



OBSERVER

FEBRUARY 2019

Bringing Stars to the eyes of Tulsa since 1937

Editor – John Land



Waltzing in the Moonlight

Above video by Bill Collier – Composed of 24 shots at various stages of the lunar eclipse were centered and processed in GIMP 2.0 and then combined using Windows 7 media software. Click the Triangle

In this Issue

- 2 Upcoming Events**
- 3 President Report - Tamara Green**
2019 Astronomy Calendars HALF PRICE SALE
- 4 Images of Jan 5th Telescope 101 Workshop at TASM**
- 5-6 Images of Jan 20 Lunar Eclipse**
- 7-8 Use your Cell Phone for Quick and Easy Astrophotos**
By Daniel Smith
- 9 Treasurer Report – John Newton**
- 10 Messier Marathon set for Saturday March 2nd**
- 11-12 Night Sky Network – Find the Winter Hexagon**
Evening and Morning planets
- 13. Directions to Club Events Locations**
- 14. Jenks Planetarium Schedule**
2019 Officers and Board
- 15-16 Secretary Report - Jess Cagnolatti**
December Board Minutes

Astronomy Club Events

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

FEBRUARY				
MEMBERS' NIGHT		FRI, FEB 1	6:00 PM	OBSERVATORY
VALENTINE'S DAY		THU, FEB 14		
GENERAL MEETING		FRI, FEB 15	7:00 PM	JENKS PLANETARIUM
SIDEWALK ASTRONOMY		SAT, FEB 16	5:00 PM	BASS PRO
PRESIDENTS' DAY		MON, FEB 18		
PUBLIC NIGHT		SAT, FEB 23	5:45 PM	OBSERVATORY
MARCH				
MEMBERS' NIGHT		FRI, MAR 8	6:30 PM	OBSERVATORY
MESSIER MARATHON		SAT, MAR 9	Leave BA 3:00 PM	TUVA
DAYLIGHT SAVING TIME BEGINS		SUN, MAR 10		
SIDEWALK ASTRONOMY		SAT, MAR 16	6:30 PM	BASS PRO
VERNAL EQUINOX		WED, MAR 20	4:59 PM CDT	
GENERAL MEETING		FRI, MAR 29	7:00 PM	JENKS PLANETARIUM
PUBLIC NIGHT		SAT, MAR 30	7:15 PM	OBSERVATORY

PRESIDENT'S MESSAGE

BY TAMARA GREEN



Hey Y'all!

2019 has gotten off to a great start! I am very pleased with the way some of our events went this month!

First of all, our Telescopes 101 event at TASM on the 5th was a success! The new way of scheduling guests to come get help with their new telescopes in sessions of 30-minute blocks worked out wonderfully. I even got to (somewhat) learn WITH a guest how to use an equatorial mount! Being a DOB lady, I felt that was an accomplishment. It was reported back to me that our guests loved the event, and everyone went home happy! We will have to continue this wonderful event each year.

Secondly, our General Meeting on the 18th was really good! We had a much bigger than normal turnout of members and guests, and I heard that all who attended enjoyed the NSN Webinar on the 50th Anniversary of the famous Earthrise photo!

For those of us who got to see the Lunar Eclipse on the 20th going into the 21st, I got reports of some great views. When I went outside to look at it, I could see it from my front porch, and it had not gotten to its darkest stage yet. It was still bright reddish-orange. Owen went out later and looked, and said it was so dark he could barely see it! I apologize for not having the public viewing event with TASM like I had planned on, but due to TASM still not having heat as of the 20th, and the bitter cold temperatures, we both agreed that an event would, sadly, not be do-able.

Some of us were lucky enough to attend the presentation given by Brother Guy Consolmagno at ORU on the 22nd. It was a fun and fascinating talk. I wish all of you could have attended this wonderful presentation.

We finished up the month with month our Public Night on the 26th. The daytime temperature was in the 50's but periodic clouds hampered the viewing. None the less we had a few enthusiastic guests come out.

More great events are in the works, so stay tuned! *Clear Skies!* Tamara



HALF Price Sale

Our Tulsa Astronomy Club still has a limited supply on hand of the **2019 Astronomy Magazine Calendars for \$ 5 each**

Contact our treasurer John Newton at AstroTulsa.tres@gmail.com to reserve your copy.

