

# Astronomy Club of Tulsa Observer



June 2009

## Picture of the Month



### *The Big Dipper*

Photographer: Doug Zubenel (Earth Science Picture of the Day for May 27, 2009)

One the most well-known constellation asterisms found in northern hemisphere skies is the Big Dipper. This bright, sauce-pan shaped group of stars is part of the much larger constellation of Ursa Major – the Great Bear. At this time of year, as the Earth’s orbital motion seems to tip our northern climes to the Sun and as spring spreads its verdant blanket across the land, the Big Dipper can easily be found high above the north celestial pole after darkness falls. In fact, sky-watchers living near 56 degrees north latitude can see the Big Dipper sprawling across their zenith at the end of evening twilight during the month of May. The astronomical term for the Big Dipper above the north celestial pole in spring is “upper culmination.” During autumn it lies near, on, or below the northern horizon, and is said to be at “lower culmination.”

Five of the seven stars that make up the Big Dipper comprise a portion of the Ursa Major Moving Group. Also designated as Collinder 285, this is one of the closest star clusters to our solar system. Roughly 75 light years away, the stars Merak, Phocda, Megrez, Alioth, and the Mizar/Aleor system are all moving together toward our solar system at ~ 10 km/second.

Photo details: The above photograph is one single, three minute guided exposure, centered at 10:32 p.m. local time. It was made on the beautifully clear evening of May 11, 2009, from the driveway of my home near De Soto, Kansas. In order to highlight the Big Dipper itself, I used a Tiffen Fog 2 filter, which I removed briefly during the exposure to illuminate our fresh spring oak and hickory trees with an electronic flash. I used a Canon Rebel XT camera set at ISO 200, with a 24mm Nikkor lens @ f/4.

#### ***Inside This Issue:***

June Calendar ----- p2	Planetarium News ----- p7
Land’s Tidbits ----- p2	Observing Pages ---- pp8-11
June Stars ----- p3	ACT Puzzle ----- p12
AL Outreach Awards---- p4	Epsilon Auriga ----- p13
Adams Ranch Report ---- p5	
IYoA Around the World -- p6	

#### ***Important ACT Upcoming Dates:***

- No June General Membership Meeting at TCC***
- Board Meeting at RMCC – Sat June 6, 2009 (10am)
- RMCC Work Day – Sat June 6, 2009 (10am – 4pm)
- Public Star Party... Fri June 12, 2009 (p11)
- Member Star Party... Fri June 19, 2009
- Sidewalk Astronomy... Fri & Sat June 26-27, 2009

## June 2009

Tulsa, Oklahoma

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 Sunrise: 6:08am Sunset: 8:35pm Moonrise: 3:01pm Moonset: 2:15am	2 Sunrise: 6:08am Sunset: 8:35pm Moonrise: 4:04pm Moonset: 2:42am	3 Sunrise: 6:07am Sunset: 8:36pm Moonrise: 5:06pm Moonset: 3:10am	4 Sunrise: 6:07am Sunset: 8:37pm Moonrise: 6:09pm Moonset: 3:41am	5 Sunrise: 6:07am Sunset: 8:37pm Moonrise: 7:10pm Moonset: 4:16am	6 Sunrise: 6:07am Sunset: 8:38pm Moonrise: 8:09pm Moonset: 4:56am
7 Sunrise: 6:06am Sunset: 8:38pm Moonrise: 9:03pm Moonset: 5:41am Full Moon: 12:12pm	8 Sunrise: 6:06am Sunset: 8:39pm Moonrise: 9:52pm Moonset: 6:32am	9 Sunrise: 6:06am Sunset: 8:39pm Moonrise: 10:34pm Moonset: 7:28am	10 Sunrise: 6:06am Sunset: 8:40pm Moonrise: 11:10pm Moonset: 8:25am	11 Sunrise: 6:06am Sunset: 8:40pm Moonrise: 11:41pm Moonset: 9:24am	12 <b>RMCC PUBLIC</b> Sunrise: 6:06am Sunset: 8:41pm Moonrise: none Moonset: 10:22am	13 Sunrise: 6:06am Sunset: 8:41pm Moonrise: 12:09am Moonset: 11:19am
14 Sunrise: 6:06am Sunset: 8:42pm Moonrise: 12:35am Moonset: 12:17pm	15 Sunrise: 6:06am Sunset: 8:42pm Moonrise: 12:59am Moonset: 1:16pm Last Qtr: 4:15pm	16 Sunrise: 6:06am Sunset: 8:42pm Moonrise: 1:24am Moonset: 2:17pm	17 Sunrise: 6:06am Sunset: 8:43pm Moonrise: 1:51am Moonset: 3:20pm	18 Sunrise: 6:06am Sunset: 8:43pm Moonrise: 2:22am Moonset: 4:28pm	19 <b>MEMBERS</b> Sunrise: 6:06am Sunset: 8:43pm Moonrise: 2:58am Moonset: 5:39pm	20 Sunrise: 6:07am Sunset: 8:43pm Moonrise: 3:41am Moonset: 6:51pm
21 Sunrise: 6:07am Sunset: 8:44pm Moonrise: 4:35am Moonset: 8:01pm	22 Sunrise: 6:07am Sunset: 8:44pm Moonrise: 5:39am Moonset: 9:03pm New Moon: 1:36pm	23 Sunrise: 6:07am Sunset: 8:44pm Moonrise: 6:52am Moonset: 9:57pm	24 Sunrise: 6:07am Sunset: 8:44pm Moonrise: 8:09am Moonset: 10:41pm	25 Sunrise: 6:08am Sunset: 8:44pm Moonrise: 9:25am Moonset: 11:17pm	26 <b>SIDEWALK</b> <b>BASS PRO &amp; RIVERWALK</b> <b>8:30-10 PM</b> Sunrise: 6:08am Sunset: 8:44pm Moonrise: 10:37am Moonset: 11:49pm	27 <b>SIDEWALK</b> <b>BASS PRO &amp; RIVERWALK</b> <b>8:30-10 PM</b> Sunrise: 6:08am Sunset: 8:45pm Moonrise: 11:47am Moonset: none
28 Sunrise: 6:09am Sunset: 8:45pm Moonrise: 12:53pm Moonset: 12:18am	29 Sunrise: 6:09am Sunset: 8:45pm Moonrise: 1:57pm Moonset: 12:46am First Qtr: 5:29am	30 Sunrise: 6:10am Sunset: 8:45pm Moonrise: 3:01pm Moonset: 1:14am				

### Lands Tidbits – by John Land

Regional Astronomy Observing events: Many clubs across the country sponsor extended Astronomy observing events. Your June issue of the Astronomical League Reflector gave details on dozens of them. Below are three of regional interest. MOST REQUIRE EARLY REGISTRATION or offer DISCOUNTS for early registration.

