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ASTRONOMY CLUB OF TULSA

# OBSERVER

AUGUST 2015



ABOVE PHOTO: Morning at Black Mesa, taken at Okie-Tex Star Party Sep 21, 2014.

BELOW PHOTO: The Big Dipper in Ursa Major over Black Mesa, taken at Okie-Tex Star Party, Sep 20, 2014.

Both photos by Tamara Green.

THE ASTRONOMY CLUB TULSA  
IS A PROUD MEMBER OF



THE ASTRONOMICAL LEAGUE

# AUGUST 2015

## MOON PHASES AND HOLIDAYS:

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					



**LAST QUARTER** THURS AUG 6  
**NEW MOON** FRI AUG 14  
**FIRST QUARTER** SAT AUG 22  
**FULL MOON (Sturgeon Moon)** SAT AUG 29

## UPCOMING EVENTS:

<b>SIDEWALK ASTRONOMY</b>	<b>SAT, AUG 1</b>	<b>8:00 PM</b>	<b>BASS PRO</b>
<b>MEMBERS' NIGHT</b>	<b>FRI, AUG 14</b>	<b>8:00 PM</b>	<b>ACT OBSERVATORY</b>
<b>PUBLIC STAR PARTY</b>	<b>SAT, AUG 22</b>	<b>8:00 PM</b>	<b>ACT OBSERVATORY</b>
<b>SIDEWALK ASTRONOMY</b>	<b>SAT, AUG 29</b>	<b>7:15 PM</b>	<b>BASS PRO</b>
<b>GENERAL MEETING</b>	<b>FRI, SEP 4</b>	<b>7:00 PM</b>	<b>JENKS HS PLANETARIUM</b>
<b>MEMBERS' NIGHT</b>	<b>FRI, SEP 11</b>	<b>7:30 PM</b>	<b>ACT OBSERVATORY</b>
<b>OKIE-TEX STAR PARTY</b>	<b>SEP 12-20</b>	<b>CAMP BILLY JOE, KENTON, OK</b>	
<b>PUBLIC STAR PARTY</b>	<b>SAT, SEP 19</b>	<b>7:30 PM</b>	<b>ACT OBSERVATORY</b>
<b>AUTUMNAL EQUINOX</b>	<b>WED, SEP 23</b>	<b>3:20 AM</b>	
<b>SIDEWALK ASTRONOMY</b>	<b>SAT, SEP 26</b>	<b>6:30 PM</b>	<b>BASS PRO</b>

# SEPTEMBER 2015

## MOON PHASES & HOLIDAYS:

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			



**LAST QUARTER** SAT SEP 5  
**LABOR DAY** MON SEP 7  
**NEW MOON** SUN SEP 13  
**FIRST QUARTER** MON SEP 21  
**FULL MOON (Harvest Moon)** SUN SEP 27

## **TWO VERY IMPORTANT ANNOUNCEMENTS**

**EYEPIECES NEEDED FOR CLUB TELESCOPE**

**OCTOBER ELECTIONS**

### **EYEPIECES NEEDED!**

Principal Telescope Operator Christopher Proctor needs two good-quality eyepieces for the Club's telescope in order to be better able to show our guests the various deep-sky objects during his dome shows. He is looking for 2" 16 mm and 40 mm eyepieces. Since these are expensive items, he is asking for anyone who has such eyepieces and does not use them anymore to please consider donating them to the Club. If you have a 2" eyepiece in either 16 mm or 40 mm, and you wish to donate it, please contact either Mr. Proctor or a Club officer. Thank you for your consideration.

### **ELECTIONS WILL BE IN OCTOBER OF THIS YEAR.**

The election of officers and board members for 2016 will be held at our OCTOBER General Meeting. The date will be Saturday, October 3 at 7:00 PM at the Jenks Planetarium. The meeting will be on that Saturday night due to a home game at Jenks on that Friday night. Anybody who is interested in an office or board position, or who would like to nominate someone, please contact Secretary Teresa Davis at [astrotulsa.sec@gmail.com](mailto:astrotulsa.sec@gmail.com) so she can get your or your nominee's name on the ballot.

