



Astronomy Club of Tulsa

Observer

July 2012



Photo: John Land looks for a night-sky object to show some guests at a star party, by Tamara Green.

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Inside This Edition:

Article/Item	Page
August Calendar and Upcoming Events	3
President's Message, by Ann Bruun	4
Land's Tidbits, by John Land	5
The Secretary's Stuff, by Tamara Green	6
Dark Sky Committee Report, by Brad Young (with Editor's note by Tamara Green)	7
Advertisement: Telescope For Sale	8
"Mars Science Laboratory—Curiosity Lands Sunday, August 5", by John Land	9
"Ring of Fire, Annular Eclipse May 20, 2012", by Brad Young	10
Officers, Board Members-At-Large, and Staff Info	14
Membership Info	15

August 2012 Tulsa, Oklahoma

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 Sunrise: 6:31 am Sunset: 6:23pm Moonrise: 8:02pm Moonset: 6:01am Full Moon: 9:29pm	2 Sunrise: 6:32am Sunset: 6:23pm Moonrise: 8:39pm Moonset: 7:09am	3 Sunrise: 6:32am Sunset: 6:27pm Moonrise: 9:12pm Moonset: 8:12am	4 Sunrise: 6:33am Sunset: 6:26pm Moonrise: 9:44pm Moonset: 9:15am
5 Sunrise: 6:34am Sunset: 6:25pm Moonrise: 10:14pm Moonset: 10:15am	6 Sunrise: 6:35am Sunset: 6:24pm Moonrise: 10:45pm Moonset: 11:14am	7 Sunrise: 6:36am Sunset: 6:23pm Moonrise: 11:18pm Moonset: 12:12pm	8 Sunrise: 6:36 am Sunset: 6:22pm Moonrise: 11:52pm Moonset: 1:08pm	9 Sunrise: 6:37am Sunset: 6:21pm Moonrise: none Moonset: 2:04pm Last Qr: 12:56pm	10 Public Star Party Sunrise: 6:38am Sunset: 6:20pm Moonrise: 12:30am Moonset: 2:59pm	11 Sunrise: 6:39am Sunset: 6:19pm Moonrise: 1:12am Moonset: 3:50pm
12 Sunrise: 6:40am Sunset: 6:18pm Moonrise: 1:58am Moonset: 4:39pm	13 Sunrise: 6:40am Sunset: 6:17pm Moonrise: 2:49am Moonset: 5:25pm	14 Sunrise: 6:41am Sunset: 6:16pm Moonrise: 3:44am Moonset: 6:08pm	15 Sunrise: 6:42 am Sunset: 6:14pm Moonrise: 4:42am Moonset: 6:47pm	16 Sunrise: 6:43am Sunset: 6:13pm Moonrise: 5:43am Moonset: 7:24pm	17 M.O.O.N. Sunrise: 6:44am Sunset: 6:12pm Moonrise: 6:46am Moonset: 7:58pm New Moon: 9:56am	18 Sunrise: 6:44am Sunset: 6:11pm Moonrise: 7:50am Moonset: 8:32pm
19 Sunrise: 6:45am Sunset: 6:10pm Moonrise: 8:55am Moonset: 9:06pm	20 Sunrise: 6:46am Sunset: 6:08pm Moonrise: 10:01 am Moonset: 9:41 pm	21 Sunrise: 6:47am Sunset: 6:07pm Moonrise: 11:08am Moonset: 10:19pm	22 Sunrise: 6:48 am Sunset: 6:06pm Moonrise: 12:16pm Moonset: 11:01pm	23 Sunrise: 6:48am Sunset: 6:04pm Moonrise: 1:23pm Moonset: 11:48pm	24 Sunrise: 6:49am Sunset: 6:03pm Moonrise: 2:28pm Moonset: none First Qr: 7:55am	25 Sunrise: 6:50am Sunset: 6:02pm Moonrise: 3:29pm Moonset: 12:41 am
26 Sunrise: 6:51am Sunset: 6:00pm Moonrise: 4:25pm Moonset: 1:40am	27 Sunrise: 6:51am Sunset: 7:59pm Moonrise: 5:14pm Moonset: 2:43 am	28 Sunrise: 6:52am Sunset: 7:58pm Moonrise: 5:57pm Moonset: 3:48am	29 Sunrise: 6:53 am Sunset: 7:56pm Moonrise: 6:36pm Moonset: 4:53am	30 Sunrise: 6:54am Sunset: 7:55pm Moonrise: 7:10pm Moonset: 5:57am	31 Sunrise: 6:55am Sunset: 7:53pm Moonrise: 7:42pm Moonset: 7:00am Full Moon: 7:59am	

