



Astronomy Club of Tulsa

OBSERVER

August 2004

<http://www.AstroTulsa.com>

ACT, Inc. has been meeting continuously since 1937 and was incorporated in 1986. It is a nonprofit; tax deductible organization dedicated to promoting, to the public, the art of viewing and the scientific aspect of astronomy.

What

The Astronomy Club of Tulsa Star Party

When

13 August 2004 about 8:00 P.M.

Where

RMCC Observatory

President's Message

Craig Davis

The summer rolls on even though lately it hasn't really seemed much like summer. The past week, with the lower temps, it's been more like our seasonal twins - early spring and fall. That's perfectly all right especially since a break from the usual summer temp levels is welcome. But from the forecasts for the upcoming week, well, we're heading back to the hot, bright clear days of summer again. Hopefully the remainder of the summer will be good for all be it hot or not. To be, or not to be, we'll leave it to the jet stream and the weatherman to predict.

With deepest regrets there has been a great loss to our club over the month of July. A true misfortune has taken two of our club members in only the past three weeks, **Blake Champlin** and **Franklin Gilbert Gottschalk**. Blake Champlin was lost due to an accident that was both very unusual as well as totally unexpected. Franklin Gilbert "Gil" Gottschalk had been blessed with a very long life and had accomplished so much.

Blake had been a member of the Club for many years and was very closely involved with the construction of RMCC Observatory.

Through his dedicated efforts we all have the observatory for our monthly star parties as well as a remote area for personal observations. It will be a true loss to us all with his passing.

Franklin, or as he was commonly known as "Gil", also had been a club member for many years. His abilities and contributions will be missed.

Only recently did I find out that our Vice President - Ruth Simmons will be leaving us. Ruth works for Citgo and with the company's decision in moving has to be re-homesteaded in Houston, TX by the end of the month. Thank goodness she is not being simply tossed aside like so many others have had to suffer through in the past few years. It will truly be a loss to not have her with us but hopefully things will work out well for her and her family in the near future. Thanks a million Ruth, we'll really miss you.

Our last star party was great. The weather was playing with us somewhat but it still turned out great. Thank goodness we have "backup days" set in our schedules. It was and is always great to see as many club members at the observatory as possible. Hopefully we will have another good one this month without as much weather problem as before. Don't forget, it's scheduled for August 13th. The moon won't rise till 4:04 A.M. so we won't have a thing to worry about. By the way, with so many deep space wonders that are on display in the summer you might like to check out the following web site - www.telescopes.za.org/TGHHowTo1 - "Secrets of Deep Sky Observing". Can't ever tell, may learn something new or a tidbit of this or that that may make locating or identifying "fuzzes" that are in the category of the hard ones, can't ever tell.

We have a very good meteor shower coming up soon - the Perseids shower. As a matter of fact it has already begun but it will hit it's peak on both the 12th & 13th of August. In and of itself the shower will be an added highlight to our upcoming star party. Now the point from where the Perseid meteors appear to radiate is located within the constellation Perseus and is referred to as the radiant. The radiant is located in the northern portion of that constellation, almost midway between Perseus and the constellation Cassiopeia. Keep your fingers crossed, even though we will have to battle with the sky glow in the

northeast it may very well still be quite a show for us all.

About a month past Jim Miller, Zach Garrett and I and my wife Debbie "discovered" a dark sky site, which in Jim's opinion, is as dark as Black Mesa. It is a large, active cattle ranch located just north of the Tall Grass Prairie Preserve near the Kansas border, only about fifteen miles shy. Driving time to it is about 2.5 hours from Tulsa. Formerly, it was the old Mullendore Cattle Ranch. The ranch used to be owned by the Adams family (Boots Adams of Phillips Petroleum). The Adams boys got in financial trouble some years ago and sold the ranch to, of all organizations, the Mormon Church. Didn't know churches were into ranching but I do now. The ranch is an active cattle operation so we can't go wherever we want. When we left there were twenty cattle semi's parked along the road outside the ranch's main gate waiting to begin loading in the morning. We have received permission from the ranch manager, James Caldron, to use the paved, abandoned airstrip on the property as an observing sight whenever we want. Even though we have been there once the skies are remarkable. Jim laid claim to his first fireball there and as far as I knew at that time, there was no shower going on radiating out of the southeast. Needless to say, I had my eyeball glued to an eyepiece viewing M51 when everyone else saw the meteors- missed all of them. Debbie was finding so many "M" objects both naked eye and with her binoculars faster than Jim's "go-to". According to the Dark Sky Association Maps of Oklahoma, it does not get any darker in the continental US than at this ranch. Yes, it's quite a distance away but most certainly not as far as Black Mesa. If things look good weather-wise for the 12th we may very well trip back up for the Perseids. If anyone would perhaps like to go just contact me at sirian@cox.net and I'll let you know how things are looking. Overall, even though it's a very distant and remote observing sight with no Quik Trip close by at all, ultimately, the rewards are well worth the time to get there.

