



ASTRONOMY CLUB OF TULSA

OBSERVER

AUGUST 2017

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THE ASTRONOMY CLUB TULSA
IS A PROUD MEMBER OF



THE ASTRONOMICAL LEAGUE



PHOTOS: Above: The Big Dipper over Black Mesa; Below: Telescope and Sagittarius, looking West, both taken at the Okie-Tex Star Party, 2016, by Tamara Green.

AUGUST 2017

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7 	8	9	10	11	12
13	14 	15	16	17	18	19
20	21 	22	23	24	25	26
27	28	29 	30	31		

MOON PHASES AND HOLIDAYS:

FULL MOON	MON AUG 7
LAST QUARTER	MON AUG 14
NEW MOON	MON AUG 21
FIRST QUARTER	TUES AUG 29

UPCOMING EVENTS:

PUBLIC STAR PARTY	SAT AUG 12	7:45 PM	ACT OBSERVATORY
MEMBERS' NIGHT**	FRI AUG 18	8:15 PM	ACT OBSERVATORY
TOTAL SOLAR ECLIPSE	MON AUG 21	BEGINS 11:40 AM CDT	VARIOUS LOCATIONS NATIONWIDE
SIDEWALK ASTRONOMY	SAT AUG 26	7:30 PM	BASS PRO
PUBLIC STAR PARTY	SAT SEP 9	7:30 PM	ACT OBSERVATORY
MEMBERS' NIGHT**	SAT SEP 16	7:30 PM	ACT OBSERVATORY
OKIE-TEX STAR PARTY	SAT SEP 16—SUN SEP 24		BLACK MESA
GENERAL MEETING	FRI SEP 29	7:00 PM	JENKS HS PLANETARIUM
HIGH FRONTIER	SAT SEP 30—SUN OCT 1		PAWHUSKA AIRPORT

**MEMBERS AND FAMILY ONLY PLEASE.

SEPTEMBER 2017

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6 	7	8	9
10	11	12	13 	14	15	16
17	18	19	20 	21	22	23
24	25	26	27 	28	29	30

MOON PHASES AND HOLIDAYS:

LABOR DAY	MON SEP 4
FULL MOON	WED SEP 6
LAST QUARTER	WED SEP 13
NEW MOON	WED SEP 20
FIRST QUARTER	WED SEP 27

PRESIDENT'S MESSAGE

BY RICHARD BRADY



Upcoming events

There are a lot of things happening both near and far in the next few months.

The Perseid meteor shower peaks on Sunday, August 13. If anyone is interested in going out to the observatory to watch them, let me know.

There seems to be something going on Monday, August 21. Some little thing called a Total Solar Eclipse. Here in Tulsa it will not be total, instead a partial eclipse of just under 90%. It's been advertised in the newspapers, including the Tulsa World. We are not planning anything as a club, since most of our members will be out of town in the path of totality. Those who are stuck in Tulsa will have to work, but I'm sure everyone will be taking a look from whenever they can.

From Saturday, September 16 to Sunday, September 24, is Okie-Tex. If you want to observe under some of the darkest skies in the continental states, this is the place to be.

Then on Saturday, September 30 and Sunday, October 1 is High Frontier 14 hosted by the Tulsa Rocketry club. We have been unable to go the past couple of years since it was scheduled during Okie-Tex. They actually rescheduled their event so our members could be there. More info can be found at <http://tulsarocketry.org/high-frontier/>.

We are going to have a picnic for our members on Friday, October 20, with a backup date of Saturday, October 21. These are the same nights as our Member Observing Nights. We plan to be there early around 5:30-6:00 PM to eat before observing. The club will provide soft drinks, hamburgers and hot dogs.

We will be holding elections for officers and board members at the October General Meeting on Friday, October 27th. If you want to run for an office or board member, please let our secretary, John Newton, know. His email address is astrotulsa.secy@gmail.com. To be an officer or board member you must be a member in good standing for at least a year. I am also going to put Article V & VI of the club by-laws concerning the officer and board duties in this newsletter.

On Saturday, November 18th we will be having our annual club dinner. More details coming soon.

The planets this month

In the sky this month, Mercury is low in the northwest right at sundown, Jupiter is starting to get lower in the southwest as the month goes on, Saturn is now well placed in the evening, and Venus is the bright morning star. Mars is still too close to the sun and basically unobservable this month.

Mars was in conjunction with the sun on July 27th and so is can't be seen all month, except maybe if you are lucky enough to be heading north to bask in totality on August 21. Look to the west (right) of the eclipsed sun then.

Mercury sets about an hour after the sun on August 1, it is fading fast on its way to inferior conjunction on August 26. It is magnitude +0.5 on August 1, barely visible low in the west-northwest, only 13° above the horizon.

Jupiter is getting lower in the southwest as the month goes by, but still the brightest object in the evening sky. It is around magnitude -1.9 with an apparent diameter around 33". It remains up until around 11:30 PM at the start of the month but sets around 9:45 PM by the end.

Saturn stays around magnitude +0.3 all month. The rings are tilted about as far as they can be, so now is a good time to look. Even a small telescope will show them well. It is up until 3 AM on August 1 and 1 AM on August 31.