**July 19–24 Nebraska Star Party** (<http://www.nebraskastarparty.org/>) Ann Brunn and others from the club are going to this one.

**Sept 12–20 Okie-Tex Star Party** (<http://www.okie-tex.com/>) This annual gathering in the tip of the Oklahoma panhandle is attended by 300 plus astronomers including dozens from our club. Read Brad Young's review of last year's Okie-Tex on Page 6 of the Nov. 2008 club Observer newsletter. <http://www.astrotulsa.com/Archive/200811.pdf>

**October 15–18 Heart of American Star Party in Butler Missouri** (<http://www.hoasp.com/>) There is an excellent article on this event and its origins in the June AL Reflector.

**ATTENTION RADIO ASTRONOMERS...** **June 24 – 27 Green Bank West Virginia Star Quest** on the grounds of the Green Bank Radio observatory. (<http://www.greenbankstarquest.org/>) Among other attractions is the opportunity to use a 40 ft Radio telescope and classes on radio astronomy.

### Welcome Recent New Members: Doug Stogsdill, Matthew Cooper, Carl Cotrill, Monetha Williams

Our membership rates for 2009 – 2010 will be as follows:

**Adults** - \$35 per year (includes Astronomical League Membership)

**Sr. Adult** - discount \$25 per year for those 65 or older (includes Astronomical League Membership)

**Students** - \$15 (without Astronomical League membership)

**Students** - \$20 (with Astronomical 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. If an additional member of the family would like to join with voting rights the additional cost is \$15, and/or additional Astronomical League memberships within a family are \$5 each.

**Magazine Subscriptions:** If your magazines are coming up for renewal, try to save the mailing label or renewal form you get in the mail. Do NOT mail renewals back to the magazine! To get the club discount you must go through the club group rate.

Astronomy is \$34 for 1 year or \$60 for 2 years. "www.astronomy.com"

Sky & Telescope is \$33 / year. [www.skyandtelescope.com](http://www.skyandtelescope.com) (Sky and Telescope also offers a 10% discount on their products.)

Note: You may renew your Sky & Telescope subscription directly without having to mail in the subscriptions to the club.

NEW SUBSCRIPTIONS must still be sent to the club treasurer. Forms are available on the website.

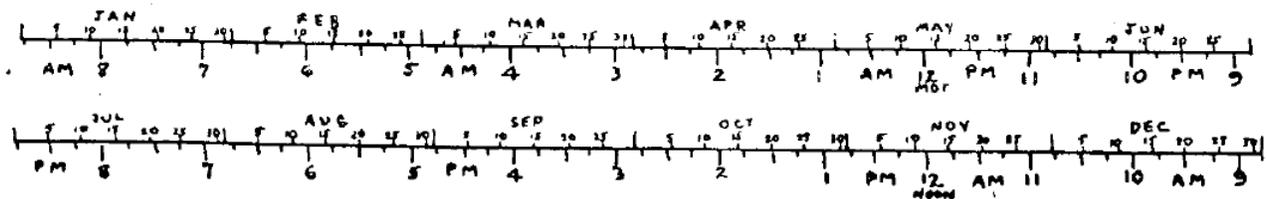
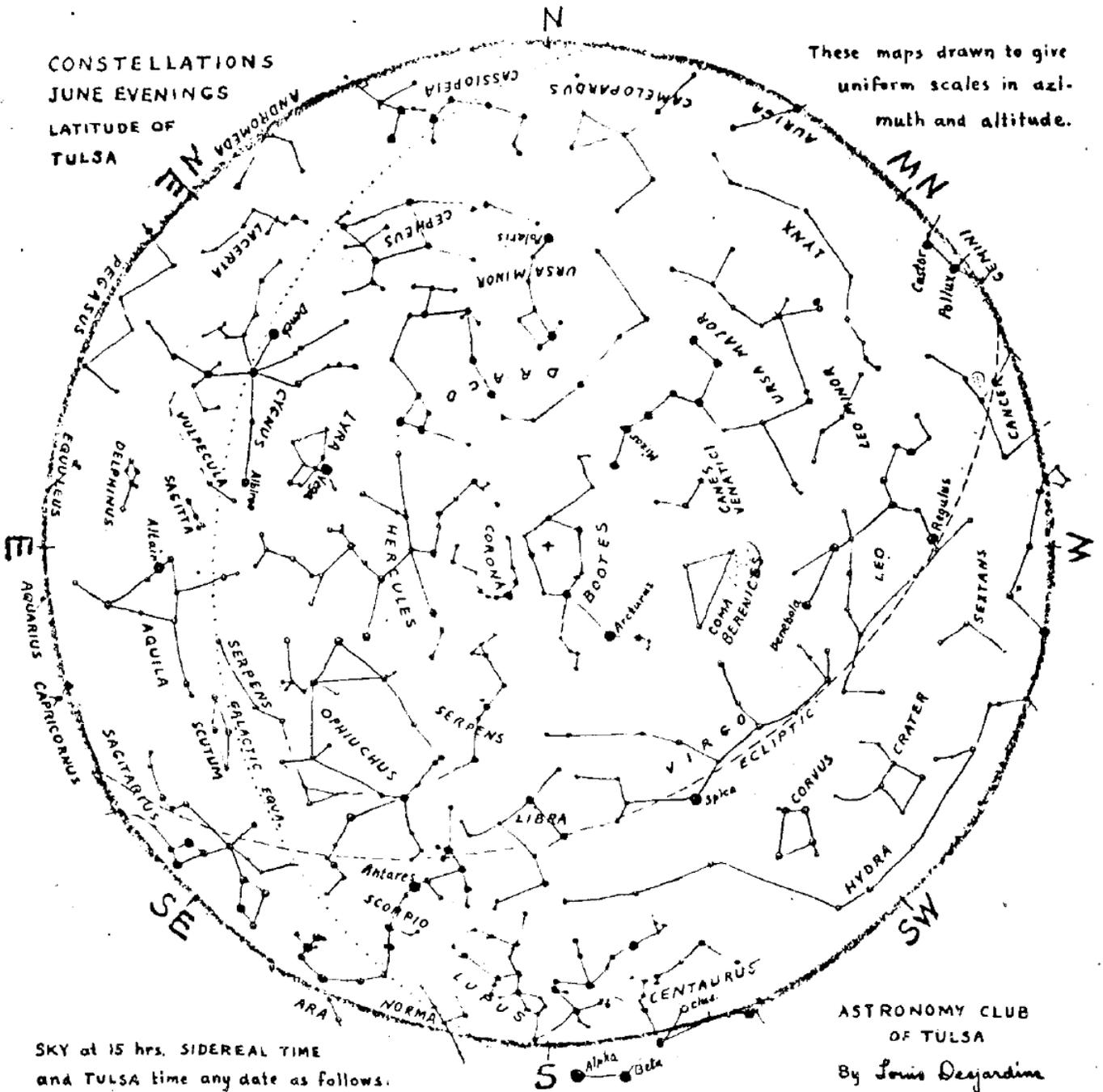
We now have an automated on line registration form on the website for new AND renewal memberships plus magazine subscriptions. You simply type in your information and hit send to submit the information. "<http://www.astrotulsa.com/Club/join.asp>"

You can then print a copy of the form and mail in your check to:

**Astronomy Club of Tulsa**  
**25209 E 62nd St**  
**Broken Arrow, OK 74014**

#### Address Corrections- Email changes – Questions:

You may forward questions to the club by going to our club website (<http://www.astrotulsa.com/>) and fill out an online form or just click on John Land and send an email. Please leave a clear subject line and message with your name, phone number, your question – along with email.