Telescope 101 Workshop at Tulsa Air & Space Museum

We had a great turn out on Sat. Jan 5th for our telescope workshop. One Hundred guests came with 49 different telescopes for one on one help in setting up and using their telescope. Many of them had new telescopes and others brought a scope that they just needed more help learning to use.



John Moore helps young astronomer
Dennis Berney & GoTo Scope



Bryan Kyle – Planetarium director & new astronomer
Ken Weikel – explains refractor



Jim Norwood talking about Star charts as Tony Cagnolatti assists.



January 20, 2019 Total Lunar Eclipse

Tulsa and many of our club members enjoyed watching last month's Total Lunar Eclipse. The temperature was cold, but the sky was crystal clear. Below are some images from several of our members plus a link to a great video of the event. The next Lunar eclipse visible from Tulsa will be May 26, 2021 at dawn. The moon will set in the west just 4 mins into Totality. There will be a 97% partial lunar eclipse on Nov 19, 2021 from 2:30 AM to 6:00 AM



Images by Skip Whitehurst using a Canon 60Da DSLR with 70-200 mm lens and 2X teleconverter at 400 mm. Mounted on a Celestron AVX equatorial mount tracking at solar rate with the center on the umbra. The partial image is a combination of three exposures into a single image that uses the longer exposure to show the dimmer parts and the shortest exposure to preserve the highlights.

Below is the partial phases going into (right) and out of (left) the umbra.

Note: Its curved shape is a silhouette of the Earth's spherical shape.

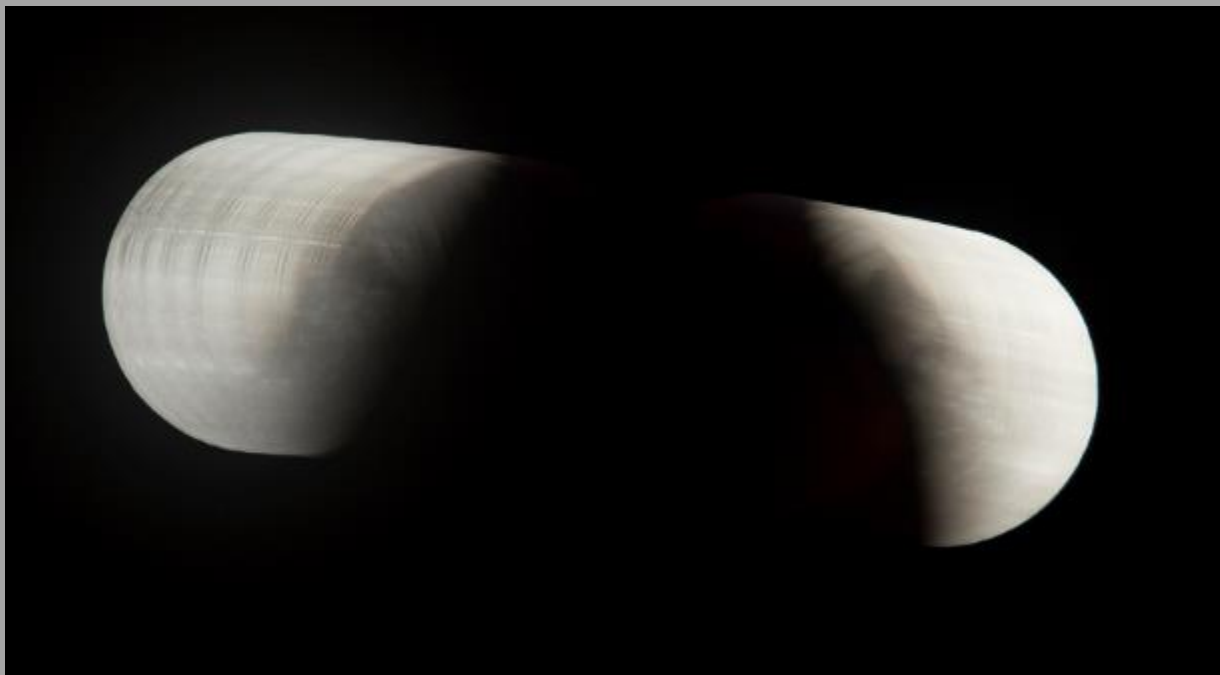


Image Sequence by Bill Collier

used a Meade 6-inch f5 Newtonian reflector mounted on an unguided Orion Skyview Pro GEM. The camera was an unmodified Canon T3i Rebel mounted at prime focus. The exposures ranged from 1/400th of a sec at ISO of 200 to 1 sec at ISO of 1600. See the Video Bill composed on our cover page.