Daylight Saving/Summer Time is in effect for the entire month.
Courtesy of www.sunrisesunset.com
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Public Star Party	Fri, Aug 10	ACT Observatory	7:30 PM
Members' Night	Fri, Aug 17	ACT Observatory	7:30 PM
Sidewalk Astronomy	Sat, Sep 1	Bass Pro	7:30 PM
Public Star Party	Fri, Sep 7	ACT Observatory	7:00 PM
OKIE-TEX STAR PARTY	Sep 8-16	Camp Billy Joe, Kenton, OK	
Members' Night	Fri, Sep 14	ACT Observatory	7:00 PM
General Meeting	Fri, Sep 28	TCC NE Campus	7:00 PM
Sidewalk Astronomy	Sat Sep 29	Bass Pro	7:00 PM



President's Message

By Ann Bruun

The heat is on again and though it has been miserable during the day we have had some very pleasant evenings up at the observatory. Summer nights are great for just relaxing and enjoying the sights no matter what objects you prefer.

On a more serious note, due to the secluded nature of our facility safety is always a concern. No one should ever be left alone to shut down the observatory. There is a shut-down procedure which must be followed and takes some time. Many of our members have not been trained or may not even be aware of the procedure. Key holders and experienced members will be glad to show anyone the process but the main thing is, even though you might not know what needs to be done, never leave a single person to do it. There is safety in numbers and it is hard to believe how quickly our happy observatory becomes creepy when you are up there alone after midnight.

Try to stay cool during the day and check out the summer sky at night. The Milky Way is on full display this time of year. Don't miss it.

Ann Bruun
Astronomy Club of Tulsa President
Act_pres@astrotulsa.com



Land's Tidbits

By John Land

Regional Summer Astronomy Events

TIME IS RUNNING OUT TO REGISTER FOR OKIE-TEX

Registration prices go up Aug 18th All meal registrations due before Aug 24th



29th Okie-Tex Star Party

Sept 8th to Sept 16th

<http://www.okie-tex.com/>

Details for registration and meals at website.

Dozens of our Tulsa members join with more than 300 fellow astronomers each fall to marvel at the dark skies in the tip of the Oklahoma Panhandle. Al Nagler of Tel-Vue optics proclaimed it as one of the darkest sites in America. [Get your registrations in early.](#) Especially for the on site meals. Since the nearest eating places are nearly 40 miles away.



Heart of America Star party near Butler, MO

Oct 10 to Oct 14 <http://www.hoasp.org/>

This Month I am trying a new format to report the club membership and accounts balances.

Each summer THREE large expenses occur -

Our Astronomical League dues of \$ 585 were paid in June \$ 5 per active member

Our club insurance policies of \$ 2487 are paid in July

I keep a reserve amount aside each year to cover these large expenses.