Full Moon.....June 7<sup>th</sup>  
 Last Quarter.....June 15<sup>th</sup>  
 New Moon.....June 22<sup>nd</sup>  
 First Quarter.....June 29<sup>th</sup>

June 3<sup>rd</sup> - 200 in Hale Telescope dedicated (1948)  
 June 5<sup>th</sup> - Venus - Greatest W. Elongation (Morning)  
 June 13<sup>th</sup> - Mercury - Greatest W. Elongation (Morning)  
 June 29<sup>th</sup> - George Ellery Hale (b.) 1868  
 Evening - Saturn / Morning - Mercury, Venus, Mars & Jupiter

## ASTRONOMICAL LEAGUE OUTREACH AWARDS

### The Astronomical League Mission Statement:

- To promote the Science of Astronomy to foster observational and computational work and craftsmanship opportunities in the various fields of Astronomy.
- To provide a medium for correlating amateur activities and professional research.
- To encourage and coordinate activities of amateur Astronomical Societies

Jerry Koenig had asked me after an A.C.T. meeting if I was aware of the Astronomical League's Award Program for outreaches. I was not. So he led me to the Astronomical League's site, where I found out all kinds of information about their award program. This award program was started by Scott Roberts of Meade Instruments and has been an excellent vehicle to share ideas, promote outreach and encourage those involved in outreach. These have come to be known as the AstroOscars.

With all the time the membership is extending to the community this year, it is only right to get recognized for the energy you are spending with the public in any capacity. With all the aid from the Night Sky Network/J.P.L. and NASA's presentations, resources and activity kits, outreach to the various elements in the community are almost effortless.

This year with the International Year of Astronomy activities with three scheduled events a month, our public star party, BassPro sidewalk astronomy and Riverwalk sidewalk astronomy that should give the bulk of the members a basic outreach award. However, many members have done things on their own or with a few other members and those need to be included in your year's event logs. The requests for private star parties at the observatory, Boy or Girl Scouts, schools, churches, summer camps, etc., all need to be documented. That is not to leave out anyone who shares their hobby with their neighborhood or church groups.

### According to the Astronomical League:

1. Outreach is simply paramount to the survival of our hobby. You know and have seen the Sky & Telescope statistics. And look around you our meetings are "graying."
2. The highly successful League Observing Clubs are popular and inviting. By making Astronomy Outreach on the same level as other League Observing Clubs, it promotes the importance of outreach among our many members. It would also encourage clubs to become more involved.
3. The Astronomical League is the organization that has historically tied together amateur clubs. The League is therefore, the best vehicle by far to recognize and reward individual outreach efforts. The league already recognizes efforts by clubs for Astronomy Day. Yet we need to practice outreach on more than one day per year – and many of us do just that. It is often the individual that makes this happen.
4. You cannot have too much outreach nor recognize outreach efforts often enough.

**The Rules and Regulations are:** To qualify for the Astronomical League's Outreach, Stellar Outreach and Master Outreach Awards, you need only be a member of the Astronomical League, either through an affiliated club or as a Member-At-Large. The initial concept is to award outreach just as the Astronomical League currently recognizes Observing Clubs (each club offers a certificate based upon achieving certain observing goals) based on a number of outreach events and hours.

### There are three levels of recognition:

#### OUTREACH AWARD

A minimum of five – 2 hour outreach events

Document each event with

- date, start time, end time, location
- what you did for the outreach
- estimate the number of people attending

#### STELLAR OUTREACH AWARD

In addition to the (first Outreach Award, the Stellar Outreach recipients will need an additional fifty hours minimum, in outreach events

Document each event with

- date, start time, end time, location
- what you did for the outreach
- estimate the number of people attending

The recipient will "report" on one of his/her outreach events, these reports can be used in The League's, *The Reflector* and elsewhere to overview what amateurs are doing in Outreach and share ideas

#### MASTER OUTREACH AWARD

In addition to the Outreach and Stellar Outreach Awards, the Master Outreach recipients will need an additional one hundred hours minimum in outreach events

As with the first two levels, document each event with

- date, start time, end time, location
- what you did for the outreach
- estimate the number of people attending

The Master Outreach Award nominee will report on what seems to work best for their outreach efforts, this can be specific activities, locations, etc. Like with the Stellar Outreach Award, these reports can be used in The League's, *The Reflector*

This structure of tiered recognition encourages the initial recipient to continue with his/her outreach efforts. As with all League Observing Clubs, the Astronomical League's Outreach Awards will be numbered. And as with other League Observing Clubs, all Outreach proposed awards would need to be certified by the local club president. Each successful individual would receive a certificate and pin after review by the League Outreach Club Chair.

Outreach documentation for the Astronomical League's Outreach Awards begins with events starting on 1, January.

To help facilitate the promptness and accuracy of the logs, I will receive your log forms and review them to ensure all of our outreach opportunities are not forgotten. Plus, having one coordinator will make it easier on the person who needs to certify the log sheets. In addition, this will cut down on possibly losing someone's paperwork. I know that the forms on line can be sent in by the member, but I thought a nice ceremony at one of our meetings would be very encouraging to one another. That is why I would like to have the pins and awards come back to me.

The Astronomical League's "guidelines" and "log sheet" can be found on their website under the Outreach Heading, and please add to it as we work our way through our year's activities. With having tickets for the drawing, I have a base number from some of the events we've had so far and will post those for you. The numbers would be higher since not everyone likes to fill out forms for fear of selling their name or something. But if you need to help recap the few things we've done – it shouldn't be hard to put Rained Out/Clouded Out – on most of our stuff so far!

Please drop me an email to let me know if you are planning to log your events and if you need my help recapping the events. Email me at [PEG@astrotusla.com](mailto:PEG@astrotusla.com).

## CLUSTER OF STARS – JUNE 12<sup>TH</sup>

Friday, June 12<sup>th</sup> in the Observatory classroom, Ann Bruun will present a talk on "Star Clusters". Ann has been preparing this presentation for the membership and the guests for our Public Star Party. She is very excited about the opportunity to share this information with our guests. She will discuss the life cycle of stars, neutron stars, white dwarfs, super giants, and "touch" on black holes. I say touch because I will be presenting Black Holes at the Public Star Party, Friday, July 31<sup>st</sup>. I know she will not get into too much detail because my uniform will not fit her! See you there.