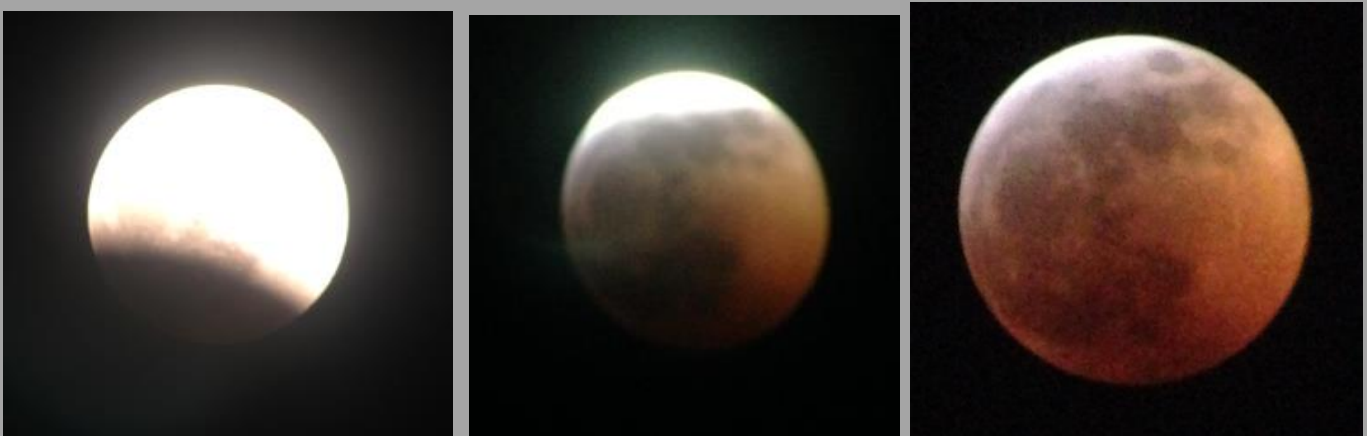
Image Sequence by Daniel Smith

Taken with Samsung S8 attached to an eyepiece on a 12-inch Dobsonian telescope



Image Sequence by John Land

Taken with iPhone 5C using aFocal imaging with a 102 mm Refractor



For a better understanding of how the Moon and Earth's shadow interact watch the Video / Animation at [Astronomy Picture of the Day Jan 26](#)

Use your Cell Phone for Quick and Easy Astrophotos. *By Daniel Smith*

Many of us have seen fantastic astrophotography photos and thought about jumping into that side of our hobby. But doing a little research shows that these photos take lots of money, time, and plenty of trial and error. Many sources like those found on astronomy forum, cloudynights.com, say that the cost of the minimum gear needed for astrophotography is around three thousand dollars. Many of these single photos take hours and hours of sub-exposures that require days or months of clear weather. These facts make astrophotography seem daunting if not downright impossible for many of us.

Some people would be more than happy to at least get a photo of something, even if it's not nearly as good as these great astrophotos. Did you know that it is possible? You can do basic astrophotography with an investment of just around twenty bucks provided you already have a mobile phone, telescope, and at least one eyepiece. I am talking about a cell adapter mount for eyepieces. You don't even have to have tracking on your mount, although that would certainly help a lot.

Many aspiring astrophotographers have tried to hold cell phones up to the eyepiece and capture a planet, the moon, or maybe the Great Orion Nebula. But it's very hard to find the object much less hold the phone steady for the photo. There are many cell phone eyepiece adapters on the market such as one that the Gosky brand makes. Buy one of these and you will be surprised what is possible with just a cell phone camera. Please note that this inexpensive version of astrophotography can only be used on bright objects such as the moon, planets, and the brightest nebulae and clusters.

There is still a process of trial and error to getting some decent astrophotos after you have purchased the adapter. Here are some steps to help you along the way:

Practice with your phone and adaptor in the daytime on a distant object and take a few images.

This will help you get the comfortable with all the steps. If the moon is up in the daytime, try a few images of it and then move on to night time imaging.