Clear skies to all,

Craig D. Davis

CHAMPLIN -- Blake K., 45, died the evening of Monday, July 19, 2004, when a tree fell on him while he was relaxing in his hammock in the backyard of his home. Blake was born on April 3, 1959, in Penn Yan, a small town in upstate New York. After graduating from high school, Blake married his high school sweetheart, Roxanne, and joined the Air Force. He was stationed in Hawaii as a Military Policeman and attended the University of Hawaii where he obtained a Bachelor of Arts degree in Political Science, with Distinction, in 1981. Following his honorable discharge, Blake did enough construction work in South Texas with his in-laws (Joyce and Dan Shay) to realize that law school would be a better plan. He graduated with honors from the University of Tulsa School of Law in 1986, where he was a member of the Tulsa Law Journal and the Order of Curule Chair. Blake then began what became an eighteen-year practice in environmental law when he joined Charles Shipley's law firm. Blake later became a named-partner of Shipley, Jennings & Champlin and, in 2002, he joined the Tulsa law firm of Boone, Smith, Davis, Hurst & Dickman, where he headed their environmental law department. Blake was a past Director of the Oklahoma Society of Environmental Professionals and a past Chairman of the Environmental Law Section of the Oklahoma Bar Association. He was a featured speaker at numerous environmental seminars throughout the region. Blake was regarded by his peers, including his opposing counsel, as an attorney with tremendous talent, integrity, common sense, and humor. In addition to his many professional accomplishments, Blake had a love for the outdoors and a thirst for knowledge and new experiences. He joined the Astronomy Club of Tulsa in 1989. Through his efforts, the club completed an ambitious two-year project and built the Ronald McDonald's Children's Charities Observatory. He was active in the Nature Conservancy, most especially its annual Wild Brew fundraiser, being a beer maker himself and member of the Fellowship of Oklahoma Ale Makers ("FOAM"). He was also a member of the Sierra Club and Save the Illinois River (STIR), and the Director of "Keep Tulsa Beautiful." Blake was a voracious reader of fiction and non-fiction and always eager to take on new and unusual hobbies: astronomy, brewing beer, riding motorcycles through Colorado, building a wooden canoe in his garage, riding a bike through the streets of Tulsa, learning to sail and scuba dive, and preparing to build his own log cabin in the woods near the Illinois River. He was an avid fan of TU's Golden Hurricane basketball team and in 2000, he took his grandson, Jalen (then two months old) to the first of what would be many basketball games with Papa. Preceding Blake in death was his father, Keith Cham-

plin of Penn Yan, NY. Blake is survived by: his wife, Roxanne; daughter, Tabitha Kidd and her husband, Jeremy Kidd; son, Joshua Champlin; grandson, Jalen Kidd; mother and stepfather, Connie Cator and George Cator; step-mother, JoAnn Champlin; brothers, Brad Champlin and Brian Champlin, and their wives, Cindy and Patty and their children; and a host of other relatives, friends, colleagues and clients. Blake's sense of good humor, love of nature and his passion for life and love of family and friends will be missed by all who knew and loved him. In lieu of flowers the family asks that donations be made to the Nature Conservancy - Oklahoma Chapter, 2727 E. 21st, Suite 102, Tulsa, OK 74114 or that you attend the Wild Brew on August 14, 2004 (reservations required, call 585-1117) and have a "cold one" in memory of Blake. Memorial service will be held at 2 p.m. on Friday, July 23, 2004, Asbury United Methodist Church - Mason Chapel, 6767 S. Mingo, Tulsa, OK. Stanleys, 743-6271.