The schedule for our presentations for the rest of the year are as follows:

July 31<sup>st</sup> – Peggy Walker – Black Holes

Aug 14<sup>th</sup> – Tony White – Rocks and Ice in the Solar System

Sept 11<sup>th</sup> – Tamara Green – Planets and Moons

Oct 9<sup>th</sup> – Owen Green – The Fate of the Universe

Nov 20<sup>th</sup> – Rod Gallagher – Search for New Worlds

Dec 11<sup>th</sup> – Dennis Karcher – The Life Cycle of Stars



Garrett Optical® stocks over 50 astronomy binoculars from six different manufacturers, and we're based right here in south Tulsa.

Visit our websites

[www.GarrettOptical.com](http://www.GarrettOptical.com)

[www.AstronomyBinoculars.com](http://www.AstronomyBinoculars.com)

for more information!

### Predicted MAXIMA of long period variables – June 2009 North of -55° Declination ~ Tulsa, OK Viewing Limit (Predicted Maxima > 8.0 – Easy Binocular Range)

Designation	Name	Code	Range	Est Max Date
*0106+21A	X Psc	#	7.9–15.0	Jun 18?
0653+55	R Lyn		<7.9–13.8>	Jun 4
*0720–05	TT Mon	&	7.3–(14.0)	Jun 18?
1717+23	RS Her		<7.9–12.5>	Jun 23
2011–39	RT Sgr	#	<7.0–13.3>	Jun 30
2219–48	S Gru	@	<7.7–14.4>	Jun 14

#### Codes:

- # – needs more observations
- & – needs more observations urgently
- @ – needs more observations very urgently
- % – has good CCDV or multicolor photometry, but more visual observations are needed (usually more visual observations are needed very urgently)

Source: AAVSO Bulletin 71

## Report on Adams Ranch Weekend 2009 by John Land

Despite uncertain weather forecasts 18 members of our Tulsa Club attended our Memorial weekend Star Party at Adams Ranch NW of Pawhuska OK. We were rewarded with TWO magnificent nights of observing.

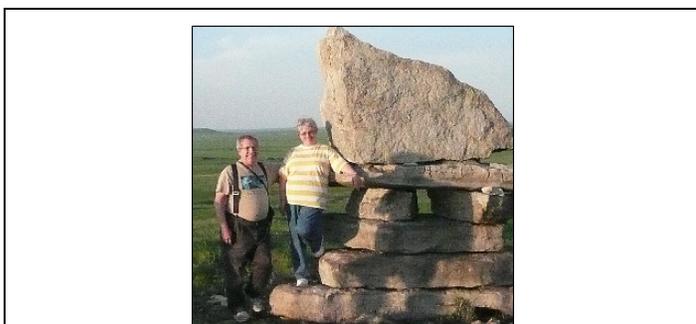
Friday night the puffy daytime clouds disappeared near sunset and we were in for a great night of observing. The temperature was cool but not cold and winds dead calm. I counted 6 stars in bottom corner of Ursa Minor indicating the seeing was at least 6.3 magnitude. The Milky Way put on a grand show as it rose in the east around Midnight. I stayed up to observe Jupiter around 3:00 AM.

Saturday Night saw a cloud bank about 15 degrees up in the SE and some heavy dew but the sky overhead was clear and rock steady. Tom McDonough showed us a classic view of a double star only 1.5 arcsec apart clearly split at 345 X and Airy disks surrounding both stars. We saw dozens of sporadic meteors both nights. Several members worked on their observing lists.

During the daytime members enjoyed trips to Blue Fin Lake and sunset at the Escarpment. The ranch sets on a high plateau. Nearby is the escarpment that drops off 200 to 300 feet into a broad valley running for 15 plus miles. Nothing but open prairie as far as the eye can see.

Sunday we left about Suppertime, as it appeared the clouds would finally win out the last night of the event.

Pictured following, are scenes from the bunkhouse, the Escarpment and some of our members who attended – Bobbie Willis, John and Carl Cotrill, Bob and Marcia Boston and John and Marilyn Land.



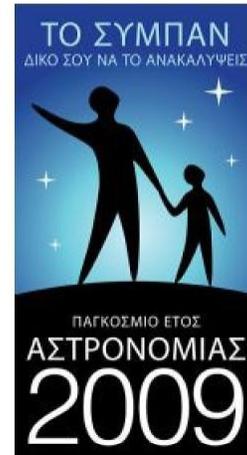
# International Year of Astronomy – Around the World



Japan



Mexico



Greece



China



France



Tanzania



Russia



Germany

**No Food or Drinks  
allowed in the  
Planetarium.**



## Planetarium Shows

June 1<sup>st</sup> – 30<sup>th</sup>, 2009  
Presentation Schedule Changes Monthly



**Doors open 10 minutes prior to show time for general seating.  
All shows begin on the hour. Admission applies to one show.**

### Monday PLANETARIUM CLOSED

### Tuesday through Friday

11:00 AM	Secret of the Cardboard Rocket
12:00 Noon	<b>BIG</b>
1:00 PM	Extreme Planets
2:00 PM	Secret of the Cardboard Rocket
3:00 PM	Night Skies over Green Country
4:00 PM	<b>BIG</b>

### Saturday

10:00 AM	Extreme Planets
11:00 AM	Secret of the Cardboard Rocket
12:00 Noon	<b>BIG</b>
1:00 PM	Extreme Planets
2:00 PM	Secret of the Cardboard Rocket
3:00 PM	Night Skies over Green Country
4:00 PM	<b>BIG</b>

### Sunday

1:00 PM	Extreme Planets
2:00 PM	Secret of the Cardboard Rocket
3:00 PM	Night Skies over Green Country
4:00 PM	<b>BIG</b>

**BIG:** The Universe is Big, but how Big is Big? Journey to the farthest observable reaches of the universe to find out! Computer animation, claymation, laser graphics and a surround sound musical score bring a really BIG subject down to Earth.

**Secret of the Cardboard Rocket:** Join two children, Bonnie and Marcus, on a magical journey through the Solar System, aided by a talking astronomy book, a cardboard rocket, and a vivid imagination. Take an up close look at all of our planets and learn the secret that makes this entire journey possible. Great for young children and their families. *Funded by Sam Viersen Family Foundation and The Oxley Foundation. Community Sponsor -- Tulsa City-County Library.*

**Extreme Planets:** For ages, humanity has wondered whether we are alone in the Universe. Fifteen years ago we were unaware of planets outside our solar system, but today these "extrasolar" planets appear to be quite common. As the search continues, the possibility exists that one day we might find life elsewhere in the Universe, born in the light of another sun. Join us in the adventure as we explore Extreme Planets.