Venus is the bright morning star around magnitude -4.0. It comes up about 2 ½ - 3 hours before sunrise.

Clear skies!
Richard Brady

PRESIDENT'S MESSAGE

BY RICHARD BRADY, CT'D.



ARTICLE V

THE BOARD OF DIRECTORS

1. Powers of the Board of Directors: The affairs of the corporation shall be managed by its Board of Directors, which may exercise all powers granted under the Certificate of Incorporation, these bylaws, or as required by the membership.

2. Numbers of Directors: The Board of Directors shall consist of the four elected officers and Directors at Large. The elected officers include President, Vice President, Secretary, and Treasurer. The number of Directors at Large shall be determined by the membership at the annual business meeting for the subsequent year.

3. Qualifications for the elected position of Director shall be:

The nominee must be an eligible member in good standing for at least one (1) year.

The nominee must be the minimum legal age for the purpose of signing legal contracts and documents.

4. Election and Terms of Directors:

The Directors shall be:

Elected to their positions by the membership at the annual business meeting, or at any regular or special meeting as circumstances may necessitate.

Elected to serve a term of one (1) year to begin immediately after the annual business meeting adjourns.

Entitled to succeed themselves.

5. Vacancies: If any vacancies occur in the Board of Directors for any reason, the vacancies may be filled by electing the required number of new Directors at the next monthly or special membership meeting.

6. Quorum of the Board of Directors: A quorum of the Board of Directors at any meeting of the Board shall be a majority of the Directors, provided that the proper notice was provided to all the Directors. If a quorum is not present at any meeting of the Board, then the Directors present shall adjourn until a quorum shall be present.

7. Meetings of the Board of Directors:

A. Regular Meetings: The Board shall hold a minimum of four (4) meetings annually in or within fifty (50) miles of Tulsa, Oklahoma as shall be determined by the Board. Any member may attend a regular board meeting.

B. Special Meetings: A special meeting of the Board of Directors shall be defined as any business that necessitates the immediate attention of the Board.

Special meetings may be called by the President, Vice President, Secretary, Treasurer, or by any two (2) Directors, provided that each Director is notified of the meeting at least two (2) days in advance. Any member of the Board of Directors that has not responded to the notice shall be notified by alternate means.

Any member may attend a special board meeting provided that the meeting has not been declared closed prior to its convening.

8. Minutes of the Board: A synopsis of the minutes of the Board of Directors shall be published in the first newsletter following each meeting. Any decision of the Board is subject to repeal by a two-thirds (2/3) vote of the membership at any regular or special membership meeting. The secretary shall keep records of all minutes of the board of directors. These minutes will be made available to the membership to examine upon request.

9. Compensation of Directors: No Director shall receive any stated salary for services rendered, but may be reimbursed for any expenses incurred on behalf of the corporation, provided that the proof of expenditures are submitted with a written request for reimbursement to the Board and it is approved. Such documentation shall become part of the corporation's records. Nothing herein shall be construed to preclude any Director from serving the corporation in any other capacity and receiving reasonable compensation thereof, when officially engaged by the Board for that purpose.

10. Dissolution: No Director or member shall possess any property rights in or to the property of the corporation. In the event of dissolution and closing down the existence of the corporation, and after paying or providing for its debts and obligations, the Board of Directors shall dispose of all remaining assets in accordance with Section 504 (c) (3) of the Internal Revenue Service Code.

11. Honorary Directors: The Board at its own discretion may grant Honorary Director status to any person that renders an outstanding service or contribution to the corporation. Honorary Directors may have all rights and privileges granted to Honorary Members. Honorary Directors may serve the Board in an advisory position, but may not be empowered to vote or exercise any powers granted to the Board of Directors.

PRESIDENT'S MESSAGE

BY RICHARD BRADY, CT'D.



12. Committees: The Board of Directors may establish one (1) or more committees at such times as it shall deem necessary. The purpose of each committee, its duties, obligations, designated name, term of existence, and to what extent it is empowered to act, shall be determined by the Board of Directors, and attested to by the official minutes of such board meeting.

13. Standing Rules for Committees:

- A. The President of the Board shall be an ex officio member of all committees.
- B. All committees shall have a chair and at least two (2) other members.
- C. The President of the Board shall appoint all chairpersons of said committees, subject to Board approval.
- D. The committee chair shall report to the board all proceedings, findings, incurred expenses, and any other information that is required by the Board as often as the Board deems essential.

ARTICLE VI

OFFICERS AND DUTIES OF OFFICERS

1. Officers Named and Terms of Officers: The elected officers of the corporation shall be President, Vice President, Secretary, and Treasurer. The officers will be elected at the annual business meeting, or at any monthly or special meeting as circumstances may necessitate. All elected officers shall serve on the Board of Directors.

A. Officers shall serve a term of one (1) year to begin immediately after the election meeting adjourns.

Entitled to succeed themselves.

2. Qualifications of Officers:

Qualifications for the elected position of officer shall be:

The nominee shall be an eligible member in good standing for at least one (1) year.