Below is who is running so far:

President: Richard Brady  
Vice President: Tamara Green  
Secretary: Teresa Davis  
Treasurer: Tim Davis  
Board: Skip Whitehurst  
Christopher Proctor  
James Taggart

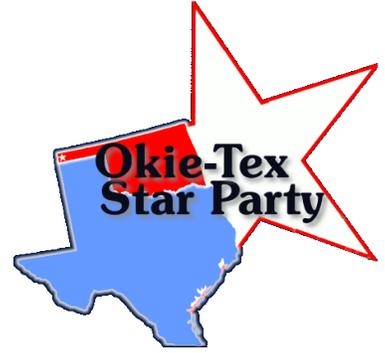
We will need to have a quorum of members in order to have the elections take place so please make plans to attend.

**THANK YOU FOR YOUR CONSIDERATION ON BOTH OF THESE ISSUES!**

**ASTRONOMY CONVENTIONS THIS SUMMER  
GET YOUR RESERVATIONS IN AND SAVE!**

## Okie-Tex Star Party September 12-20, 2015

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



Pre-registration submissions must be post-marked no later than **August 24, 2015** and must be paid in full. Online Registrations must be completed and paid in full by midnight CDT that evening. See above websites for complete details.

Meals catered by Jody's Catering, Boise City, OK. Their meal request form and payment must be received, with a postmark, **no later than August 21, 2015**.

Many of our Astronomy Club of Tulsa members go to this fun star party every year and it is WELL WORTH IT! Some of the most beautiful scenery in Oklahoma and the darkest skies! Plus a swap meet, great food, great guest speakers and the Okie-Tex Giveaway! Enjoy yourself with us at this magnificent dark sky site!

If you can't get your event and meal registrations in by their respective deadlines, don't despair! You can still get in on the fun. At-the-door admission to OTSP is \$75 plus your \$5 per day facility fee. Meals are \$3 more each than the pre-registration prices. (Pre-registration meal prices are: Breakfast \$8; Lunch \$10, Dinner \$13.) Those who pay at the door are still eligible for the Okie-Tex Giveaway too!

Hope to see you there!



PHOTO CREDIT: TAMARA GREEN

## **An Invitation to attend the ELDORADO STAR PARTY!**

You can save by registering early for the 13th annual Eldorado Star Party (ESP), October 5-10, 2015.

Just for amateur astronomers who want dark skies and a protected environment, the 7,100 acre X-Bar Ranch is 20 miles WNW of Sonora, Texas. Sponsored by the Austin, San Antonio, and Fredricksburg astronomy clubs, and assisted by volunteers throughout Texas, this event brings dark skies closer to the amateur astronomer... ESP's central location is within easy driving distance of many Texas cities... 3 hours west of San Antonio, and 5 1/2 to 6 hours from Dallas and Houston.

The site is eight miles north of Interstate-10, and has a convenient all-weather road and nearby light-shielded parking area at the observing fields. The main observing area includes power for telescopes and equipment, and is organized so that you may drive on-off from the nearby parking area at night without impacting the observers on the fields. The same darkout rules that you see at TSP will be in effect here! Here's some of what you will find at this year's ESP:

- \* Star party activities including special observing programs, afternoon speakers, and doorprizes. And don't miss the nearby Caverns of Sonora!
  - \* Camping (and hot water showers), special rates at nearby motels, catered meals.
  - \* New! Safari Bed Tent! You can sleep in a comfortable bed on site and avoid the drive to a motel at a nearby town. Or if you already enjoy camping at ESP, now you can avoid the transport/setup/take down of your own tent, and get a real bed!
  - \* Internet available at Lodge and observing field.
  - \* Convenient ONLINE registration and payment via check or credit card!
- Want to learn more? There's lots of information on the ESP web site!

Register online NOW at:

<http://www.eldoradostarparty.org>

Pre-register soon, to save money before our rates go up!