**Night Skies over Green Country:** Live Planetarium presentation takes the audience on a journey of the current local night sky. Visual demonstrations will include what constellations and planets are visible that night and include upcoming celestial events like comets, meteor showers, and eclipses. Program changes as the night sky changes.

**Notice:** Shows are subject to change. Seating is for 110. Admission and seating is on the basis of first-come, first-served. Seating may not be available for all showings. Visitors must be seated before presentation begins. No entry after doors are closed, late arrivals attend next presentation. No food or drinks allowed in Planetarium. Please contact the Planetarium to confirm shows and information at (918) 834-9900 x400.

Tulsa Air and Space Museum Campus 3624 North 74<sup>th</sup> East Avenue Tulsa, Oklahoma 74115 (918) 834-9900  
[www.TulsaAirAndSpaceMuseum.com](http://www.TulsaAirAndSpaceMuseum.com)

## Observing Pages

### Information Exchange

The Astronomy Club of Tulsa has started a new Yahoo Group for the club. For those of you who are unfamiliar with Yahoo groups, it is a forum that allows for messages, photos and files that can be shared among the group's members. As stated in the group's description, "This group is for the members of the Astronomy Club of Tulsa to ask questions, share ideas, get information, plan observing sessions, or just communicate in general. Informal club business communications may also be announced here." This group can be found on the web at <http://tech.groups.yahoo.com/group/AstroTulsa/>. It is open to all club members so be sure to check it out! Tony White, our new Club President is the group's moderator.

## June Observing List

	Double Star	Caldwell	Messier	Herschel-1
1	Kappa Bootis	NGC5694 (C66) *	M3	NGC5557
2	Iota Bootis		M5	NGC5566
3	Pi Bootis		M51	NGC5576
4	Epsilon Bootis		M83	NGC5631
5	Alpha Librae		M101	NGC5634
6	Xi Bootis		M102 (NGC5866) *	NGC5676
7	Delta Bootis			NGC5689
8	Mu Bootis			NGC5694 *
9	Delta Serpentis			NGC5746
10	Zeta Corona Borealis			NGC5846
11				NGC5866 *
12				NGC5897
13				NGC5907
14				NGC5982

Details of this list are located in the folder, "ACT Observing Lists" in the AstroTulsa Yahoo group's files section. This list contains too many objects to "observe" in one evening, but we will recognize anyone who observes 20 or more of these objects. The reason there are many objects is to give the observer a variety of objects that can also be used for completion of a Astronomical League (AL) Observing Club. For more information on the Astronomical League and the observing clubs, check it out at <http://www.astroleague.org/observing.html>. All of the objects cross the meridian between 10 PM and midnight. For this month, the list contains 10 double stars (AL Double Star Club), 1 Caldwell objects (AL Caldwell Club), 5 Messier objects (AL Binocular Messier & AL Messier Clubs), 0 deep sky objects (AL Deep Sky Binocular Club) and 14 Herschel objects (AL Herschel-1 Club). A couple of the Herschel objects are also on the Caldwell and Messier lists, so observing any of these objects will count toward multiple observing clubs.

As we continue these lists, one should be able to complete several of the AL observing clubs in only one year. Of course the Herschel list with its 400 entries, will probably take longer.

Please take a look and give feedback to either Ann Bruun or Rod Gallagher. Also, please provide a copy of your observing logs to Ann Bruun.

Thanks – Rod Gallagher

After the last couple of months, we are nearing the end of the “galaxy” season. Most of the objects on these lists are still galaxies. Two of these galaxies are easily visible even in urban skies. Here are a couple of images that I did of these objects.



**M51 & NGC 5195**



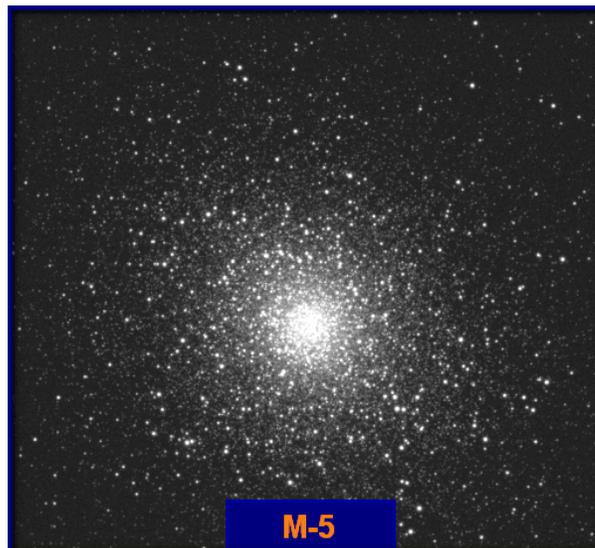
**NGC 5907**

## Opens and Globbs

By Ann Bruun – ACT Observing Chairperson



**The Double Cluster**



**M-5**

There are two types of star clusters, open clusters and globular clusters. I have always been a big fan of globular clusters, or globs, as I like to call them. When Peggy Walker was looking for volunteers to give talks for the International Year of Astronomy and she said “clusters” I immediately thought globular clusters and raised my hand. This would be a golden opportunity to go on and on about my favorite subject. I could give open clusters a mention and then get on with the exciting stuff.

As with most things in life, it did not turn out the way I expected. When I started doing research for the talk I found out that opens are really where all the action is. They are young, and dynamic. Stars in open clusters are like a bunch of teenagers, hitting their stride and getting ready to head out on their own. Open Clusters can contain anywhere from a few dozen to several hundred stars. The stars have recently developed from a cloud of gas and dust. The members separate fairly quickly, within 100 million years or so. Encounters with other stars and clouds of dust pull the clusters apart. Tidal forces in the galaxy and close encounters within the cluster also help break it up. Our sun and all the other field stars we see are thought to have come from open clusters.

Stars are forming in clusters right now. The Orion Nebula is probably our best example. After a few million years the gas and dust will be used up or blown away by the stellar winds of young stars. There are 1100 open clusters known in our galaxy and likely many more. When I think about it like that, open clusters aren't nearly as boring as I thought they were.

Globular Clusters, on the other hand, are very exciting to look at but there is really not much going on inside of them. They are gravitationally bound concentrations of 10 thousand to one million stars. They are very, very old, among the first collections of stars to form in the galaxy. There are no known star forming regions within globular clusters. On the bright side they are giant, glittering balls of stars, which makes them fascinating to observe. Depending on the cluster and/or your instrument, you may be able to see individual stars. This is called resolving the cluster. Clusters that cannot be resolved are difficult to distinguish from galaxies. With higher magnification you can sometimes start to see individual stars where before there was just a fuzzy ball.