B. The nominee must be the minimum legal age for the purpose of signing legal contracts and documents.

3. Duties of the Officers:

A. The President: The President shall preside at all meetings of the corporation and Board of Directors, act as chief spokesperson of the corporation, exercise general supervision over the interests and welfare of the corporation, appoint all other positions or agents subject to Board approval for such term(s) as the President may choose, but not to exceed one (1) year. The President shall perform other duties and sign all documents that the Board or membership may require.

The President shall also execute all bonds, mortgages, and contracts requiring a seal under the seal of the corporation, except where required or permitted by law to be otherwise signed or executed, and except where the signing and executing thereof shall be expressly delegated by the Board of Directors to some other officer or agent of the corporation.

B. The Vice President: The Vice President shall, in the absence of the President, perform all duties and exercise all powers of the President, and shall perform such other duties as the Board or the membership prescribes.

C. The Secretary: The Secretary or designee shall attend all meetings of the membership and the Board, record and maintain all minutes thereof, record all votes, keep minutes of all proceedings in a book specifically for that purpose, give or cause to be given notice of all meetings of the membership and the Board of Directors, and perform such other duties as may be required by law or statute, or prescribed by the President or the Board, attest and sign all documents, keep all correspondence of the Board, officers, or any individual in as much as it may concern representation of the corporation, and maintain a current list of the membership and its eligible voters.

D. The Treasurer: The Treasurer shall have custody of, maintain, and keep an accounting of:

1. All corporate funds, financial records and securities; keeping full and accurate records of accounts, receipts, and disbursements in books belonging to the corporation, deposit all moneys and other valuable effects in the name and to the credit of the corporation, in such depositories as may be designated by the Board, and shall report on the financial status of the corporation.

2. Disburse the funds of the corporation as may be ordered by the Board, taking proper receipts for such, and shall render to the President and the Board, at the regular Board meetings, or whenever they may require it, an account of all his/her transactions as Treasurer, and of the financial condition of the corporation.

3. If required by the Board of Directors, he/she shall give the corporation a bond (to be renewed every six (6) months) in such a sum and with such surety or securities as shall be satisfactory to the Board, for the performance of the duties of the office, and for the restoration to the corporation, in case of his/her death, resignation, retirement, or removal from office, of all books, papers, vouchers, monies and properties of whatever kind, in his/her possession, or control belonging to the corporation.

TREASURER'S AND MEMBERSHIP REPORT

BY TIM DAVIS



Astronomy Club of Tulsa: 159 members, including 32 new members in 2017.

Welcome to our new members this month: Travis Vreeland, Shannon Morrison, Ken Black, Timothy Nite, Laura Frossard, Bradley Dougless, Jill Doerflinger, Kros Doerflinger and Kevin Donald.

Club Accounts as of July 31, 2017:

Checking: 5,726.12; Savings: \$6,777.15; Investment accounts: \$21,876.95 (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 2017 are as follows:

Adults: \$45.00 per year, includes Astronomical League Membership.

Sr. Adult: \$35.00 per year for those 65 or older, includes Astro League Membership.

Students: \$30.00 with League membership; Students: \$25.00 without League membership.

Additional Family membership: \$20.00 with voting rights and League membership, \$15.00 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.

BOARD MEETING SATURDAY, JULY 8, 2017

SUMMARY

BY JOHN NEWTON

The officers and board members of the Astronomy Club of Tulsa (ACT) held its regularly scheduled Board Meeting on Saturday, July 8th, 2017 with nearly all officers and board members in attendance. The framework of the meeting included discussions surrounding near-term upcoming events which corresponds with club participation and general awareness, and topics on ACT business-at-hand. These general topics have been summarized below.

Upcoming Events and Awareness:

To begin, the annual viewing of the Perseid Meteor Shower spans from now through the middle of August with peak viewing the evening of August 12th and morning of August 13th. We hope to have a repeat of last year as many observers came to the observatory grounds to watch shooting stars at a rate of several per hour throughout the night of varying brightness and color.

This year, the club plans on having the gates of the observatory property opened to take advantage of the peak night viewing for our members on Saturday, August 12th. We strongly urge you to bring a comfortable lawn chair to relax in and enjoy the show. No equipment needed for this spectacle.

Also, this year marks the highly anticipated special event of the Great American Eclipse. This solar eclipse will occur midday on August 21st and can be seen on a sunny day virtually anywhere within the lower 48 states. Additional details on this event, best viewing options and locations, equipment and human safety, can be found in web publications listed below, in the club's Newsletter and/or Facebook. The club will provide solar glasses at no charge and will be handed out on members' night leading up to this date while supplies last.

For additional information on the event please contact John Land at tulsaastrobiz@gmail.com.
Web links regarding the Great American Eclipse:

Personal and equipment safety, ways to view this special event - http://www.eclipse2017.org/eclipse2017_eye%20safety.htm

Time-of-day and viewing expectation within the lower 48 - http://www.eclipse2017.org/2017/what_i_will_see.htm

<http://shadowandsubstance.com/> http://www.eclipse2017.org/2017/local_circumstances.htm

<http://www.eclipse2017.org/2017/zeiler.htm>

Star map and objects potentially visible during eclipse totality -
http://www.eclipse2017.org/2017/sky_at_totality.jpg

For the astro-photographer –
<http://www.eclipse2017.org/2017/photographing.htm>

Mark your calendars as September 16-23 is Okie-Tex week! This is a week-long event held in the far west corner of the Oklahoma panhandle and promises to provide some of the darkest skies on Earth for astronomical viewing.