1. Place cell phone in adapter first and center the phone's camera lens where the eyepiece will go.
Note: you may have to take off your phone case.
 2. Take low power 1.25-inch eyepiece and place it in the adapter.
It should be approximately a ¼ inch from the phone.
 3. Turn the camera on and point the eyepiece open end towards a light source (not the sun!).
You are now making adjustments to the phone and eyepiece to make sure everything is centered.
You should see a circle of light in the center of your phone screen.
It may take awhile to find the "Sweet Spot" where the image is centered.
Using another eyepiece or your finder scope center your target in the scope and lock it down
So it doesn't move around.
 4. If you only have one eyepiece, you can use your phone as a viewing screen but this process is much easier with a second eyepiece.
 5. After finding the object, carefully place the eyepiece with phone attached into the focuser, making sure not to bump the telescope.
 6. Turn your camera on. Now most auto photo modes do not work well for this. Most modern cell phones (made in the last couple years) will have a "pro" or "manual" mode that allows you to change the camera's ISO, shutter speed and focus. Some also let you shoot the photos in RAW instead of JPEG.
Set your camera to this manual mode.
- NOTE: * * If you phone doesn't have manual settings try increasing or decreasing the light setting.
You can also experiment with the phones Zoom feature but don't overdo it.
7. Set ISO as high as it will go (usually 800).
 8. Set shutter speed to 1 second (for now).
 9. To focus select a star field nearby and use your focuser to get the stars as sharp as possible then move back to your target. You may then try the camera's focuser if it has one. If you notice dust or diffraction rings, play around with both ways of focusing to see if you can get rid of these things.
 10. Set your camera timer for 3 to 5 seconds. This will allow the vibrations of the telescope to settle after you GENTLY TAP the shutter button.

Now you're ready to take some photos! Now depending on the brightness of what you're photographing, you may have to adjust the ISO or shutter speed. Remember that at the high magnifications of the telescope, longer shutter speeds will make the photo blurry. Therefore, low power eyepieces are best. Play around with the settings and see what works best for you. The correct shutter speed for a given object will be a balance between getting enough light, and not making the picture too blurry. If you do happen to have a tracking mount, then you can try much longer shutter speeds. Also remember that the astronomical seeing conditions will greatly affect your photos. Below are some images taken with my Samsung S8 attached to a 12" unguided Dobsonian scope.



Eclipsed Moon



Orion Nebula M 42

Here are a few things to remember. These photos are not going to be nearly the same quality as photos taken with expensive astrophotography gear, so don't expect that from a twenty-dollar adapter. It will benefit your photos to edit them with a photo editing software such as Adobe Lightroom. Some phones even have some simple editing tools installed. There are many tutorials on YouTube showing how to edit astrophotos. Lastly, try taking photos of various things! I have successfully photographed Jupiter, Mars, Saturn, the moon, Orion Nebula, and Pleiades.

Afocal photography, (afocal imaging) a method of photography where the camera with its lens attached is mounted over the eyepiece of another image forming system such as an optical telescope or optical microscope, with the camera lens taking the place of the human eye. This sort of photography can be done with a cell phone or simple point and shoot camera also.



A couple of Simple phone Adapters
 < Gosky style
 Explore Scientific >



TREASURER'S and MEMBERSHIP Report

BY JOHN NEWTON



As of January 19th, the Astronomy Club of Tulsa has 174 members, including 3 new members who have joined ACT this month to start 2019 off strong. I welcome our newest members who joined ACT in January, including **Randall Gibson, Doug Phillips, and Dan Henshaw**. Welcome!

Accounts as of January 19th, 2019 -

Checking: \$ 6,025.93

Savings: \$ 5,780.44

Investments: \$ 22,701.12 (Value tend to fluctuate with market changes).

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.

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



2019 Messier Marathon 28th Annual Event
Saturday March 2 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 contact you.
918-851-1213 astrotulsa.pres@gmail.com

Each year near the Spring Equinox, Club members get together for an all night Messier Marathon at TUVA (the home of our wonderful hosts Ron and Maura, located south of Muskogee, OK
TUVA is also Home of the 24" Bart Custom built telescope.

There will be a caravan led by Tamara Green to the TUVA observing site. Be sure to bring something for the **Pot-luck dinner and snacks and drinks to keep you going through the night.**

There are 110 objects in Messier's famous catalog. The object of the game is to see how many of them you can find in one night. In the late 1700's French astronomer Charles Messier made a catalog of 110 deep sky objects that are visible in amateur telescopes. They include star clusters, galaxies and nebula.