Astronomy Club of Tulsa - Treasurer Report by John Land			
The club has 106 members including 17 new memberships this year			
In 2012 - 115 people requested information on the website visitor section			
Newest Members - Joel Moon and Richard Brady			
Expenses	Deposits	Balance	Checking Account
		\$ 1,318.42	June 29 Balance
	\$ 140.00	\$ 1,458.42	July Deposits
	\$ 2,000.00	\$ 3,458.42	Transfer from savings
\$ 97.12		\$ 3,361.30	July Routine Expenses
\$ 1,544.00		\$ 1,817.30	Ins Liability & Property
\$ 943.00		\$ 874.30	Ins Directors and Officers
		\$ 874.30	July 24 Balance
		\$ 9,001.19	June 29 Savings Acct
	\$ 3.18	\$ 9,004.37	Interest Earning July 1
\$ 2,000.00		\$ 7,004.37	Transfer to Checking
		\$ 7,004.37	July 24 Savings
Investment Account - End of month		Account Value varies with Market	
\$ 15,305.62	Dec-11	May	\$ 15,611.46
\$ 15,682.28	Jan-12	June	\$ 16,231.22
\$ 16,067.68	Feb	July	
\$ 16,217.08	Mar	August	
\$ 16,240.96	Apr	Sept	



The Secretary's Stuff

By Tamara Green

Since there have not been any general meetings this month for me to take minutes for, I don't have any "Secretary's Stuff" for July.

However, as Observing Co-Chair, I want to say Congratulations to Brad Young, who has completed his requirements for the AL's Basic Outreach Certificate! Mr. Young has completed 5 observing events for a total of 10.5 hours, with an estimated 535 participants. Good Job Brad!



Dark Sky Committee Report

By Brad Young

(Editor's Note: This report was the result of a meeting of the Dark Sky Committee on June 23. Brad did attempt to send me an email about this meeting, but due to an inopportune glitch in my email program, I never got it. This was meant to go in last month's edition, but since it did not make it into last month's edition, I am including it in this month's. Thank you for your continued support, and Brad, I am sorry for any trouble. —Tamara)

We had a quorum of 3 last night (sorry, Lee) and have decided that we are the point where the next step is raising money. We estimate it will take approximate \$10,000 to get a site and start the Dark Sky Project. It would then require about another \$10,000 to improve that site to a point where we might be able to stay overnight.

At this time, the Dark Sky Committee will go on hiatus and await action by the Board or General Membership further to this subject. Thank you for your support.

Brad Young

DSC Team Leader



FOR SALE - Meade LX 50 - 10 inch telescope - 1998 vintage
Fork Mount with wedge and tripod - Has Drive motors but not "GoTo"
equipped.

Several eyepieces – Original shipping case

Contact Howard Baker 918-438-3634

Mars Science Laboratory - Curiosity lands Sunday August 5th

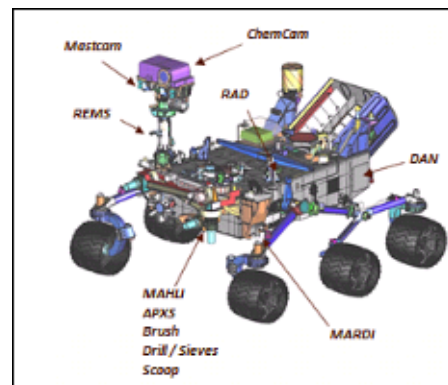
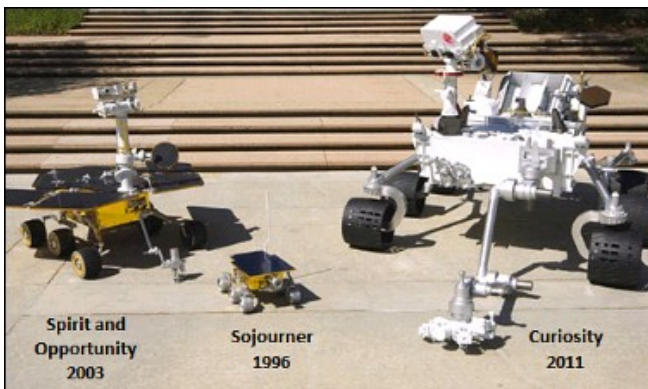
Touch down occurs at 12:31 AM on Monday Aug 6th Tulsa time.