The High Frontier Rocketry Club event is a combined solar and stellar event coupled with rocket launching during the day on Saturday, September 30th and Sunday, October 1st near Pawhuska.

ACT telescopes will be on site for viewing our star during the day, and for stargazing in a star party at nightfall for those folks who wish to stay after the rocket launching wraps up.

The ACT Summer Picnic event has been rescheduled to the Fall in hopes of cooler, more comfortable weather. The new date is now planned for Friday, October 20th, with a weather backup date of Saturday, October 21st, and will be hosted at the grounds of the observatory. The intent of this event is to honor our club members calling this the ACT Members' Appreciation picnic.

Menu items will include soft drinks, grilled hot dogs and hamburgers. Start time will begin with gates opening at about 30 to 60 minutes prior to sunset (Sunset 6:41 PM).

We welcome voluntary participation to help with serving food and drink, and sharing in the grilling tasks. If interested in helping with this event please contact John Newton at astrotulsa.secy@gmail.com.

Keep an eye out as the ACT Newsletter will provide reminders and more details regarding each of these events.

BOARD MEETING SATURDAY, JULY 8, 2017

SUMMARY

BY JOHN NEWTON, CT'D.

ACT Business-at-Hand:

ACT Club Member Elections will be held during the General Meeting scheduled for October 27th. Ballots with names of those who have voiced an interest of running for office and board positions will be listed and available during this meeting.

Currently running for ACT office positions this year we have Tamara Green for President, Jerry Cassity for Vice President, Tim Davis for Treasurer (incumbent), John Newton for Secretary (incumbent), and Richard Brady, Teresa Davis, John Land, James Taggart, and Skip Whitehurst for Board.

Space will be provided under each position as an option to our members to write in a name of your choosing when casting your vote.

In addition, John Land has volunteered to be the Newsletter editor, and Jerry Cassity has volunteered to be the Facebook Administrator. These are not elected positions.

The annual club members' dinner is scheduled for November 18th. This year marks the clubs' 80th anniversary since its establishment in 1937.

Location for the dinner along with other information will be provided soon. Committee to help organize the dinner includes Jerry Cassity (jerrycassity@gmail.com) and John Newton (astrotulsa.secy@gmail.com).

Regarding the facility around the observatory, in the last few months work has been conducted by making much needed repairs to the metal work and by replacing the weatherproofing strip around the base of the dome. Most of this work was led by James Taggart and Skip Whitehurst, along with others who helped provide tools and their time to the preservation of this facility – we thank you all. Although much progress has been made, there is still a little more to do to complete this effort.

Looking ahead and to next steps of upkeep for the dome has already begun. Cost estimating to strip and resurfacing the inside upper portion of the dome will begin soon with hopes of starting the project later this year or early next.

Additional observatory/facility items include trimming the overgrowth of trees and shrubs along the south fence line which has become an obstacle for viewing the night sky. James Taggart has offered his time and assistance to this task as he has the right equipment to perform the grooming necessary. Again, thank you James for your continued and tireless support.

James is also considering ways of improving security in and around the observatory grounds while making it easier for qualifying members to gain access into the observatory.

Lastly, as the club grows the board members of the club have decided that a Members' Policy and Procedure Handbook needs to be developed to help provide guidance to the use and care of this club's investments in both its delicate astronomical instruments, and in the use and security of the facility property. For those interested in using the telescopes, the recommendation is to provide obligatory training by tenured members surrounding the proper use of these devices, as well as facility use.

Also, for those members who wish to request a key to the gates with access to the observatory will find a form with compliancy in the back of the handbook.

Please know that we encourage all club members who have been on for more than one year and in good standing to take advantage of the use of the facility and of these club instruments but with the care and respect stipulated in the policies and procedures handbook.

Once the handbook is ready for distribution, the handbook will be sent out to all members to review these guidelines mandated by the board. Going forward, a copy of the handbook will be sent out as an attachment to all new member via the welcoming email.

Please feel free to contact me with any questions or comments pertaining to the items listed above, email me at astrotulsa.secy@gmail.com.

Best regards,

John Newton – ACT Secretary

PLEASE NOTE: The Televue 9 mm Type 6 Nagler eyepiece and the astro cards with the red light viewer have been sold as of July 29, per Marcia Boston. Thank you.

Telescopes and Astronomy accessories Sale. Great Bargains still available

Long time members Bob and Marcia Boston are reducing their astronomy inventory. If you are interested in purchasing one or more items.

Contact Marcia Boston thebostons@cox.net 918-636-4414



< **Celestron CPC 1100** 11" Aperture f1 2800 mm >>>>
Fully equipped GoTo technology
Includes \$300 StarSense Auto align –
2" Dielectric diagonal \$100 – 40mm Plossol eyepiece
Asking \$2,100 Web list for \$3,000 +



Orion StarBlast 6 in f5 f1 760 mm >>>>>
With Sirius Plossol 25mm & 10mm eyepieces
Asking \$ 200 Web list for \$340
This tabletop telescope is a great "Grab & Go"
Scope for family and public events.