# PRESIDENT'S MESSAGE

BY RICHARD BRADY



Hi everyone!

New Horizons has finally flown past Pluto after its 9 ½ year voyage. The images being sent back are totally amazing and completely unexpected, even by the experts running the mission. Who could have imagined that Pluto would “have a heart”. What’s really amazing is that the heart, now unofficially named Tombaugh Regio (unofficial until the International Astronomical Union makes it official), is relatively smooth, meaning relatively new terrain (only 100 million years or so). And the best is yet to come! All the pictures received so far have been compressed so as to transmit faster, but at the cost of sacrificing detail. It will take 16 months to transmit all the data back, including full resolution versions of the images already transmitted. Pluto is so far from us that the data is transmitted back at a very slow rate (1 kilobyte/second) to receive it all correctly. So as I said, the best is yet to come! I have been following the mission on two different web sites, [plutosafari.com](http://plutosafari.com) and [pluto.jhuapl.edu](http://pluto.jhuapl.edu). (jhuapl is John Hopkins University Applied Physics Laboratory, which runs the New Horizons mission for NASA.) If you haven’t already, check them out.

One of the best meteor showers of the year happens in August, and this year is no different, maybe even better. The Perseid meteor shower is expected to reach its peak the night of August 12-13. The peak should be around 3 AM the (very early) morning of Thursday, August 13<sup>th</sup>. This year the moon will not be a factor, since new moon is the next day, August 14<sup>th</sup>. We will be opening the observatory for any members who want to come out and watch the shower. I will be there around sundown, but the shower won’t reach its peak until after midnight. You don’t need to have a telescope for a meteor shower. In fact it’s not recommended. Any telescope just sees a small portion of the sky, whereas a shower can cover much more. All you really need is a lawn chair to lay back and watch the sky. And something to snack on. And probably some bug spray. A good article about the shower is on Sky & Telescope’s News page. The link to it is [www.skyandtelescope.com/astronomy-news/observing-news/plan-for-the-perseids/](http://www.skyandtelescope.com/astronomy-news/observing-news/plan-for-the-perseids/).

Due to a Jenks home football game on Friday, October 2<sup>nd</sup>, we are moving the General Meeting to Saturday, October 3<sup>rd</sup>. It will still be at 7:00 PM at the Jenks Planetarium. We will be having elections for the officers and board at the meeting. If you are interested in being an officer or on the board, please let our secretary, Teresa Davis, know and she will add you to the ballot. Her email is [astrotulsa.sec@gmail.com](mailto:astrotulsa.sec@gmail.com). To be an officer or on the board you must be a member in good standing for at least a year.

In November, we will be having our annual dinner. This year it will be at the Jenks Planetarium on Saturday, November 7<sup>th</sup> at 6:30-8:30 PM. There is a very nice room with full kitchen facilities on the same floor as the planetarium, just at the other end of the hall. So mark your calendars. More details will follow.

Finally, we had a board meeting Saturday, August 8<sup>th</sup>. A summary is elsewhere in this newsletter. One of the main topics was our observatory’s leaky dome. We are looking at having it repaired by an outside firm. The board is still considering exactly what to do. We will keep the membership informed as we move forward on this.

And don’t forget Okie-Tex is coming in September.

Clear Skies!  
Richard Brady

# TREASURER'S AND MEMBERSHIP REPORT

BY TIM DAVIS



**Astronomy Club of Tulsa: 149 members, including 37 new members in 2015.**

**Welcome to our new members this month:** Clint Shaw, Dan Major, Robbie Sturdivant, Dora Guitierrez, Steve Barteau and William Gent.