Near the Spring Equinox it is possible to view all 110 of them in a single night starting in the west just as the sun sets and extending to dawn as the sun rises in the east.

Our website has log sheets with the objects arranged in the optimum order for observing them during the night. You'll want to **Print off the Log sheets** to record each object as you locate it. A couple of EverSharp Mechanical pencils work best for keeping your records.

You may also print the **set of observing charts** with each object marked with a Sequence number. You can **print these off these charts** or use your on star charts.

<http://okmcd.com/pub/MessierMarathonCharts.pdf> Log Sheets & Observing Charts

The maps make a great finder chart during the year also.

Prepare yourself well for a full nights observing. Red lights are a must to maintain you dark adaptation.

Temperatures can drop sharply throughout the night. Dress in layers and supply yourself with warm gloves, hat and insulated shoes or double socks. You'll need to bring some sort of clip board or tray to keep your log papers organized. Also bring your own lawn chair and maybe a blanket to catch a power nap along the way. Some people bring a small tent or blankets. The main building is heated and has a small restroom. Outdoor electricity is limited so bring your own power supplies if you have them.

Guide to Messier Marathon Observing

<http://www.richardbell.net/marathon.html>

Great Single page search list

http://www.richardbell.net/Files/messier_list.pdf

Star Hopping Guide to the Marathon

<http://www.robhawley.net/mm/>

Enjoy a Live Video Marathon Mar 28

<http://www.mvastro.org/starparty/messier.php>

Composite Image of all 110 M objects

<http://apod.nasa.gov/apod/ap000311.html>

Messier Marathon **App** Store on iTunes –

<https://itunes.apple.com/ca/app/messier-marathon/id594617818?mt=8>

Composite Image of all 110 M objects

<http://apod.nasa.gov/apod/ap000311.html>

Awesome APOD Image of a Messier Night

<http://apod.nasa.gov/apod/ap110527.html>

AVOID FRUSTRATION

M 40 is only a Double Star

<http://astrotulsa.com/Observe/m40.htm>



This article is distributed by NASA Night Sky Network

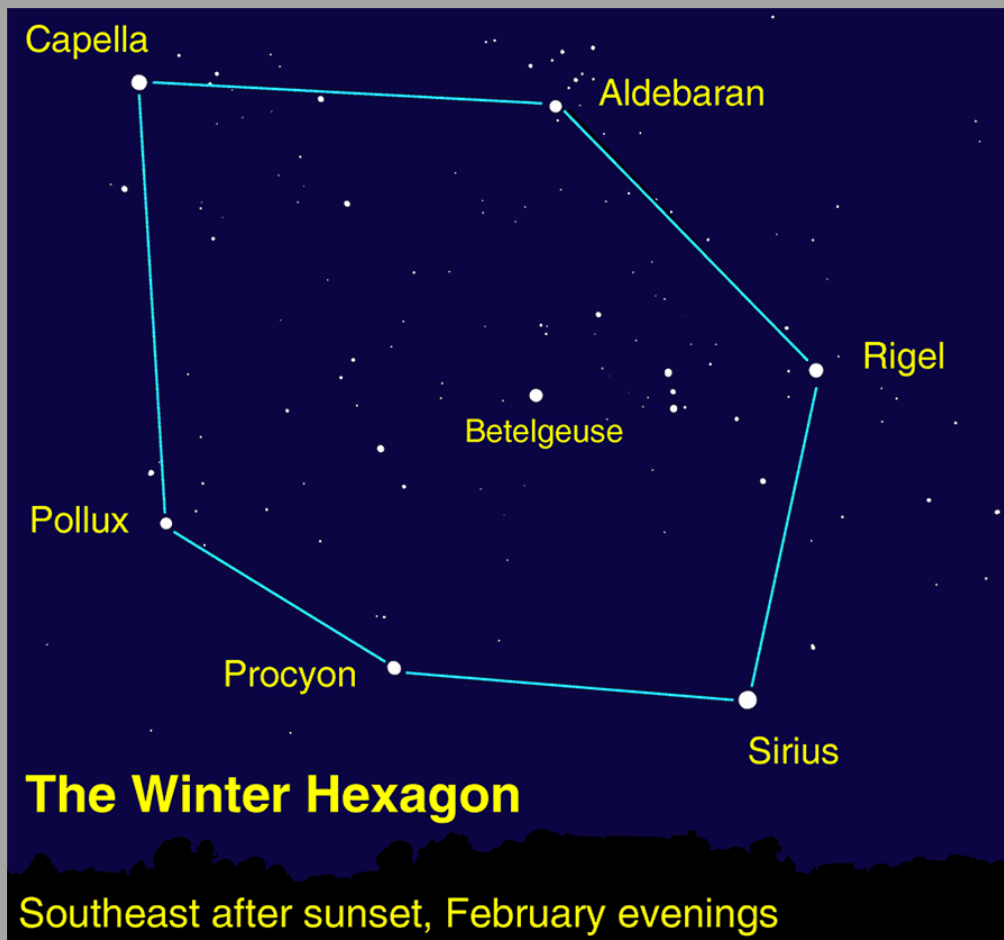
The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