By John Land

Monday evening I had the opportunity to listen in to a teleconference on the Mars Science Laboratory named Curiosity sponsored by the Night Sky Network. The speaker was Dr. Ashwin R. Vasavada, Deputy Project Scientist for the mission. You can view his online slide show at:

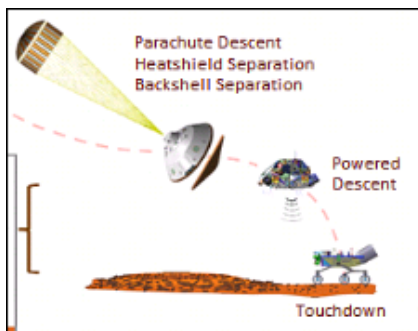
<http://astrosociety.org/nsntelecon/> http://nightsky.jpl.nasa.gov/news-display.cfm?News_ID=519

Curiosity is the most ambitious Mars mission to date. The goal is to land a one ton Mars rover in a 100 mile wide crater known as Gale crater. This site was chosen because at its center is a 30 mile wide – 3 mile high mountain. Two years of intense imaging from orbital spacecraft reveal that Mt. Sharp is composed of many layers of exposed rock formations dating back to the early history of Mars. The primary mission is to examine these rock structures for evidence of potentially habitable environmental conditions in Mars ancient past.



The Mars Science Laboratory is the latest in a series of Mars Landers and robotic explorers. The size of a small car, it has a wheel base of 9 feet and weighs in at 900 kg (nearly 1 ton). Its mast stands 7 feet tall and it is loaded with 165 lbs of scientific instruments to image and perform complex analysis on rock samples. Curiosity will rely on a radioisotope power source to run all this instrumentation and allow a much more robust exploration cycle. Solar powered robots have suffered power loss due to build up of dust on their panels and must be parked for extended periods due to the low solar angle during the long Martian winters.

Delivering this massive package to its specific target on the surface of Mars will be the most challenging mission to date. Launched Nov. 26, 2011 the craft set out on an 8 ½ month – 350 million mile cruise to Mars. When Curiosity arrives at Mars it will be screaming in at 13,000 mph. Before it touches down at its target it must endure “Seven Minutes of Terror” (see video link). Its heat shield will be heated to 1600 degrees as it slams into the thin Martian atmosphere. In order to hit its target it will have to use thrusters to actively steer its course during aerobraking. Still going at supersonic velocity it will pop a 60 foot wide parachute subjecting the capsule to a braking force of 9 g’s. But the parachute alone will not be enough in the thin atmosphere. The next phase involves a retrorocket powered sky crane that will slow the craft to hover a few meters above the surface. Then it will carefully lower the Lander on tethers



to the surface – blow the tethers and fly away. The spacecraft must do all these maneuvers without any help from Earth. Once the craft comes to rest Project planners must wait an agonizing 14 minutes for the spacecraft touch down confirmation signal to reach Earth. So stay tuned for great times on Mars.

Mars Science Laboratory home page <http://mars.jpl.nasa.gov/msl/>

Seven Minutes of Terror Video http://www.youtube.com/watch?v=Ki_Af_o9Q9s&feature=youtu.be

RING OF FIRE

ANNULAR ECLIPSE MAY 20, 2012

By Brad Young



My wife and son recently travelled with me to New Mexico to view the annular eclipse. Unfortunately, my daughter was not able to make it. We had a wonderful trip, and the high point was viewing the Ring of Fire low over the northwest horizon from the Albuquerque Airport on May 20.

I was unable to carry my small scope, an ETX-125, with us as my teenage son already had to carry all my bags due to my recent surgery. However, we did bring along several pairs of solar viewing glasses from the Astronomical League and #14 welder's glass for safe viewing. We gave away some of the glasses to relatives and friends so that they could view the deep partial eclipse from Las Cruces. I also tried using two slips of paper to make a pinhole projector. This did not work because "You're not doing it right." I'll bet you guys have heard that one before.

But despite some setbacks, we were all able to see this annular eclipse, which was a first for all of us. Harriet and I remember the deep partial eclipse in Tulsa from 1994, but neither of us was able to travel that time to the actual central line. This time we wanted to see the full view, and with the Transit of Venus right around the corner, it seemed like a great time to make it happen.