**M-11 The Wild Duck Cluster**

Because globular clusters hang around the halo above the Milky Way there is sort of a globular cluster season. In the summer when the Milky Way is overhead there are loads of globs to look at. 180 to 200 are estimated to be in our galaxy and 29 of them are on the Messier list. The Herschel 400 list contains 62 globs. From our latitude 95 globs are available.

I still think for sheer razzle-dazzle globs are the way to go but if you are looking for something with a little more depth, something to exercise your imagination, open clusters can't be beat. Whether you're looking at globs or opens while observing I probably don't have to tell you IT'S ALL GOOD!

**Opens to look for in June:**

**M44 – The Beehive.** It is getting low in the west but it is worth trying to catch.

**M29 – In Cygnus.** Not the most exciting open but fairly easy to locate

**M11 – The Wild Duck Cluster.** This is a very rich open cluster, one of the best.

**Globs to look for in June:**

**M13 – In Hercules.** This is the biggest glob normally seen from our latitude.

**M5 – In Serpens Caput.** An under-appreciated glob.

**M4 – In Scorpius.** Not too difficult to find near Antares



## ASTRONOMY CLUB STAR PUBLIC PARTY

### FRIDAY JUNE 12<sup>TH</sup> - ALTERNATE DATE WILL BE SATURDAY JUNE 13<sup>TH</sup> IF SKY IS CLOUDY ON FRIDAY.

GATES OPEN AT 7:30 PM SUNSET -8:41 P.M. / END CIVIL TWILIGHT - 9:12 P.M.

PHASE OF THE MOON ON 12 JUNE: WANING GIBBOUS WITH 79% OF THE MOON'S VISIBLE DISK ILLUMINATED.

**PRESENTATION AT 8:30 P.M. IN CLASSROOM – STAR CLUSTERS**

Due to the uncertain weather reports, always check your local weather reports for sky conditions. Our club has an excellent resource for predictions of cloud cover on the observe section of our website: (<http://www.astrotulsa.com/Observe/observe.asp>). Also check the Astro-Tulsa Yahoo Group Page: (<http://tech.groups.yahoo.com/group/AstroTulsa/>) for cancellations if weather is uncertain!

Since night-time temperatures can dip to the mid 50's or colder you should plan to bring a jacket. **IT CAN GET VERY WINDY UP ON OBSERVATORY HILL!!**

- **Beginners Telescope Set Up on Center Pad:** Several of our new members and guests have new telescopes they are trying to learn how to use. We would like to invite you to set up your equipment near the center concrete observing pad. Members let's all take time to meet these novice astronomers and help them get a good start with their equipment.
- **Wireless Internet now available at the Observatory:** For laptop users - Rod Gallagher has made arrangements for wireless Internet to be broadcast on the observing field. Details for log on are available at the observatory. This is available for members to use for astronomy, observing and weather information and should not be abused for other types of browsing and gaming.
- **Things to bring to a star party:** Of course a telescope or binoculars are great for observing but you don't have to have one to enjoy the evening. You don't have to own a telescope to enjoy an observing night. Our members are eager to share their views with others. There will be plenty of people willing to share the view if you just ask. Also bring a red colored or covered flashlight to see your way around. We have plenty of folding chairs and a clean restroom.
- **Children are always welcome but must be supervised and must stay on observatory grounds.** It's always wise to have an alternate activity such as a favorite book or tapes for younger children who may tire early. Closed toed shoes are preferred and a light jacket as needed.
- We would like to encourage our new members and guests to join us
- Plan to arrive before dark. We have plenty of chairs and a classroom area.
- We have a microwave and you can bring your own snacks. You need to bring your own drinking water!

**PARKING MAY BE AT A PREMIUM.** Reserve Parking is available next door in old ATT lot for those without equipment or planning to leave early. PLEASE DO NOT PARK VEHICLES near the center-observing pad blocking the view and traffic access.

**SAFETY ISSUE:** When large groups are present it is better to turn on your park lights or headlights on low beam rather than to try driving in or out without lights... especially if those groups include children. Just warn everyone when you are getting ready to leave.

**NEVER try driving down the hill without lights.**

*A donation of \$1.00 per guest would be appreciated to help us maintain the observatory.*

ACT Word Search Puzzle by Peggy & Rick Walker

Male International Astronomers L-P
Astronomy Club of Tulsa

CAAPEEREENNSDBEPBUMUSHOU EI NOJ I R I AGUJ RBN
AHYI AKSCPCNCZOMTREYAMSAI BOTTONEUGEBAUERO
MMCEPEL IOAVCHRI SLI NT OTTRITASKURUI ANBUDIT
NYRGRGCHPRMLHSUI BOMT SUGUAREOATHANOORENUW
UI APRMUNONAAARNLJ NDDESMMP OEBEPHTOMESSUA E
OPMBOBEI UTETDEAOI TS OFFOHRETSOORETEI PATN
I I F I CHARLES P R I T CHARD OOL BGTI CNTRELNPI MPC
XRFNORRYPLLNRI MI MGP NJ ARUOUEI OEOI R I LODHA
EUOMTOY LDRANREGI ENI AGEELTSNESRETEPKI RES
HEEUTYARLEGEUCEGSRXLRTNERRMNRTPPNCR I I AHS
CSGSSLVOOJ EUMNL OUPAS Y MEDRLEEEI EDHASLWNI
URBAI NLEVERRI ERIRNORTPOKLT RLEERLRTELD J J
OHMH . UE BLBK B MML HGDRUA O O EMDLORLTI ATEEND
MOCAALPSMDVAMLUELEEAUSRPRMAUI RAASBHHI AP
EMI SRI AEANI EWI AAGBMAHBNELEZMOENRTEECMBF
ENLAZCKURTSVLJ NUI ELLI ACALEDSALOCINBTI US
DANNRTDSRRTAAOCLRFNSI EEAPAMEOELAALEI NRW
EHCLMNI EWEE SDDI RANATNOMONAI NI MEGNI MMSI R
MOI S S COLLO NI EHEDATS AI ELMYUGNOOCRPMENAMR
AJUESMI PAMKTP I LMRI ANALI I AONAENRPODDHLAR
UAOLBEMCEP I NPBEERUPEELZJ MOUHLNAPLRUOPNR
RPLBI UMDLNNI DBHEOAGOENONI SOJ I BRLAPJ ANE
I AGENARANEZNNMRCRCNS ANNEAONJ AEFNAWEOI UN
CJLEMI OYPANI AAHACAAI OTRI I CSNERORS DCLCEN
EHCPU RLTDALLAHEPEVELACHARLESMESSIERRREA
LBOSS I ORUHNJ WSORLENNPAASBRTUTPUDOFORAGI
OPTEAURBPNFJ I HAJTOUHA AKLELEOLO TIARAEGKE
EYHMMUALAHOMLNETNSDLEELNOOHPYTI TJ EJE OCN
WTNAUKOHEHSNLVSPDLRUEBUEPYJ OSEPHLIT TROW
YHEJ HDORAMHNI MJ UENYI ROGI RGEPEUME DLEABL
PAMTAJ DNOI NCAPEPTTPOXHEI NRI CHOLBERSTVBS
JGOTMYNNOEZVMAHPERRUGDDA OFEXECNRSI KALUO
VONAMPABAMOZLXUBESEUNANEAFNI PEOLACAHALE
LREJ AALNEYRTAPERDNABSNI TORREPI RNEHI ANND
LAMLDKRMTRI I S I MRYANALP I NNAVOI GMVLOCUI HD
NSI RMROI NNTES PLEDNALALEMOREJ OAPI PLMDOO
USA AI EMI AYAI EUOESPOEWCRALEALJ LNI PELENJ N
ALJ FCOTLLUMRLMOSPYOI CZNHNTENGDP EMLLBPRS
LEI AERCCMMAL I LLI WBPLAMYAHDCOI I TORUTEYVEH
BGOERGE PARKERI I ONLEERNCOANI ASL GRELROESH
EOWLI J BSELUEJ LKNI HNSTSHI MEEUGDS ELAHEDOM
RRZPI LREI MFEE E J ADLDOUKMCHMENS LOMA OEREL L
TMEAOEG I AMADRAMORBNEVI L MASKELYNEUZAI I PT
MVYCNCPSCNOARPASHPLNTEGYABMTDAECSSAMEET
AAAHOI LROI DNAV AHANDAMHAASERYLSLHAETDJ HR
ROBERTLUTHERMHKNI APSDRKNUTLUNDMARKNEKEC
TAMCYADOAESNOANMANI LNNADMYSLPAUI I OAALAU
HLJ OSEPHLOCKYERANFAPANLMNHMMAGUNPNBENI U
LMLAML ESNONAKANI HCI UYSBRI HGENRRNPUMNPMN
OCHARLES MASONNEDUPPLRCKL BHULLRHOAGNAOPS
GHNEHGEORGE PARKERS J PERTERNI LSONNEGREUER
RSAMAEPORKHAE EBHPNRHHUVM T TLI J STDRGBEARU
HPMRLJ LLEUSMALNUEDUARTEAMTPWZTI PRBPR TAY