Eyepieces, filters & cases



Electronic Eyepiece



Star Atlas Set 3 vol set



Messier AstroCards

Brand	Type	Focal Length		Asking Price	Web List Prices	Details
	Eyepieces					
Televue	Nagler type 6	9 mm	82 deg	\$200.00	\$310.00	1.25"
TMB	Planetary WA	6	58 deg	\$30.00	\$50.00	1.25"
Meade	Super Plossol eyepieces	Set	52 deg	\$100.00	\$170.00	32-15-12.4-9.7-6.4 mm with shorty 2x barlow with color filters and case
Meade	Electronic Video Eyepiece			\$30.00		Monochromatic Live view – RCA output - uses 9 volt battery
	FILTERS					
	Televue 5X powermate barlow			\$90.00	\$205.00	
	Orion Ultra Block LP filter			\$40.00	\$80.00	1.25"
	Orion 2" variable Polarizing filter			\$30.00	\$60.00	Great for lunar observing
	Orion 2" Oxygen-III nebula			\$70.00	\$140.00	Deep sky Nebular viewing
	Lumicon UHC light pollution			\$50.00	\$100.00	1.25"
	Lumicon 1.25 " Oxygen III nebula			\$50.00	\$100.00	1.25"
3 Vol Set	Millennium Star Atlas			\$150.00	\$450.00	Over 1,500 star charts and 1.8 million stars to 11th magnitude by Roger Sinnott
AstroCards	Messier set charts with red light viewer			\$20.00		Each card has info and finder charts

ASTRONOMY EQUIPMENT FOR SALE!

CELESTRON 6 SE TELESCOPE

I have a brand-new (still in box) Celestron 6 SE telescope that I would like to sell. I'm in Claremore. Asking \$750.00.

Contact John Knapp at John.Knapp@bakerhughes.com.

KC LOBRECHT'S 12 INCH DOBSONIAN—THIS IS NO JOKE!!



As many of you know this is a wonderful user friendly telescope. Need to be 5'5" not need a step up.

John Hall, (Pegasus Mirrors) reconfigured mirror. Have the light wave curve specs from his work.

Enhanced secondary, capable of 15th magnitude. AstroSystems Teflon, one of the few Dobsonians that pivots beautifully at zenith.

Kenneth Novak hardware. Starlight Instruments, 2" Focuser, #59, with reducer. Had it serviced (rack and pinion) in '09. Flocked it then too. 100+ lbs in three parts, counting mirror. Will fit in a compact car. 2 minute set up.

Acceived many of my Master Observer Certicates with it, except H2, binocular, meteor and solar program.

Asking \$1200. Have \$2k in it.

Contact KC Lobrecht at lobrechtkc@gmail.com.

Monday Aug 21, 2017 from Tulsa

89% partial Solar Eclipse.

11:40 AM Partial Eclipse begins

1:09 PM Maximum Eclipse

2:37 PM Eclipse Ends



Image from *Eclipse2017* App

EYE PROTECTION is ESSENTIAL for all of the partial phases of the eclipse! Even if only 10% of the sun is still visible it's still 100,000 times too bright for the unprotected eye. There is nothing Extra Dangerous about the sun during an eclipse. It's the same sun we see every day. Except during an Eclipse people want to see what is happening up there. **Only persons observing the 2 ½ minutes of Totality when the sun is completely covered can safely view the eclipse without eye protection.**

Safe Ways to observe the Partial Eclipse – Experiment techniques before the eclipse day.

1 Solar Projection – Get **two Index cards** – Punch a small hole about 1/8 inch in one card.

Stand with your back to the sun and hold the 2nd card in the shadow of the other.

You'll see an image of the sun projected onto the card.

**** DO NOT LOOK THROUGH THE HOLE AT THE SUN !**

2 Hold a Kitchen Collander a foot or so above a white paper.

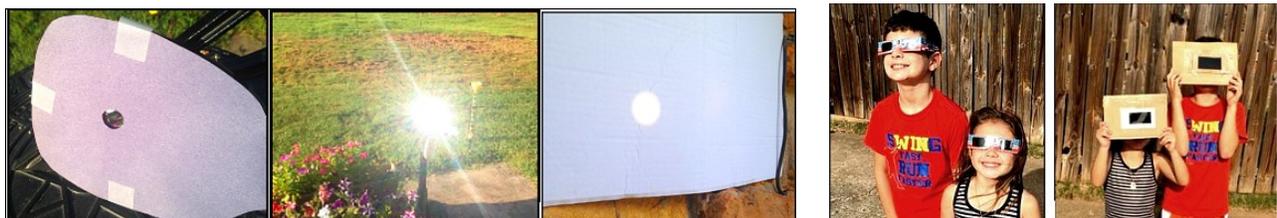
You'll see dozens of tiny eclipse images on the paper.