GOTTSCHALK — Franklin Gilbert, July 23, 1914 to June 29, 2004. Born to Franklin and Mathilda (Fleissner) Gottschalk in St. Louis, MO, oldest of 5 children. He graduated from high school at 16 and then operated his own clock and watch repair shop to help his family during the Depression. During WWII he worked at Western Cartridge and at the Naval Ordnance Plant. After the war he earned a degree in Mechanical Engineering at Washington University. Married to Bonnie Bess DeChaumes in 1950. They moved to Tulsa where he worked for Dynmac Corp. until retirement in 1981. His passion for and understanding of all things scientific, mathematical and mechanical was legendary. He was active in many organizations including Boy Scouts and Second Baptist Church in St. Louis, Astronomy Club of Tulsa, American Society of Mechanical Engineers and All Souls Unitarian Church. Gil also supported Meals on Wheels and Friends of the Library with many hours of volunteer work. His beloved wife, Bonnie, his sister, Elise and brother, Ben preceded him in death. He is survived by: daughters, Kathy (Robert) Scheer of Tulsa and Linda (Charles) Van Citters of Seattle, WA; brother, Paul; sister, Ruth; 5 grandchildren; 2 great-grandchildren; and numerous nieces and nephews. A gathering to celebrate his life will be held July 31, 2 p.m. at Oklahoma Methodist Manor, Flemming Center, 4134 E. 31st St., Tulsa. In lieu of flowers the family suggests donations to the Tulsa Library Trust or Nature Conservancy.

Remembering...

Our Astronomy family has lost one its members. **Blake Champlin**, 45 of the Astronomy Club of Tulsa died in a freak accident at his home July 19, 2004. Blake had been a member of the Tulsa club since 1989 where he immediately became a part of the Club's Observatory committee. Through Blake's passion for astronomy and education came the dedication and leadership that resulted in the completion of the Ronald McDonald's Children's Charity Observatory in 1991. For those that knew Blake, one common observation was always made.... he had a great sense of humor. He was always first to make fun of himself. I think he mainly did that to not give his friends the satisfaction of getting him first. One funny thing Blake did early in his astronomy life was to connect the dots on his star maps to show the basic constellation patterns. After all of his work on his new star maps, the first night out we could here Blake saying "I though I did that map". Then we'd hear it again. Finally we asked what was wrong. He said he had drawn in all the lines on his star maps but they weren't there now. We looked at his maps, shined our "white lights" at them, and his lines magically appeared. Blake learned that you couldn't use a "red pen" on your maps if you use a "red light" to look at them. Blake's humor and laughter will be missed in the clear nights to come.

James Liley

David's Astro Corner

By David Stine

PERSEID'S - "WILL THEY FIZZLE OR SURPRISE!"

Mark your calendars for the night of August 11 and the morning of the 12th. This will be the dates of the 2004 addition of the Perseid Meteor Shower. The Perseid's were one of the most exciting meteor shower's during the 1990,s with outbursts of up to 400+ an hour. Since then the numbers have decreased steadily to less than 60 an hour with last years shower even less. This was expected as the comet that is associated with this shower Comet Swift-Tuttle passed perihelion in 1992 and is now deeper toward its 130-year destination of the outer solar system. When the comet is closer to the sun, our planet encounters more of the comets dust and we observe more meteors. However, each time the comet passes the Sun it sheds even more dust and these dust trails develop their own orbits. So in certain years if a dust trail is near earth we

see more meteors. The mother comet could be many distances from these trails.

This is the situation we have this year. The IMO Calendar lists the maximum peak at 11h UT on August 12th, which would be 6a.m. Tulsa time. Bad timing for us, but not really, because the shower should be rapidly increasing its rates up to peak time. This leads me to believe that we should be able to see one or more meteors per minute between 3a.m. and dawn on the morning of the 12th. But this year we have a possible surprise twist to the activity. Remember what I said about dust trails being left by the parent comet that develop their own orbits far from the comet. Well this year according to researcher Esko Lyytinen and Tom Van Flandern, earth will pass within 0.0013AU of the one-revolution dust trail at about 21UT August 11th. There should be increased activity at this time and could approach storm level of 1000/hr of faint meteors for a short outburst. This trail was left by the comet during the Civil War in 1862 and is a fairly young filament. When I asked Lyytinen by e-mail about this prediction, he said the timing of the 1-rev. encounter is expected to be good within about 15 minutes or better but the prediction of strength is more uncertain. What about the USA? He said even though it will not be dark yet during the predicted outburst, we still should see increased rates after dark and then leading up to the IMO peak time. So we are right in the middle of the two peaks, after the outburst on Wed night the 11th and just before the traditional peak Thursday morning. This year could definitely be interesting. Perseids are fast meteors and have been known to light up the sky with several seconds of train. The normal ZHR hourly rates quoted for the Perseids are about 100 meteors per hour. ZHR is zenith hourly rates or is the number of meteors that an observer would expect to see under a dark country sky with the radiant directly overhead. The early evening may bring some spectacular earth grazers, as Perseus will be hanging low in the eastern sky. You won't see many of these but those you see will be awesome. These seem to come from the horizon and shoot horizontally through the atmosphere. The club observatory grounds will be open the night of the 11th and 12th for anyone wanting to watch this shower from a dark location. Now if you want to see the shower from a really dark location, we will be caravanning from the Golden Driller at Expo Square on 21st St. on August 11th leaving at 3p. m. to go to the Tall Grass Prairie Reserve area near the Kansas border. See Craig's article in the newsletter. From what I understand there is no other site in the continental US that is darker including the Texas Star

