the club observatory recently you may have noticed a new water tight skirt around the dome, and fresh paint on the stairs and deck on the second floor. Also, new shelving, lighting and an air conditioner have been installed in the downstairs area of the classroom.
Before going into the observatory, we will have a person outside to greet you and go over important safety items that all visitors should be aware of. In addition, for your safety and for security measurements, video cameras have been installed to monitor the site 24 hours a day.
The above-mentioned items are only the beginning, as board members plan to expand the use of the classroom to include 15 to 30 minutes' worth of learning sessions with the help from instructors and video demonstrations. Meanwhile, instructors will be outside pointing out seasonal star constellations, nebulae and planetary systems that can be seen across the night sky. Concurrently, allow groups of people up to the dome to use the permanent 14-inch telescope.
Finally, to help build public awareness, new tri-fold brochures have been developed and printed about the club. We hope that our members are spreading the news about ACT as there is no better way to advertise than by word of mouth.

Committees - updates:

1. Still looking at Pawhuska as an alternate dark sky site. The committee, with assistance by Tamara Green, has contacted folks at the Pawhuska Chamber, and another person apart from the city to begin the initial discussions for setting the stage of hosting star parties and member's night events. Although contact has been made, the committee is still in the early stages of getting this opportunity completely organized or scheduled. Stay tuned as we hope to report more positive news on this key item.

2. Richard Brady will lead a new committee to begin research for a second club Solar Telescope. It would be best to have a backup or secondary solar scope outfitted with hydrogen alpha filters to be used at the observatory before nightfall. Richard will coordinate his research with Tony White and Owen Green on finding a scope at a reasonable price.

3. **The Annual Club Dinner is set for November 10th at Jenks High School**. The committee lead be Jerry Cassity will coordinate with other volunteering members to plan for arranging table décor, meals, drinks and desserts. The cuisine style options for BBQ again, Italian, Mexican, Chinese, or other is yet to be determined. If you have a favorite, please feel free to drop Jerry Cassity an email with your suggestions and possible restaurant or caterer.

As the many listed committees undergo their assigned research, the board will continue to monitor progress and post their findings in future newsletters.

Please feel free to contact me with any questions or comments at astrotulsa.secy@gmail.com.

Sincerely,
John Newton - ACT Secretary

TREASURER'S AND MEMBERSHIP REPORT

BY TIM DAVIS

Astronomy Club of Tulsa: 176 members, including 38 new members in 2018.
New Members for August : Larry Smith, Daniel Smith, Don Hamilton, and Monica Rogers.

Club Accounts as of Aug 26, 2018:

Checking: $ 4,499.48
Savings: $ 5,778.99
Investment accounts: $ 23,454.79 *(Value Fluctuates with Market)*

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. Contact their websites for details.

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.
Note: You may renew your Sky & Telescope subscription directly by calling the number on the renewal form, **be sure to ask for the club rate.**
NEW SUBSCRIPTIONS must still be sent to the club

This article is distributed by NASA Space Place.
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A Trip Through the Milky Way

By Jane Houston Jones and Jessica Stoller-Conrad

Feeling like you missed out on planning a last vacation of summer? Don't worry—you can still take a late summertime road trip along the Milky Way!

The waning days of summer are upon us, and that means the Sun is setting earlier now. These earlier sunsets reveal a starry sky bisected by the Milky Way. Want to see this view of our home galaxy? Head out to your favorite dark sky getaway or to the darkest city park or urban open space you can find.

While you're out there waiting for a peek at the Milky Way, you'll also have a great view of the planets in our solar system. Keep an eye out right after sunset and you can catch a look at Venus. If you have binoculars or a telescope, you'll see Venus's phase change dramatically during September—from nearly half phase to a larger, thinner crescent.

Jupiter, Saturn and reddish Mars are next in the sky, as they continue their brilliant appearances this month. To see them, look southwest after sunset. If you're in a dark sky and you look above and below Saturn, you can't miss the summer Milky Way spanning the sky from southwest to northeast.

You can also use the summer constellations to help you trace a path across the Milky Way. For example, there's Sagittarius, where stars and some brighter clumps appear as steam from a teapot. Then there is Aquila, where the Eagle's bright Star Altair combined with Cygnus's Deneb and Lyra's Vega mark what's called the "summer triangle." The familiar W-shaped constellation Cassiopeia completes the constellation trail through the summer Milky Way. Binoculars will reveal double stars, clusters and nebulae all along the Milky Way.

Between Sept. 12 and 20, watch the Moon pass from near Venus, above Jupiter, to the left of Saturn and finally above Mars!

This month, both Neptune and brighter Uranus can also be spotted with some help from a telescope. To see them, look in the southeastern sky at 1 a.m. or later. If you stay awake, you can also find Mercury just above Earth's eastern horizon shortly before sunrise. Use the Moon as a guide on Sept. 7 and 8.

Although there are no major meteor showers in August, cometary dust appears in another late summer sight, the morning zodiacal light. Zodiacal light looks like a cone of soft light in the night sky. It is produced when sunlight is scattered by dust in our solar system. Try looking for it in the east right before sunrise on the moonless mornings of Sept. 8 through Sept 23.

You can catch up on all of NASA's current—and future—missions at **www.nasa.gov**

Caption: This illustration shows how the summer constellations trace a path across the Milky Way. To get the best views, head out to the darkest sky you can find. Credit: NASA/JPL-Caltech

JENKS PLANETARIUM

Jenks High School Campus
205 East B Street, Jenks

TICKETS
$5 online or $7 at the door
Purchase online at jenkscommunityed.com
or call 918-298-0340

2018 Go to Show Schedule
Then click the Date Column to sort them by show date

Explore the night sky with engaging, awe-inspiring shows at the Jenks Planetarium. The 50-foot dome provides the ultimate screen for seeing planets up close, flying to distant galaxies, and even rediscovering our own earth in ways never thought possible.

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
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

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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NIGHT SKY NETWORK –
Open Position

WEBMASTER JENNIFER JONES

Photo taken by Rendell Napier using Dennis Berney's Night Vison Scope.

Dennis' scope is popular at our public events as it allows people to see dozens of stars even in town or partly cloudy conditions.

A **night vision scope** uses a photo multiplier electronics to amplify available light and project it onto a green phosphor screen.