NSN Night Sky Planner page has interactive tools to enhance your observing experience <https://nightsky.jpl.nasa.gov/planner.cfm>

Hexagon at Night, Quartet in the Morning

David Prosper

The stars that make up the Winter Hexagon asterism are some of the brightest in the night sky and February evenings are a great time to enjoy their sparkly splendor. The Winter Hexagon is so large in size that the six stars that make up its points are also the brightest members of six different constellations, making the Hexagon a great starting point for learning the winter sky. Start by looking in the SE sky for the constellation Orion -the Hunter. Orion is easily found by locating the three stars in a row that make up his belt. Find the Hexagon by looking southeast after sunset and finding the bright reddish orange star that forms the “left shoulder” of the constellation Orion: **Betelgeuse**. You can think of Betelgeuse as the center of a large irregular clock, with the Winter Hexagon stars as the clock’s hour numbers. Move diagonally across Orion to spot its “right foot,” the bright star **Rigel**. Now move clockwise from Rigel to the brightest star in the night sky: **Sirius** in Canis Major. Continue ticking along clockwise to **Procyon** in Canis Minor and then towards **Pollux**, the brighter of the Gemini twin stars Pollux and Castor. Keep moving around the circuit to find **Capella** in Auriga, and finish at orange **Aldebaran**, the “eye” of the V-shaped face of Taurus the Bull.



Caption: The stars of the Winter Hexagon
Image created with help from Stellarium

Two naked-eye planets are visible in the evening sky this month. As red **Mars** moves across Pisces, NASA's InSight Mission is readying its suite of geological instruments designed to study the Martian interior. InSight and the rest of humanity's robotic Martian emissaries will soon be joined by the Mars 2020 rover. The SUV-sized robot is slated to launch next year on a mission to study the possibility of past life on the red planet. **A conjunction between Mars and Uranus on February 13 will be a treat for telescopic observers.** Mars will pass a little over a degree away from Uranus and larger magnifications will allow comparisons between the small red disc of dusty Mars with the smaller and much more distant blue-green disc of ice giant Uranus.

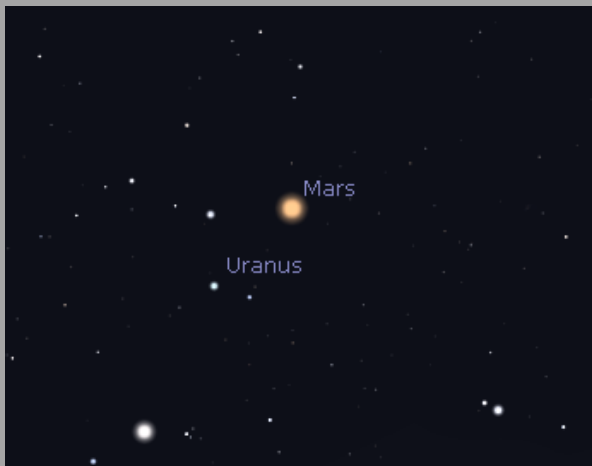


Speedy Mercury has a good showing this month and makes its highest appearance in the evening on February 27; spot it above the western horizon at sunset. An unobstructed western view and binoculars will greatly help in catching Mercury against the glow of evening twilight.

< Mercury 6:45 PM Feb 27 – Look carefully near the horizon.