Party site and the Okie-Tex site. I know right now you are saying, no way. Well come with us and see for yourself. As Craig said the members of the Astronomy Club of Tulsa have been given permission to view from there anytime we decide to come up with advance notice. This will be a great opportunity to check out the site and see the Perseids. If you can't make the 3p.m. caravan Wed. the 11th here are the directions to get there: First get to Pawhuska, which should be easy to locate with a map, from there head out of town West on Hwy 60. Hwy 60 is main street of Pawhuska. Follow Hwy 60 out about 12 miles to the junction with Hwy 18. At the junction make a right turn and head north to Grainola. You will pass through Shidler then to Grainola. On the north edge of Grainola is CR4804, Country Road 4804. Make a right turn there, heading east. You will come to one small curve to the left towards the end of CR 4804, just follow it on around to the left and you will be within a couple of minutes from the ranch. You should be able to see some of the ranch buildings off in the distance. Look for the airstrip where we will be set up. Plan on a 2 and ½ hour trip, but a trip well worth your time. Lets hope for clear skies and lots of raining meteors or at least several fireballs.

If you plan to caravan with us please be sure and notify either Craig Davis or myself so you will be sure to get all the details. If you go on your own, be sure to try and get there before dark. For more information and a complete observing guide for the Perseids this year go to www.space.com.

Perseids are not the only shower going on at that time. Besides the main show, we have 4 different Aquarid showers active producing about 17 meteors an hour, the alpha Capricornids with 2 meteors an hour, the kappa Cygnids with 3 an hour, and the sporadic activity of 7 per hour. The counts seem low but when you add them all together we are looking at 29 meteors per hour plus the Perseid activity, which makes for a great August night of meteor observing.

Comet activity in August is still good and there are three comets that are within reach of most backyard telescopes and binoculars. The brightest comet visible now is C/2003 K4 (Linear). Just above naked eye visibility, this is a very interesting comet and is now moving past Arcturus in the Bootes constellation in the early evening. An August location chart of K4 can be found at www.skyhound.com/sh/2003_K4.gif. Comet C/2001 Q4 (Neat) is still a nice comet moving through the top of the bowl of the Big Dipper. August 7th its passes near the Owl

Nebula. A chart for this comet is at www.skyhound.com/sh/2001_Q4.gif The last comet is Comet C/2004 H6 (Swan). This comet is moving through the southern part of Aquarius. This comet may be breaking up from the latest reports, so it may be gone by the time you read this article. The chart for this comet is at www.skyhound.com/sh/2004_H6.gif

All three of these comets will be an added attraction during the Perseids to try and observe. There are several more comets that are within reach of a 10-inch scope for August. Go to www.skyhound.com.com/sh/comets.html

Happy comet hunting for August.

A new bright supernova was discovered on July 31st on the outskirts of the spiral galaxy NGC 2403(Caldwell 7) in Camelopardalis. The new object is at right ascension 7h 37m 17s, declination +65 degrees 35 min and 58 s which puts it 160 arc seconds east and 10 arc seconds north of the galaxy's nucleus. It is in reach of small telescopes at Mg. 11.2. There are many foreground stars in the vicinity of the galaxy which can be confusing in locating it but if you go to the site at http://skyandtelescope.com/observing/objects/variablestars/article_1315_1.asp you can see a picture of the galaxy and the location of the new supernova. If you can find the star Omicron Ursa Major that is the nose of the Great Bear there is a group of zigzagging 6th Mg. stars that leads right to NGC 2403. From there you should be able to locate the supernova. Good Luck.