## Club Accounts as of July 31, 2015 :

Checking: \$ 3,801.36; Savings: \$ 3,774.55; Investment accounts: \$ 18,798.00 (*Value Fluctuates with Market*); PayPal: \$ 0.00

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 2015 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](http://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](http://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

# SECRETARY'S CORNER

BY TERESA DAVIS



Have you been wondering what the ACT board members have been up to lately? As secretary of the club, I would like to share some of the highlights of the board business from this summer. Water, water everywhere . . . all the down pours from the spring and early summer has led to issues at the observatory. We have had leaks coming in from what seems to be from around the dome . . . or the ventilation/window areas. Once the building took on water we have humidity problems throughout. James Taggart, our Observatory Manager has been very busy to say the least. He has opened the observatory and used fans to dry the area, repaired what seemed to be the beginning of a mold problem, and continues to monitor the problem while keeping the grass mowed low enough to continue having events. In the meantime, James scheduled a contractor to come out and give us estimates on what it would take to remedy the leak problems. To get the work contracted and with materials the estimate has come to more than \$10,000. At this point the board is looking over the portions of the bid to determine what part of the plan we could do ourselves and what we should have contracted. This amount of money would nearly absorb what is left of our investment funds. However, without the repairs the observatory would be left for ruin.

Several events coming up needed board discussion. The Perseid Meteor Shower will peak on the evening of Thursday, August 12<sup>th</sup> through the night and into the morning hours of Friday, August 13 at 3am. Our President, Richard Brady, will have the observatory open for our members. We can go out and observe the shower without working with groups or the public. Bring your lawn chairs and binoculars. The board received an email giving information on the Eldorado Star Party this October 5-10<sup>th</sup> in Eldorado, TX. For more information and how to register go to: [www.elderadostarparty.org](http://www.elderadostarparty.org) Three of the board members have formed a committee to work with TASM. We want to plan an event at their site for the next lunar eclipse. Look for details and a call for volunteers to come to your email box soon. Our next annual business meeting will be held on the October 3<sup>rd</sup> public meeting at the Jenks Planetarium. Make a note and change the date to Saturday, October 3<sup>rd</sup>, rather than the Friday as previously planned. Jenks home football game will crowd us out on that Friday. During that business meeting we will be holding our elections for the clubs officers and board members. Anyone interested in being on the board of directors for next year and would like to be on the ballot, send an email to me, Teresa Davis, your club secretary, at [astrotulsa.sec@gmail.com](mailto:astrotulsa.sec@gmail.com) .

For more information on the business of the board, you can go to the following link to bring up the official minutes of the last board meeting held on August 8<sup>th</sup>, 2015.  
<https://drive.google.com/file/d/0B0Buo9ksHSVrS3pUZVRXT1FZVW8/view?usp=sharing>

If you have any problems opening the document, send an email to Teresa Davis:  
[astrotulsa.sec@gmail.com](mailto:astrotulsa.sec@gmail.com)

## ASTRONOMY CLUB OF TULSA MAKES THE NEWS AT OUR SIDEWALK ASTRONOMY EVENT

THE ASTRONOMY CLUB OF TULSA AND OUR OWN OWEN GREEN MADE THE NEWS AT SIDEWALK ASTRONOMY!

Saturday, Aug 1 was a really fantastic night for Sidewalk Astronomy. The event drew quite the crowd and even a reporter and photographer from the Tulsa World who interviewed Owen! Here are a few highlights in pictures by Tamara Green!



Owen being interviewed by the reporter and photographer from the Tulsa World



### Crowd Shots

For the article which appeared in the Monday, Aug. 3 edition of the Tulsa World, here is the link below:

[http://www.tulsaworld.com/news/local/public-sees-what-the-sky-has-to-offer-with-the/article\\_b9d354c8-d49b-5e6b-bab1-65f8c81f5c73.html](http://www.tulsaworld.com/news/local/public-sees-what-the-sky-has-to-offer-with-the/article_b9d354c8-d49b-5e6b-bab1-65f8c81f5c73.html)

# ALCON 2015

By Brad Young

I had the opportunity to attend ALCON 2015 in Las Cruces New Mexico. My wife, son, and I had planned a trip there to bring my mother-in-law to visit her brother. She was gracious enough to let me pool the trips together, and it turned out to be a wonderful time for all. Our hosts were most amenable, and put us up in their beautiful homes up in the hills looking over Las Cruces.