We had planned to view from the TAAS (The Albuquerque Astronomical Society) site, but on arrival, we found several hundred people already there! However, the airport is very large so we just selected a nice parking spot in the back area where other stragglers were and set up there. Unfortunately, I forgot to look for two observing buddies who may have been there, but with the eclipse about to start, we had no time to lose.

My rough notes from the eclipse read (all times MDT):

First tiny bite seen at lower northwest edge of moon at 6:29 PM.

Moon had moved onto sun enough to form “Ms. Pac-Man” at 6:46 pm

Estimated 40% on at 6:54 PM

Harriet tried Image #3 at 7:00 – overexposed but the partial phase shows in a reflection

50% on at 7:05 PM

66% at 7:14 PM

Sun appears as the same thin crescent as Venus at 7:21

Looks to be well over 90% at 7:32

Underestimated it – 2nd contact at 7:33 forming a **Ring of Fire**

Appears central at 7:35 (image #1 above)

3rd contact and annularity ended at 7:38 PM

There was a collective “Woooo-hoooo!” at the point of 2nd contact across the entire field, and though we were ½ mile away from the main group, we heard them yell too. Part of the fun was experiencing this with all manner of strangers, all staring at the sun and excited like a bunch of kids. After annularity was complete, we watched a few minutes as the scene reversed, but the sun was now very low so we soon packed up our gear.

Besides the obvious excitement of watching the moon move across the sun, we had other effects to enjoy. With the low sun and clear dry desert air, our shadows were very long, but, as annularity increased, they became more “fuzzy” – I assume this was a diffraction effect. The landscape, which included the Sandia Mountains in the east, took on a muted appearance that was part low sun and part eclipse. We noticed before and after the eclipse that the purple seen in lowlands was evident, but no colors were sharp during the central portion of the eclipse.



All in all, a wonderful experience to share with most of my family. Now, we are preparing for the Venus Transit, and looking forward to August 21, 2017 and the Total Eclipse of the Sun.



Notes on images:

All images copyright Harriet Young, taken with a Dell Streak pad camera

Image #1 taken while objective covered with eclipse glasses. The sun is highly overexposed, but shows the centrality of mid-eclipse. To the eye, the ring was much thinner.

Image #2 no filter used.

Image #3 no filter – note reflection of overexposed sun

CLUB OFFICERS

PRESIDENT	ANN BRUUN 918-231-0301
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SECRETARY	TAMARA GREEN 918-851-1213
TREASURER	JOHN LAND 918-695-3195

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TERESA DAVIS	918-637-1477
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CATHERINE KAHBI	918-230-8480
TOM MCDONOUGH	918-851-2653

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WEBMASTER	JENNIFER JONES 918-629-8732
FUNDRAISING CHAIR	CATHERINE KAHBI 918-230-8480

MEMBERSHIP INFORMATION

Adult Membership, \$45 per year. Includes membership in the Astronomical League, a Subscription to the Astronomy Club of Tulsa's "Observer" and a Subscription to the Astronomical League's "Reflector".

Senior Adult Membership, \$35 per year. Includes all of the benefits of the Adult Membership, for those age 65 and older.

Student Membership, \$30 per year with Astronomical League membership, \$25 without Astronomical League membership.

The regular Adult and Senior Adult memberships allow all members in the member's family to participate in Club events, but only ONE voting member and ONE Astronomical League membership per family.

For additional Family memberships, \$15 per family member with Astronomy Club of Tulsa voting rights, \$20 per family member with Astronomy Club of Tulsa voting rights and Astronomical League membership.

Magazine Subscriptions, \$34 per year for "Astronomy" and \$33 per year for "Sky and Telescope".

For more information, contact Membership Chair/Treasurer John Land at 918-695-3195 or astroclubbiz@windstream.net.

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

For more information please visit www.astrotulsa.com.



The Observer is a publication by the Astronomy Club of Tulsa. The Astronomy Club of Tulsa is a 501C 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.