3 Mirror Projection – cover a mirror with a dark stiff piece paper. Cut a 1/4 to 1/2 inch hole in the paper. Project the sun's image onto a shaded wall or white paper a few feet away.

Tip: Try positioning the mirror to shine through a N or S facing window

to cast the sun's image on a wall or ceiling.

4 As the Eclipse reaches 90% or more **look on the ground under a tree** to see tiny sun images filtering through the leaves. Don't have a tree nearby? Try to **Chris-Cross your fingers** and let the sun light filter through your fingers to project solar images



NASA Eclipse Live Stream

2017 Total Solar Eclipse MegaCast: Exclusive path of totality coverage across multiple platforms

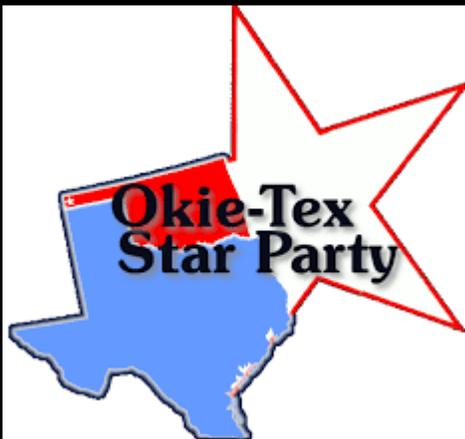
For four hours surrounding the eclipse, NASA will host an Eclipse Megacast providing unique broadcast coverage across multiple phenomenon programming, and allow NASA to interact with the scientists and member of the public across the country as they watch and study the eclipse. The Megacast will be picked up by NASA TV as well as many other local and national TV stations. In all, hundreds of millions, worldwide, will be able to experience and learn about the eclipse through NASA programming. <https://www.nasa.gov/eclipselive>

A promotional banner for the NASA Eclipse Live Stream. The background is dark blue with a large, bright sun partially obscured by a dark circle representing the moon. In the foreground, silhouettes of people are watching the eclipse, and a city skyline is visible on the right. On the left, there is a circular graphic with a globe and abstract patterns. The text is white and yellow, providing information about live video streams and a link to the NASA website.

LIVE VIDEO STREAMS
of the August 21 total solar eclipse,
from locations across the country,
will be available on
<https://www.nasa.gov/eclipselive>

[Read More](#)

Credit: S. Habbal, M. Druckmiller and P. Anst



If you have not done so already, it is not too late to register for Okie-Tex Star Party 2017, which runs September 16 thru 24, 2017!

Per the Oklahoma City Astronomy Club's Okie-Tex website: <http://www.okie-tex.com/registration.php>:

Pre-Registration and Fees:

The pre-registration fee is \$50.00 for each primary registrant and \$25.00 for each additional family member 16 years old or older. Children under 16 are admitted free of charge. Only primary registrants are eligible for the *Great Okie-Tex Giveaway* Adult guests may register as primary registrants for \$50.00 if they wish to be eligible in the giveaway or may upgrade their registration for \$25.00 at the party by checking in at the registration desk at anytime prior to the giveaway.

Pre-registration submissions must be post-marked no later than Saturday, August 26, 2017 and must be paid in full. Online Registrations must be completed and paid in full by midnight CDT on Monday, August 28, 2017.

At-The-Door Registration and Fees:

Registrations received with postmarks after August 26, 2017 and registrations at the door are \$100.00 for all adult guests. At-the-door registrants are eligible to participate in the *Great Okie-Tex Giveaway*.

Facility Fee:

As part of our ongoing investment in and improvements to Camp Billy Joe, a \$5.00 per day facility fee is charged for **all registrants**. The facility fee is waived for children under 16.

Meals are catered by Jody's Catering of Boise City, OK.

In camp meals provided by Jody's Catering may be purchased. Please refer to the [Meal Request Form](#). Checks for meals are made payable to Jody's Catering. Please pre-purchase meals to ensure enough food is available. At the door meal purchases will be limited. **Meal request form and payment must be received, with a postmark, no later than August 25, 2017.**

Link to the Okie-Tex Star Party Website: <http://www.okie-tex.com/>

Link to the Online Registration Form: <http://www.okie-tex.com/registration.php>

Link to the Meals Request Form: <http://www.okie-tex.com/Files/2017meals.pdf>

Many of us go to Okie-Tex each year and it is really a fantastic star party and a great observing experience. There are also side trips you can take to the dinosaur tracks, the Oklahoma/Colorado/New Mexico tri-state marker, a hike up Black Mesa, nearby Black Mesa State Park and Lake Carl Etling, and Capulin Volcano National Monument.

Hope to see you there!

This article is provided by NASA Space Place.

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

Visit spaceplace.nasa.gov to explore space and Earth science!

**Twenty Years Ago on Mars...**

By Linda Hermans-Killiam

On July 4, 1997, NASA's Mars Pathfinder landed on the surface of Mars. It landed in an ancient flood plain that is now dry and covered with rocks. Pathfinder's mission was to study the Martian climate, atmosphere and geology. At the same time, the mission was also testing lots of new technologies.