**Casa Pierce**



**View of Las Cruces from Patio**

The trip was not without its share of adventure. The first day our flight was canceled due to severe weather and flooding in Tulsa. We were able to go the next day, and arrived in El Paso just before a very destructive hailstorm. Driving through that, we were able to reach our destination, only to be greeted with flash flooding in the arroyos that surround the town.

Luckily, I had my cousin with me to guide me through the storm and show me where the convention was being held.



**Arroyo behind our cousin's house the next day**

Things had not gone perfectly for them at the convention either; since I arrived a day late, it was the evening of the outdoor Star-B-Que at a local State Park. Entertainment and stargazing had been planned, but obviously this was a washout. The festivities were moved back to the hotel, and the change in venue did allow me to meet a few people the first night. I was glad to put some faces with the names I've communicated with over the years, while working on various Observing Programs. I enjoyed meeting Dolores Hill, and getting an update on the next NEO search effort (this October) from the coordinator herself.

After a very wet night, the next day was sunny and hot like it was expected to be. I was able to attend several of the topical panels, including those given by the young astronomer award winner and runner-up. I also attended talks on the telescope Library Loaner Program (the Broken Arrow Sidewalk Astronomers Club was one of the clubs awarded a scope) and a presentation by the AAVSO regarding amateur contributions to science via monitoring cataclysmic variables. I missed one of the panels I'd hoped to attend due to delays, so I was not able to ask about grant funding through the AL. It looks like at this point, their major club-level effort is the Library Loaner Program.

The vendors had a lot to offer and were giving out a lot more goodies than usual. However I didn't win anything at the door prizes and there seem to be a lot of trouble with no-shows. The ticket drawer kept having to go back and try new numbers to give away the prizes, and then kept finding previously winning tickets back in the bowl! Rumors of a riot were heard, but luckily, none were started.

There were also several exhibits to look at, great images taken by local amateurs, and even a solar scope with an ingenious viewing box that allowed showing projected white light or H-alpha views of the sun.



There was mention of two new observing programs, but no mention of what they are or when they might be published. The national coordinator approached me about one I had suggested again, but he was of the opinion that it would count as a Challenge Certificate instead of an observing program, so I have withdrawn it from consideration. I don't know that we're going to see eye to eye on that program (imagine that), but I am excited to see what the two new ones are going to be. Then, after a break with the relatives, I he returned to the hotel that night to the main event, the Keynote Speech and Awards Banquet.

The banquet was relatively concise compared to several I've attended, but with many speakers and presenters to get through, it did take a while. There was a tribute to Walter Haas, and all of the annual winners of various awards. A new feature this year was the presentation of plaques to Master Observers. Thirteen plaques were handed out at this ceremony, including one to the author. I was honored and thoroughly enjoyed accepting it.



Bill Bogardus presenting my plaque

Events conspired to delay my trip and cost me making a few meetings and presentations I had wanted to attend. However, the ones I was able to make were quite interesting, and everyone involved was friendly and accommodating. I have found the Astronomical League observing programs to be a real boon to my observation work. It was great to finally meet some of the people who have been involved, see some of the process, and hear some of the upcoming plans.

As many of you know, although during the process of completing 40+ of these programs I have had a lot of help and rekindled my enjoyment of my main hobby, there have been a few problems that have come up along the way. Unfortunately, the delay in my trip did not allow me to attend one of the councils on the direction observing programs will be moving. I remain very concerned that visual observing is being tossed aside in favor of imaging without proper thought given to the value of real time human interaction with the sky. There have been some hopeful signs recently, such as the Sketching Observing Program (well worth the effort). But there were also disturbing discussions at this convention of how imaging was the only way to do real science; in fact, since the convention, a new Observing Challenge has been released that again requires imaging and prohibits visual astronomy!