I would like to dedicate my article this month to Blake Champlin. As everyone knows by now that Blake was killed in a freak accident. The astronomy club has lost an enormous asset to the club. Many of you new members did not know Blake, but without him and his continued persistence we probably would not now have an observatory. He was great to be around and was always helping everyone that needed help. Blake loved to watch meteor showers and the last one I was fortunate to observe with him was the Fireball Leonid Shower. His passing on to the stars was sudden and unexplainable and as one person said at his funeral, "God must have needed another good angel". As you view the Perseids this year remember Blake and what he meant to the Astronomy Club of Tulsa.

That's it from my corner this month; keep you eyes to the sky.

EVENTS AT RMCC

Tentatively scheduled dates below are bracketed with question marks.
The number of persons expected is in parenthesis.

EVENTS AT RMCC OBSERVATORY:

AUG

- 11 Wed 08:15 Perseid Meteor Shower
- 13 Fri 08:15 Club Meeting and Star Party
- 14 Sat 08:15 Back Up for 08/13
- 20 Fri 07:00 Tulsa Bicycle Club Camp Out
- 21 Sat 07:00 Tulsa Bicycle Club Camp Out
- 28 Sat 08:00 Girl Scout Troop 541 (21)

SEP

- 17 Fri 07:00 Club Star Party
- 18 Sat 07:00 Back Up for 09/17

OCT

- 15 Fri 06:15 Club Star Party
- 16 Sat 06:15 Back Up for 10/15

EVENTS AWAY FROM OBSERVATORY

AUG

11 Wed 08:15 Perseid Meteor Shower at the Tall Grass Prarie near Pawhuska (Check with David Stine)

SEP

- 10 Fri 07:30 Regular Club Meeting at TU
- 18 Sat 07:00 Girl Scouts at Box Ranch near Pretty Water Lake

OCT

- 08 Fri 07:30 Regular Club Meeting at TU

Gerry Andries
Observatory Group Director
Astronomy Club of Tulsa

Astroland Tidbits

by John Land

Please send any inquiries about your membership or other club matters to membership@astrotulsa.com

Welcome to our new members: Frank Duncan, Matt Fox, Cassie Wilborn

Sky & Telescope announces new magazine for beginning astronomers. (<http://nightskymag.com/>) The club has coupons for a free issue - Send a self-addressed stamped envelope or pick one up at a club event.

ALCON 2004 Report :

I just returned from attending the 2004 National Astronomy convention in Berkley, CA. This year's event was a combined meeting of the Astronomical League, the Astronomical Society of the Pacific (ASP), Association of Lunar & Planetary Observers (ALPO) and Association of Variable Star Observers (AVSO). There were about 250 in attendance.

It's was an exciting time to actually meet and talk to several of the notable astronomers we read about in the magazines. David Levy gave several presentations about his love of astronomy and observing experiences. He encouraged observers to keep an organized log of their observing experiences. His started with # 1 of an eclipse in 1959 and now extends into the 40,000's To everyone's delight Levy won a comet filter as a door prize and hopes it brings him luck since its been 10 years since his last comet discovery.

J. Kelly Beatty was there from Sky and Telescope encouraging clubs to get youth and children more involved in club activities. The ASP has a new program called the NIGHT SKY NETWORK that has funding from NASA. They provide clubs free instructional kits and information with the stipulation that clubs do at

least 5 outreach programs each year. I hope that several of you in the Tulsa club will join me this fall as we try to be a part of this network. Don Parker gave an interesting presentation describing that the South polar cap on Mars has shrunk 30% since the 1960's. Cloud activity and global dust storms are occurring at an increased rate on Mars. Must be all those Mars Rovers causing Global Warming! Ha! One of the side trips was to Lick Observatory. After surviving the 2 hours drive with at least 100 switchback curves we made the 19-mile drive to the top. We got to tour the Shane 120" telescope that has been used to discover 80 of the 100 know extrasolar planets and also look through a 36-inch refractor at M-13. After the return trip I was thankful for our Great FLAT Plains observing experiences. Next year's convention will be in Kansas City so maybe you can be a part of the fun. For more information go to www.astrosociety.org

Bringing stars to your child's eyes.