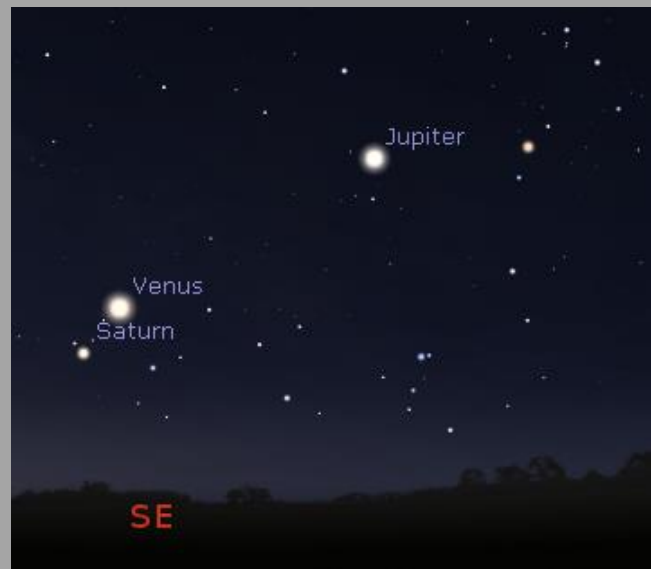
The morning planets put on quite a show in February. Look for the bright planets **Venus, Jupiter, and Saturn** above the eastern horizon all month, at times forming a neat lineup. A crescent Moon makes a stunning addition on the mornings of February 1-2, and again on the 28th. Watch over the course of the month as Venus travels from its position above Jupiter to below dimmer Saturn. Venus and Saturn will be in close conjunction on the 18th; see if you can fit both planets into the same telescopic field of view. A telescope reveals the brilliant thin crescent phase of Venus waxing into a wide gibbous phase as the planet passes around the other side of our Sun. The Night Sky Network has a simple activity that helps explain the nature of both Venus and Mercury's phases at bit.ly/venusphases

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



Feb 13 evening 8:00 PM in SW

Will need Binoculars or Telescope to see Uranus



Feb 14 Morning 6:15 in SE

Image created by Free Software - Stellarium

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.

ASTRONOMY CLUB OFFICERS:

PRESIDENT – TAMARA GREEN
astrotulsa.pres@gmail.com
VICE PRESIDENT – JERRY CASSITY
astrotulsa.vp@gmail.com
SECRETARY – JESS CAGNOLLATI
astrotulsa.secy@gmail.com
TREASURER – JOHN NEWTON
astrotulsa.tres@gmail.com

BOARD MEMBERS-AT-LARGE:

RICHARD BRADY
TONY CAGNOLLATI
JOHN LAND
SHELDON PADAWER
JACOB SHEPHERD
JAMES TAGGART
SKIP WHITEHURST

STAFF:

FACILITIES MANAGER –
JAMES TAGGART
astrotulsa.obs@gmail.com
EDITOR - JOHN LAND
astrotulsa.editor@gmail.com
OBSERVING CHAIRS
OWEN AND TAMARA GREEN
darthnewo@yahoo.com
astrotulsa.pres@gmail.com
SIDEWALK ASTRONOMY –
TAMARA GREEN
astrotulsa.pres@gmail.com
PR AND OUTREACH –
GROUP DIRECTOR – JERRY CASSITY
astrotulsa.vp@gmail.com

NIGHT SKY NETWORK –
Open Position

WEBMASTER JENNIFER JONES

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

2019 [Go to Show Schedule](#)

Click the Date Column to sort them by show date

Shows take place on
Tuesday evenings from 7:00 PM to 8:00 PM

PERMISSION TO REPRINT ANYTHING FROM THIS NEWSLETTER IS GRANTED, **PROVIDED THAT CREDIT IS GIVEN TO THE ORIGINAL AUTHOR AND THAT THE ASTRONOMY CLUB OF TULSA "OBSERVER" IS LISTED AS THE ORIGINAL SOURCE.** FOR ORIGINAL CONTENT CREDITED TO OTHERS AND SO NOTED IN THIS PUBLICATION, YOU SHOULD OBTAIN PERMISSION FROM THAT RESPECTIVE SOURCE PRIOR TO REPRINTING. THANK YOU VERY MUCH FOR YOUR COOPERATION. PLEASE ENJOY THIS EDITION OF THE OBSERVER.