Nicolas de Lacaille
William Lassell
Arno Penzias
Giovanni Plana
John Pond
Pierre Puiseux
Li Fan
Joseph Lockyer
Knut Lundmark
Ma Yize
Charles Mason
William McCrea
Joel Metcalf
August Mobius
Antonin Mrkos
Naburimannu
Gerry Neugebauer
Houei Nojiri
Freidrich Opelt
Johann Palisa
James Peebles

Claes Lagerkvist
A. Laurent
Charles Perrine
Petrus Plancius
Jean Pons
Georg Purbach
Bertil Lindblad
Maurice Loewy
Robert Luther
George Parker
Edward Maunder
Bruce McIntosh
John Mitchell
Johan Mohr
Johannes Muller
Ahmad Nahavandi
Otto Neugebauer
Jaime Nomen
Ernst Opik
Johann Palitzsch

Joseph Lagrange
Typhoon Lee
Henri Perrotin
John Plaskett
Vladimir Porubcan
Armin Leuschner
Adolph Lindemann
Christian Longomontanus
Lupitus of Barcelona
Geoff Marcy
Pierre Maupertuis
Pierre Mechain
Dan Milosavljevic
Samuel Molyneux
Bin Musa Ahmad
Syuichi Nakano
Grigoriy Neujmin
Tarmo Oja
Donald Osterbrook
Anton Pannekoek

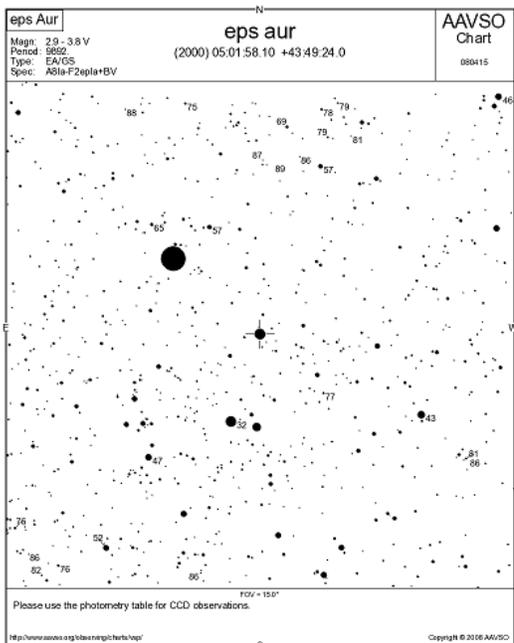
Jerome Lalande
Guillaume le Gentil
Christian Peters
Pierre Lemonnier
Charles Pritchard
Pythagoras
Chris Littott
Angel Lopez
Willem Luyten
Simon Marius
Alain Maury
Thebe Medupe
Edward Milne
Geminiano Montanari
Bin Musa Hasan
Jayant Narlikar
Issac Newton
Heinrich Olbers
Jean Oudemans
George Parker

Johann Lambert
Georges Lemaître
Erik Petersen
Norman Pogson
Richard Proctor
Urbain Le Verrier
Joseph Littrow
Alvaro Garcia
Don Bell
Albert Marth
Brian May
Phillibert Melotte
Rudolph Minkowski
Pat Moore
Bin Musa Muhammad
Naubakht
Albertus Nijland
Jan Oort
Rafael Pacheco
William Parsons

Pierre Laplace
Roger Penrose
Giuseppe Piazzi
Christian Poggias
Ptolemy
David Levy
Liu Xin
John Lubbock
Gernard Lyot
Nevil Maskelyne
Tobias Mayer
Charles Messier
Marcel Minnaert
Amedee Mouchex
Niils Mustelin
Al fadl bin Naubakht
Perter Nilson
Pieter Oosterhoff
Bohdan Paczynski
Andre Patry

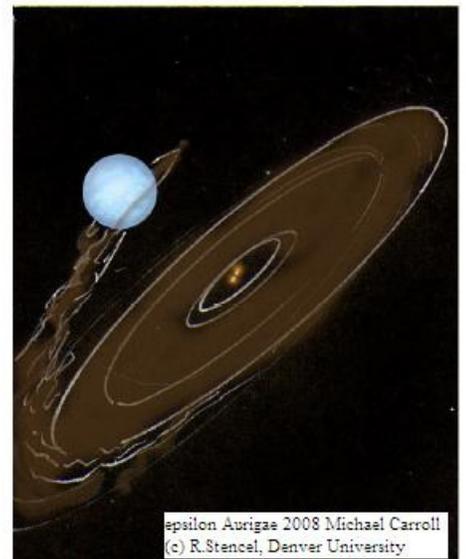
(Answers Next Month...)