I often get questions about young kids and astronomy. Here is a reply I recently made to the parents of an eager 5 year old:

It is great to hear of young children interested in astronomy. One of my fondest memories as a Dad is having my 3-year-old point up to a star named Arcturus and say in her 3 year old voice "I see Turus! " Jennifer is 29 now and we still share our love of the stars. She once called me from Istanbul, Turkey on father's day to tell me about seeing the summer triangle from the roof of her hotel.

My suggestion is to start with storybooks. An excellent one is "Find the Constellations" by HA REY (the author of the Curious George series). It can be found or ordered in most books stores. Some glow in the dark stars on a ceiling or wall is a fun way for kids to enjoy "their own" stars indoors.

We have a meteor shower taking place this weekend that reaches its peak on Tuesday and Weds Night. Usually you can see a few bright meteors even from town.

It would be worth the trip to bring young ones to the star party. If we have a clear sky she certainly will see more stars than in town. Younger children have short attention spans so I would suggest bringing along a favorite toy or CD to listen to if she gets tired. Just the family time of going out looking at the stars and maybe learning the names of the brighter ones will help her develop an interest to learn more.

I don't suggest a telescope for young children. They don't seem to have the coordination to look through a tiny eyepiece and relate that to a real object in the sky. If their interest in the stars continues a telescope would be appropriate at about 9 or 10 years of age. Each child is different so you will soon learn if the stars are an abiding passion in her life or one of the many passing curiosities that kids explore. . Who knows one day you may be visiting your grandkids on Mars.

The new Cassini Mission to Saturn has a whole kids literacy section of stories and artwork. It's aimed at 2nd to 5th grade but I'm sure there may be activities you might enjoy. <http://saturn.jpl.nasa.gov/kids/index.cfm>

There is a separate section on the Mars Rovers for kids at http://marsprogram.jpl.nasa.gov/funzone_flash.html

There is also NASA kids section with lots of activities but most of the sights assume the child is already reading well. <http://kids.msfc.nasa.gov/>

Other beginner Astronomy information can be found at www.currentsky.com I'm sure there are many other resources but those are just a few I knew about.

The Okie-Tex Star party in the Oklahoma Panhandle will be held Oct 10th to Oct 17th, 2004. You'll enjoy some of the darkest sky in America. <http://www.okie-tex.com/>

ON LINE Club Memberships and Renewals :

Club memberships are \$25 per year for adults and \$15 per year for students.

We now have an automated on line registration form on the web-site 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**

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 \$29 for 1 year or \$55 for 2 years. (www.astronomy.com)

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

Address Corrections - Email changes - Questions :

You may forward questions to the club call our message line at 918-688-MARS (6277) by email membership@astrotulsa.com

Please leave a clear message with your name, phone number, your question - along with address or email. Please make email subject lines that address your question. The spam filters may DELETE emails without clear identification!

APPLICATION / RENEWALS
DON'T FORGET TO RENEW

Astronomy Club of Tulsa Membership Application / Renewal Form

Name: _____ Phone: () _____

Address: _____

City / State / Zip

E-mail address - print clearly Check Lines below for YES

____ I would prefer to receive E-mail notification when club newsletter is posted to the web.

____ I choose to receive my newsletter by E-mail ONLY instead of postal mail. (Usually 3 or 4 days earlier * Must have web access)

____ Notify me by E-mail of late breaking Astronomy Events

Please check all that apply:

____ New Membership (\$25) ____ Student Membership (\$15)

____ Membership Renewal (\$25) ____ Student Member Renewal (\$15)

____ Sky & Telescope Subscription (\$30) / year
also includes 10% discount on most Sky & Tel products

____ Astronomy Subscription (\$29) / year (\$55) / two years

* Magazine rates may change / prices available with membership only.

Please bring this application along with a check for the total amount made out to the Astronomy Club of Tulsa to the next meeting or mail the payment and application to:

Astronomy Club of Tulsa / 25209 E. 62nd St / Broken Arrow, OK 74014
For questions contact John Land - 918-357-1759 - astroland@gbronline.com

How did you hear of the Astronomy Club of Tulsa?

How long have you been interested or active in astronomy? _____

Do you have a telescope? _____ Type _____

Have you been a member of other astronomy clubs? _____

Where / when _____

What astronomy club activities would you like to participate in?

Astronomy Club of Tulsa membership (\$25/year) includes membership in the Astronomical League and subscription to ACT's "Observer" and AL's "Reflector". "Astronomy" (\$29/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.

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Teresa Kincannon
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Astronomy Club of Tulsa

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