SECRETARY'S MESSAGE

BY JESS CAGNOLLATI



Board Meeting – Saturday December 8th

Club board members attendees:

Tamara Green (President), John Land (Club Editor), Jerry Cassity (Vice President), John Newton (Treasurer), Sheldon Padawer (Board), Skip Whitehurst (Board), James Taggart (Board), Richard Brady (Board), Tony Cagnolatti (Board), Jess Cagnolatti (Secretary)

Location/time: Brookside Public Library, 1207 E. 45th Place, Tulsa, OK 12:02- 3:00 PM

Meeting called to order at 12:02 PM

1. Discussion in regards to 2019 events calendar
 - General meeting conflicts for February and March. Vote to move February meeting to Friday the 22nd was unanimous. Vote to move March's meeting to Friday the 29th was unanimous.
 - Plan for Messier marathon on 3/9, weather permitting.
 - Club picnic will be Saturday 8/3, Gates at 5PM with food at 6 PM.
 - Tentative meeting dates for September and October 2019 due to Jenk's football schedule.
2. Discussion in regards to quarterly star parties at TASM
 - Sheldon brought up hosting party around 1st quarter of moon and schedule toward parade of planets and also adopting a policy to allow for more than 2 locations for astronomy not associated with the observatory.
 - Discussion took place in regards to hosting two sidewalk astronomy events on the same night, including location and the amount of volunteers needed.
 - Tamara brought up having sidewalk once a quarter at TASM, instead of Bass Pro Shops
 - James mentioned discussing with TASM what our requirements would be then making decision to host star parties there.
 - Discussion in regard to having events at The Gathering Place- Tamara has reached out to coordinators via email but has not had a response at time of meeting.
 - Discussion in regard to recruiting and retaining volunteers for events- motivators and recognition for volunteers.
 - Total eclipse on January 20th – Discussion in regard to a possible event with TASM for this, John Land will reach out for possible event.
3. Telescopes 101 at TASM- Saturday January 5, 2019 from 11 a.m.- 2 p.m.
 - Volunteers needed for groups
 - Plan is for six 30 minute sessions with groups of 6
 - There will be a planetarium show for attendees
4. Veteran's discount for club membership
 - Richard was asked if we provide a discount for service members and first responders. –
 - Richard made motion to amend bylaw to provide discount for veterans, active duty and first responders.
 - The rate proposed is the current senior membership rate.
 - Vote to form committee to review and amend bylaws for discounts was unanimous.

-Astronomy 101 classes at observatory was discussed – Committee formed to help from curriculum for presentations and other educational experiences during public nights and other events. Plan to use Night Sky Network materials for presentations.

5. Donations at events

-Discussion in regard to having people at front entrance during public nights with donation buckets, to help direct traffic and possibly boost donations to club.

-Discussion in regard to having concessions at public nights for sale. General consensus that coffee, water and pop would be the more viable options to have for sale at the observatory.

-Plan for having activities for kids at sidewalk astronomy, also having an information table at sidewalk, for donations and information about the club, including membership and eventually having opportunity to sign people up for membership.

6. Goal planning meeting

-James mentioned having all day goal planning meeting for the club. This will involve future goals and mission for the club overall.

-This meeting will be mandatory for board members but will be potentially open to the overall membership.

-Plan to set up date by 12/31. Tentative dates are **March 2nd** or March 23rd. (**Date is set for March 2nd**)

7. Club's official address

-Richie is only member with key to mailbox and in past Tim requested that mail be forward to him. In club bylaws the PO box is the club's official address.

-John Newton has agreed to pick up mail but will need key.

-John Land made motion for John Newton to receive a key and monitor mail, Skip seconded motion. Vote unanimous for John Newton to manage club's mail.

8. Manager of astrophotography and visual observing inventory

-This individual will be responsible for managing and keeping inventory on items for observing and imaging and general upkeep of observatory with James

-Skip recommended name change to equipment manager, with members in agreement

-James in agreement to having another individual help with maintenance and upkeep for observatory that would go to him with major concerns/projects.

-John Land recommended creating a list for inventory

-James requested a toolbox and lock for storage of some of the items at the observatory, which Tamara approved.

-James also cited some dome rotation issues and that he is working on mechanisms for these issues.

-Skip stated he is willing to be equipment manager with Jerry making a motion, seconded by Sheldon. Vote unanimous.

- Procedure for sign out list or other policies for equipment will be considered.

9. Selling unused telescopes- John Land and Richard mentioned that this should be tabled until inventory is completed with rest of members in agreement.

10. New mount for club telescope that could alternate between Alt-Azimuth and equatorial was proposed by Sheldon, members in agreement to have this discussion during goal planning meeting.

11. Future plans – members in agreement to table this conversation for the goal planning meeting.

Meeting adjourned at 3:00 p.m.