I'll leave that debate for another time. I was able to discuss with some of the officers the direction the observing programs are moving, and hopefully my feedback (which included input from others) will be heard going forward. But I can say without a doubt that my first ALCON was an enjoyable experience, and I may try to attend other ones in the future.

#### Winning Clubs of the 2015 Horkheimer Library Telescope Program

Because of the generosity and vision of the Horkheimer Charitable Fund, the Astronomical League presented ten Library Telescopes at ALCON 2015 in Las Cruces. The names of ten clubs, one from each region, were drawn from the thirty-three total entries. These clubs will each receive an Orion 4.5 inch StarBlast Dobsonian Telescope, a Celestron 8-24 mm zoom eyepiece, and a commemorative plate, all to be modified by the respective club as a Library Telescope.

The Astronomical League wishes to thank Orion Telescopes and Celestron for making this program possible.

#### 2015 Horkheimer Library Telescopes:

Mid States Region: Broken Arrow Sidewalk Astronomers

Great Lakes Region: Oakland Astronomy Club

Northeast Region: Amateur Observers' Society of New York

Mid East Region: Back Bay Amateur Astronomers

Southeast Region: Flint River Astronomical Society

More information on the Library Telescope Program can be found at <https://www.astroleague.org/content/library-telescope-program>

## **WHERE WE MEET**

JENKS HIGH SCHOOL PLANETARIUM

105 E. B ST. JENKS, OK

### **DIRECTIONS TO THE JENKS HIGH SCHOOL CAMPUS:**

#### **FROM THE WEST: (MARKED IN RED ON MAPS)**

TAKE US 75 TO THE MAIN ST. - JENKS EXIT

FOLLOW MAIN ST. APPROXIMATELY 2 MILES AND CROSS THE RAILROAD TRACKS

TURN LEFT ON 1ST ST.

#### **FROM CENTRAL PART OF TULSA: (MARKED IN GREEN ON THE MAPS)**

TAKE RIVERSIDE DRIVE TO THE 96TH STREET BRIDGE

TURN RIGHT AND GO OVER THE RIVER

FOLLOW A ST. APPROXIMATELY 7 BLOCKS

TURN RIGHT ON 1ST ST.

#### **FROM THE EAST: (MARKED IN BLUE ON THE MAPS))**

TAKE THE CREEK TURNPIKE TO S. ELM ST. IN JENKS

FOLLOW ELM ST. NORTH TO MAIN ST.

TURN RIGHT ON MAIN ST. AND CROSS THE RAILROAD TRACKS

TURN LEFT ON 1ST ST.

#### **FOR EACH:**

PARK IN THE LOT AT THE END OF 1ST ST.