## Get Ready for Epsilon Auriga's next Fading Act



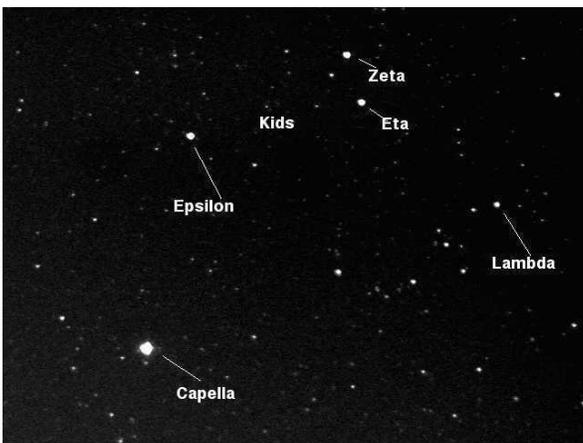
The epsilon Aurigae system is perhaps the most interesting eclipsing star system. It has puzzled astronomers for over 150 years. It is a bright star (3rd magnitude) located about 3 degrees southwest of Capella and eclipses once every 27.1 years. It is at the vertex of a triangular group of stars known as "The Kids". Zeta Aurigae, another interesting long-period eclipsing binary, makes up one of the other two stars. See: [The Mysterious Epsilon Aurigae](http://www.hposoft.com/Astro/PEP/EAUR/EAURMYS.html) (<http://www.hposoft.com/Astro/PEP/EAUR/EAURMYS.html>).

What makes this star system so intriguing is not just its long period but the length of its eclipse and what happens during the eclipse. Typically the eclipse lasts about two years which with the 27.1 year period means the eclipsing body must be gigantic. There have been no satisfactory explanations for this. To make matters even more interesting, there seems to be a mid-eclipse brightening. How can this be? One explanation, according to James Kemp, is the eclipsing body is a giant cloud of gases enclosing two small stars in orbit around each other. These stars sweep out an area in the middle. It would be a bit like a giant donut. This donut must be tilted such that as it eclipses the primary star, the system's total light decreases until the "donut-hole" allows some of the primary star's light to sneak through at mid-eclipse.



To try to unravel this system's mystery, a concentrated effort was undertaken during the 1982-1984 eclipse. Hundreds of astronomers, amateurs and professionals, from around the world, observed the eclipse and space-born satellites observed in the ultraviolet and infrared. Ground based observations were photometric, spectroscopic, and polarimetric. Photometric observations were made with UBV filters, narrow band filters, and at wavelengths into the far infrared. Despite the concentrated efforts, epsilon Aurigae still remains a mystery. There are multiple professional and amateur astronomer efforts to track the next eclipse event starting this year.

The May 2009 issue of *Sky & Telescope* has a great 6-page article "The Very Long Mystery of Epsilon Aurigae" by Dr. Robert Stencel. This is an excellent review of the star system and the work that has been done on it. AAVSO also has a good write up about epsilon Auriga at ([http://www.aavso.org/vstar/vsots/eps\\_aur.shtml](http://www.aavso.org/vstar/vsots/eps_aur.shtml)) and is organizing efforts to observe this star.



The next eclipse of Epsilon Auriga is forecast to begin in late summer 2009, during which visual and digital monitoring will be essential in support of professional multi-wavelength astrophysical studies. Because the star is 3rd magnitude, this object provides an easy entry point for scientific research by all persons regardless of their background, training and equipment: with just good eyesight and a finder chart, the eclipse can be easily monitored.

The Epsilon Aurigae project welcomes anybody who has an interest in participating! We will guide you through the process of how to observe Eps Aur, how to send us your observations of the star, how to see your results, analyze them, and even publish them in a scientific journal!! We would like to include as many people as possible to participate. No previous experience is required. We hope that this will be the largest citizen science project in modern history that involves real, active research! The effort is part of 2009

IYoA and is called "The AAVSO Citizen Sky Project" and details are at: (<http://www.aavso.org/aavso/iya.shtml>). Join in and learn something in the process.

*D. J. Karcher – May, 2009*

### CLUB OFFICERS

POSITION	NAME	PHONE
<b>President</b>	Tony White	918-258-1221
<b>Vice-President</b>	Tom McDonough	918-665-1853
<b>Co-Treasurers</b>	John Land Jim Miller	918-357-1759 918-627-4551
<b>Secretary</b>	Teresa Kincannon	918-637-1477

### BOARD MEMBERS AT LARGE

NAME	PHONE
Ann Bruun	918-834-0757
Steve Chapman	918-342-1643
Rod Gallagher	918-369-3827
Bill Steen	918-251-3062
Chris Proctor	918-810-6210
Rick Walker	918-451-9235
Dennis Karcher	918-619-7097

### APPOINTED STAFF

POSITION	NAME	PHONE
<b>RMCC Facility Manager</b>	Open	
<b>Membership Chairman</b>	John Land	918-357-1759
<b>Observing Chairman</b>	Ann Bruun	918-834-0757
<b>New Members (co-Chairmen)</b>	Owen Green Rick Walker	918-851-1213 918-451-9235
<b>Observatory Director</b>	Teresa Kincannon	918-637-1477
<b>Webmaster</b>	Richard Alford	918-855-9986
<b>Newsletter Editor</b>	Dennis Karcher	918-619-7097
<b>Night Sky Network</b>	Peggy Walker	918-640-0832

### MEMBERSHIP INFORMATION

Astronomy Club of Tulsa membership (\$35/year) includes membership in the Astronomical League and subscription to ACT's "Observer" and AL's "Reflector". "Astronomy" (\$34/year) and "Sky and Telescope" (\$33/year) are also available through the club. For more information contact John Land at 918-357-1759. Permission is hereby granted to reprint from this publication provided credit is given to the original author and the Astronomy Club of Tulsa Observer is identified as the source.

The Astronomy Club of Tulsa is a proud member of the Astronomical League and the Night Sky Network



<http://www.astroleague.org>

<http://nightsky.jpl.nasa.gov>

ACT welcomes your questions, suggestions, comments, and submissions for publication.  
Please send all inquiries to [Newsletter@astrotulsa.com](mailto:Newsletter@astrotulsa.com)

One day, Jesus said to his disciples: "The Kingdom of Heaven is like  $3x^2 + 8x - 9$ ."  
A man who had just joined the disciples looked very confused and asked Peter: "What, on Earth, does he mean by that?"  
Peter replied: "Don't worry - it's just another one of his parables."

What is the difference between an engineer, a physicist, and a mathematician?  
An engineer believes equations approximate the world.  
A physicist believes the world approximates equations.  
A mathematician sees no connection between the two.

**Deadline for July Article submissions: June 26, 2009**  
**Target Publication for July Observer = June 30, 2009**  
**eMail article submissions to: [djkarcher@cox.net](mailto:djkarcher@cox.net)**