For example, the Pathfinder mission tried a brand-new way of landing on Mars. After speeding into the Martian atmosphere, Pathfinder used a parachute to slow down and drift toward the surface of the Red Planet. Before landing, Pathfinder inflated huge airbags around itself. The spacecraft released its parachute and dropped to the ground, bouncing on its airbags about 15 times. After Pathfinder came to a stop, the airbags deflated.

Before Pathfinder, spacecraft had to use lots of fuel to slow down for a safe landing on another planet. Pathfinder's airbags allowed engineers to use and store less fuel for the landing. This made the mission less expensive. After seeing the successful Pathfinder landing, future missions used this airbag technique, too!

Pathfinder had two parts: a lander that stayed in one place, and a wheeled rover that could move around. The Pathfinder lander had special instruments to study Martian weather. These instruments measured air temperature, pressure and winds. The measurements helped us better understand the climate of Mars.

The lander also had a camera for taking images of the Martian landscape. The lander sent back more than 16,000 pictures of Mars. Its last signal was sent to Earth on Sept. 27, 1997. The Pathfinder lander was renamed the Carl Sagan Memorial Station. Carl Sagan was a well-known astronomer and science educator.

Pathfinder also carried the very first rover to Mars. This remotely-controlled rover was about the size of a microwave oven and was called Sojourner. It was named to honor Sojourner Truth, who fought for African-American and women's rights. Two days after Pathfinder landed, Sojourner rolled onto the surface of Mars. Sojourner gathered data on Martian rocks and soil. The rover also carried cameras. In the three months that Sojourner operated on Mars, the rover took more than 550 photos!

Pathfinder helped us learn how to better design missions to Mars. It gave us valuable new information on the Martian climate and surface. Together, these things helped lay the groundwork for future missions to Mars.

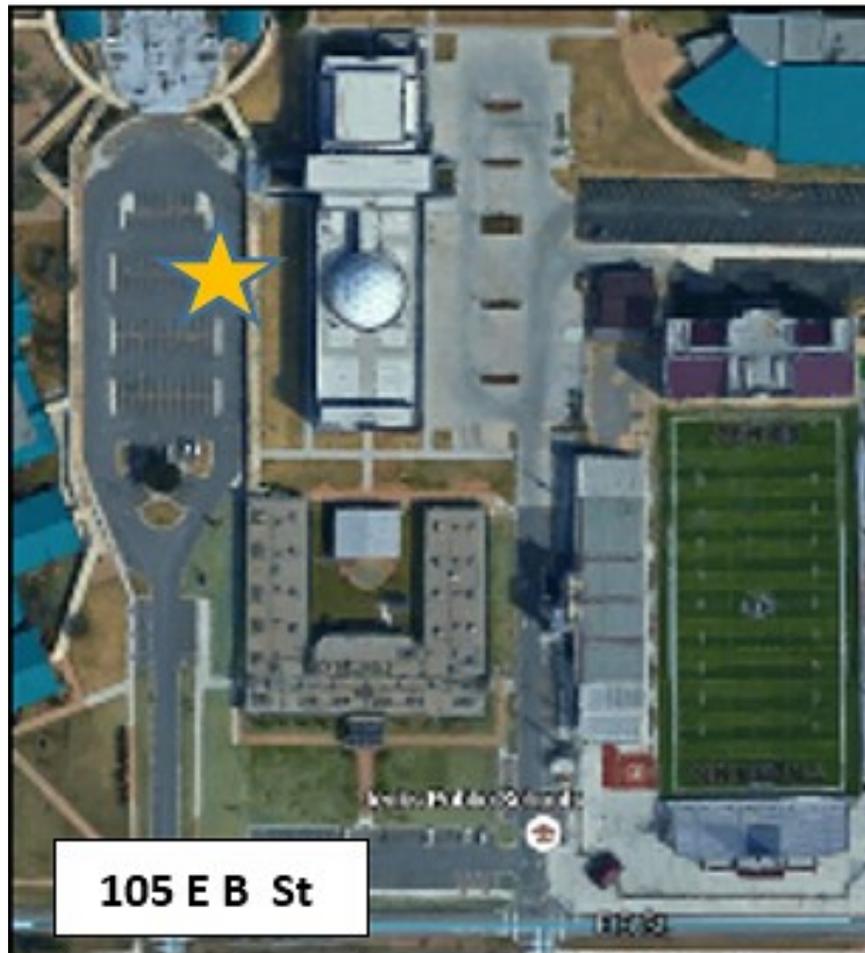
Learn more about the Sojourner rover at the NASA Space Place: <https://spaceplace.nasa.gov/mars-sojourner>



Caption: The Mars Pathfinder lander took this photo of its small rover, called Sojourner. Here, Sojourner is investigating a rock on Mars. Image credit: NASA/JPL-Caltech

WHERE WE MEET

JENKS HS PLANETARIUM



**Our Club General meetings are held at the
Jenks Public Schools Planetarium
105 East B St, Jenks, OK**

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

Meetings begin at 7:00 PM

**Printable Detailed map available at [http://astrotulsa.com/cms_files/
Directions_JenksPlanetarium.pdf](http://astrotulsa.com/cms_files/Directions_JenksPlanetarium.pdf)**

We hope to see you there!