USE THE DOORS AT THE NORTH SIDE OF THE BUILDING

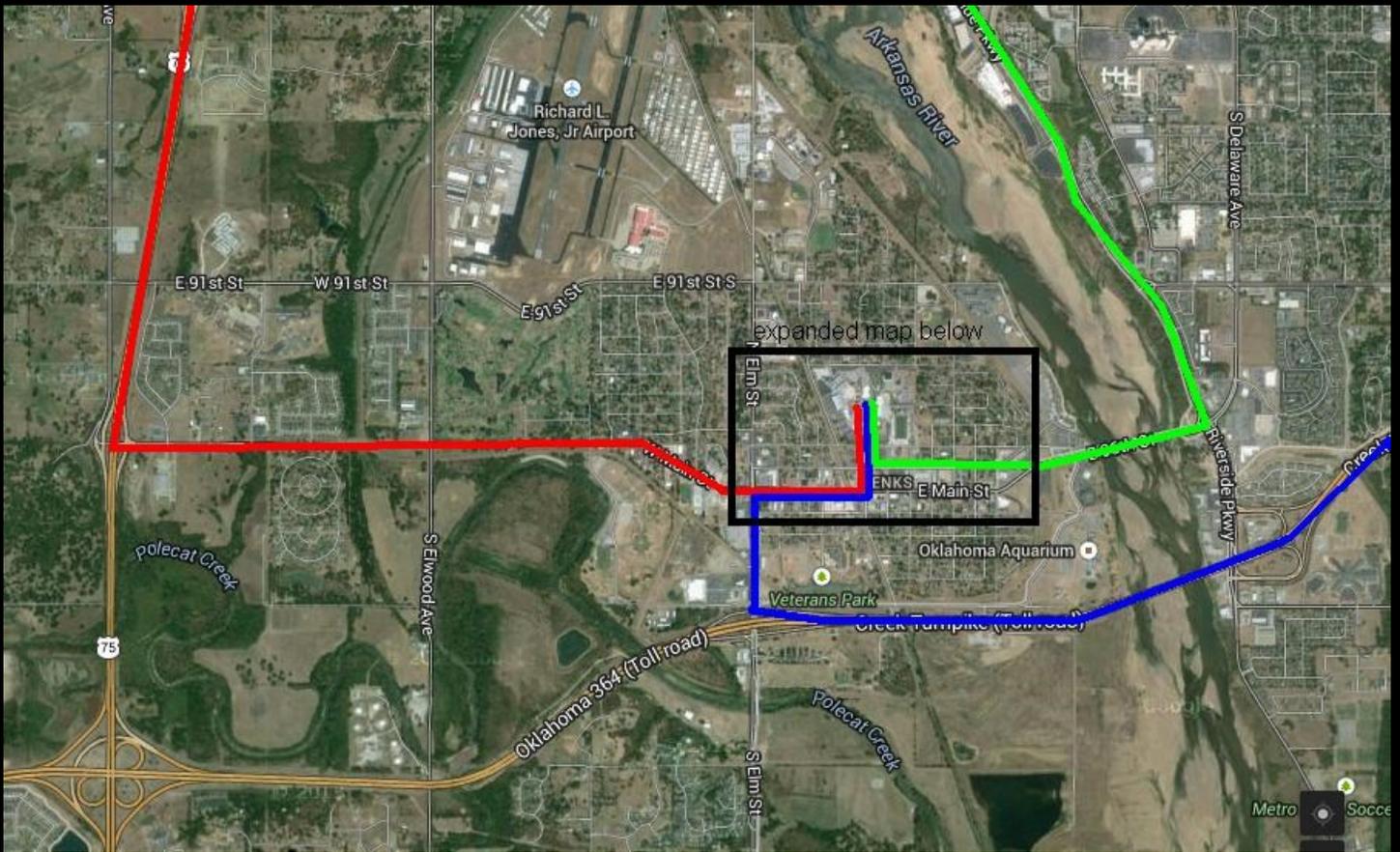
GO UP THE STAIRS TO THE 3RD FLOOR (THERE IS AN ELEVATOR FOR THOSE WHO NEED IT)

TURN RIGHT AND GO DOWN THE HALLWAY TO EITHER SIDE OF THE PLANETARIUM

### **MAPS ON NEXT PAGE**

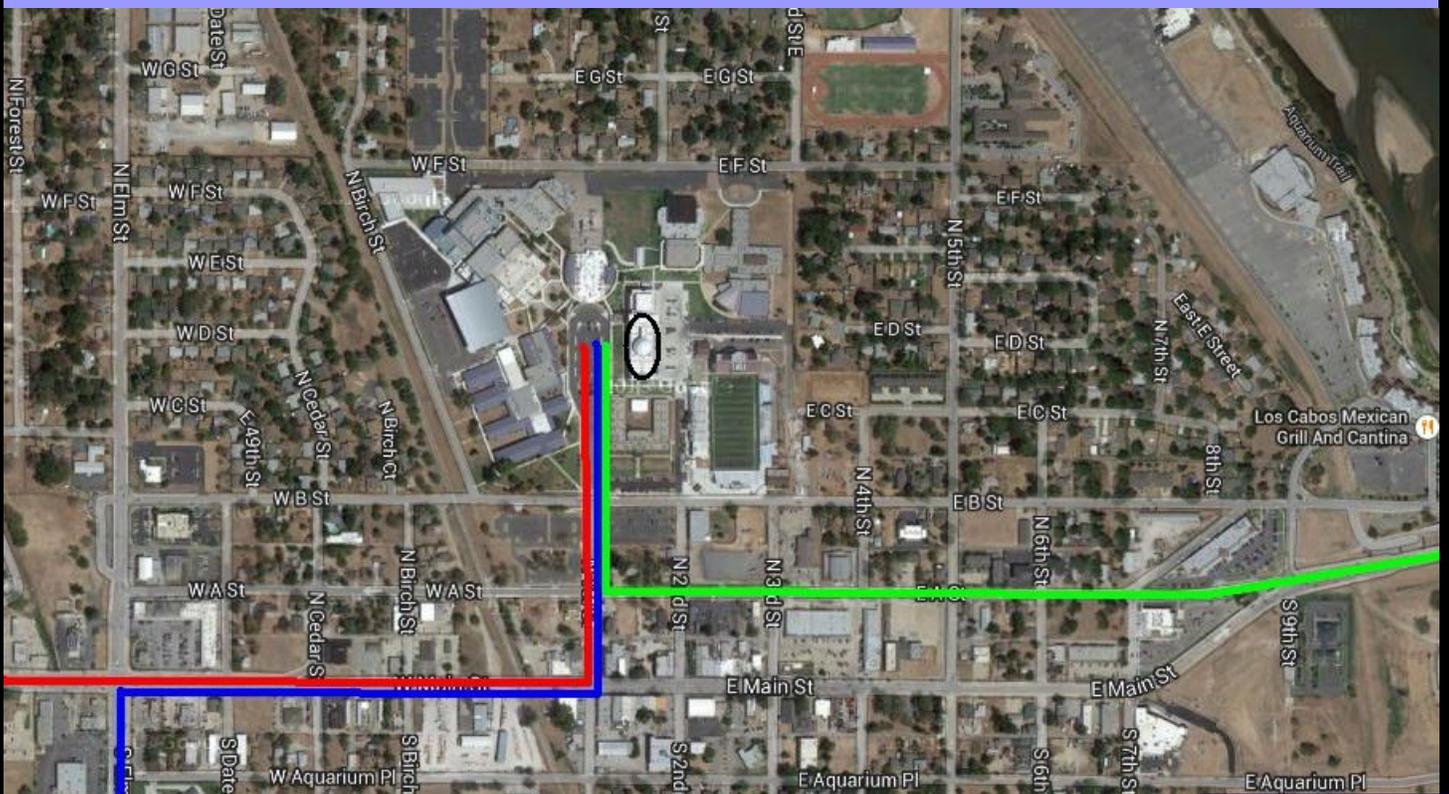
**THE GENERAL MEETINGS ARE FREE AND OPEN TO THE PUBLIC.**

**WE HOPE TO SEE YOU THERE!**



**ABOVE:** DIRECTIONS TO JENKS HIGH SCHOOL FROM CENTRAL TULSA, WEST OF TULSA AND EAST OF TULSA

**BELOW:** MAP SHOWING ROUTE INTO PARKING LOT



## MEMBERSHIP INFORMATION

### ASTRONOMY CLUB OF TULSA OFFICERS:

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JAMES TAGGART  
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**FACILITIES MANAGER** JAMES TAGGART  
astrotulsa.obs@gmail.com

### MEMBERSHIP RATES FOR 2015 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](http://www.astronomy.com)

SKY & TELESCOPE IS \$33 PER YEAR.

WEBSITE: [www.skyandtelescope.com](http://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.

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.

 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

BRAD YOUNG

RICHARD BRADY

TIM DAVIS

TERESA DAVIS

TAMARA GREEN



ABOVE PHOTO: Cassiopeia and Andromeda with the Andromeda Galaxy

BELOW PHOTO: One Last Sky-Scape

Both photos taken at Okie-Tex Star Party on Sep 27, 2014 by Tamara Green.