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MEMBERSHIP RATES FOR 2017 WILL BE AS FOLLOWS:

ADULTS - \$45 PER YEAR. INCLUDES ASTRONOMICAL LEAGUE MEMBERSHIP.

SENIOR ADULTS - \$35 PER YEAR. **FOR THOSE AGED 65 AND OLDER.** INCLUDES ASTRONOMICAL LEAGUE MEMBERSHIP.

STUDENTS - \$30 PER YEAR. INCLUDES ASTRONOMICAL LEAGUE MEMBERSHIP.

STUDENTS - \$25 PER YEAR. **DOES NOT INCLUDE ASTRONOMICAL LEAGUE MEMBERSHIP.**

THE REGULAR MEMBERSHIP ALLOWS ALL MEMBERS OF THE FAMILY TO PARTICIPATE IN CLUB EVENTS, BUT ONLY ONE VOTING MEMBERSHIP AND ONE ASTRONOMICAL LEAGUE MEMBERSHIP PER FAMILY.

ADDITIONAL FAMILY MEMBERSHIP - \$15 WITH ASTRONOMY CLUB OF TULSA VOTING RIGHTS, \$20 WITH CLUB VOTING RIGHTS AND ASTRONOMICAL LEAGUE MEMBERSHIP.

THOSE WISHING TO EARN ASTRONOMICAL LEAGUE OBSERVING CERTIFICATES NEED TO HAVE A LEAGUE MEMBERSHIP.

MAGAZINE SUBSCRIPTIONS:

ASTRONOMY IS \$34 FOR ONE YEAR OR \$60 FOR 2 YEARS.

WEBSITE: www.astronomy.com

SKY & TELESCOPE IS \$33 PER YEAR.

WEBSITE: www.skyandtelescope.com

SKY & TELESCOPE OFFERS A 10% DISCOUNT ON THEIR PRODUCTS.

IF YOU ARE AN EXISTING S&T SUBSCRIBER, YOU CAN RENEW DIRECTLY WITH S&T AT THE SAME CLUB RATE. BOTH S&T AND ASTRONOMY NOW HAVE DIGITAL ISSUES FOR COMPUTERS, IPADS AND SMART PHONES.

ONLINE REGISTRATION

WE NOW HAVE AN AUTOMATED ONLINE REGISTRATION FORM ON THE WEBSITE FOR NEW MEMBERSHIPS, MEMBERSHIP RENEWALS AND MAGAZINE SUBSCRIPTIONS. JUST SIMPLY TYPE IN YOUR INFORMATION AND HIT "SEND" TO SUBMIT THE INFORMATION. YOU CAN THEN PRINT A COPY OF THE FORM AND MAIL IT IN WITH YOUR CHECK, OR USE OUR CONVENIENT PAYPAL OPTION. .

LINK: <http://www.astrotulsa.com/Club/join.asp>

OR, IF AT A STAR PARTY OR MEETING, SIMPLY FIND A CLUB OFFICER TO ASK ABOUT JOINING OR RENEWING WITH YOUR DEBIT OR CREDIT CARD THROUGH OUR CONVENIENT SQUARE OPTION!



THE ASTRONOMY CLUB OF
TULSA INVITES YOU TO MAKE
PLANS THIS SUMMER TO JOIN
US AT A STAR PARTY!

OPEN TO THE PUBLIC

FOR MORE INFORMATION
PLEASE VISIT
WWW.ASTROTULSA.COM.

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3 NON-PROFIT ORGANIZATION OPEN TO
THE PUBLIC. THE CLUB STARTED IN
1937 WITH THE SINGLE MISSION TO
BRING THE JOY AND KNOWLEDGE OF
ASTRONOMY TO THE COMMUNITY OF
TULSA, OK AND THE SURROUNDING
AREA. TODAY OUR MISSION REMAINS
EXACTLY THE SAME. WE TRAVEL TO
LOCAL SCHOOLS, CHURCHES AND
MANY OTHER VENUES WITH SCOPES
AND PEOPLE TO TEACH. OUR
OBSERVATORY IS LOCATED IN MOUNDS
AND MANY PUBLIC PROGRAMS ARE
OFFERED THERE. TO JOIN THE
ASTRONOMY CLUB OF TULSA, PLEASE
VISIT WWW.ASTROTULSA.COM WHERE
YOU WILL FIND ALL THE INFORMATION
NECESSARY TO BECOME A MEMBER.



Also find us on Facebook!

<https://www.facebook.com/AstronomyClubofTulsa>



WE ALSO ARE A PROUD PARTICIPANT IN NASA'S NIGHT SKY
NETWORK.

THE EDITOR WISHES TO THANK THE FOLLOWING FOR
THEIR CONTRIBUTIONS TO "THE OBSERVER" FOR
THIS ISSUE:

LINDA HERMANS-KILLIAM

JOHN LAND

MARCIA BOSTON

RICHARD BRADY

TIM DAVIS

TAMARA GREEN



PHOTOS: Above, Evening stars over the observatory; Below: More Summer evening stars, both photos taken during the Summer of 2016 by Tamara Green.

